DETERMINANTS OF INNOVATIVE DEVELOPMENT OF MICROECONOMIC SYSTEMS IN THE SPATIAL LIMITS OF THE NATIONAL ECONOMY

Vovk Olha, D.Sc. in Economics, Professor
National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"
Kyiv, Ukraine
ORCID ID 0000-0002-1680-1959

Dmytro Ivanets, PhD student
National Aviation University
ORCID ID 0000-0002-5790-3601
3925532@stud.nau.edu.ua

Macroeconomic systems, to which the national economy belongs in terms of the scale of functioning, in the theory of innovative development determine structural influences on spatial transformations, thereby forming key determinants of innovative development of all elements of the system.

The method of determining modernisation strategies for an enterprise using additive convolution algorithmically consists in implementing an optimistic approach to strategic management and takes into account the cognitive perception of the uniformity of both low and high parametric estimates of modernisation scenarios. This ensures that decisions are made in a deliberately positive-oriented mindset and in compliance with holistic principles, which allows assessing the prospects and results of the modernisation of an infrastructure enterprise. The proposed approach is also acceptable within the innovation and cognitive paradigm, as it allows to reveal the entire set of expected results formed by a person and his/her economic thinking, and the method has no restrictions on software alternatives. Therefore, in accordance with the methodology of applying this method, we will identify the following main programme alternatives (Table 1.):

Table 1. - Vectoriality and programme results of implementation of innovation development imperatives

Levels of imperatives formation	**Vector directions of strategic implementation of imperatives**	**Directions of building up the modernisation potential of the enterprise**	**Strategies for implementing imperatives**	**Expected programme results**
1	2	3	4	5
Unconditional and compulsory levels	Resource efficiency. Intellectualisation and digitalisation. Quality. Security.	Resource provision and design (Policy alternative a1)	Defensive, reduction and safety strategies; detensive, resource-saving, extensive strategies; survival, concentration and energy efficiency strategies of technical rearmament; certification and standardisation; concentration.	Implementation of innovative technologies, building competences, ensuring quality, security and information security, increasing productivity and profitability of resource use.
Developmental level	Institutional support. Competitiveness. Integration.	Accumulation (Policy alternative a2) and realisation (Policy alternative a3)	Adaptive, motivational, competitive, offensive strategies; strategy of sustainable development, focus; cost leadership, market niche, cost optimisation.	Accumulation of modelling potential, formation of creative thinking and cognitive coordination of development disproportions; increase in quantitative, cost and quality parameters of functioning.

1	2	3	4	5
Resulting level	Strategic, innovative, and corporatised.	Efficiency (Policy alternative a4)	Aggressive strategy; strategies of integrated, competitive, diversified, innovative, spatial development; investment and corporate strategies.	Transition to a new level of efficiency and market and technology development. The company becomes a leader in innovative development. The dynamism and intensity of development form the corporate principles and dominant position.

Source: developed by the author

1. Programmatic alternative a1 - resource provision, which is implemented through reducing, technological or progressive modernisation.

2. Programme alternative a2 - accumulation of resources in the modernisation potential through the implementation of sustainable or adaptive modernisation.

3. Policy alternative a3 - implementation through the following types of modernisation: extensive technological, creative or intensive.

4. Policy alternative a4 - effectiveness - is ensured by absolutely innovative or leadership modernisation.

The research allows to deepen the theory of innovation development and substantiate strategic vectors for the effective implementation of the outlined strategies.

The mathematical description of the terms of the set of indicators is determined by fuzzy values assigned by specialists and experts of the infrastructure services market or infrastructure sector employees. The terms have a clear form of a membership function for the indicator. We believe that the triangular type of membership function is the most appropriate for the analysis, as it allows us to determine the position of the modernisation potential in the spiral space of enterprise modernisation in the vertical and horizontal planes, forming a three-dimensional projection of the assessment results.

The spatial constraints and strategies for overcoming them in the spiral space of modernisation are researched (Table 1)

The spatial model in the implementation of strategic guidelines allows to project the directions of modernisation changes and, by applying the method of additive convolution in the formation of alternative sets, determines the cost of activation, scenarios and acceptability of the implementation of modernisation strategies.

The assessment of programme alternatives (Table 1) allows us to substantiate not only innovation and investment strategies and their choice, but also the directions of strategic management for the implementation of the developed system of socio-economic imperatives for the modernisation of infrastructure enterprises by describing and coordinating the set of scenarios for building modernisation potential and modernisation strategies.

Reference

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