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Airport as a Multimodal Transportation Hub in the System of Carriage Type “Sea-Air”

Relevance of the research Globalization and increased competition in the global transport market make it necessary to use fundamentally new approaches to international and sectoral economic relations. The transformation taking place in the economy of Ukraine, development of economic relations with foreign countries pose Logistic complex challenges for its integration into European and global transport system problem of development of multimodal transport mechanism for the formation of the node as a component of the increase in the provision of multimodal traffic and increase the country's competitiveness in international markets is essential.

The study of problem Many foreign and local scientists engaged in modeling of transport issues. Vojevudskiy O.M., Tikhonova M.O., Lomash D.A., Persianov V.A. and others have contributed to the organization of the transport. Among foreign scholars are G. Zijian, S. Xiangqun, Z. Peng, H. You-heng, Z. Ling-yun and others. Proceedings of scientists is dedicated to modeling of the ports on the interaction of various modes of

transport, optimizing the supply of goods, the amount of storage space and other issues of the transport systems.

However, nowadays any work on the issues of complex transport systems to optimize the performance of all transport modes involved in multimodal transportation process, and particularly describing the organization of the airport as a multimodal transportation hub in the transportation system of the “sea-air” have been found.

The aim of the paper is to describe the organization of the airport as a multimodal transportation hub in the transportation system of the “sea-air”.

The main statement of research material Submitters take in the computation to six factors, choosing the means of delivery of a particular product. For example, if the sender is interested in rate, the main choice is manifested between air and road. If the goal is a minimum cost, the choice is between water and pipeline transportation. Senders are increasingly resorting to the simultaneous use of two or more modes of transportation – multimodal transport due to containerization.

Analysis of scientific literature on the subject of practical research has shown that an explicit formulation of the concept of the term “multimodal transport” is not in the current development of national transport science that could reveal the understanding of the nature and subject of study. The vast majority of scholars and practitioners give a purely contextual definition of this concept. We believe, most researchers and practitioners formulate the term “multimodal transport” and give it a too wide definition.

The first and only legal source of international level contains the term “multimodal transport” and reveals its essence the UN Convention of 1980 “On international multimodal freight” which, unfortunately, has not entered into force yet. Based on the basic provisions of this document the main features that characterize transportation as multimodal, that is organized on the basis of the Western doctrine produced by traffic law (which is stated as “international multimodal transport of goods”) includes:

- cargo must be international;
- at least two modes of transport should be involved in transportation;
- transportation is organized transport operator or a person acting on his behalf;
- transportation operator in the contract of carriage between him and the person who bought traffic (client), acts as an equal party

to the contract, and not as an agent or on behalf of the consignor or carriers involved in operations of transportation;

- transport operator assumes responsibility for the execution of the contract of carriage;
- a document that gives the operator transportation covers all the way of movement of cargo from shipper to consignee;
- operator is responsible for the consignment in the period from the date of acceptance of the goods in his keeping until the transfer of the goods by the recipient [4, p. 77].

Thus, multimodal transportation can be defined as international traffic carried by two or more modes of transport organized by the operator, who assumes responsibility for carriage of goods in general, which gives the sender to multimodal transport document covering the entire path of movement of goods. The operator of multimodal transport, which takes responsibility for all risks associated with the carriage of goods sent to a single shipping document covering the entire path of movement of goods, is indigenous honors of multimodal transportation from all others related to it.

The most important structural element of multimodal transportation is a multi-modal transportation hub. The term multimodal transportation hub (MTH) means the geographical point connections and interaction of several modes of transport. This node can combine the railway stations, sea and river ports, airports, train stations, highways, final and intermediate objects pipelines, municipal transport networks.

Multimodal transport hub is a complex of technical means to perform all operations with cargo units. There are basic types of multimodal transport hubs:

- ports where there is reloading with sea ships on river boats, cars and cars there and back;
- airports (reloading from aircraft to cars, wagons there and back);
- river ports (reloading of riverboats in carriages and automobiles);
- dry ports (terminals land vehicles) for reloading of cars in the car there and back [2].

Storage facilities and cargo terminals with control centers and distribution of freight, customs clearance facilities, transport insurance organization representing the freight forwarding and banking services include infrastructure multimodal transport hubs. These nodes, in fact, are springboard organizational, technical and technological interaction between different modes of transport, the implementation of multimodal

transport logistics on principles not only on a national but also at international level.

The strategic objective in the development of programs to create any of multimodal transport hubs is an integrated development of all of his modes of transport, terminal and storage facilities, as well as their infrastructure links. Therefore, the basis of (MTH) always makes 2–3 of transport investments, the development of which allow to get the greatest effect, because due to natural causes, not all transport modes have the same development.

The largest segment of international transportation is associated with marine transportation. The main feature of this type of transport is that unlike other types of cargo, where the price depends on the distance at which it is necessary to carry the load, the shortest path is not always cheaper than using sea transport which is much longer.

Marine multimodal freight transport is best suited for large shipments over long distances and used when needed solving complex transportation problems, such as intercontinental shipping. Maritime transport is used in most cases in implementation and attracts 2 (air, rail and road transport) or more of the counterparty.

We can introduce a skip scheme material flow in the “shipper-carrier-consignee” in the multimodal transport of the “sea-air” as follows (Fig. 1).

Airport, in the multimodal transport such as “sea-air” serves two

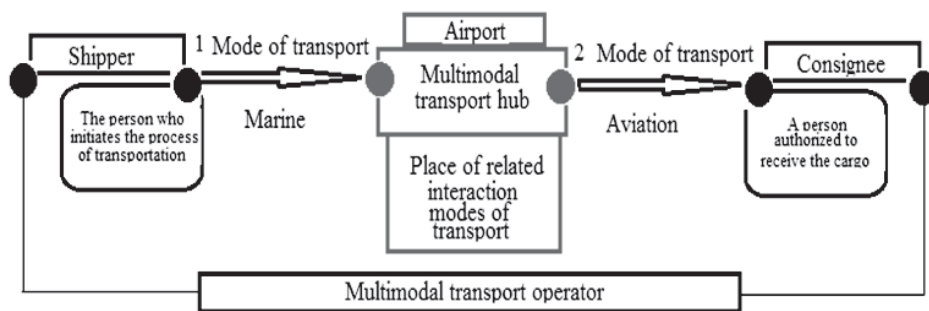


Fig. 1. The airport serves multimodal transportation hub in the maritime transport of the «sea-air»

kinds of input streams loads submitted during unloading and cargo to be submitted under load. Operations with loads occurring at the airport such as loading and unloading supply of empty containers by the shipper

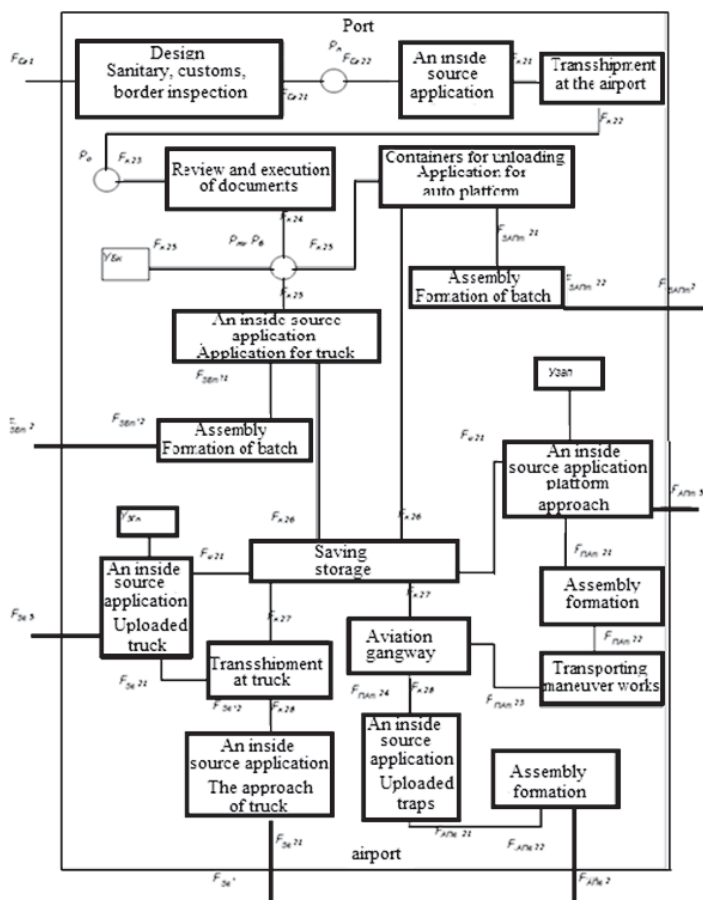


Fig. 2. Stepping algorithm process of transactions cargo in multimodal transport hub (airport) at transportation of the «sea-air», where:

FCz - ship loaded with containers; $FA\Gamma m$ -- empty aviation gangways; FGn -- empty trucks; $F3A\Gamma m$ -- Application for empty aviation gangways; $F3\Gamma n$ - Application for empty trucks; $FA\Gamma 3$ - empty aviation gangways on the application; $FB3$ - empty trucks on the application; $FA\Gamma m$ - laden containers of aviation gangways; $FB6$ - trucks loaded with containers; Fk - containers; Fu - notification of readiness for service of the application; YBk - rejected containers; $Y3A\Gamma m$ - waste applications of aviation gangways; $Y3Bn$ - waste application to empty trucks; Pn - algorithm of selection berth processing vessel; $P6$ - the party formation algorithm of for Customs Supervision; Pm - algorithm selection method of transportation containers; $P6$ - rejection algorithm of containers.

for loading, delivery of loaded containers recipients returning empty containers at the terminal – is calculated based on the amount of input streams and airport capacity [1, p.39].

Process of operations with cargo in multimodal transport hub (airport) can be represented as a single-step algorithm, where at each stage of the production capacity is distributed (Fig. 2).

Process of reloading cargo on a plane during multimodal freight transportation such as “sea-air” begins with the delivery of the cargo at the port, then to airport cargo department. After that the sender must present his goods for carriage, where he will be asked to overload the goods on pallets for its inspection, weighing and design. Acceptor asks to perform this operation by using this service right on the part of the airport, if the product is not properly packaged. This procedure is similar to the process of package shipments [5].

Next shipment will be issued and the party will be completed and sent to the warehouse, where it waits for the earliest opportunity to load the plane. The cargo will be tested for safety for transportation by analogy with the usual baggage of passengers with the appearance of free air gangway.

Forwarder after clearance gets consignment note, stating the name adopted by the cargo, its weight, volume, number of seats, the cost of transportation, name of sender, recipient and carrier, and other necessary information.

Consignee is required to get into the cargo department of its power of attorney and the airport with passport on arrival, where he can pick the name of his company's sent goods.

Conclusion. Thus, the formation of multi-modal transport hubs is directly associated with the creation of logistics centers that have a regional or interregional status. They are designed to take control of the circulation of goods and services within cities and economic zones. Formation and development of logistics centers should aim at maximizing the release of local producers and consumers of goods and services from their non-core activities related to the supply, sale, transport and storage of raw materials and supplies finished products to customers.

References:

1. Voevodskyy E.N. The system model descriptions of management processes for offshore transport / E.N. Voevodskyy, O.V. Sokolova. – Odessa: Mariner, 1981. – 101 P.
2. Persianov V.A. Multimodal transport (economics, planning, control) / V.A. Persianov, S.V. Miloslavskaya. – Moscow: Transport, 2008. – 231p.
3. Postan M.Y. Probabilistic models of interaction flows lorry transfer points and their application / M.Y. Postan // Transport: science, technology, management: / VINITI. – 1991. – № 11. – P.2-11.
4. Tikhonov N.A. Simulation methods in the study of transport systems / N.A. Tihonova. Omsk. 2004 – 108p.
5. Fadeev I.P. Automating the operational management of the fleet in the port of processing / I.P. Fadeev. – Gorkiy, 2006. – 56p.

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Abstracts

МАРИНА ХАРЧЕНКО. Аеропорт і мультимодальні транспортування HUB в системі перевезень типу «SEA-AIR». У статті аналізується поняття і основні риси змішаного перевезення. Це зачіпає проблему мультимодальної транспортної розв'язки в структурних підрозділах мультимодальних перевезень. Тут показано схему мультимодальних перевезень, таких як «морське повітря» і представлено покроковий процес алгоритму транспортування вантажу в мультимодальних транспортних вузлах (аеропортах) при транспортуванні в системі «морське повітря».

Ключові слова: мультимодальні вантажні перевезення, мультимодальні перевезення маточин, Трансфер до аеропорту, алгоритм «море-повітря».

MARINA CHARCZENKO. Lotnisko jako węzeł transportowy w systemie przewozów typu „SEA-AIR”. W artykule przeanalizowano

podstawowe cechy transportu multimodalnego, w tym opisano problem multimodalnego węzła komunikacyjnego w jednostkach strukturalnych transportu multimodalnego, a także przedstawiono znaczenie algorytmu „morze-powietrze” («sea-air») w procesie transakcji ładunku.

Słowa kluczowe: transport multimodalny, multimodalny węzeł komunikacyjny, transport na lotnisko, algorytm „morze-powietrze”

МАРИНА ХАРЧЕНКО. Аэропорт и мультимодальные транспортировки HUB в системе перевозок типа «SEA-AIR». В статье анализируется понятие и основные черты смешанной перевозки. Это затрагивает проблему мультимодальной транспортной развязки в структурных подразделениях мультимодальных перевозок. Здесь показано схему мультимодальных перевозок, таких как «морской воздух» и представлено пошаговый процесс алгоритма транспортировки груза в мультимодальных транспортном узлах (аэропортах) при транспортировке в системе «морской воздух».

Ключевые слова: мультимодальные грузовые перевозки, мультимодальные перевозки ступицы, Трансфер до аэропорта, алгоритм «море-воздух».

MARYNA KHARCHENKO. Airport as a multimodal transportation HUB in the system of carriage type «Sea-Air». The article analyzes the concept and main features of a multimodal transport. It touches upon the problem of multi-modal transport hub as the structural units of multimodal transportation. It reveals schematic diagram of multimodal transportation such as «sea-air» and builds stepwise algorithm process transactions cargo in multimodal transport hub (airport) at transportation of the «sea-air».

Key words: multimodal freight transportation, multimodal transportation hub, airport transportation such as «sea-air» algorithm.