
OPTIMIZATION OF CARGO COLLECTION AND DELIVERY PROCESSES**Ulugbek Kubayev**

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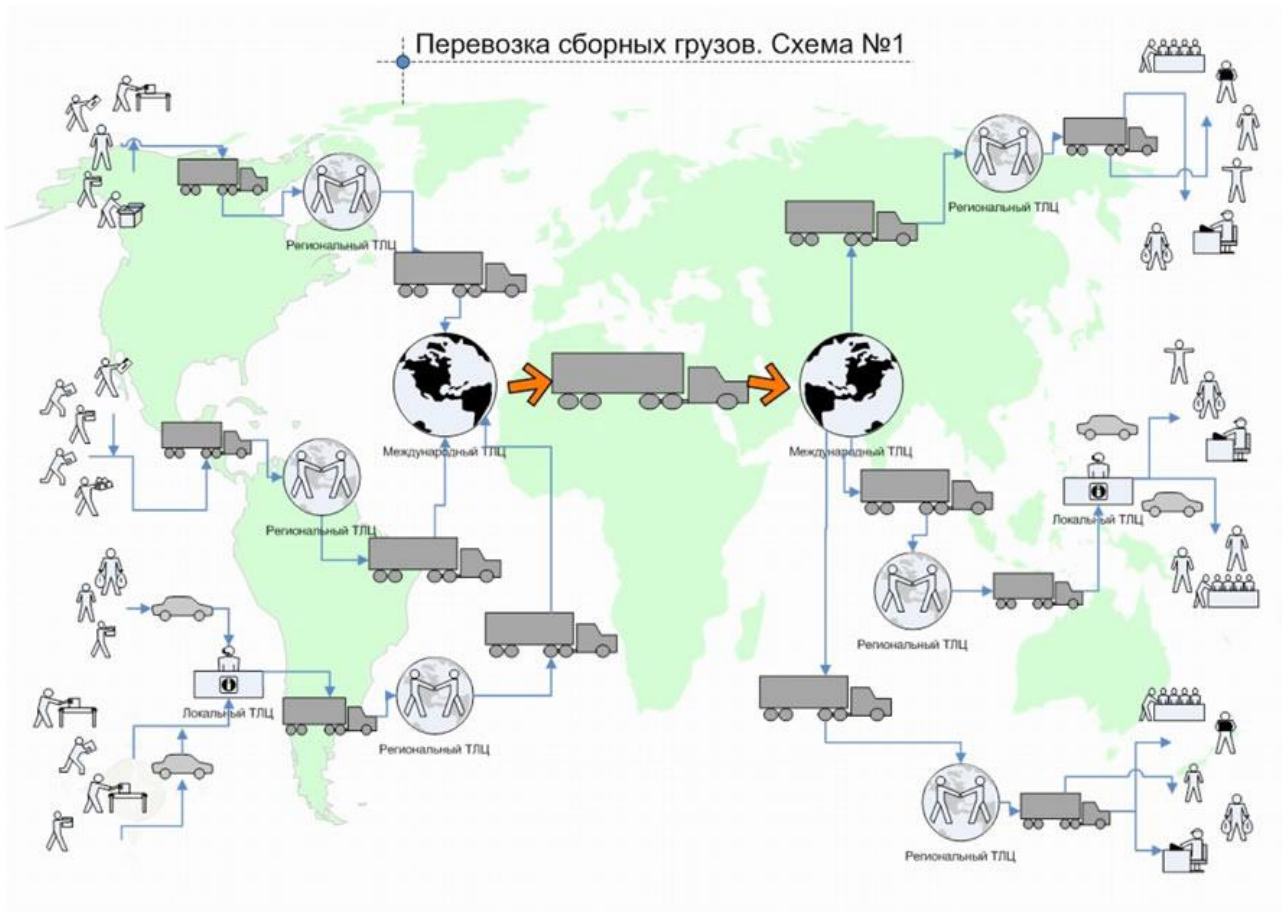
Abstract: *issues of optimizing the processes of cargo collection and delivery are considered both regionally and internationally. A direct proportional relationship has been determined between orders for the transportation of large cargo and requests for the transportation of small cargo. It is shown that consolidation/disconsolidation of cargo can occur both at local TLCs (district, city or region level), and at regional TLCs and international TLCs (transport and logistics centers between which the main international transportation is carried out).*

Key words: *transportation of groupage cargo, transport and logistics center, consolidation/deconsolidation of cargo, transport costs, common information space.*

Transportation of groupage cargo is in itself a difficult and labor-intensive process from the point of view of freight forwarding companies. A process that requires careful monitoring of the information received, constant reconciliation of data and monitoring the efficiency of each individual link in the supply chain. Although a huge number of large customers carry full container loads, many of them often require the transport of small loads, and there is a direct proportional relationship between their orders for the transport of large loads and requests for the transport of small loads. And there are many such clients. Transportation of small cargo is technically and economically feasible as part of groupage cargo. In this article we will look at the specifics of transportation of groupage cargo and explore possible ways to optimize the process of their transportation and delivery.

A load is called groupage if a combination of three conditions is met [1]:

- the cargo must be less in weight than the maximum permissible weight of cargo for transportation in a given cargo unit (for example, a sea container, a truck body, a railway container, etc.);
- less in volume than the maximum permissible volume of cargo for transportation in a given cargo unit;
- transported in this cargo unit together with other cargo.



Here:



Локальный ТЛЦ – local transport and logistics center



Региональный ТЛЦ – regional transport and logistics center



Международный ТЛЦ – international transport and logistics center

In other words, there is some container or some other “transport carrier” for transporting cargo. It has its own limit/maximum capacity, characterized by volume and carrying capacity. The logic of groupage cargo assumes that several different cargoes from different customers will be transported in the container at once. That is, in this way, each individual cargo must be less in volume and weight than the weight and volume characteristics of the container’s capacity, then there will be adequate space in the container for other cargo as part of the consolidated cargo.

From the forwarder's point of view, transportation of consolidated cargo is much more problematic than transportation of individual cargo.

This is primarily due to [2,3]:

- compliance with delivery deadlines;
- shipment planning;
- exchange of information between all participants in the transportation process.

In order to understand why all these problems arise, let's look at the following diagram illustrating the process of delivery and receipt of groupage cargo.

Thus, for groupage cargo, six main participants in the transportation process can be distinguished. Two of which: the supplier (sender of the cargo) and the recipient of the cargo are at the initial and final stages of the supply chain. The remaining four links (regional TLC in the sending country, international TLC in the sending country, international TLC in the receiving country and, accordingly, regional TLC in the receiving country) operate under the control and, in fact, on the direct initiative of the forwarding company servicing the transportation .

During the transportation process, groupage cargo goes through several stages of consolidation (enlargement of the cargo lot) and deconsolidation (respectively, proportional reduction and “fragmentation” of the cargo lot). Consolidation/disconsolidation of cargo can occur both at local transport and logistics centers (district, city or region level), and at regional transport and logistics centers and at international transport and logistics centers (transport and logistics centers between which the main international transportation is carried out).

With such multi-level consolidation and deconsolidation, economic benefits are primarily pursued. The fact is that when transporting a single cargo in a large consignment, transport costs included in the cost of the goods will range from 5% to 30% of the actual cost of the commodity unit, and when transporting groupage cargo this figure can rise to 200%. Multi-level consolidation/disconsolidation of goods, their transportation between TLCs of different levels, transportation by transport of different carrying capacity and capacity allows one to significantly reduce transport costs and bring them as close as possible to the level of costs when transporting a single product in a large consignment.

The economic benefits are obvious. But here the question remains open about the interaction of intermediate links in the supply chain with each other and with the recipient and sender of the cargo, respectively. All the main problems that arise in the process of transporting consolidated cargo, especially during their international delivery, are directly related to the large number of these intermediate links. At the same time, the process of optimizing such transportation seems to be directly related to optimizing and increasing the efficiency of these links.

It should be highlighted five main activities through which this optimization of transportation is possible [4,5].

1. First of all, the creation of a single information space and unified rules for the exchange of information between all participants in the supply chain.

Information about the current condition of the cargo must be relevant and accessible to each participant in the transportation process at any time. Which in turn will allow:

- plan transportation in advance on each of the cargo routes;
- establish the order of loading/unloading and handling of cargo along the entire route;
- prepare in advance a set of transport and warehouse documents necessary for transportation and warehouse processing of goods, which will reduce the time for document flow at junction points;
- organize the introduction of electronic document management (where possible).

In this situation, various IT solutions for logistics automation can come to the rescue; our market is now actively offering them. They can be performed either on any famous and certified platforms, or they can be our own chamber developments. Very few of them cover all aspects of information exchange; most affect one or another aspect of the process, which creates corresponding inconveniences.

Required control of cargo movement along the entire route, which will make it possible to promptly intervene in the delivery process in case of unexpected delays. This is where various mobile transportation optimizers based on GPS navigators will come to the rescue.

Then it is necessary to introduce a preliminary analysis, review and classification of goods being prepared for transportation.

In such an analysis of cargo, the most important criteria are [6]:

- the very possibility of transporting goods in accordance with accepted international conventions, as well as the current legislation of the sending country, recipient country and transit countries;
- compliance with the customs legislation of the relevant countries;
- copyright compliance;
- compliance with other similar legal regulations.

This is where various databases can come to the rescue (necessarily with a good search and sorting of indicators).

Next is the selection of local, regional and international transport and logistics centers, which are junction points in the overall supply chain. Analysis of TLC for compliance with international quality standards is mandatory. For effective stable cooperation, it is best to develop a wide agent network around the world.

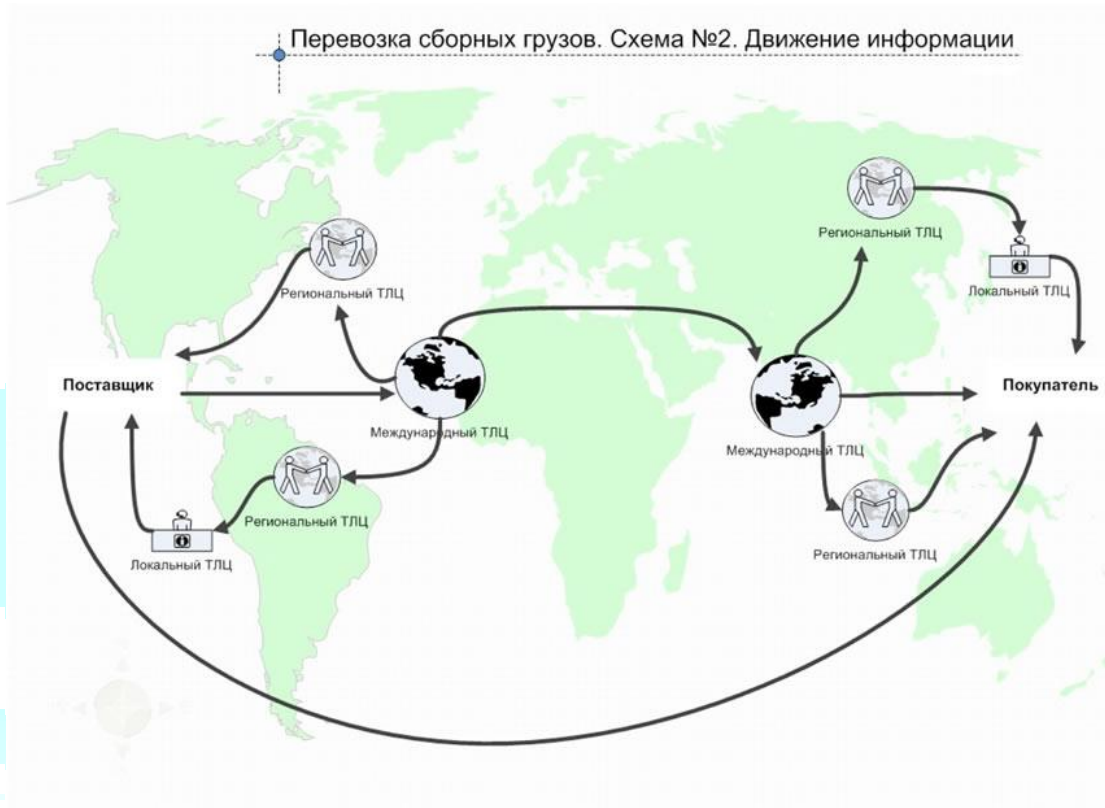
And, of course, for a clear understanding of the system and control over its functioning, it is extremely necessary to describe the business processes between all participants in the supply chain [7].

We will provide a description of business processes for one of the options for delivering goods from Supplier X (shipper) to Recipient Y as part of a groupage cargo.

1. The Supplier informs the Recipient about the estimated date of readiness of the goods for shipment from the warehouse.
2. The Supplier (if he is the customer of the transportation, according to Incoterms 2000) informs the Forwarder about the date of cargo readiness, who carries out the main (international)

transportation and consolidates the cargo at International Transport and Logistics Centers depending on the directions.

3. The MTLC Forwarder transmits the information to the MTLC Forwarder of the recipient country and then the information is transmitted along the entire chain from International TLCs to local TLCs, which in turn contact the Supplier and Buyer and notify them of readiness for pickup of the cargo on the set date.



4. The forwarder carrying out international transportation requests detailed information about the goods from the Supplier and transmits the information to all participants in the transportation process for analysis, indicating a response time.

5. After collecting and analyzing information for compliance with transport, customs legislation and other legal acts, Freight Forwarders, if necessary, provide the Supplier and Buyer with their recommendations.

6. The Supplier notifies the Forwarder that the goods are ready for shipment and sends all the necessary documents.

7. The forwarder notifies all participants in the transportation process and provides the Supplier and Recipient with access to information about the movement of cargo in real time.

8. The supplier transfers the goods to the first carrier.

9. The first carrier delivers the cargo with a set of original documents to the Local TLC.

10. LTLC forms a cargo shipment for further shipment and transfers the cargo with a set of documents to the Second Carrier.

11. The second carrier delivers the goods to the Regional TLC, where this shipment is deconsolidated into directions and shipments are formed for further shipment to the Main carrier (forwarder).
12. Consolidated cargo from Regional TLCs is sent to International TLCs depending on the direction of further cargo delivery.
13. Cargo arriving at the MTLC is deconsolidated by direction, and then consolidated with other cargo according to the same principle.
14. The consolidated cargo with a set of documents for international transportation is transferred to the Main Carrier, which, in turn, delivers the cargo to the recipient country.
15. The same procedure follows only in reverse order.

All this, accordingly, is accompanied by the exchange of information at each stage.

As you can see, the procedure is quite complicated and developing such schemes for each client is very problematic. To do this, there must be a clearly established and well-functioning mechanism that meets all of the above requirements. There are two options: creating a branch or agent network.

Creating a network of branches is a productive process, but expensive and quite labor-intensive. Only large transnational companies can afford it. At the same time, to ensure the normal functioning of the supply chain, a branch network must be created not only in one's own country, but also abroad.

Thus, the only way out for small and medium-sized companies is to establish business relationships with similar specialized companies through specialized associations and associations (such as, for example, the World Freight Group Association of Freight Forwarders, the International Air Transport Association IATA, the Association of International Road Carriers ASMAP and many others) and the creation on their basis of agent networks with a single information space, uniform quality standards for the provision of transport and forwarding services.

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