FORMATION OF THE TRANSPORT AND LOGISTICS SYSTEM AS THE BASIS FOR RICE PRODUCTION DEVELOPMENT IN THE KAZAKHSTAN ARAL SEA REGION IN THE CONTEXT OF THE EAEU ECONOMIC INTEGRATION

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ABSTRACT

This article reveals the theoretical aspects of integration in the context of the EAEU, as well as the regional values of integration processes for the development of transport logistics and rice production in the Kyzylorda region. The components of the region's transport and logistics system and subsystem depending on their functions are presented. The importance of intensifying agricultural production in rice growing is justified for increasing the region's export potential based on the ongoing state support and regulation of rice production as a kind of rice grain subcomplex of the country. At the same time, the article presents the features of the rice production field, in which the use of transport logistics, taking into account all its constituent subsystems and commodity flow processes, attracts the attention of managers of various levels to ensure production and marketing efficiency against other methods and concepts of modern management, as well as to form new information and analytical systems and infrastructure, having unity at the level of intercountry relations. The need for a transport and logistics system in the rice-growing region is also substantiated from the perspective of the implementation of certain conditions, such as the development of science, technology and the institutional environment, while ensuring the principles of consistency, comprehensiveness, rationality, efficiency, and interdependence of measures taken.

Keywords: Logistics, Transport Logistics, Economic Integration, Agriculture, Rice Production.

INTRODUCTION

The development of transport infrastructure helps to strengthen national security, political stability and economic growth by creating multimodal terminals in cargo-forming areas. Regions are becoming the prominent subjects of international economic relations (Kazhyken, 2018; Krugman, 1998). An important role in solving integration problems between the rice-growing Kazakhstan Aral Sea region and other regions of Kazakhstan and the EAEU member countries is played by the transport and logistics system.

By 2020, the implementation of the state project for the development and integration of the infrastructure of the transport system of the Republic of Kazakhstan should be completed. But right now the results of the activity of the program are obvious. The regional *"Road map for the development of a network of highways"* is approved with a deadline for implementation in 2018-2020. Within the framework of the map, 103 projects are planned immediately. The international route network of the Korkyt ata airport of Kyzylorda is actively developing; work has been carried out to open domestic flights Kyzylorda-Kokshetau and Kyzylorda-Oskemen. Two major bridges were repaired in the Syrdarya region, a bridge was put into operation on the highway near the settlement of Besaryk. In the Kazalinsky district of the Kyzylorda region, the construction of a large bridge across the Syr Darya was completed. In the framework of the law *"On State Regulation of the Development of Agro-Industrial Complex and Rural Territories"* of Kazakhstan there are also positive updates (as of 2020), from now it regulates information system of insurance in the agricultural sector, information and marketing system of the agricultural sector, approval of the norm physical volume of agricultural products.

MATERIAL AND METHODS

The work is based on a dialectical approach and a systemic analysis of studying integration processes, as well as on the use of transport logistics in the context of the regional economy as the basis for the country's sustainable development. Particular attention is paid to the theory of state and regional economic development, as well as to the application of a systematic approach and a comprehensive analysis to exploring the dynamics, factors and indicators of the development of industries, regions and the national economy.

The study used the legislative and regulatory acts of the republican and regional executive bodies in the field of economic development and agriculture, as well as fact-based and empirical materials.

To improve the efficiency of agricultural production in Kazakhstan, certain regulatory acts and strategic programs have been developed, such as the Concept of Transition of the Republic of Kazakhstan to Sustainable Development for 2007-2024 and the Law of the Republic of Kazakhstan *"On State Regulation of the Development of the Agro-Industrial Complex and Rural Territories"*.

RESULTS AND DISCUSSION

In the Address of the Head of State Nursultan Nazarbayev to the People of Kazakhstan *"Kazakhstan-2050 Strategy: New Political Course for the Established State",* the task was set to double transit capacity across Kazakhstan by 2020 and increase 10-fold by 2050. He emphasized that *"it is important to focus attention on exit routes from the country and create transport and logistics facilities outside Kazakhstan"*. The State Program for the Development of Transport Infrastructure until 2020 (Nazarbayev, 2017) is aimed at the practical implementation of these tasks.

Kazakhstan has prospects to become a logistic link connecting Europe and Asia. The basis for the formation of a multimodal logistics operator of the transnational scale with a full sector of assets and competencies is NC KTZ JSC. The multimodal company will include the Aktau seaport, the Khorgos-Eastern Gate SEZ, airports, and the terminal network of Kazakhstan.

On the part of Kazakhstan, work was carried out on the construction of terminals not only in the republic, but also in other countries, such as the Republic of Azerbaijan and Iran.

The integration of transport assets into a single structure makes it possible to provide favorable conditions for the implementation of the country's export and transit potential in the EAEU, the Middle East, Southeast Asia, and China. Ongoing measures ensure the involvement of the global operator Dubai Port World (Umirzakov et al., 2019). Investment projects are being implemented to form a developed transport and logistics infrastructure.

In the field of railway transport, new Zhezkazgan-Beineu railway lines and the first launch complex of the first phase of the Zhezkazgan-Saksaulskaya section and the Arkalyk-Shubarkol railway line were put into operation, which optimize the configuration of international and transport corridors. The modernization of the railway and logistics infrastructure is one of the key areas of the state infrastructure development program Nurly Zhol. Currently, the transportation of goods, such as steel, sulfur, ore, coal, grain, construction materials, is carried out along the indicated routes. The volume of transportation is 11.9 million tons.

In the Almaty region there are two main railway checkpoints and a point under construction at the junction of the automobile corridor Western Europe – Western China. In this regard, the first phase of the dry port was put into operation on the territory of the Khorgos–Eastern Gate SEZ. The formation of SEZ infrastructure still continues, which will allow increasing the volume of trade through Khorgos by eight times, or increase the transportation of goods to 4 million tons per year.

To increase the efficiency of transportation, the construction of second main tracks and their electrification on the Almaty-1-Shu section was completed. This makes it possible to increase speed, reduce the train travel time, increase the traffic and carrying capacity of the section, and increase the carrying capacity of goods from 25 million tons to 80 million tons.

The length of public roads in the Republic of Kazakhstan is 85,867 km, of which 81,331 km (94.7%) are paved roads. The average density of paved roads in the country is 29.8 km per 1,000 km^2. The North Kazakhstan region has the highest density of roads – 71.5 km, while the lowest is observed in the Kyzylorda region – 11.6 km. All district centers of the regions are fully provided with road communication. Rural settlements are provided by only 73.1%. Among the regions, the lowest provision indicators of rural settlements are observed in the West Kazakhstan region (31.1%), and the highest – in the Akmola region (100%). The average density of railways in Kazakhstan is 5.2 km per 1,000 km^2. In most CIS countries, the density of railway tracks ranges from 25 to 35 km. The operational length of navigable inland waterways is 4,356 km. They run through the territory of seven regions. The East Kazakhstan region has the greatest length – 25% of the total. In the Atyrau region, it amounts to 17%, and in the Karaganda region – to 2%.

A dry cargo marine company has been created for the first time in the country. The airport infrastructure is being modernized, and it is planned to form a network of Class A and B transport and logistics centers with the participation of the private sector. The reconstruction of the Kyzylorda-Zhezkazgan highway allows increasing cargo traffic to central Kazakhstan and to the north.

For Kazakhstan, grain is a strategic product that ensures the country's food security. At the same time, grain export makes up a large share of Kazakhstan's export potential, and the state is taking measures to stimulate its increase, which contributes to the development of logistics, the creation of infrastructure, and the construction of terminals to expand exports to

world markets. In the country, there is an increase in production and other types of agricultural products, a renewal of fixed capital stock, and an annual increase in investment in fixed assets. The financial situation of agricultural enterprises is being strengthened. The share of agriculture in the country's GDP over the past four years has been less than 5%. At the same time, Kazakhstan has become one of the world's leading exporters of grain, wheat and flour. In Kazakhstan, an average of 18.0–20.0 million tons of grain with a high-quality characteristic is produced, which allowed it to take third place in the CIS after Russia and Ukraine (Umirzakov et al., 2019).

The development of the transport and logistics system of Kazakhstan should ensure the total effect of gross value added in the amount of 15 billion dollars, with an average annual GDP growth of more than 1%. To improve transport logistics, about 5 trillion tenge of investments by the state and private companies are attracted.

Prospects for developing the transport and logistics system and increasing the output of industry and agriculture are shown in Table 1.

Table 1 THE MAIN MACROECONOMIC INDICATORS OF THE REPUBLIC OF KAZAKHSTAN	
Indicators	As of January 1, 2018
Territory, thousand km^2	2724.9
Length of railways, thousand km	15.3
Including: Passing within the country	14.5
passing on the territory of other states, km	275
Length of roads, thousand km	85
Length of oil pipelines, thousand km	6
Length of gas pipelines, thousand km	10
Number of administrative districts	177
Number of cities, total	87
of which: cities of republican and regional subordination	40
Urban-type settlements	30
Auls	6569
Volume of industrial products, goods and services, billion tenge	22747
Gross output of agricultural products (services), billion tenge	4092,3
Investments in fixed assets, billion tenge	8771
Retail trade volume, billion tenge	8892.9
Cargo transportation by all means of transport, million tons	3946.1
Employed population, thousand people	8585.2
Unemployed population, thousand people	442.3
Average monthly salary, tenge	150827

Source: Compiled by the authors based on the statistical compilation *"Regions of Kazakhstan 2018"* and departmental data.

Over the period 2016-2019, more than 15 million dollars were invested in the agriculture of the Kazakhstan Aral Sea region. As a result, the agricultural sector of the Kyzylorda region increased export products by 28%. According to the regional agricultural department of the Kyzylorda region, in 2019, 48.5 thousand tons were exported by the region's rice farmers, which are over 20 million dollars (Agriculture of the Kyzylorda region, 2019; Data of the Kyzylorda regional agricultural department for 2016-2019, 2019). Unfortunately, this is 10% less than in 2018. The Kazakhstani rice-growing region exports rice to the Republic of Tajikistan, which

makes up 34.6% of total exports, to the Russian Federation – 32.7%, Ukraine – 9.1%, the Republic of Uzbekistan – 9.0%, and the Republic of Azerbaijan – 7.5 %. Furthermore, 19 types of agricultural products are exported, including rice, safflower oil, vegetables and melons, salt, as well as cattle, sheep, and camels in live weight. In 2019, for the first time, the region exported 20 tons of wool to China, and more than 2 thousand sheep and camels to Iran and Uzbekistan. Since 2018, safflower oil has become a brand of Kyzylorda exporters (Agriculture of the Kyzylorda region, 2019; Data of the Kyzylorda regional agricultural department for 2016-2019, 2019). It is produced by AB Invest Group LLP. The end market is China, the famous Kantianyuan food corporation.

Table 2 COMPONENTS OF THE TRANSPORT AND LOGISTICS SYSTEM OF THE KAZAKHSTANI RICE-GROWING REGION	
Types of logistics systems and subsystems	Logistics subsystems or functions performed
Logistics system of goods distribution	Functional
	Local subsystems
	Industry subsystems of the logistics system
	Territorial and administrative subsystems of the logistics system
Functional subsystem	Logistics transport system of the region
	Logistics information system
	Logistics terminal system
	Logistics center
	Logistics trading system
	Logistics production system
Industry subsystems of the logistics subsystem	Logistics system of agricultural industries
	Logistics system of regional material production industries
	Logistics system of the infrastructure of economic industries
	Inter industry logistics system
Local subsystems of the logistics system	Logistics system of an individual agricultural enterprise
	Logistics system of a group of enterprises
	Logistics system of joint ventures
	Logistics system of international enterprises
Territorial and administrative subsystems of the logistics system	Logistics system of regional entities
	Logistics system of local government
	Regional logistics system
	Interregional logistics system

Note: Compiled by the authors based on the constituent functions of the logistics system of goods distribution.

The country's state industrialization program makes it possible to accelerate, simplify and reduce the cost of domestic transportation, when supplying production with raw materials, the delivery of agricultural products to consumers, as well as the transportation of goods over long

distances and hard-to-reach areas (Romanko & Musabekova, 2014; Albekov et al., 2001; Gadzhinsky, 2013; Mirotin, 2003).

An integral component of economic development is the implementation of the Logistic Map of Kazakhstan. The President of Kazakhstan at the 25th plenary meeting of the Council of Foreign Investors announced the start of the project *"Kazakhstan – the New Silk Road"*. Kazakhstan needs to revive the historical role of the largest business transit hub of the Central Asian region.

The information support center established under the regional akimat can coordinate all the components of transport logistics in the country in conjunction with Baikonur SEC and other structures on the basis of public-private partnerships. The transport and logistics system will increase cargo flows to the EAEU and the EU. There should be an operator of multimodal transportation, providing the distribution of rice and other agricultural products in all directions and controlling delivery.

Currently, the actual traffic load on republican roads in Kazakhstan, which are part of international transport corridors, is on average 55% of the calculated – from 3 to 7 thousand cars per day, depending on the road category. The Kazakhstani rice-growing region has great potential for the efficient use of the international highway Western China – Western Europe (Table 2).

When using transport logistics, there is a need for energy conservation: the formation of an optimal set of agricultural equipment for agricultural work in rice farming, as well as the consolidation of rice farms, which improves the optimization of the machine and tractor fleet and agricultural activities during the growing season.

DISCUSSION

The transport and logistics system of the rice-growing Kazakhstan Aral Sea region should begin with the distribution sphere. Peter Drucker, a well-known management theorist, notes that sales have always been the main center for the organization's expenses (Nazarbayev, 2017). In order for sales costs to be minimized, it is necessary to rearrange them in distribution. At the same time, by increasing the frequency of goods delivery, one can reduce the overall cost of transport logistics.

Mirotin & Sergeev (2000) believe that on the basis of physical distribution and material management of the procurement sphere, the business logistics concept is developing, and production management is being transformed into industrial logistics. However, at the same time, taking into account these arguments, one should note the development of production in the context of the business logistics concept (Drucker, 2009; Mirotin & Sergeev, 2000).

Kazakhstan does not yet occupy a leading position in the Eurasian Union. The country is heavily dependent on imports of industrial and consumer goods. The target setting of the republic is a focus on mobilizing domestic reserves, using a liberalized foreign market, and a lower level of taxation. This is important in the context of competition and adaptation to the new conditions of the WTO (Magomedov, 2012).

It is necessary to create an economic logistics mechanism, with regard to prices, tariffs, costs of transportation services and marketing, transport logistics infrastructure, and franchising. The issues of toll roads, information and analytical support, and the development of interstate

structures should be addressed at the interstate level (Koshanov, 2017; Tasuyeva, 2003, Damdyn & Ochur, 2010).

CONCLUSIONS

2020 is a year when the second stage of implementation of the State Program for the Development and Integration of the Infrastructure of the Transport System of the Republic of Kazakhstan is finishing, so the predicted goals are close to be achieved. The implementation of the main infrastructure projects are completing: Western Europe - Western China, Center - South, Center - East, Center - West, Zhezkazgan - Beineu and Expansion of Aktau port in the north direction. An indicator of the successful implementation of the Program will be the improvement of Kazakhstan's position in the World Bank's Logistics Efficiency Index (LPI) rating; it is supposed to achieve the position of Kazakhstan in the above ranking in 40th place. The main link in the system of transport logistics development is the structure of railway transport. Great interest in the EAEU on the part of some CIS and Middle East countries expands the capabilities of the transport and logistics system, requiring the rice-growing Kazakhstan Aral Sea region to increase agricultural output and expand the product range. The regional authorities should adopt an appropriate strategy for the development of the agricultural production system and provide it with state support and regulation tools.

REFERENCES

Agriculture of the Kyzylorda region. (2019). Retrieved January 8, 2020, from www.stat.gov.kz

Albekov, A.U., Fedko B.P. & O.A. Mitko (2001). *Commerce logistics*. Rostov-on-Don: Feniks.

Damdyn, O.S. & Yu.S. Ochur (2010). Transport logistics. *Young Scientist, 12*(1), 73-74.

Data of the Kyzylorda regional agricultural department for 2016-2019. (2019). Retrieved January 8, 2020, from www.stat.gov.kz

Drucker, P.F. (2009). *Managing for Results*. New York: Harper Collins.

Gadzhinsky, A.M. (2013). *Logistics*. Moscow: Dashkov and Co.

Kazhyken, M. (2018). *Model of adaptive economy*. Astana: Profmedia Astana LLP.

Koshanov, A. (2017). EAEU: Pros and cons of integration. Republican socio-political magazine "Thought", April, 13-18.

Krugman, P. (1998). Space: The Final Frontier. *Journal of Economic Perspectives, 12*(2), 161-174.

Magomedov, A.M. (2012). Management of regional economies – logistic approach. *Management of Economic Systems, 48*(12), 106. Retrieved January 8, 2020, from http://www.uecs.ru/uecs48-482012/item/1744-2012-12-05-10-58-49?pop=1&tmpl=component&print=1

Mirotin, L.B. & V.I. Sergeev (2000). *Basics of logistics*. Moscow: INFRA-M.

Mirotin, L.B. (2003). *Transport logistics: A textbook for transport universities*. Moscow: Ekzamen.

Nazarbayev, N.A. (2017). *Program "Kazakhstan-2050 Strategy: New Political Course for the Established State"*.

Regions of Kazakhstan. (2018). Statistical compilation of the Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan. Astana.

Romanko, E.B. & A.O. Musabekova (2014). *Development of transport logistics in Republic of Kazakhstan. Bulletin of the Karaganda University*, *2*(74), 142-148. Retrieved January 8, 2020, from https://economy-vestnik.ksu.kz/archive

Tasuyeva, T.S. (2013). Transformation of the warehouse logistics: from storage function to innovative management flow of control. *Discussion, 1*(31), 2-6. Retrieved January 8, 2020, from https://www.journal-discussion.ru/issues/issue-31-january-2013/article-997#article

Umirzakov S.Y., Bykharbaeva, A.Zh., Nauryzbaeva, A.Zh., Oralbaeva, A.K. & D.A. Bekesheva (2019). Assessment of the current status and problems of agricultural production development and agricultural marketing in Kazakhstan. *International Journal of Supply Chain Management, 8*(3), 256-265.