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MINIMIZATION OF TRANSACTION COSTS IN THE LOGISTICS PROCESS OF INTERNATIONAL FREIGHT ON MARITIME TRANSPORT

ABSTRACT

The relevance of the topic is important due to the fact that transaction costs are a significant component of the final price of products. It is necessary to generate an optimal logistic schemes of cargo delivery from the manufacturer to the recipient with the participation of various transport modes, to optimize transport costs and paperwork associated with the preparation and transportation of goods, transfer, storage, insurance, etc. that provide not cargo owners and their representatives, freight forwarders.

Practical problems of the organization of the logistics process is quite large and includes a number of practical problems:

– optimization of documents while forwarding of the specified goods;

– development of traffic routes;

– the selection of vessels for transportation of specified goods on the basis of transport and operational characteristics of vessels and time of delivery;

– assignment of each vessel in the particular case of a work;

– minimization of the cost of delivery.

Existing mathematical apparatus does not always correspond to a set of practical tasks. There is therefore a need to develop procedures that are using modern mathematical apparatus and computer equipment, that will help to minimize costs in the logistics process of transportation on maritime transport.

The purpose of this article is to develope effective methods of minimizing forwarding costs in the logistics process of freight transport on sea transport.

A method to minimize expenses when shipping of specified volume of cargo is proposed.

The method consists in the following. Three types of vessel were selected on the basis of technical and operational indicators of the ships, with accounting of the time of delivery and the range of transportation. The layouts of the ships were built so that the cost of the cargo were the lowest. In the set problem of minimizing of transport costs the following factors are not taken into account in are not taken into account in the mathematical model, the solution by known optimization algorithms is not possible:

1) the possibility of redistribution of cargo quantity in case the rest of the cargo offered for shipment does not exceed the carrying capacity of the vessel;

2) related relocation expenses;

3) reusability of the vessel in the carriage scheme;

4) the cost of ballast transitions in the return of the vessels in the ports of loading.

In this regard, formally-heuristic method for solving problems was used. Since the amount of cargo charged for transportation did not coincide with the total capacity of the fleet, the selection of fleet was divided into several phases, which included the initial placement of vehicles with the gradual adjustment of the volume of traffic and the introduction of ballast transitions. Thus, the development of the whole traffic was divided into three stages. On the second and third stages of the costs of the cargo shipping included expenses vessel during ballast transitions.