

Innovative processes and factors forming the mechanism of development of transport companies

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Abstract. The article examines the modern features of innovation processes in the activities of transport companies and substantiates the factors that determine the formation of the mechanism of their innovative development. It is established that in modern conditions the innovative development of transport companies is associated with the transition from the fragmented implementation of individual technological solutions to the construction of a comprehensive innovation management system. It is determined that the main areas of innovation processes are the digitalization of operational activities, technological modernization of rolling stock and infrastructure, improvement of organizational and management models, development of human capital, as well as adaptation of transport systems to military risks and challenges of post-war recovery. The groups of factors that have a positive and negative impact on the innovative development of transport companies are systematized, namely: technical and economic, organizational and management, political and legal, socio-psychological and natural resource. Based on the expert-analytical approach, SWOT analysis and integrated assessment of innovativeness, the ranking of transport companies by the level of innovative potential is carried out. It has been proven that the formation of an effective mechanism for innovative development of transport companies requires a systematic combination of strategic management, digital technologies, investment support, and adaptive management solutions.

Keywords: innovative development, transport companies, digitalization, logistics, SWOT analysis, innovative potential, development mechanism, transport infrastructure.

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INTRODUCTION

In modern conditions of the functioning of the economy, transport companies perform not only the operational function of moving goods and passengers, but also act as one of the key elements of ensuring logistical sustainability, economic security and integration of the national economy into global supply chains. In this regard, the issue of innovative development of transport companies is becoming particularly relevant, since it is innovations that ensure increased transportation efficiency, cost reduction, increased flexibility and adaptability of business models, as well as compliance with new environmental, safety and technological requirements. This problem becomes especially important in conditions of military risks, destruction of logistics routes, changes in international transport flows and the need to restore transport infrastructure. Under such conditions, the innovative development of transport companies should be not only economic, but also adaptive in nature, aimed at ensuring the continuity of transportation, diversifying routes, increasing cybersecurity and using new technological solutions.

METHODOLOGY

The methodological basis of the study is a set of general scientific and special methods, the application of which made it possible to comprehensively investigate the innovative processes and factors of the formation of the mechanism of innovative development of transport companies. The theoretical basis of the work was the provisions of the innovation theory, the concept of strategic management, approaches to assessing the innovative potential of enterprises, as well as modern scientific developments in the field of transport logistics, digitalization and sustainable development.

In the process of the study, the method of theoretical generalization and scientific abstraction was used to clarify the essence of the concepts of "innovative development of a transport company", "innovative process" and "mechanism of innovative development". The system approach was used to consider the innovative development of transport companies as a holistic multi-level system that combines technological, organizational and managerial, economic, personnel and institutional components.

To identify modern trends in the development of transport companies, as well as the main prerequisites and limitations of innovative activity, the methods of analysis and synthesis, the structural-logical method and the comparison method were used. This allowed us to systematize the factors influencing the innovative development of transport companies by technical and economic, organizational and managerial, political and legal, socio-psychological and natural resource groups.

An important place in the study was occupied by the expert-analytical method, which was used to assess the significance of individual factors in the formation of the mechanism of innovative development of transport companies. To increase the reliability of the results, the concordance coefficient was used, which made it possible to determine the level of consistency of expert assessments. The data obtained were summarized using SWOT analysis, which allowed us to identify the strengths and weaknesses of transport companies, as well as external opportunities and threats to their innovative development.

Economic and statistical methods were used to quantitatively assess the innovative potential of transport companies, in particular the methods of grouping, comparison, ranking and integral assessment. The information base of the study was the financial and economic indicators of the activities of transport companies, including the profitability of assets, profitability of equity, profitability of sales, return on assets, depreciation rate of fixed assets and the share of intangible assets. On their basis, an integrated approach to determining the level of innovative capacity of transport enterprises was formed.

To substantiate the practical conclusions, a graphical method, a tabular method, as well as an interpretative approach were used, which provided a visual presentation of the research results and the possibility of their further use in forming a mechanism for the innovative

development of transport companies. The combined use of these methods ensured the logic, objectivity and scientific reliability of the results obtained.

In modern scientific research, the issue of innovative development of enterprises is considered through the prism of the influence of technical and economic, organizational and managerial, political and legal, socio-psychological and natural resource factors. This approach is also relevant for transport companies, whose activities are characterized by high capital intensity, technological dependence, increased risk and significant sensitivity to changes in the external environment. In works devoted to the development of entrepreneurship and logistics systems, attention is focused on the fact that the effectiveness of innovative activity depends not only on financial support or technical renewal, but also on the quality of management, institutional environment, human resources and the level of openness of the enterprise to changes. In modern scientific literature, individual components of the mechanism of innovative development of transport companies are disclosed in the works of domestic and foreign researchers. Thus, A. Verhun, O. Lozhachevska, M. Mishchenko, O. Budiakova, N. Bakalo, A. Ivanyshyn, V. Skrypnyk[1] substantiated the importance of logistics design for the safe development of enterprises under martial law and proposed the use of the method of hierarchy analysis when choosing management decisions. transport companies. A. Bieliatynskyi, O. Bakulich, A. Bokyi, I. Kis, O. Piven [2] developed a conceptual model of digital transformation of management processes, which creates a basis for including digital solutions in the structure of the mechanism of innovative development. The study by K. O. Kompanets, L. O. Lytvishko, Yu. Malakhova[3] proved the feasibility of forming innovative environmental protection activities, which strengthens the ecological orientation of the innovative development of transport companies. The work of K. O. Kompanets, V. Yu. Ilchenko, M. O. Khobti [4] expands the methodological basis of the study by applying a systematic analysis of the risks of environmental protection activities of motor transport enterprises. At the same time, the work of K. A. Kompanets, I. V. Shapovalova, V. Yu. Ilchenko, M. Ya. Gorodetsky[5] substantiates the business model of ecological marketing, which allows considering ecological innovations as a source of competitive advantages. Thus, the existing scientific works form an important theoretical and methodological basis for the study, but requires further study of the issue of integrating logistics and security, digital, environmental, risk-analytical and marketing components into a single mechanism for the innovative development of a transport company.

At the same time, applied approaches to a comprehensive assessment of the innovative potential of transport companies, taking into account the modern challenges of digital transformation, military risks and greening of transport activities, remain insufficiently developed in the scientific literature, which necessitates further research in this area. The purpose of the article is to substantiate modern directions of innovative processes in the activities of transport companies, systematize the factors of formation of the mechanism of their innovative development and assess the innovative potential of transport enterprises based on an expert-analytical approach.

RESULTS

Innovative processes in the activities of transport companies in modern conditions are characterized by a transition from the fragmented implementation of individual innovations to the creation of comprehensive innovative development management systems. Such a transition is due to the growing role of transport in ensuring the continuity of economic ties, the development of logistics systems and maintaining the competitiveness of the national economy. One of the leading areas of innovative development is the digitalization of the operational activities of transport companies, which is implemented through the introduction of electronic document management, electronic freight bills, GPS monitoring, automated dispatching systems and real-time transport flow management platforms. The use of such solutions contributes to reducing transaction costs, increasing the transparency of

transportation and reducing the time for cargo delivery. An equally important component of innovative development is the technological modernization of rolling stock and transport infrastructure. It involves the use of energy-efficient vehicles, alternative fuels, technical diagnostics and predictive maintenance systems. In modern conditions, these innovations not only increase the reliability of transportation, but also allow to reduce operating costs, optimize the use of resources and strengthen the environmental component of transport activities.

Innovative processes also cover the organizational and managerial level. It is here that the implementation of new models of logistics services, multimodal and intermodal transportation schemes, digital platforms for interaction with customers, partners and government agencies takes place. This allows transport companies to increase their adaptability, flexibility and ability to quickly respond to changes in the market situation. At the same time, the effectiveness of innovative development largely depends on human capital, since the implementation of complex digital and technological solutions requires the development of personnel competencies, the formation of an innovation culture and the integration of training into the strategic plans of the enterprise.

In conditions of war risks and post-war reconstruction, innovative processes in the transport sector acquire an adaptive nature. They are aimed not only at increasing efficiency, but also at ensuring the continuity of transportation, diversifying routes, minimizing logistics risks, and strengthening cyber and physical security of transport systems. Therefore, innovations in the transport sector act not only as a driver of economic development, but also as a tool for ensuring business sustainability in an unstable environment.

To systematize the prerequisites for the innovative development of transport companies, it is advisable to identify groups of factors that have both a positive and negative impact on this process. Technical and economic factors include financial support for innovative projects, investment in rolling stock renewal, access to credit, risk insurance, and state budget support for the development of transport infrastructure. Lack of funding sources, weak material and technical base, high economic risks, and low scientific and technical potential significantly hinder the innovative development of transport companies, while the availability of investment reserves, infrastructure, and state incentives create powerful prerequisites for innovative renewal.

Organizational and management factors determine the internal capacity of transport companies to implement innovations. Rigid hierarchical structures, excessive centralization, conservative management style and orientation towards short-term payback reduce the flexibility of enterprises and slow down the adoption of innovative decisions. At the same time, decentralization, the development of horizontal communications, democratic management style, the formation of innovative infrastructure and integration into international scientific and technical networks significantly increase the adaptability and innovative capacity of transport companies.

Political and legal factors shape the external institutional conditions of innovative development. The imperfection of the legislative and legal framework, weak protection of intellectual property and the instability of the regulatory environment create significant barriers to the implementation of innovations. In contrast, a stable and stimulating legal framework, special benefits, innovation support programs and clear market rules provide favorable conditions for the commercialization of innovative solutions in the transport industry.

Socio-psychological factors are related to the level of innovation culture of personnel, employees' readiness for change, motivation to master new technologies and the general psychological climate in the team. Resistance to change, fear of uncertainty, lack of incentives and outflow of qualified personnel slow down innovation processes, while the formation of an atmosphere of creativity, public recognition, moral and material rewards increase the

readiness of personnel for innovative activity. It is worth noting separately the natural resource factors that increasingly determine

In order to comprehensively assess the conditions for the formation of the mechanism for the innovative development of transport companies, an expert-analytical approach was applied, which combines the methods of point and rank assessment, as well as SWOT analysis. The expert survey was conducted among 12 specialists, including middle and senior managers of transport companies, specialists in logistics, digitalization and innovative development, as well as scientists and practitioners in the field of transport economics. The obtained value of the concordance coefficient $W = 0.92$ indicated a very high degree of consistency of the experts' opinions, which confirms the reliability of the formed assessments (Table 1).

Table 1 - Summary SWOT matrix for the formation of the innovative mechanism for the development of transport companies

	Opportunities (O)	Threats (T)
Strengths (S)	SO Strategies Use strengths to capitalize on opportunities 1. Leverage well-developed logistics and warehousing infrastructure to expand integrated and multimodal logistics services. 2. Use digital transport management systems (TMS, WMS, ERP) to accelerate the adoption of automation and digital platforms. 3. Exploit international operational experience to deepen cross-border cooperation and technology transfer. 4. Apply managerial competencies and qualified personnel to implement green logistics and energy-efficient technologies. 5. Rely on organizational flexibility to respond quickly to state and regional innovation support programs.	ST Strategies Use strengths to minimize threats 1. Use digital management systems to reduce the impact of war-related disruptions on logistics chains. 2. Rely on international integration to mitigate competitive pressure from global logistics operators. 3. Apply organizational flexibility to adapt promptly to regulatory instability and frequent legal changes. 4. Use strong managerial competencies to optimize transport operations under rising fuel and energy costs. 5. Strengthen internal training systems to compensate for the shortage and migration of qualified personnel.
Weaknesses (W)	WO Strategies Overcome weaknesses by using opportunities 1. Attract funding for innovation projects through state and regional support programs. 2. Modernize worn-out fleets through the adoption of green and energy-efficient technologies. 3. Reduce disparities in innovative development by engaging in international cooperation and technology transfer. 4. Overcome conservative managerial approaches by intensifying the adoption of IT solutions and digital platforms. 5. Increase investment in R&D through participation in innovation-oriented public and private initiatives.	WT Strategies Minimize weaknesses and avoid threats 1. Diversify financial sources to reduce vulnerability to war-related risks and market instability. 2. Accelerate fleet renewal in order to limit the negative effects of rising transport and energy costs. 3. Introduce change-oriented management approaches to reduce resistance to radical innovation under competitive pressure. 4. Strengthen innovation planning to prevent further lagging behind international logistics operators. 5. Develop staff retention and professional development policies to address workforce shortages and migration risks.

Source: formed on the basis of expert analysis

Based on the results of the expert assessment, a consolidated SWOT matrix was formed for the formation of an innovative mechanism for the development of transport companies. The strengths include developed logistics and warehouse infrastructure, the use of digital transportation management systems, experience in international activities, qualified personnel and the necessity of organizational structures. The main weaknesses include the limited internal sources of financing for innovations, the wear and tear of the transport fleet, the uneven level of innovative development between companies, the conservatism of management decisions and the insufficient level of investment in R&D. Among the possible ones, state and regional programs for supporting innovations, the development of "green" logistics, the growth of demand for complex logistics services, international cooperation and the active implementation of IT solutions are highlighted. The key threats include military risks, regulatory instability, rising fuel costs and increased competition from international operators.

The detailing of expert assessments showed that among the strong aspects, the digitalization of logistics processes is of the greatest importance with an average score of 8.6, among the average aspects, the limited financial innovations with a score of 8.4, among the possible aspects, the development of digital and "green" logistics with a score of 8.7, and among the threats, military risks and disruption of logistics routes with the highest score of 9.1. Thus, the most significant drivers and limitations of the innovative development of transport companies are directly related to digitalization, access to financial resources, environmental protection and security of logistics systems.

To assess the innovative potential of transport companies, a system of financial and economic indicators for 2020–2024 was used, namely: return on assets, return on equity, return on sales, return on capital, export ratios of fixed assets and combination of intangible assets. On their basis, an integral index of innovation was formed, which allowed to rank the enterprise by the ability to implement innovations. According to the calculations, the leaders of innovative development were DSV Logistics with an index of 0.48 and DP "Kühne & Nagel" with an index of 0.42. The average level of innovative potential was recorded in LLC "ZAMMLER Ukraine" and the transport company "SAT", while the lowest positions were occupied by JSC "KVK "RAPID", LLC "Europe Trans Agro" and LLC "UVK-International". This shows a significant differentiation of transport companies in terms of the level of innovative capacity and requires the development of individualized mechanisms for their development (table 2)

Table 2 -Innovative potential of transport companies

Enterprise	Innovation Index	Rank
DSV Logistics	0,48	1
Kuhne & Nagel State Enterprise	0,42	2
ZAMMLER Ukraine LLC	0,28	3
SAT Transport Company	0,24	4
RABEN Ukraine	0,15	5
Rhenus Freight Logistics LLC	0,12	6
Trans-Logistic LLC	0,11	7
UVK-International LLC	0,10	8
Europe Trans Agro LLC	0,08	9
KVK RAPID JSC	0,07	10

Source: formed by the author

Summing up the results of the study, it can be stated that innovations in the activities of transport companies act as a system-forming factor in their development. They ensure increased competitiveness, economic sustainability and compliance with modern

technological, institutional and security requirements. Therefore, the formation of a mechanism for innovative development of transport companies should be carried out on the basis of comprehensive consideration of all groups of factors, a combination of strategic management, investment support, digital modernization and adaptive organizational solutions.

CONCLUSIONS.

The article examines the modern features of innovative processes in the activities of transport companies and establishes that their development occurs under the influence of a set of interconnected internal and external factors. It is substantiated that the innovative development of transport companies should be considered as a complex process that includes the digitalization of operational activities, technological modernization of rolling stock, improvement of organizational and management models, development of human capital and increased adaptability to security challenges.

Systematization of factors of innovative development showed that the most significant influence on the activities of transport companies is exerted by technical-economic, organizational-managerial, political-legal, socio-psychological and natural-resource factors, the action of which can both stimulate and restrain innovative processes. According to the results of expert assessment, it was established that the main drivers of innovative development are the digitalization of logistics processes, the development of "green" logistics and international cooperation, while the most significant restraining factors are limited funding for innovations, wear and tear of the transport fleet, military risks and regulatory instability.

The ranking of transport companies by the integral index of innovativeness made it possible to identify a significant differentiation of their innovative potential, which confirms the need to apply flexible and differentiated mechanisms for managing innovative development. It has been proven that an effective mechanism for innovative development of transport companies should be based on a combination of strategic management, investment support, technological modernization, development of digital infrastructure, and increasing the human resources capacity of enterprises.

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