managing cargo transportation processes is relevant and will allow making informed decisions in matters of transport service for suppliers and consumers, as well as ensuring the delivery of cargo with a minimum of costs.

Transportation by circular routes is characterized by a high degree of uneven loading and unloading intervals. The reasons that make management difficult and affect the unevenness include: uneven application submission, the complexity of the landfill structure, multiples of the length of the landfill and the length of loaded and empty routes. The unevenness characterized by the interaction of suppliers, consumers and transport is an unmanageable, disorganizing factor. It is possible to reduce the negative impact of this factor by managing the transportation process of ring routes. To manage the process, it is necessary to use a mathematical apparatus that will allow optimizing the interaction between suppliers, consumers and transport. The use of mathematical apparatus significantly increases the number of possible solutions from which the rational one is chosen. In practice, the dispatcher uses, as a rule, intuitive schemes for handling circular routes. At the same time, the number of warehouses is unreasonably large and can be reduced due to effective management based on the application of mathematical models.

In the process of the research, various statements of the transport task were considered. It was established that the existing approaches do not allow taking into account loaded and empty route flights in one calculation. As a result, there is a need for manual transfer of information between different stages of calculation of loaded and empty flights, while the structure of the test site imposes a limit on the duration of the calculation. Therefore, there is a need to use modern informatization and computer technology, which will allow to bring the solution of this problem to a qualitatively different level. At the same time, it becomes possible to adapt the mathematical apparatus to the constraints in a special way and to automate the process of building optimization models. Since in the ring version there is no need to transfer data between separate flight calculations of loaded and empty routes, better conditions are created for building an automated planning system. At the same time, opportunities appear: optimization taking into account delivery at different speeds, simultaneous optimization of transportation of various types of cargo, imposition of group and individual restrictions on transport connections and individual transportation.

References.

1. Vojtov, V., Kutiya, O., Berezhnaja, N., Karnaukh, M., Bilyaeva, O. Modeling of reliability of logistic systems of urban freight transportation taking into account street congestion. Eastern-European Journal of Enterprise Technologies. Vol. 4, no. 3 (100), pp. 15–21. 2019. https://doi.org/10.15587/1729-4061.2019.175064.

2. Muzylyov, D., Shramenko, N., Karnaukh, M. (2021) Choice of Carrier Behavior Strategy According to Industry 4.0. In: Ivanov V., Trojanowska J., Pavlenko I., Zajac J., Peraković D. (eds) Advances in Design, Simulation and Manufacturing IV. DSMIE 2021. Lecture Notes in Mechanical Engineering. Springer, Cham. https://doi.org/10.1007/978-3-030-77719-7_22.

3. Dmitriy Muzylyov, Andrey Kravcov, Mykola Karnaukh, Natalija Berezchnaja, Olesya Kutya. Development of a methodology for choosing conditions of interaction between harvesting and transport complexes. Eastern-European Journal of Enterprise Technologies 2 (3), 11-21. 2016.

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ANALYSIS OF THE EFFICIENCY OF THE USE OF VEHICLES IN THE PERFORMANCE OF TRANSPORTATION IN INTERNATIONAL TRAFFIC

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Today, the international road transport market is dynamically expanding and developing. Only those transport companies that are able to fully satisfy the needs of consumers and offer

services at optimal prices can withstand competition, maintain and increase the volume of transportation. The lack of domestic rolling stock suitable for international transportation is one of the main reasons for the low competitiveness of carriers.

The efficiency of the activity of the motor transport enterprise (ATP) depends to a significant extent on the rolling stock. In this regard, the process of selecting rolling stock must necessarily be included in the system of ensuring the quality of services of motor transport companies specializing in the transportation of goods in international traffic.

Almost all transportation quality indicators (speed, safety, reliability, and others) and financial results depend on the technical and economic characteristics of the rolling stock. The quality of rolling stock, in turn, is determined by a number of indicators: durability, reliability, safety, economy, environmental friendliness, dynamism and others. Therefore, ATP should develop and implement rolling stock assessment methods based on quality indicators.

There is fierce competition between the manufacturers of rolling stock for international road transport, the technical and economic parameters of trucks produced at the moment differ slightly. In addition, the uniform requirements for the compliance of cars with UNECE Regulations (the number of which is up to 110) and EU Directives bring their design parameters closer together. At the same time, prices for cars of different manufacturers differ, and this difference can reach significant values.

Due to the fact that the problem of consumers' choice of rolling stock from a number of cars of the same type has not been fully resolved, research in this direction is relevant.

Based on the analysis of literary sources, it was noted that the methods of evaluating the technical and economic efficiency of new equipment, which are currently used in market conditions, are not applicable due to the bias and limitations of evaluation criteria, therefore there is a need to develop methods for evaluating new cars.

These methods should be based on the calculation of cash flow from the operation of rolling stock, take into account a set of quality assessment indicators, a single method of measuring the competitiveness of cars.

Analysis of approaches to assessing competitiveness shows that it should be carried out taking into account the commercial, regulatory, technical and economic aspects of a new car during its life cycle. The final preference when choosing a vehicle is given to the car that most fully meets the requirements of the buyer and the cargo delivery market.

To calculate the economic efficiency of truck operation, it is necessary to develop a complex system of integral criteria, assessment of technical and economic efficiency, quality and competitiveness of rolling stock for international road transport, which would allow to increase efficiency due to the selection of optimal rolling stock.

References.

1. Vojtov, V., Kutiya, O., Berezhnaja, N., Karnaukh, M., Bilyaeva, O. Modeling of reliability of logistic systems of urban freight transportation taking into account street congestion. Eastern-European Journal of Enterprise Technologies. Vol. 4, no. 3 (100), pp. 15–21. 2019. https://doi.org/10.15587/1729-4061.2019.175064.

2. Muzylyov, D., Shramenko, N., Karnaukh, M. (2021) Choice of Carrier Behavior Strategy According to Industry 4.0. In: Ivanov V., Trojanowska J., Pavlenko I., Zajac J., Peraković D. (eds) Advances in Design, Simulation and Manufacturing IV. DSMIE 2021. Lecture Notes in Mechanical Engineering. Springer, Cham. https://doi.org/10.1007/978-3-030-77719-7_22.

3. Dmitriy Muzylyov, Andrey Kravcov, Mykola Karnaukh, Natalija Berezchnaja, Olesya Kutya. Development of a methodology for choosing conditions of interaction between harvesting and transport complexes. Eastern-European Journal of Enterprise Technologies 2 (3), 11-21. 2016.