METHOD OF STANDARDIZATION OF TERMINAL AND NETWORK PRODUCTS IN MULTIMODAL TRANSPORTATION

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ABSTRACT

The article introduces the concept, development problems and options to improve the efficiency of international multimodal transportation (MMT). The main characteristics, functions, as well as organizational and logic structure of MMT are shown. We consider the basic stages of the formation of the terminal network, and the concept of shipping and forwarding activities. The principles and standards of documentation procedures in accordance with the basic rules are considered. The paper describes the terminal and network principle of cargo movement and its main characteristics, as well as the effectiveness of this principle. The comparative analysis of the ways of MMT implementation was conducted. The main advantages of these ways, as well as the advisability of separate ones, were shown. The principles of the classification of terminal and network products of the forwarder, as the main link in the organization of the system, were formulated. We have proposed some innovative modes of delivery allowing to increase the efficiency of the system and to ensure its reliability.

INTRODUCTION

Multimodal transport is the system of organizational provisions and legal groundwork for international transportation performed with at least two different means of transport (Multimodal Transportation, 2017; Smurov, et al., 2016). Such cargo movement on traffic arteries is impossible without the standardized conditions for carriages which form the ingredient of transportation system. Considering that a forwarder plays a key role in the interaction of all participants of trade and transportation activities, this paper is focused on the ingredient of transportation system of the forwarder.

The basis for the transportation process is a sales contract, transport basic conditions of which are listed in the INCOTERMS classifier. The transport proforma presented as model contracts should be developed by the ICC and FIATA (Jones, 2008). Using a standard proforma of documents makes them easier to fill, which allows to improve the control of cargo flows movement, to simplify customs formalities, documentation procedures and mutual settlements, to reduce commodity stocks and warehouse requirements.

METHODS

The concept of shipping and forwarding activities (SFA) is based on the need for a universal classification of transport products of forwarders to improve the reliability of transactions, to simplify documentation procedures, and as a result, to receive funds by documentary letter of credit (Fig. 1) (Intermodal/ Multimodal Freight Transportation; Multimodal and Intermodal Freight Transportation, 2017; Multimodal and Intermodal Transportation, 2017; Gubenko, and Ksenofontova, 2015; Multimodal Services That Optimize Air, Sea, Land, and Rail Transportation, End-To-End, 2017).

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To improve SFA efficiency in this part, it is necessary to introduce an e-document management, and to implement the automated processing of commercial documents. This will significantly reduce the time of confirming paperwork at dispatching points, customs, and facilitate the interaction between the transportation system participants.

**DISCUSSION**

Through the analysis of international multimodal transport technology (MMT) we determine the services for clients, the most convenient route, and calculate the through rate. The use of international transport corridors and discount schedule, the coordination of modes of transport at the hubs of interaction, the cargo consolidation for reducing logistic costs, all this allows to achieve efficiency in this part Table 1.

**RESULTS**

The foundations of terminal business are formulated as the first stage of the terminal network organization (AnyLogic Logistics Network Manager-Decision Support System for Network Optimization, 2017; Best Airports of, 2014): the focus on the container market, the model of hierarchically organized
Table 1. The effectiveness of international multimodal transport (MMT)

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<th>MMT ways of implementation</th>
<th>Advantages</th>
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<td><strong>Terminal system</strong></td>
<td>Providing a wide range of services&lt;br&gt;The single cargo and distribution terminal&lt;br&gt;Reliability of delivery time&lt;br&gt;Increasing of cargo delivery speed&lt;br&gt;Reducing transportation costs&lt;br&gt;System flexibility&lt;br&gt;Decreasing in risk of cargo damage&lt;br&gt;Rapid order processing&lt;br&gt;Reducing stock reserves&lt;br&gt;Improvement of quality in transport and logistics service</td>
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<td><strong>Consolidation of goods</strong></td>
<td>Minimum financial costs for the delivery of a small consignment of goods to anywhere in the world&lt;br&gt;Facilitation of shipping documentation execution&lt;br&gt;Availability of necessary storage and handling conditions&lt;br&gt;Different types of goods can be carried in one vehicle&lt;br&gt;Cargo of different senders can be placed in one vehicle&lt;br&gt;Delivery within the specific time frame</td>
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<td><strong>Unitization</strong></td>
<td>It ensures the safety of goods&lt;br&gt;Low labor costs due to the mechanization of cargo operations&lt;br&gt;Increasing of cargo delivery speed&lt;br&gt;Possibility of re-shipment of goods without repacking&lt;br&gt;Simplifying of cargo record&lt;br&gt;Wide range of the transported goods&lt;br&gt;Reduction of costs and speeding up the rolling stock processing&lt;br&gt;Reduction of warehouse facilities (containers can be used as storage; reservoirs of processing companies; the possibility of multitier stacking)&lt;br&gt;Simplification and unification of shipping documentation and freight forwarding operations</td>
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<td><strong>International transport corridors</strong></td>
<td>Rationalization of the interaction between different modes of transport in the intermodal transport chain&lt;br&gt;Safe passage of passengers and cargo across national borders&lt;br&gt;Providing the international through traffic&lt;br&gt;Unitary international standards&lt;br&gt;Minimizing the cost of transit carriage</td>
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<td><strong>Cross docking</strong></td>
<td>Reduction of cost of warehousing services due to renunciation of the storage and repetition some of cargo operations&lt;br&gt;Increasing of cargo delivery speed&lt;br&gt;Lessening of the need for storage facilities, and as a consequence logistics costs saving&lt;br&gt;Totals and performance improvement as the goods pass over the warehouse&lt;br&gt;Efficient utilization of automobile vehicles&lt;br&gt;Facilitation of documentation procedures</td>
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<td><strong>Advanced transport technological system of delivery (Multimodal and Intermodal Transportation)</strong></td>
<td>Combining different modes of transport and their effective interaction&lt;br&gt;Application of new principles of movement in order to increase the speed of goods delivery&lt;br&gt;Increasing the intensity of cargo handling operations and reduction of material and labor costs&lt;br&gt;The high degree of organization, mechanization and automation of technological processes&lt;br&gt;Increasing the load capacity of vehicles&lt;br&gt;Reduction the number of shipping documents&lt;br&gt;Increasing the cargo safety&lt;br&gt;Increasing the transportation capacity of transportation providers</td>
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transport and terminal network, approaching the market of distribution services and cargo handling, the idea of creating a network by means of the route “container trains” (Airport Passenger Terminal Planning and Design, 2010).

The main indicators, reflecting the preferences of the MMT operator for customers, include the presence of a person responsible for the cargo and its transportation for the whole route; preservation of the goods; price characteristics; the possibility of customs clearance; the possibility of issuing the document of multimodal transportation received by domestic and foreign banks; financial transparency of the relationship with the client (CAST Terminal-Passenger Terminal Simulation, 2017).

Clients have need of terminals for optimization their logistics costs. The review of product policy of terminals is important for quality network organization, which is caused by the need for specialization in key services. The formulation of the basic products enables to plan the development of the terminal network at all stages more effectively; it allows to point some key customer groups and the potential for the development of competition.
The list of forwarding services in the terminal network is unusually wide (Freight Forwarding and Logistics: What the High Performers Know, 2017). The forwarder arranges the movable part of the process (including carriage monitoring); cargo operations, warehousing; interaction of modes of transports at gateways; storage, release, acceptance; execution of documents; settlements; legal support; contract work; consulting; customs clearance; selection of the optimum carriers and other participants in the transport and terminal organization (TTO); selection of the optimal route; minimization of transportation cost in the price of the goods; calculation of the through rate; insurance, etc. Financial relations between the parties of TTO are carried out by the banking system; the information support is carried out with the help of automated information systems (Palagin, 2014; Connectivity and Growth. Directions of Travel for Airport Investments, 2014). Information technologies allow to track the whereabouts of
cargo, to carry out monetary settlements fast and convenient, to execute the necessary documents before the arrival of the goods at the place of destination (customs clearance). Thus, an MMT operator provides a complex of logistics services for a shipper, closing all the logistics flows and providing the transport product of high quality (Fig. 2).

For better understanding of stock liabilities, (Ksenofontova, 2013) the classification of warehouse services Supplementary Table 2 is proposed. The code, obligations of the parties, and the price of services and groups of warehouses are indicated for each condition that allow to carry out the necessary works (Air Traffic Control, 2015).

CONCLUSION

The article introduces the concept, development problems and options to improve the efficiency of international multi-modal transportation (MMT). MMT operator plays a big role in the international multimodal transportation concept. It organizes the end-to-end control for transportation process. The principles of increasing the efficiency of the systems, their development and implementation are given here.

First of all, we have considered the terminal and network principle of cargo movement. Also, this article formulates the principles of classification of the forwarder’s terminal and network products.

REFERENCES


