

SCTCMG 2021**International Scientific Conference «Social and Cultural Transformations in the Context of Modern Globalism»****ECONOMIC EFFICIENCY OF THE ORGANIZATION OF
TRANSPORTATION AND TRANSPORT SPACE**

Yulia Arkadyevna Tagiltseva (a)*, Elena Leonidovna Kuzina (b),
Marina Aleksandrovna Vasilenko (c), Nikita Alekseevich Drozdov (d),
Anastasia Mikhailovna Prokopova (e)

*Corresponding author

(a) Rostov Branch of Russian Customs Academy, 20, Budennovskiy ave., Rostov-on-Don, Russia,
79185065822@ya.ru,

(b) Russian Transport University, 9b9, Obrazcova Str., Moscow, Russia, kyzina2008@yandex.ru,

(c) Rostov State Medical University, 29, Nakhichevskiy Lane, Rostov-on-Don, Russia, margo2026@yandex.ru,

(d) Technological institute (branch) of Don state technical university in the city of Azov, 1, Promyshlennaya Str.,
Azov, Russia, dharmaface@yandex.ru,

(e) Russian transport university, 9b9, Obrazcova Str., Moscow, Russia, kyzina2008@yandex.ru

Abstract

The development of international cargo transportation has been relevant since the emergence of the international division of labor. The transport system is considered the "circulatory system" of the country's economy, which makes it a key link in the implementation of economic reforms in the country. The transport industry has significant social significance, which also determines the specifics of the phased market transformations. The development of international multimodal transportation is becoming a new trend in the development of the transport services market. The paper examines the system of international transportation of the Eurasian Economic Union (EAEU), the integration of the transport system, and the formation of single transport space. The article examines the issue of the specifics of freight transportation by each type of transport, highlights the advantages and disadvantages, evaluates the combined (multimodal) transportation. The authors analyzed the ongoing freight traffic in the Russian Federation, deduced trends in the development of the industry and changes in the directions of movement of goods. The integration of the EAEU transport systems contributes to the economic growth of the Union states, the reduction of their transport isolation, the expansion of intra-union and international economic ties, and an increase in the volume of transit traffic. Due to the favorable geopolitical position of the EAEU countries, an increase in transit cargo flows will allow the Union to become one of the leaders in the world freight and passenger transportation market.

2357-1330 © 2021 Published by European Publisher.

Keywords: Multimodal transport, transport space, efficiency, EAEU, container



This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 Unported License, permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

1. Introduction

The transport system of any country is a key sector of the economy. This industry is always unique. It develops independently and at the same time participates in organizing the activities of other industries, ensuring the flow of all the necessary resources and final products to the consumer. Its development largely determines the spatial accessibility of territories, the quality, standard of living and mobility of the population, freedom of movement of goods and provision of services, foreign economic activity.

In market conditions, the main competitive advantage is an increase in the speed of delivery of goods to the end consumer and a reduction in the cost of transportation. Multimodal transportation of goods is becoming a new global trend in the organization of the transportation process.

At the same time, since 2014 Russia has been in the stage of formation of integration interaction within the framework of the Eurasian Economic Union. The Treaty on the Eurasian Economic Union of May 29, 2014, provides for a coordinated transport policy aimed at ensuring the sustainable development of the Union member states, as well as the consistent and phased formation of single transport space.

Thus, the issue of organizing international multimodal transportation in the context of the formation of a single transport space of the EAEU becomes undoubtedly relevant.

2. Problem Statement

Scientific interest in researching the issue of reducing transportation costs and increasing the efficiency of its organization has appeared a long time ago and is still in demand. According to Stephenson (2015), reducing the cost of global shipping has opened new business opportunities and fundamentally changed production models. Transport scientists note that in the system of international transportation, the main place is occupied by container transportation of goods. An analysis of the works of domestic and foreign economists showed that the search for promising markets for transport services, the development of cross-border transport infrastructure (transport corridors, multimodal transport, and logistics centers) to ensure territorial connectivity of all EAEU participants, the expansion of international trade and cooperation is relevant; formation of a common market for transport services without exceptions and restrictions; pursuing a coordinated tariff policy for the rational use of transit opportunities of the Eurasian corridors and increasing their competitiveness (Almetova et al., 2018).

The formation of a single transport space is carried out through the gradual liberalization of transport services between the EAEU member states. The integration process was launched in 2014. The works of domestic transport economists such as Asaul and Mokhov (2018), analyze a set of measures for the implementation of a coordinated transport policy of the Union, consider measures to eliminate existing shortcomings and propose ways of further integration of the EAEU transport systems, taking into account the differences in legal regulation, technological features of certain types of transport and the state of transport infrastructure.

The development and design of the EAEU transport systems, ways of their modernization in various aspects were studied by Shkurina et al. (2019) and Reser (2012). However, the issues of increasing the efficiency of the organization of international transport and the prospects for the unification

of transport systems within the EAEU in the world and domestic practice have not yet been sufficiently studied.

3. Research Questions

Each type of transport has its specifics, allowing in one case or another to choose by the sea, road, rail, or air transportation following the requests of the consignor (Fig. 01).

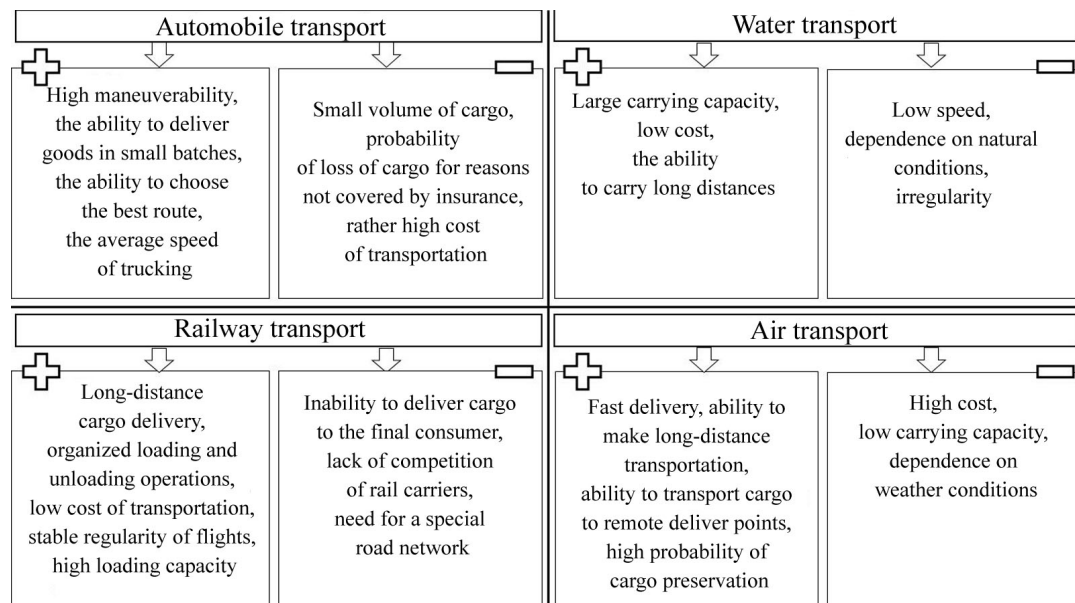


Figure 1. The specifics of the implementation of cargo transportation depending on the type of transport

Despite the lack of statistical data on multimodal international transport, we will try to assess which mode of transport is most suitable for moving commercial consignments of goods. In the Russian Federation, rail freight traffic consistently ranks first in terms of freight turnover, outstripping the same indicator of road transport by more than 9 times (Fig. 02).

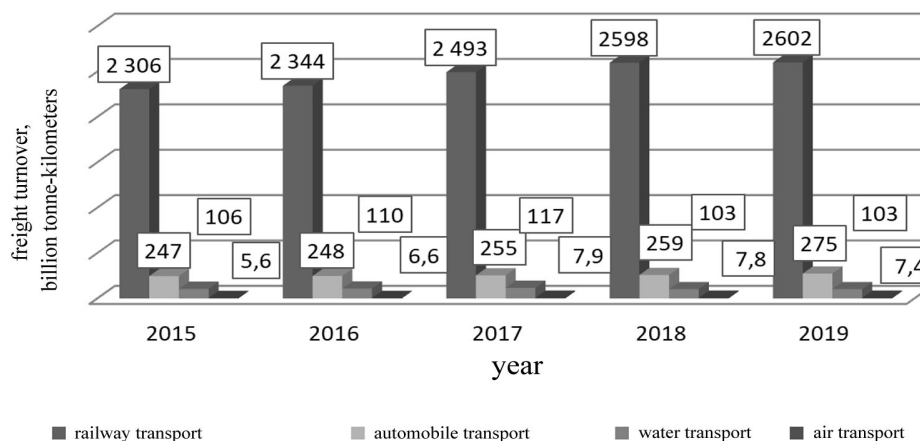


Figure 2. Structure of freight turnover in Russia by type of transport (railway, automobile, water transport and air means of transport) for 2015–2019

This is due to the length of railways, the ability to transport large volumes of goods, the speed and availability of this type of transportation.

For comparison: according to the Organization for Economic Cooperation and Development, the total freight turnover of rail transport in 2019 among more than 40 countries that provided information amounted to 6,148 billion ton-kilometers, followed by Russia, followed by the United States and Canada. In terms of water transport, the total freight turnover in 2019 was 217 billion tonne-kilometers, and Russia also occupies a leading position. However, in the total freight turnover of road transport, which amounted to almost 6,384 billion ton-kilometers in 2018, the Russian Federation accounted for only about 4 %, which is explained by the high cost of road freight transport with their low carrying capacity (International transport forum, 2019).

If we evaluate the transport infrastructure of the EAEU, then today the total area is 20 million square meters. km., on which operate:

- 1.6 million km of roads;
- 108 thousand km of railways, of which 46% are electrified;
- 107.5 thousand km of operated inland waterways;
- 793.5 thousand km of air routes (Sidawi, 2014).

The main directions of development of the EAEU transport system are based on the formation of international transport corridors (ITC). Two directions connecting the supply of goods between Europe and Asia are becoming key: ITC “North-South” and “West-East”.

The strategies for the development of the EAEU transport systems should be focused not on competition, but on rational interaction, which will ensure the effective redistribution of intra-union and transit freight flows between the transport corridors of the Union, increase the level of use of the carrying capacity of all modes of transport with unbalanced traffic volumes in directions, and lead to a reduction in unproductive work rolling stock and, as a result, a real reduction in the cost of transport work (Tagiltseva et al., 2017). Such interaction should be based on coordinating the activities of national logistics operators, pursuing an agreed tariff policy, the inadmissibility of any restrictions in the use of the transport infrastructure of transit countries. Only in this way will the Eurasian land corridors in the future be able to effectively compete with sea routes for transit cargo flows.

Participation in the Union provides all its members with additional opportunities for economic growth. For example, after joining the Union, Armenia increased its exports to the EAEU countries by more than 56 %. In turn, other EAEU members are actively increasing investment in the industrial sector of the Armenian economy. The growth in the volume of Armenia's foreign trade is accompanied by a synchronous increase in the volume of traffic.

4. Purpose of the Study

The study aims to increase the economic efficiency of international multimodal transportation as the basis for the formation of a single transport space of the Eurasian Economic Union.

To achieve this goal, the authors identify the following tasks

- to study the prospects for the development of international transport corridors “North-South” and “West-East”;

- to analyze the prospects for the development of multimodal transportation in the EAEU.

5. Research Methods

In the process of research and substantiation of theoretical positions, general scientific methods and techniques were used: analysis and synthesis, abstraction and analogy, deduction and induction. The research is based on a systems approach and systems analysis, transportation technology, the theory of mathematical statistics, and mathematical modeling and optimization. The theoretical and methodological basis of the study was the scientific works of leading domestic and foreign scientists in the field of transport economics and the development of transport systems, modeling and optimization of transport transportation processes.

6. Findings

The Russian transport system is one of the most developed in the world. In terms of the length of railways, the country is in third place in the world after the United States of America (USA) and China, and in fifth place by road (Sidawi, 2014). At the same time, the role of the transport and logistics complex in the Russian economy is great: in 2018, the sector provided 7.0 % of gross value added, which is more than twice that of the United States (3.2 %), but comparable with Russia's BRICS partners (6.8 % in India and 8.7 % in South Africa).

Over the past 10 years, the share of Russia's foreign trade with the countries of the Asia-Pacific Economic Cooperation (APEC) has grown by one and a half times, from 20 % in 2008 to 31 % in 2018. We will conduct a study of the export of freight traffic to the CIS countries by different types of transport (Table 01).

Table 1. The nominal growth rate of exports of freight traffic by mode of transport and the contribution of modes of transport to the increase in total exports of freight traffic, 2020

	Nominal growth rate, %			Contribution to the growth of export of freight traffic		
	TOTAL	Far abroad	CIS	TOTAL	Far abroad	CIS
Freight export - total	9.0	8.6	11.4	–	–	–
Sea transport	10.6	9.9	52.6	1.3	1.4	0.7
Air Transport	13.9	12.5	19.9	4.4	3.7	8.3
Railway transport	–7.9	–8.8	–4.9	–0.7	–0.7	–0.7
Automobile transport	18.1	17.1	21.0	2.2	1.8	4.7
Pipeline transport	4.8	6.3	–9.1	1.3	1.9	–1.8

Thus, it can be noted that the bulk of the increase in export freight traffic is provided by road transport. At the same time, there is a decrease in the growth rates of railway and pipeline transport, which have always accounted for most of the increase in the total volume of traffic (Tagiltseva et al., 2020).

It can be concluded that transportation by only one mode of transport increases the cost of transportation and becomes ineffective. The use of several types of transport will reduce the cost and increase the economic efficiency of the organization of the transportation process.

According to the results of the first half of 2020, international cargo transportation in the Eurasian Economic Union decreased by 6.0 % and amounted to 168.9 billion tons/km.

The dynamics of international freight turnover by mode of transport is shown in Figures 03 and 04.

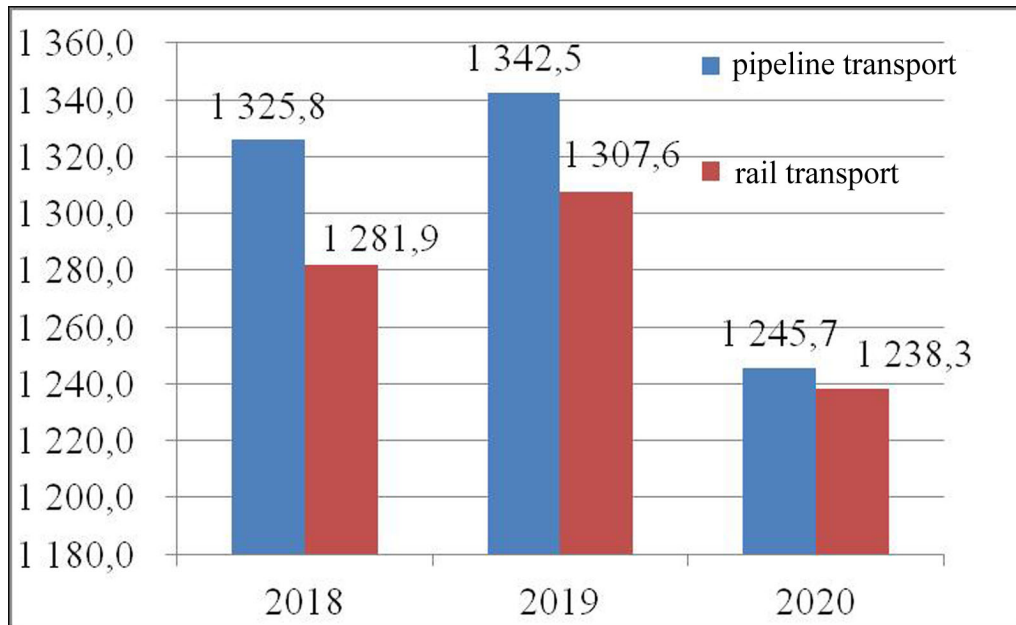


Figure 3. Dynamics of freight turnover in international rail and pipeline transport in 2018–2020

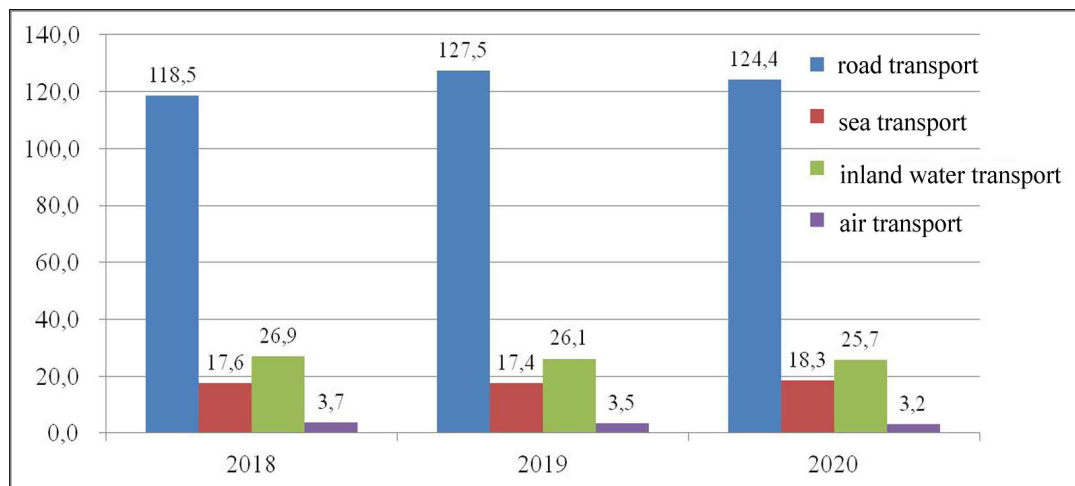


Figure 4. Dynamics of freight turnover in international transport by road, water and air transport in 2018–2020

According to the Eurasian Economic Commission, rail and pipeline transport account for the largest volume of international traffic. At the same time, in 2020 there is a decrease in the amount of traffic by 7.2 and 5.3 %, respectively. This indicator is associated with global market trends (Tagiltseva et al., 2020). The current epidemiological situation in the country and the world, and the change in world prices for energy resources (oil and oil products) had a significant impact.

It is worth noting that compared to the same period in 2019, the turnover of international sea transport increased, in absolute terms, it amounted to 0.9 billion tones km.

International air traffic decreased by 8.5 % compared to the same indicator in 2019 and is the leader in decline in 2020.

Air transportation was recognized by the Ministry of Transport of Russia as the most affected sector of the country's transport system due to the current epidemiological situation in the world. Passenger traffic and international passenger traffic suffered the most. Border closures and the cancellation of most international flights were key drivers of the decline.

Thus, the analysis of cargo transportation by different modes of transport shows that the use of only one mode of transport is very vulnerable. From the point of view of the economic feasibility of organizing the transportation process, it should be noted that the use of multimodal transportation minimizes the disadvantages of a particular mode of transport, increases the speed of delivery of goods, and ensures a decrease in the cost of international transportation.

7. Conclusion

The study of the state of the international transportation market showed that multimodal transportation is becoming a key trend in the development of the industry. The main share of international cargo turnover in the EAEU is accounted for by domestic and export-import traffic. The transit potential is only 7 %, which is one of the directions of the future development of the transport space of the Union. The favorable geographical position, through which the main international transport corridors pass, provides another direction for increasing the efficiency of the organization of transportation.

At the same time, integration interaction in the transport industry is influenced by several factors: regional features, global trends in economic development, the state of transport infrastructure, etc. The transport systems of the EAEU countries have significant potential, and their integration will contribute to the further socio-economic development of union education and improvement conditions and quality of life of the population.

References

- Almetova, Z. V., Sheremet, A. A., Samartseva, A. V., & Dolgushina, N. Y. (2018). Integration processes of transport systems of the Eurasian Economic Union. *Bulletin of SUSU. Series: Economics and Management*, 3.
- Asaul, M. A., & Mokhov, A. E. (2018). Formation of a single transport space and a common market for transport services in the EAEU. *Transport of the Russian Federation. A journal about science, practice, economics*, 2(75).
- Macheret, P. D., Macheret, D. A., & Savchuk, R. R. (2019). Economic importance of automation of transport infrastructure design. In *Proceedings of the 2019 IEEE Conference of Russian Young Researchers in Electrical and Electronic Engineering, ElConRus*. St. Petersburg.
- Reser, S. M. (2012). *Containerization of freight traffic*. VINITI RAS.
- Shkurina, L., Maslova, M., Podsorin, V., & Tereshina, N. (2019). Effective investment management with elements of simulation modelling. *E3S Web of Conferences-2019*. https://www.e3s-conferences.org/articles/e3sconf/abs/2019/61/e3sconf_itese18_04028/e3sconf_itese18_04028.html

- Sidawi, B. (2014). Traffic Safety: National Partnership and Corporate Social Responsibility. *International Journal of Transportation Science and Technology*, 3(1), 39–42. <https://doi.org/10.1260/2046-0430.3.1.39>
- Stephenson, S. (2015). *Global Value Chains: The New Reality of International Trade*. http://e15initiative.org/wp-content/uploads/2015/01/E15_GVCs_BP_Stephenson_FINAL.pdf
- Tagiltseva, J. A., Kuzina, E. L., Drozdov, N. A., & Vasilenko, M. A. (2017). The algorithm of making environmental management decisions. *Quality Management, Transport and Information Security, Information Technologies (IT&QM&IS). Materials International Conference*, 581–585.
- Tagiltseva, J. A., Kuzina, E. L., Drozdov, N. A., Vasilenko, M. A., Semibratova, S. V., & Abramov, V. S. (2020). Social And Ecological Safety, Production Processes, Economic Efficiency In Transport Enterprises. *European Proceedings of Social and Behavioural Sciences EpsBS*, 1661–1670. <https://doi.org/10.15405/epsbs.2020.10.05.219>