TRANSMODAL SHIPMENT: DEFINITION AND FORMULATION OF OPTIMISATION PROBLEMS

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Produced analysis of modern transport market participants (including both transport operators and the public to accept the status of former intra-industrial carriers, such as JSC “Transport Company “LUKOIL-Trans”, JSC “Severstaltrans”, etc.) shows that operated transportation characterized by the familiar complicated structures formed logistics systems.

At the same consignment with the ultimate goal of increasing the efficiency of transportation is distributed by type of transport and vehicles. Accordingly, the structure takes the form of transport links operated by combining a number of series and parallel multimodal transport – so called “transmodal” transportation (Kirichenko, Denyak, 2007).

Thus, it is useful in the interests of the study and optimisation of these systems to put into circulation the term “transmodal shipment”, under which a swarm of means: a fixed amount of cargo transportation of one or more interacting senders with serial and parallel use of several types of transport and transport enterprises, performed on a single plan of the transport operator.

It should be noted that the approach indicated the presence of a single cargo waybill as mandatory characteristics of trans-carriage is not mandatory. You must have a single contract between the cargo and the transport operator.

Managerial decision-making in these conditions requires, on the one hand, the decision block optimisation problems dynamic programming (constellation and key) and, on the other hand, a balanced management system formed chains (unlike flows, chains rely on specific subjects). Of course, said chain with goods produced complexes logistics operations (up scaling and downscaling packages, temporary storage, etc.).

The optimisation problem of transmodal shipments seem mutually exclusive requirements is in alignment problems mentioned classes, because this combination leads to unjustified from the standpoint of common sense, globalisation mathematical model of functioning.

So, we know that by now formulated two concepts of constructing an optimal plan transport system by means of economic and mathematical methods. One of them comes from the description of the object of planning as a single “global” economic-mathematical model. This concept is based on the writings of transport means by V. N. Obraztsov, V. V. Zvonkov, V. G. Bakaev and others who have studied the transport sector of the economy as representing a single set of all modes of transport (Kirichenko, Kuznetsov, Izotov, 2013).

However, at the moment, due to the dismemberment of the transport industry, the acquisition of economic independence is no real coordinating body control and transport network, this approach is associated with many difficulties, both theoretical and practical nature.

The second concept involves the construction of an optimal plan for the functioning of the transport network by describing the object through the planning system of interrelated economic and mathematical models of the functioning of individual links on the modes of
transport. On the basis of such a system multiple-step planning process can be arranged, when each step processes only a part of the information and solves local problems functioning of the transport system. By the early 1990s, scientists' transporters have established the theoretical basis for this approach (Kirichenko, Kuznetsov, Izotov, 2013).

Scheduling optimisation problems are solved with iterative methods: each model in the course of solving conditionally alienated from ties with the entire system, and these connections are fixed at a certain level. Then, after a meaningful analysis of a number of models, identifies and assesses the achieved values of parameters of interest and plans, after the necessary proof, newly translated. Incremental calculations are repeated until a plan of operation such large and extra large transport systems for which any changes would have been impractical, not increase its utility for all subsystems hoc logistics system.

In modern conditions advantage of the second approach seems obvious. Since the main content of the logistics organization of material flow is the integration of individual unit’s cargo chain into a single system capable of adequately responding to the external environment. The most difficult step of forming a workable and manageable system of trans-shipments is to analyse the various available options in the transport market, choice and association in a rational combination transport subsystems, elements, which belong to different owners.

Obviously, this explains the direction of further research on the topic.

References
