

# Government regulation of innovations in the logistics system - in the Republic of Kazakhstan

## Regulación gubernamental de las innovaciones en el sistema logístico en la República de Kazajstán

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#### ABSTRACT:

The main idea of this article is the need to innovative in the logistics system of the Republic of Kazakhstan in order to improve its efficiency, as well as to establish the role and tasks of state regulation of innovation activity of logistics structures. The principles of providing favorable conditions for the functioning of domestic business structures that ensure the preservation and further operation of the entire logistics system in the country are also established.

**Keywords:** : Innovative Logistics, Government Regulation, Logistic System, Regulatory Framework

#### RESUMEN:

La idea principal de este artículo es la necesidad de innovar en el sistema logístico de la República de Kazajstán para mejorar su eficiencia, así como para establecer el papel y las tareas de regulación estatal de la actividad de innovación de las estructuras logísticas. También se establecen los principios de proporcionar condiciones favorables para el funcionamiento de las estructuras comerciales nacionales que aseguran la preservación y el funcionamiento de todo el sistema logístico en el país.

**Palabras clave:** Logística innovadora, regulación gubernamental, sistema logístico, marco regulatorio.

## 1. Introduction

The main focus of this article is the state's regulation of innovations in the logistical system of the Republic of Kazakhstan. Logistics as an innovative management tool is clearly not used by the state. The state outlines specific tasks for the development of the country's innovative potential, which defines a new Kazakhstan model of economic growth that ensures the country's global competitiveness, where the main tools for implementing it are the development of basic sectors of the economy, such as agriculture, transport, including logistics (Nazarbayev, 2017).

The concept of state regulation of strategic innovation systems is considered by the authors (Reshetnikova, 2012, Lundvall, 1992), but in their studies the logistics system is not presented as an innovative tool for regulating the economy

## **1.1. Formation of innovative Kazakhstan**

In its turn, the JSC "Kazakhstan Institute for Industry Development", together with the specialists of the German Fraunhofer Society, interviewed state bodies, development institutions and other interested parties involved in the process of building the industrialization policy in the Republic of Kazakhstan, as supporting innovations and their rapid introduction into production is an important condition for the formation of a new industry 4.0 in Kazakhstan.

The share of innovations in the economic growth of developed countries is about two-thirds. On the other hand, according to the Ministry of Economy of the Republic of Kazakhstan, the contribution of innovative enterprises to the country's GDP, - is on average 0.8-2%, which is several times lower than that of developed countries.

In accordance with the Global Innovation Index, in 2016, Kazakhstan was in the 75th place out of 128 countries, when OECD countries settled in the top 30 of the rating. And, according to the OECD, the innovative system of Kazakhstan, including innovations in the logistical system of the Republic of Kazakhstan, is still at an early stage of development, as many other statistical indicators attest. Only 0.2% of GDP is allocated for research and development, which is lower than that recommended for countries with similar levels of economic development (1% -1.5% of GDP), when both gross domestic expenditure on R&D in OECD countries is 2, 4%.

Studies of Kazakhstani scientists show that the financial crisis has revealed a number of problems that have affected the investment activity of the agrarian sector and that have restrained the pace of innovative development of the agro-industrial complex, namely:

- An obsolete fund of material and technical base; most of the buildings and structures (over 65%) have been operating for more than 40 years or more; 2/3 of all available agricultural machinery is subject to cancellation;
- Lack of financial resources for innovative research and development; the amount of allocated funds does not exceed 0.2% of gross agricultural output, whereas in countries with developed agriculture this figure is about 4-5% (Sikhimbaeva, Abdraimova, 2015).

Therefore, in practice, the regulation of innovations in the logistics system gives a powerful impetus to increasing the competitiveness of organizations and their products (Fedotenkov, 2014).

Innovative logistics is a special tool for studying, analyzing and evaluating the effectiveness of managing streaming processes, identifying unused reserves and their implementation. Innovative logistics is aimed at improving management through the application of various innovations aimed at bettering the quality of customer service.

According to the authors, the main tasks and functions of innovative logistics are the following:

- Generation of new ideas in the field of managing streaming processes, especially strategic management, through the creative use of the achievements of natural and human sciences (mathematics, econometrics, computer science, economics, sociology, etc.) for their subsequent use in logistics innovations in accordance with the requirements of the postindustrial economy;
- Study, generalization, systematization and use of the world experience of innovative activities in the field of logistics, taking into account the economic characteristics of different countries, regions, industries, spheres of activity, market structures, their capabilities and the degree to which they are in demand for logistics innovations;
- Development of the organizational and methodical mechanism for the use of a logistical innovation fund in relation to the actual conditions of functioning, development and degree of readiness of existing and newly created structures, taking into account the set

of prerequisites (socio-economic, organizational, technical, information, legal, personnel, etc.);

-Development of constructive programs in the form of methods, algorithms, standards for various structures, including the creation of systemic logistic neoplasms;

- Evaluation of the effectiveness of innovative logistics activities and programs by comparing the utility, benefits and savings from their implementation with the logistics costs incurred.

In the context of globalization, integration and internationalization of the economy, as well as the accession of the Republic of Kazakhstan to the Customs Union and the WTO, innovations in the logistics system are becoming an important factor of the country's competitiveness. The development of innovative logistics is much ahead of its regulation by the state and its institutions (Udalova, 2010).

The need to improve state regulation and modernization of innovation logistics strategies is primarily due to their growing importance for the economy and society as a whole, which determines the relevance of the main focus of the article.

## 2. Methodology

### 2.1. Introduction to innovative logistics

As the world experience shows, one of the ways to improve the quality of logistics service is the construction of innovative logistics and the application of rational methods in the management of the logistics system.

Practical implementation of innovations in logistics is becoming a powerful tool for increasing the competitiveness of enterprises, since the organization of a national logistics system that has all the characteristics of a 3-4PL supplier is practically impossible without state support, including without interaction with government agencies providing logistical processes (Grits, G.V., 2009).

Logistic innovation systems cover innovations in the organization of all goods movement, from logistics operations to system-wide innovations in logistics activities. In this regard, it is advisable to consider the classification of logistics innovations presented by Rybalkina in Table 1. This classification identifies key areas of activity of innovative logistics systems and the main objects of logistics activities. Classification of logistical innovations also allows to say that logistical innovations on various scales participate in all types of business processes presented in all areas of logistics.

According to the foreign researcher in the field of innovation Twis Brian, the process in which an intellectual product invention, information, know-how or idea acquires economic content requires the regulation of the state, the choice of the direction of R&D, the management of the implementation of innovation projects, and the construction of organizational structures focused on innovation activity (Twis Brian, 1989).

**Table 1**  
Classification of logistics innovations

Nº	Classification feature	Types of logistical innovations
1	Logistics areas	<ul style="list-style-type: none"><li>- Purchasing activity</li><li>- Storage facilities</li><li>- Transport facilities</li><li>-Distribution of resources in production</li><li>- Production processes</li><li>- Inventory management</li><li>- Marketing activities</li></ul>

2	Goods movement group	<ul style="list-style-type: none"> <li>- Functional logistics chains</li> <li>- Micro-logical chains</li> <li>- Macro-logical chains</li> </ul>
3	Scope of application	<ul style="list-style-type: none"> <li>- Local industry</li> <li>- Intersectoral</li> <li>- System-wide</li> </ul>
4	Level of use	<ul style="list-style-type: none"> <li>- Operating</li> <li>- Procedural</li> <li>- Functional</li> </ul>
5	Business Process Type	<ul style="list-style-type: none"> <li>- Technological</li> <li>- Organizational</li> <li>- Management</li> </ul>

Based on the supply chain management (SCM) concept, it is necessary to supplement the types of logistics operations in logistics areas with reverse logistic activities (Abdallah, Abbas, Mohamed, 2015).

The formation of a scientific approach to the study of innovative logistics in Kazakhstan is represented by some aspect-oriented publications.

The analysis of publications of domestic scientists in the Republic of Kazakhstan showed that, in our country, the state regulation of innovations in the logistics system as a tool of logistics, despite its universality, is practically not used, that the terminological apparatus has not been elaborated, and that the development of legal bases is not an important issue.

At present, there are no works nor fundamental research on topical problems of innovative development of logistics systems and the respective state regulation. The issues of normative acts applied in basic logistics for the administration of certain logistical procedures -for example, contracting, supply, transportation, transfer of ownership in the process of delivery of goods, etc.- require further development in relation to the innovative component of logistics.

Thus, there is a need to raise the issue of closing the gap in the scientific and methodological tools for researching innovative logistics under the conditions of state regulation in Kazakhstan and to preliminary describe the functioning mechanisms of innovative logistics and the following expected results:

- To define and clarify the conceptual-categorical apparatus in the field of application of methods of state regulation of innovations in the logistical system of the Republic of Kazakhstan;
- Analyze the interaction of material and associated flows in innovative logistics and determine its regulatory and legal framework in conditions of state regulation;
- Analyze the state regulation of innovation activities of regions and business structures at macro, meso, and micro levels;
- identify the economic and legal factors that determine the impact on the final results of the use of innovations in the logistical system of the Republic of Kazakhstan;
- To systematize the methods of state regulation of innovative processes in logistics systems, in order to build a model of innovative logistic activity of business structures on the basis of regulatory support.

## **2.2. The significance of the functioning of innovative**

# **logistics on a national and international scale**

At the present stage, the European logistics system is already sufficiently equipped with objects of transport and logistics infrastructure, and the acceleration of its development is provided mainly through the introduction of innovations in the information system and technological schemes of logistics (Rzun, 2005). In particular, this refers to the formation of databases and communication systems for logistics, the introduction of new software products that allow remote management of material flows, warehouse information systems, the organization of a remote monitoring and quality control system for the implementation of activities in various sections of the logistics chain (Starkov, -Starkova, 2008).

The development of market relations in Kazakhstan contributes to the formation of consumer priority, but does not fully affect the creation of an adequate logistics infrastructure that allows producers to meet market requirements at the level of world standards (Shevchenko, Shevchenko Ponomarenko, 2012).

European, German and Chinese logistics models imply the active participation of the state in the implementation of logistics processes. Integration into the world space requires the development of a general program for the development of logistics, taking into account a complex of economic, transport, environmental, social and other factors, as well as methodological support. At the same time, it is necessary to improve and monitor compliance with the norms and rules of equipment and operation of terminal facilities. The creation of logistics centers with the active support of the state can become a key area of innovative logistics of the country (Starkova, -Rzun, Uspensky, 2014).

One of the innovative models proposed by the European Association which can be used in cities is lift-sharing (Kizim, Serdtseeva, 2011). This service allows you to rationally organize routes and provide transport (car or bus) for –moving people in one direction thanks to previously left online applications.

The lack of a centralized logistics system in Kazakhstan shows the backlog of our country in terms of innovative approaches to the implementation of logistics services. These circumstances actualize the need to form a national logistics model based on innovations that can be introduced into the Kazakhstan economy in order to improve its efficiency and competitiveness. The construction of a developed logistic system of the country is a long-term process, requiring a clear and competent preliminary scientific and theoretical study, as well as the justification of the principles and mechanisms of the formation and functioning of the logistics system (Starkova, Savvidi-, Safonova, 2013). There is a need to study the systemic best practices of foreign countries that have achieved the best results in the field of innovative logistics.

The scientific and practical significance of the results of the research being carried out consists in scientifically and methodologically developing mechanisms for modernizing the state regulation of innovative logistics for the integration of the logistical system of Kazakhstan into the global sector of logistics services. The need for state regulation of innovative logistics does not cause doubts when using the experience of various states of the world and adapting the best of it to the realities of our state in order to achieve a positive effect in the logistical system of Kazakhstan.

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## **3. Results**

Foreign experience in the application and adaptation of innovative logistics in the Republic of Kazakhstan seriously improves the quality of life of the population and positively affects the economy of our country as a whole. The application of information technologies in logistics allows solving a whole series of tasks with minimal costs, which encourages European researchers, programmers and designers to develop information products based on the most unexpected and original ideas.

The state regulation of the innovative logistic system of the Republic of Kazakhstan will also affect macroeconomic effects, which will allow (Kizim, -Kozenko, 2013):

- To reduce the share of costs for the promotion goods and services in the GDP structure;
- To reduce the level of inflation by reducing logistics costs;
- To optimize inventory and free up financial resources;
- To increase the availability of goods by reducing consumer prices;
- To improve the quality and standard of living of the population of the republic.

Logistic models and the proposed classification of logistics innovations can be used in the process of improving state regulation in the field of innovation development in logistics systems, which will deepen and develop logistics as a science.

Depending on the nature of the theoretical tasks being developed, various general scientific methods of research could be used: analysis and synthesis, integrated and systemic approaches, the unity of qualitative and quantitative analysis, logical modeling and the expert-statistical method. It is important to use innovative technologies in logistics, among which there are morphological analysis to substantiate management decisions in logistics, the method of economic analysis of material flows of the logistics system, the possibility of using self-organizing systems in logistics with the use of coordination mechanisms.

In the process of research, the forecasted development of state bodies and public organizations will be taken into account, and international, legislative and policy documents and information sources will be used.

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## 4. Conclusions

Studies on the state regulation of innovations in logistics systems in the domestic science are based on a review of theoretical questions and proposals limited to the identification of methods of state regulation (Raisova, Kaygorodtsev, 2016) without an emphasis on innovative logistics. Therefore,

- There is a weak tendency to expand the scope of logistics in the business structures, as well as the emergence of new logistics trends that use knowledge management mechanisms, information and innovative technologies;
- There are no conceptual bases of state regulation of logistical systems of the Republic of Kazakhstan functioning in an innovative mode;

It is no secret that the potential for savings lies in logistics systems. These have learned to use corrupt elements in the form of "Kickbacks", price dumping, unjustified financing, etc., for personal purposes. Namely, the consistent implementation of these actions can become the basis for modernizing the logistical systems of state regulation and will provide an opportunity to obtain economic, political and social effects. The proceeds from the savings of material resources invested in the implementation of public procurement (-Najmuddin Hasan, -2016; Abramov-, 2014; Wang-, Thanh, 2017) at the best prices-, in the organization and holding of tenders, in financing the cost of state economic and social projects, and the use of information logistics products, will solve a whole range of problems with minimal costs, the effect of which can be directed to the solution of other important state tasks.

Formation and development of innovative logistics in Kazakhstan as a new scientific and practical direction contributes to the socio-economic development of business structures, industries and the country as a whole, as well as to the welfare of citizens.

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