LOGISTICS OF PERISHABLE GOODS IN THE PROCESS OF TRANSPORT INTERACTION

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ABSTRACT

Transportation of perishable goods across the territory of the Russian Federation faces considerable difficulties, including regular transformation of economic conditions. The main problem in this issue is to determine the degree of significance of the criteria of logistical processes associated with the delivery of perishable goods. The article presents the main parameters of logistical transport processes in the delivery of ordinary and perishable goods, their comparative assessment was carried out. On the example of analysis of cargo flows in the port of Vladivostok, time intervals of increased demand for logistics services were revealed. Optimal schemes of interaction of various modes of transport in the service of perishable goods are determined.

Keywords: logistics, perishable cargoes, parameters of transport processes, seasonality, refrigerated container, Cool Chain delivery technology.

Background. *When carrying out a comparative assessment of the logistics features of ordinary and perishable goods, it is expedient to determine the basic differences in their specificity. Comparing the set of risks that arise in the case of logistics services, we can distinguish a risk of cargo destruction as the main difference between the shipment of perishable and ordinary goods. In this kind of event, extremely negative consequences arise not only for a cargo owner, related to a loss of a customer base and breakdown of contractual relations, but also for a logistics provider. The operator of logistic processes, in addition to compensating for real damage for the spoiled cargo, also receives a significant blow to its reputation in the market, significantly reducing the competitiveness of its own company. Customers and cargoes will more likely go to competitors, thus discarding the logistics provider, which has not provided the quality of logistics services, into the outsider zone.*

In addition, the logistics provider assumes the responsibility to deliver a perishable cargo to all parts of the supply chain, not only in the required temperature regime, but also before the expiration of the product's shelf life. And often logistic operators, cherishing the image of the company, do not agree to accept for transportation a perishable cargo with a limited time interval for the sale of goods in the destination region before the expiration date. The longer is the shelf life, the longer will be the quality of the product, the more time will have trade and intermediary organizations to sell these products in the destination region.

These features determine the basic parameters of the logistics transport processes of ordinary and perishable goods.

Objective. *The objective of the author is to consider features of logistics of perishable goods in the process of transport interaction.*

Methods. *The author uses general scientific methods, comparative analysis, evaluation approach, graph construction.*

Results. *The logistics of the transport processes of ordinary cargo can be represented as a function:*

$$F(P; T; Q; C),$$

where P – price of delivery, T – time of delivery, Q – quality of delivery, C – lot.

Accordingly, the logistics of perishable goods will be presented in the form:

$$F(P; T; Q; C; S; V),$$

where P – price of delivery, T – time of delivery, Q – quality of delivery, C – lot, S – factor of seasonality of shipments, V – adaptability of a vehicle.

The comparative significance of non-price determinants of logistics of ordinary and perishable goods is shown in Table 1.

It is proposed to assign the significance of determining factors to the following three categories:

1. Obligation to fulfill existing requirements.

2. High importance, providing competitive supply of transportation.

3. Average level of significance.

From Table 1 it can be seen that the time and quality of delivery are mandatory requirements for implementation of a logistics service for the delivery of perishable goods, while for the logistics service for the delivery of ordinary goods, these parameters, although they have a status of high importance, are not required.

Of course, delays in delivery of ordinary cargo entail undesirable consequences for cargo owners and freight forwarders, which are reflected in the payment of fines and penalties for delay in delivery and, possibly, the cost of unforeseen storage of cargo. However, the delay in the delivery of perishable cargo can lead to a situation where the obligations under the contract by the logistics provider will be recognized as not fulfilled, and he will have to compensate the losses caused to the cargo owner.

And, as noted in Art. 15 of the Civil Code of the Russian Federation, the logistics provider in such a situation is responsible for not only the freight owner's expenses for restoring the violated right associated with the loss or damage of the cargo, but also for the reimbursement of lost income or lost profit.

Quality of delivery criterion (Q) is in direct dependence on delivery time criterion (T) in the transport process for

Table 1

Comparative importance of non-price determinants of logistics of ordinary goods and perishable goods

	Logistics of ordinary goods	Logistics of perishable goods
T	High importance, providing a competitive offer of transportation	Obligation to fulfill existing requirements
Q	High importance, providing a competitive offer of transportation	Obligation to fulfill existing requirements
C	High importance, providing a competitive offer of transportation	High importance, providing a competitive offer of transportation
S	Average level of significance	High importance, providing a competitive offer of transportation
V	Average level of significance	High importance, providing a competitive offer of transportation

delivery of perishable goods. The faster the perishable cargo is delivered to the destination, the higher is the quality level and the less likely that the cargo will be damaged. An obligatory condition for ensuring the required level of cargo quality in this type of transportation is the use of specialized rolling stock intended for perishable goods.

The seasonality factor (S) has an extremely high significance for ensuring the level of competitiveness of logistics operators in processes involving perishable goods. Pic. 1 shows periods of increased intensity of demand for logistics services in the port of Vladivostok, which is a clear example of seasonality in a whole group of goods-cargo, as well as the interaction of various modes of transport.

Steady demand for transportation of fruits and vegetables from China is observed for almost the entire year, but in the period from mid-May to mid-August, there is a significant decrease in demand, when basically only garlic is transported.

The demand for transportation of fish from the Far East to Central Russia is even more season determined. From January to March, pollack walks through, which can stretch in time from December to April, and in August-September, the catch of Far Eastern salmon (primarily pink salmon) is carried out, and this is the period of maximum demand for refrigerated rolling stock in the direction of Vladivostok–Moscow. However, it is then that the Russian trading fruit companies work out the logistics of fruit transportation of a new crop, the volumes of shipments are coordinated with suppliers, the pricing strategy for transportation for a few months is determined. Such periods of «overheated» demand oblige logistics operators to carefully evaluate their capabilities in terms of timeliness of delivery of vehicles for shippers and the volume of tonnage served.

The factor of adaptability of the vehicle (V) to the processes of loading, transportation, unloading of perishable cargo, including the processing at large transport and logistics nodes, which, of course, is the port of Vladivostok, is extremely important in such situations. The adaptability of the vehicle (or the ability of the vehicle to harmoniously integrate into the logistics chains of perishable goods) ultimately determines the speed and quality of delivery. The choice of a vehicle in the process of transporting perishable goods plays a decisive role in ensuring the delivery of Cool Chain technology, compliance with a specified temperature regime from the place of production of the cargo (harvesting area, harvesting site) to the final consumer in the destination region.

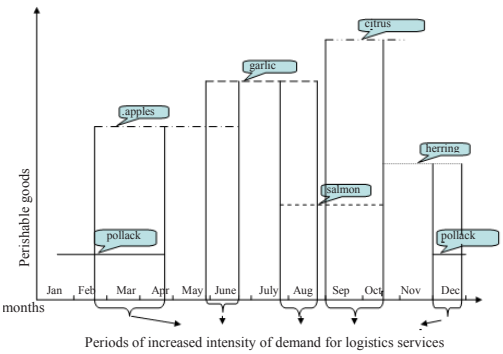
Transport interaction during the transshipment of perishable goods through Vladivostok transport hub between sea and rail transport can be carried out according to several schemes. They can be:

• ship hold –port warehouse – refrigerated car as a part of a refrigerator section;

• ship hold –port warehouse – refrigerated container as a part of container coupling (train);

• refrigerated container – container port area – refrigerated container as a part of a container connection (train).

Conclusion. *Of course, the optimal choice for ensuring the most effective transport interaction in the port of Vladivostok when processing perishable goods are schemes involving refrigerated containers. Only a refrigerator container today can provide high speed and quality of delivery, quality of handling perishable goods, and when delivering goods «from door to door» completely excludes the possibility of their damage (damage).*



Pic. 1. Periods of increased demand for logistics services for handling perishable goods in the port of Vladivostok.

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