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INNOVATION AS A FACTOR IN THE DEVELOPMENT OF SOCIO-ECONOMIC SYSTEMS

Samoylenko I., Romanenkov Yu., Zieiniiev T., Lebedchenko V.

In order to determine the priority directions for the development of socio-economic systems at different levels of the economic system, a scientific research was carried out to ensure the innovativeness of socio-economic systems (on the example of machine building and aviation enterprises) by forming effective mechanisms for managing innovation and investment activities on the basis of the concept of implementing the Unified System of Innovation and Technological Development (USInTD). The main components of the organization of the USInTD work, which include: human capital management, are defined; organizational capital management; management of partnership relations capital (Government relations management)); change management system; management of intellectual property; implementation of management innovations (Enterprise asset management). It is determined that the introduction and development of the USInTD is one of the main factors of competitiveness of the enterprise in the long term, but the effect of the introduction of such an approach can be obtained only under the conditions of proper organization of the process both at the corporate level and each production unit.

INTRODUCTION

Against the background of the crisis in the national economy, the need to ensure the innovative development of socio-economic systems at different levels is of key importance. Innovation is becoming an important indicator of the effectiveness of public policy and a primary factor in ensuring economic security at various levels of the systemic hierarchy. The course of crisis phenomena in the country's economy tends not only to disrupt the stability of any socio-economic system (enterprise, social formation, etc.), but also to update it through the intensification of innovation and investment processes, introduction of new management technologies, financial and economic tools and low reforms. Thus, the foundation for ensuring the appropriate level of innovation

of the socio-economic system in the national and international markets in today's conditions is the intensification of effective innovation and investment processes.

Despite the presence of a wide range of diverse research, the development of theoretical and methodological provisions and practical recommendations for ensuring the innovation of the socio-economic system becomes a key factor in ensuring innovation and investment attractiveness of the country at the international level and a key factor for further integration into the world community.

COMPARATIVE STUDY OF THE DEGREE OF INNOVATION OF UKRAINE

Ukraine seeks to build an industrial-innovative, technological-innovative, eco-innovative and sectoral-innovative model of the economy, the implementation of which should be accompanied by an increase in its competitiveness, innovation and ensure the transition to sustainable development.

In the system of global coordinates in 2017 - 2018 Ukraine ranked 81st in global competitiveness index [1,2], in 2019 – 85th out of 141 countries. The indicators and the introduction of information and communication technologies - from 77th to 78th place, macroeconomic stability - from 131st to 133rd place and innovative opportunities - from 58th to 60th place have deteriorated. According to the Global Innovation Index (2017) – 50th place, (2018) – 43rd place, (2019) – 47th place in the ranking of the most innovative countries in the world. "Ukraine demonstrates the highest indicators of innovation in education and science (2019 – 44th place in the rating) and business (85th place in the rating). At the same time, institutions and infrastructure remain the least innovative (107 and 89 respectively in the rating) "[3]. As a result, according to all indicators, the global innovation index of Ukraine is 37.4 out of 100 possible.

At the same time, if you introduce an amendment to the purchasing power parity, then Ukraine consumes about 3.2 times more energy per unit of GDP than the

OECD average [4]. According to the source Enerdata. Global Energy Statistical Yearbook 2016 "The intensity of energy use per unit of GDP with constant parity of purchasing power" indicator of energy consumption intensity per unit of GDP in Ukraine exceeds the level: the UK - 4.8 times; Turkey - 3.8 times; Poland - 3 times; Belarus 1.8 times; the average value for the European Union is 3.8 times; the average value for the world - 2 times.

Such data indicate the low capacity of the national economic management system and need to take into account the existing prerequisites and factors for the formation of a competitive, industrial and technological-innovative model of development. That is why raising the level of innovation and competitiveness is seen as a real resource for overcoming the crisis, stabilization and further growth of Ukraine's economy on an innovative basis. This is especially true of machine-building enterprises, because the development of mechanical engineering is the key to intensifying scientific and technological progress, the restructuring of the economy.

According to the analytical review of scientific publications [5-10], the main components of innovation were identified, which are: ensuring the accelerated pace of innovation development through the introduction of advanced technologies; maintaining the state of economic security and competitive positions in the innovation and investment environment, finding additional sources of funding and improving the efficiency of investment resources.

Innovation is seen as a qualitative characteristic that reflects the receptivity, willingness and ability to innovate and take risks, the rapid assimilation and implementation of scientific and technological advances; forecasting new directions of development of science and technology and flexible response to changes in the external environment; readiness of personnel for effective development of scientific and technical innovations, formation of necessary objective socio-economic conditions for introduction of innovations from positions of the human factor [11] (I. Dovby).

Ligonenko L.O. interprets enterprise innovation as an important socio-economic characteristic, foundation and intention of firm theory and modern management paradigm, systemic multifaceted complex concept that characterizes the company's ability to ensure innovative development as a result of management efforts to transform innovation potential as a result of innovation [12].

Researcher Prigozhin A.I. in a scientific publication [13] identifies the concept of "innovation" and "innovation receptivity", which means the ability of the enterprise to perceive innovations and innovations and the scientific potential of the enterprise as part of the concept of innovation potential. Therefore, the first is interpreted as the ability to apply innovations, the second - as the creation of innovation.

At the same time, the etymology of "investment capacity" characterizes the investment opportunities of the industry (enterprises, organizations), unrealized in the current period for objective reasons: due to the high level of investment risks in the region; economic inappropriacy of resource costs; adequacy and suitability of the main production capital; accumulation of resources for promising projects; lack of a competent investment strategy; low qualification of managers" [14].

The symbiosis of the conceptual and terminological apparatus allows to obtain a logically structured definition of the "innovation and investment capacity of the enterprise," under which the ability of the enterprise to carry out activities on the basis of integration of innovative and investment processes with the involvement of all possible potential is seen.

CONCEPT OF INNOVATIVE DEVELOPMENT MODEL

In recent years, there has been a movement from the traditional model to the open innovation model. The discrepancies between the specified models are given in table 1.

Table 1

Comparative characteristics of innovative development models

Traditional model	Open model
The best specialists must work for us	It is impossible to hire all the best specialists. It is necessary to use the work of such specialists regardless of their place of work
To make a profit from R&D, you need to initiate, conduct and adopt them yourself.	External R&D can be of significant value. Internal R&D is needed to complement this value or participate in IP sharing
If we are the first to make a discovery, we will be the first to bring it to market	You don't have to be a pioneer to profit from innovation
We will win if we generate most of the best ideas in the industry	We will win if we use both internal and external ideas better than others
We need to control our IP so that competitors do not take advantage of our ideas	We must profit from the commercialization of our IP by third parties; we should buy third-party IP whenever it strengthens our business model

The model of open innovation, in today's conditions, seems the most promising. During the formation of the corporate innovation system, the management of all types of strategic resources of the enterprise on the basis of complexity and systematics becomes demanding. Management of material and financial capital is not a weak point of Ukraine's leading enterprises. On the contrary, the management of human, organizational resources and capital of partnerships is much more vulnerable, which emphasizes the special relevance of the application of best practices. The modern model of open innovations is aimed not only at the formation of intra-corporate tools, but also at creating a comprehensive network of partnerships with development institutions, small and medium-sized businesses, foundations and foreign partners, universities, research institutes.

To this end, a concept is proposed that contains all the tools of innovation and technology and provides a synergistic effect of their application. The beauty of the

proposed system is that it operates based on a platform for management of research and development (R&D), innovation management and energy management on the principle of system and complexity.

INNOVATIVE ACTIVITIES IN THE FRAMEWORK OF THE IMPLEMENTATION OF INNOVATION AND TECHNOLOGY PLATFORM

The development of USInTD involves the creation of a more effective structure of planning (based on previous experience), organization, control and decision-making on all issues of innovation development, including management.

The formation of innovation infrastructure takes place in the direction of organizational allocation of specialized functions necessary for successful innovation development, including knowledge management systems, enterprise intellectual property management systems, R&D systems and more. Creation and development of the system of external innovation relations involves the organization of interaction of machine-building and aviation enterprises with all potential participants of its innovation projects: international industrial associations, Ukrainian and world research centres, financial institutions, small and medium innovative enterprises, universities, etc.

Human capital management. The human capital in the USInTD management system, of all types of resources, belongs the least to the company and is therefore associated with considerable risks. This actualizes the task of building a system of constant transformation of human capital into more sustainable organizational capital. The main place and key functionality of such a transformation is the knowledge management system (Knowledge Management) based on the support of corporate information infrastructure. The call of the knowledge management system is the mobilization of ideas and knowledge within the enterprise, the formation of a convenient environment for the innovation process of the most free (within the policy of confidentiality) exchange of information between departments and individual officials.

Organizational capital management should include several innovation management and monitoring bodies with clearly defined functions. In addition, there must be a clear division of strategic and tactical levels with a balanced balance of their relationship. The latter is determined by the results of the required number of cycles "Planning - Execution - Study - Adjustment" in the self-development of the innovation system. At the corporate level, the strategy is determined, and at the level of subsidiaries and divisions, issues of tactical management are resolved. Strategic decisions must be initially discussed with the cross-participation of other interested strategic bodies of the enterprise with the participation of external experts and experts. At the tactical level, decisions should be generated by the company's structures separately, but then be approved by strategic bodies.

Capital management partnerships. Given the current scientific developments in the economic field, the most successful are network formats of interaction. The direction of such cooperation as participation in the development and implementation of national technological platforms deserves special attention.

Change management system. The monitoring process of the USInTD program, which aims to manage deviations from the planned results in the operational mode, is based on the use of a set of organizational and methodological tools and technologies to examine the intermediate and final results of the USInTD program in the regulated mode, and monitoring the implementation of the USInTD program on an on-going basis, taking into account regulated factors, using a step-by-step method of managing innovative projects "Stage Gate".

Introduction of managerial innovations. During the organization of production activities, a significant number of foreign companies use advanced management tools and methods called Enterprise asset management (management of technical impacts on production assets).

Effective management of the USInTD requires a set of indicators by which its results can be evaluated, compared with planned data, and appropriate management measures taken. The effectiveness of the USInTD should be measured using a system of key performance indicators KPI, which allows you to track the results of activities

in all areas of innovation of engineering and aviation companies within the USInTD. Table 2 shows and characterizes the system of indicators of innovative activity within the USInTD.

Table 2

System of key indicators of innovative activity of machine-building and aviation enterprises within USInTD

Groups	Directions	Aspects	QPEf	Total
Innovative activity within the USInTD	Infrastructure and human potential development	Innovation infrastructure	Infrastructure costs	12
		Staff engaged in innovation	The share of staff engaged in innovation in the total number of staff	8
	Implementation of developments and innovative projects	Selection of ideas	Number of projects / innovation proposals implemented after approval by the STC	6
			The share of R&D expenditures in the company's revenue	12
		R & D	The share of investment in innovative projects in the company's revenue	12
The results of innovative activities within the USInTD	The growth of the technological level of the company		Productivity	10
		Introduction	SAIDI	10
	Achieving strategic goals of the enterprise and state priorities	Management	Level of innovation	6
			The level of local content	6
		Processes	The share of net profit from the implementation of innovative projects in the total net profit of the enterprise	18
ITR rating				**100**

Planning and implementation of R&D in the given system are considered as integral parts of the innovation process, which covers all phases of this movement - from outlining priority areas of research, organizing their completion, evaluation and accounting of the effect to use project results in practice. The best option for the result of R&D is, firstly, the current installation, the results of research and industrial operation of which are known, and secondly, the project passport for the

implementation of R&D results in the production activities of the enterprise. The project passport must be submitted to the governing bodies with a decision on its inclusion in the investment or production program of the enterprise.

CONCLUSIONS

In order to increase the influence of the degree of innovation on the development of socio-economic systems of the national economy, on the example of machine-building and aviation enterprises, it is proposed to put into operation the Unified system of innovation and technological development of innovative activity. Elements of implementation and organization of USInTD work are outlined, which include: human capital management (motivation, knowledge management, training of working staff); organizational capital management (innovation monitoring, innovation generation); capital management of partnership relations (public-private partnership, GR 20 system (Government relations management)); change management system (regulation of business processes, a set of organizational and methodological tools and technologies, roadmap for innovation, etc.); management of intellectual property (IP) (use, accounting, registration, protection, evaluation and disposal of IP objects); introduction of management innovations (Enterprise asset management), documentation of its tools; resources - information and analytical portal.

The practical significance of the study is to improve the innovation and technological doctrine of innovative development of the socio-economic system (on the example of machine-building and aviation enterprises) by implementing a technological platform that creates a basis for accelerating transformational transformations of innovation space in Ukraine, its regions and businesses, comprehensive coherence of all its elements.

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