

TRANSPORT LOGISTICS IN THE CONTEXT OF A PANDEMIC

VERA I. PRUSOVA, MARGARITA A. ZHIDKOVA, ANASTASIYA A. PANYUSHKINA

Moscow automobile and road construction state technical university (MADI), 64,

Leningradsky prosp., Moscow, 125319, Russia

Corresponding author's email: archive@madi.ru; zhidkova_m_a@mail.ru; PanAnastasi@yandex.ru

Abstract: *This article discusses the theoretical aspects of transport logistics, as well as its activities in the context of the COVID-19 pandemic. First, the characteristic features of transport logistics are identified and described: functions and tasks, types of deliveries, classification of transport services. Further, special attention is paid to the main global logistics trends in the context of the pandemic. The statistics of losses in annual revenue by means of transport in the Russian Federation are given. The purpose of the article is to analyze the trends affecting the logistics industry in the world. In conclusion, the article considers a number of prerequisites that allow the state to interfere in the work of logistics companies.*

Keywords: *logistics, multimodal transportation, unimodal transportation, intermodal transportation, COVID-19 pandemic, coronavirus, collaboration, combined cargo, digitalization.*

Received: 10/07/2020

Accepted: 15/09/2020

Published online: 31/05/2021

1. INTRODUCTION

Logistics is the science of managing and improving material, human, and information flows.

Consider some modern types of logistics: production logistics, procurement logistics, sales logistics, information logistics, warehouse logistics, customs logistics, financial logistics, trade logistics, energy logistics, complex logistics, inventory logistics, energy logistics, trade logistics, transport logistics

2. MAIN CONTENTS

Let's look at the latter form in more detail.

Transport logistics is one of the most important branches of logistics, as a science, directly related to the organization of delivery, the movement of any material objects with minimal damage along the shortest route from one point to another.

The shortest route is considered to be the one by which the logistics object can be transported in the shortest possible time with optimal costs and with the least harm to the delivery object.

A disadvantage for a logistics facility is considered to be the adverse impact of external and internal factors.

Functions and tasks of transport logistics: determination of the type and type of transport, organization of the warehouse process, formation of transport systems, selection of logistics partners, verification of all transport processes and other operations that occur along the route of a logistics object, determination of the shortest route, information support of the consignee, paperwork, additional services (insurance, customs services).

Transport logistics is based on the concept of integration of transport, production, sales and equipment, as well as the creation of an optimal process of cargo movement based on the minimum cost criterion [1].

Transport is a type of activity that is based on two components: the supplier and the consignee. It is clear that the final point of sale of the product is the physical receipt of it by the consumer. A stable position in the market conditions of any company is based not only on the minimum production costs, but also on the ability to ensure the sale of the manufactured product or product.

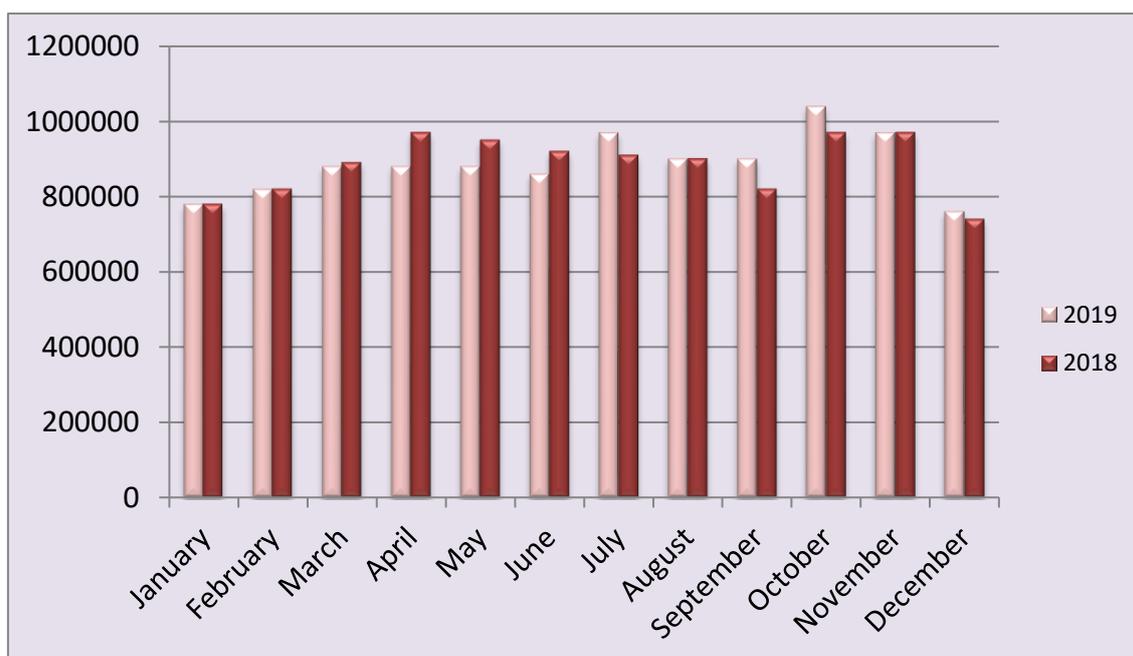


Figure 1. Dynamics of road cargo transportation from the EU to the Russian Federation, EU-RU, 2018/19, tons

Naturally, each company, enterprise, firm, concern or corporation in the implementation of the ranking of finished products is required to solve issues related to transportation, i.e. to choose a convenient type and type of transport, methods of organizing delivery and storage.

The transportation of goods is divided into successive separate stages, which are not related to each other, and can be carried out by completely different carriers.

Consider the types of deliveries:

According to the number of types of transport that carries out the transportation of a logistics object, the delivery system is divided into: single-type (unimodal), i.e. transportation is carried out by one type of transport. Multi-mode (multimodal and intermodal), i.e. transportation is carried out by several modes of transport.

Unimodal transportation – the transportation of goods by just one mode of transport along an agreed route.

Intermodal transport – the structure of the transportation of goods by different modes of transport in one cargo unit under one transport contract and the transfer of goods at the points of transshipment from one mode of transport to another without the intervention (participation) of the cargo owner. This transportation is international.

The structural element is an intermodal cargo unit that allows customs sealing of goods in it in accordance with international requirements that restrict access to the goods without breaking the seal.

Multimodal transportation – transportation of a logistics object under a single contract, but performed by two or more modes of transport; the carrier is responsible for its part of the transportation.

In the case of intermodal and multimodal transport, the first carrier (operator) concludes the delivery document with the shipper on behalf of the transport companies that take part in their execution.

Characteristics of intermodal and multimodal transportation: the presence of an operator who works from the starting point to the end point of the route, a single feasibility study agreement (Freight forwarding services), a single execution of the transport document, a single responsibility for the delivery and safety of the logistics object, a single freight rate.

The basis for the activity of intermodal and multimodal transport systems: a multi-pronged approach to the financial and economic problems associated with the organization of transportation, the association of logistics representatives (contractors), common technological and organizational criteria for transport management, a uniform commercial and legal regime, the coordination of all logistics representatives (contractors).

Components of the transport of goods:

- The execution of the order just in time
- Responsibility
- Reliability
- Quality of transport services

Transport service is the transportation of a logistics object, as well as any operation that is

associated with the preparation and implementation of the transportation process.

Transport – the most important part of the logistics system; the area of the economy that carries out the transportation of goods, goods and people. Transport must have certain criteria and meet the necessary requirements in order to create an innovative system for receiving and distributing goods and cargo.

Transportation – delivery of a logistics object.

The classification of transport services is as follows:

1. Purpose:

- General use
- Public transport-the association of industries related to material production, which provide the need for the population and the national economy in the transportation of goods, people, luggage, cargo
- Not shared use
- Non-public transport - this is intra-industrial transport and all types of vehicles (transport) that belong to non-transport organizations.

2. Type of consumer:

- External (Services are provided to organizations that are not related to transport support)
- Internal (Services are provided to enterprises whose service sector is related to transport support)

3. The nature of the activity:

- Informational
- Technological
- Commercial

Many logistics services are performed using different vehicles. The cost of carrying out these operations is about 50% of the total cost of logistics.

The COVID-19 pandemic, which just hit our world, changed not only people's lives, but also the situation in both local and global markets: borders between countries were closed, self-isolation regimes were introduced, production decreased, and as a result, transportation decreased significantly. The spread of the coronavirus has dealt a serious blow to the global logistics and supply chain of raw materials and finished products. In this regard, the International Road Transport Union (IRU) and the International Federation of Transport Workers issued an open letter to the Government of all countries requesting support for the transport industry in the context of the spread of COVID-19, which was to be expressed in assigning the highest priority to supporting the continuity and strength of supply chains [4].

Major global logistics trends:

1. Reduction of cargo traffic on a global and local scale.
2. The lack of simple and clear rules of the game in the conditions of quarantine for representatives of the logistics market.

Let's look at the current situation in logistics in Russia.

It is no secret that the two main flows of goods – the EU and China - have been significantly reduced due to the pandemic. The road, air and sea transportation markets are falling day by day, and there is no improvement yet. The Government of the Russian Federation introduces additional measures to support organizations, including logistics companies: tax holidays, deferrals on the payment of loans and related subsidies from banks, temporary cancellation of rent, and more.

Due to the economic consequences of the epidemic, imports of goods from the EU countries and, conversely, exports from Russia to the EU are reduced. The strengthening of quarantine measures during customs clearance provokes delays and increases the delivery time. As a result, the logistics chains of international transportation are changing and domestic traffic is growing.

According to InfraONE estimates, the losses of the infrastructure sectors of the Russian Federation from the epidemic by May 1 will amount to approximately 507 billion rubles, of which almost 50% - 230.3 billion rubles - are losses of the transport industry. InfraONE evaluates, among other things, the effect of the restrictions imposed to combat the spread of the coronavirus. As a result of the actions of the regions that have the right to review the terms of self-isolation of residents, the amount may decrease, "but, most likely, this will be possible only in sparsely populated regions and will have little impact on the result."

Trends in the road transport industry:

- Queues at the borders of the EU countries have increased the time of transportation. Additional sanitary checks at the borders may cause delays, which negatively affects the delivery time of goods. Drivers are massively forced to comply with quarantine restrictions. The turnover of motor transport is falling, there is a shortage of goods due to the shutdown of production, a drop in consumer demand.

- It has become much more difficult to loop round-trip flights. The current situation has led to the need to reduce the frequency of individual flights and rearrange routes.

- The most difficult destination for Russian road carriers is Italy. Nine out of ten drivers from Russia refuse to go to this country. Due to the lack of transport, the cost of transportation increased by €1-1.5 thousand per flight. For the rest of Europe, there are no difficulties associated with the refusal of drivers to make transportation. The term of automobile delivery from the EU countries to the Russian Federation has been reduced.

- Companies save money and do not want to update the fleet. The demand for repair and maintenance of the vehicle will increase.

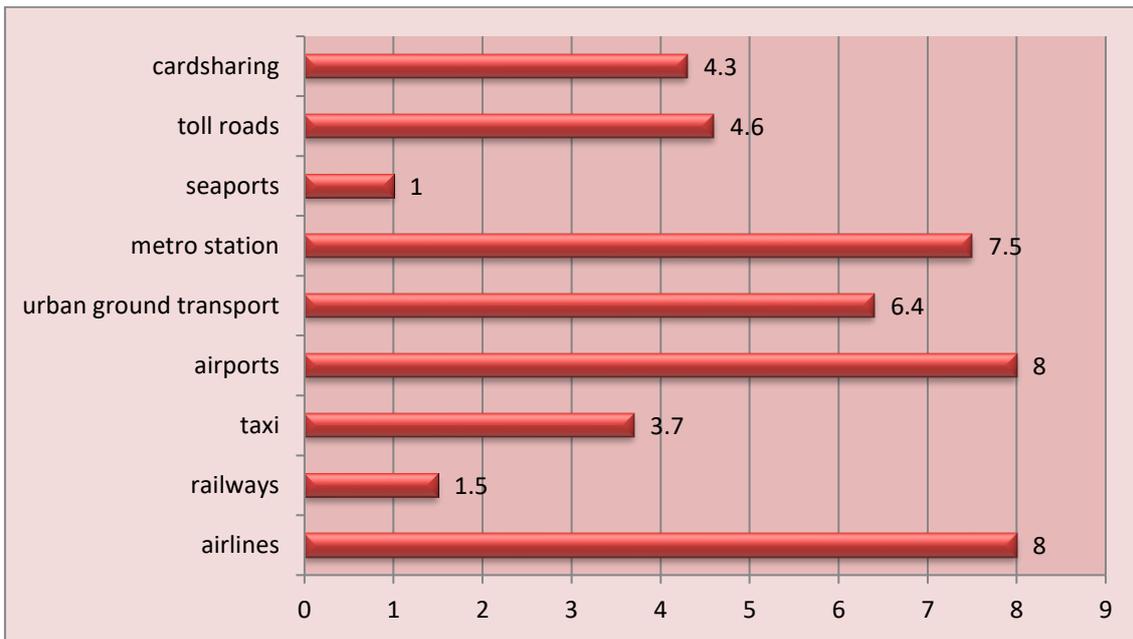


Figure 2. Share of losses in annual revenue (%) in 2020

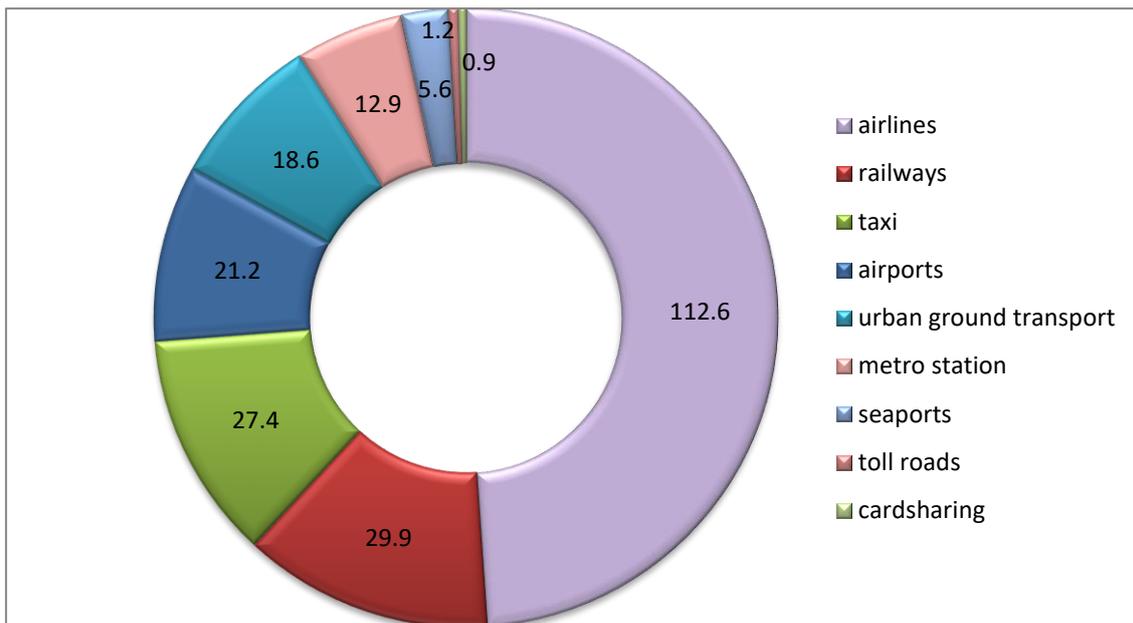


Figure 3. Losses of Russian transport companies from restrictions due to coronavirus (billion rubles) in 2020

Quick adaptation to changing conditions will quickly come to consciousness after the crisis of the logistic companies. It is obvious that even in the post-crisis period, the following trends will continue to affect the logistics industry around the world [2].

1. Increased competition for the customer leads to the emergence of price dumping in the

cargo transportation market, as the number of goods decreases, and transport is idle. Many companies will not survive long-term dumping.

2. In the near future, small and some medium-sized players will be forced to leave the logistics services market. Here, as in Darwin's theory, the strongest will survive. Those who have managed to save money over the past two "fat" years and have not burdened themselves with significant obligations, now they will definitely look at the opportunity to buy something, increase the fleet and market share. There will be a series of bankruptcies, mergers and acquisitions.

3. Players will start joining communities to share each other's services. Logistics and service companies are beginning to collaborate, develop unique comprehensive offers for customers and, as a result, strengthen their joint positions by combining their services.

4. 90% of logistics companies refuse to upgrade their fleet due to the rising exchange rate and the pandemic. This means that the fleet of cars will become obsolete, and services related to the repair and maintenance of fleets will be in demand.

5. There is a tendency to reduce the number of shipments delivered and increase the number of combined shipments sent. Significant restrictions on air transportation will "transfer" part of the demand from cargo owners for the transportation of combined cargo. The development of outsourcing will teach market players to "fill" vehicles and group shipments on mutually beneficial terms. Especially high demand is observed for combined cargo from European countries.

6. Optimization and digitalization have been discussed for a long time, but only a few people decided on real and fundamental changes in the approach. Many companies during the COVID-19 pandemic decided to transfer all work to "new rails". The IT revolution has begun in logistics. It is worth noting the use of IT platforms for logistics companies to exchange tariffs and rates.

7. The highly automated logistics chain is now very much in demand. Cargo owners need a full range of services with access mode from their mobile device. The customer gets the opportunity to order transportation on a digitalized logistics platform by clicking on a button in the mobile app. It is such systems that will be in demand in the future. For example, for individuals, the Russian Post has launched a new service for sending parcels by phone number – the function is available to all users of the logistics operator's mobile application. The sender only needs to enter the recipient's phone number or select it from the phone book. It is also worth noting the high service of the companies Dostavista, Peshkariki, Garantbox, Take'n'go, Boxberry, Scooter, Yandex Delivery.

8. Until recently, most traffic was directed to the export or import of goods, ignoring domestic markets. The crisis gave a powerful impetus to the development of the domestic product, the development of production within the country. A significant decrease in cargo flows from other Asian countries and the threat of closing borders with China in the event of the next wave of the pandemic lead to the fact that some of the resources, goods, products that were previously purchased there, manufacturers will try to produce in their own country. For example, the top 5

products that are supplied to Russia from China – smartphones, garlic, professional sports equipment, chemical fertilizers, clothing and shoes-can be produced inside the Russian Federation. Now I want to believe that this is a chance for Russia to close the logistics chain on itself. There will be an increase in domestic production due to the closure of borders and, as a result, the development of domestic logistics, reaching a new level of quality.

9. The trend of outsourcing non-core processes and services will gain great momentum. Although this trend has been actively developing since the 2000s, now it brings not only the possibility of saving the budget, but also significant time savings.

10. Delivery of a wide range of FMCG products will be distributed even in remote villages. Consumption in small towns and villages will increase rapidly, and trends from megacities will come along with migrants. Carrier companies will learn how to find individual solutions. A short delivery route is not always the most optimal.

11. Contactless delivery – taking care of the health of senders and recipients. The winners will be those companies that can offer the safest way to deliver goods from the point of view of health.

The end user is offered a wide range of products with contactless home delivery. Buyers are willing to overpay 5-10% of the cost for goods with fast delivery (1-3 days) and be able to avoid having to visit crowded places.

12. This trend came from Asia as a continuation of the idea of contactless delivery. During the pandemic in China, most packages were delivered "at home" in this way.

13. This will require optimization and automation of all business processes in the logistics company. Involving employees in the development of the company by creating platforms for the exchange of ideas will help to create transparent and well-established business processes in the organization.

14. For safety reasons, logistics companies will be forced to continue to comply with health regulations.

15. Analysts say that due to the high volatility of rates on air and sea transport, there will be a redistribution of volumes towards land transport, especially on the Asia–Europe routes. Even though the borders are open to international cargo shipments, strict checks, quarantines, driver replacements, and other measures can slow down the speed of delivery by road. This opens up new prospects for rail transport. The cancellation of passenger trains made it possible to free up the schedule for freight trains. It all depends on consumer demand.

16. The trend for holding most events in the logistics sector in the online format will continue, because this format of meetings, negotiations, webinars, conferences has shown high efficiency. Offline events scheduled for 2020 will not gain more than 60% of the planned number of visitors. Many events will be canceled for this reason.

17. The experience of the crisis during the pandemic will "encourage" the management of

logistics companies to have in their pocket "plan B: a package of anti-crisis measures" and a financial safety cushion.

18. The crisis will be relatively easy for car delivery companies and last-mile operators to handle. The easiest way to overcome the crisis will be for companies without fixed assets, that is, freight forwarders. The additional financial burden (transport equipment is purchased mainly on lease) can only worsen the situation now. Of course, if you have clients from the food, retail, FMCG, and pharma segments in your portfolio, you have a chance to even increase your operating results.

In the logistics of clinical trials, there is also a trend towards open exchange of information, which helps to jointly develop successful solutions for the industry. Thus, during the pandemic, COREX Logistics, in accordance with the requirements of pharmaceutical manufacturers and contract research centers, launched the services "Contactless Courier delivery" and "Delivery of drugs to patients of clinical trials at home".

In addition to the measures that the logistics industry is taking in the context of the pandemic, we should not forget about the impact of the state on it. To achieve the greatest efficiency, it is necessary to develop and implement a state policy in the field of transport under the supervision of a single federal management body for the transport and road complex.

The pandemic does not last forever. According to the authors, it is logical to consider a number of well-founded prerequisites that justify the invasion of the state in the work of " subjects of the transport market»:

- Transport is a key element of industrial and social infrastructure, and is on a par with such infrastructure sectors as energy, logistics, communications, which are subject to state control.

- Some transport companies operate under a "natural monopoly". Their activities should be kept under surveillance. In our country, an example of this is railway transport. Also, a similar situation may arise in motor transport, when this enterprise is the only large company in the area [3].

In any case, as foreign and domestic practice shows, the Natural monopolist-transport operator always strives for profit, by inflating tariffs and refusing unprofitable transportation. Therefore, the state allocates monopolies to transport enterprises for the provision of services in its market sector, reserving the possibility of controlling the quality of services provided, the level of tariffs, the absence of service failures, etc.

- It is also necessary to establish restrictions in the setting of transport tariffs. Reasonable pricing in transport plays an important role in the stable development of the market economy. When prices are set freely, an increase in transport tariffs leads to an adequate increase in the cost of the products provided, as well as services for which transport is necessary. Because of this, the increase in transport tariffs entails a general increase in prices and the development of inflation.

- It is also important to protect transport companies from unfair competitors. In this case, the

state acts as the controller for the compliance with the rules of the game (the permitted activities for a variety of businesses, border tariffs, building relationships with customers, etc.)

- It is equally important to establish control over the observance of common standards, rules and regulations in the field of traffic safety, environmental protection, health, working conditions, and to verify compliance with uniform technical standards. This function can only be assumed by the state.

3. CONCLUSIONS

Based on the above, we can conclude that state regulation of transport activities is, regardless of the features of the current economic system, an objective necessity. However, the most important task is to improve the conditions and quality of services provided, and to take care of the consumer, especially now, in the context of the COVID-19 pandemic.

References

1. Shcherbakov V. A. Fundamentals of logistics: Studies for universities/Edited by V. Shcherbakov. St. Petersburg: Piter, 2018. 432c
2. Problems of logistics companies in an unstable economy. Prusova V. I., Timofeeva A. O., Bulykina A. S. Economics and Business: theory and practice. 2020. No. 12-2 (70). pp. 238-242.
3. Current aspects of the digital economy in logistics work. Prusova V. I., Vasilyeva M. K. Automobile. Road. Infrastructure. 2020. No. 4 (26). p. 13.
4. COVID-19 pandemic and transport and logistics services market [Electronic resource] - <https://logistics.ru/upravlenie-logistikoy-i-kompaniey/pandemiya-covid-19-i-rynok-transportno-logisticheskikh-uslug>