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STRATEGIES FOR FUTURE DEVELOPMENT OF HUB AIRPORT IN UKRAINE

В статті представлено результати аналізу сучасних підходів до організації роботи деяких українських аеропортів.

Ключові слова: Міжнародний аеропорт, логістика, мережа

В статье представлены результаты анализов современных подходов к организации работы некоторых украинских аэропортов.

Ключевые слова: Международный аэропорт, логистика, сеть.

Modern approach analysis results for organizational performance of several Ukrainian airports are presented.

Key words: International airport, hubbing, logistics, networks.

Problem statement. Recent years show that Ukraine is possible to develop and implement new designs, technologies and equipments in airports. Airports are asset-intensive businesses that require many years to recover the significant capital investments in runways and terminals. The increasingly deregulated and liberalized aviation environment has induced many airports to re-examine their traditional business model and focus on new commercial activities with a view to achieving self-reliance and financial independence and to help support the development of their airport in line with the needs of all its customers from airlines to passengers. Transport strategy of Ukraine until 2020 years indicates regulations which are should be implemented due to European standard [1]. One of the performance requirements is the increase of local and transit passenger transportations and cargo turnover in Boryspil International Airport. Considerations about Boryspil International Airport development as future hub airport are absent. Hub airport provide local consumers with a much wider network scope at higher frequency than would be possible based on local origin-destination demand alone.

Analysis of recent research and publications. Even though there is a great potential to the hubbing development in Ukraine, there are few particular research on this topic [2]. Literature relevant to the effect of hubbing and cost-effective methods of carrying out hub network design is investigated but not enough. According to the first consideration, hubbing is a cost-minimizing option for airlines and rout networks of Ukraine. Following to this theory opening of hubs in Ukraine is one of the most important step in airline industry development. To get a complete information about hubbing process in Ukraine it is ought to know and take into account the possibilities of the main competitive hubs. In our case there are two main hubs - Istanbul and Moscow. There is a thought about opening four hubs in Ukraine. But there is a profound error because of political, economical and geographical reasons. Of course we have an opportunity for the development of this idea but not in the claimed scope.

Other estimation is about hubbing in Ukraine is rather different from the first. For passenger transportations - hubbing is optimal solution except aerotropolises but it is early and not advisable to talk about this in our situation.[6] In case of cargo transportations there is a judgment, that there is no opportunity and no need for the hubbing development process in Ukraine, and alternative way of airline industry development exists – aviation logistical center formation on the basis of cargo knot. This opinion is supported by the peculiarity, that

development of air transport and logistics centers in Ukraine is one of the main directions of improving the efficiency and quality of air service, primarily in international traffic. But to the problem of studying the process of logistics centers in the economic literature is given insufficient attention.[5] Scientists left unattended process of logistics centers based on cargo airports, due to the geographical position of Ukraine and development of multimodal transportation is of strategic importance.

Main goal. The main goal of this article is consideration of potential ways for Ukrainian airports growth and development which can provide wider network scope at high frequency with cost-effective methods. Analyses of future development of hub airport in Ukraine or organization of the air logistics center on the basis of cargo knot are presented. This research contains the actual analyses and propositions about future aviation logistics development on basis of the national transport system.

Main material. Airport hub and logistics centers based in airports are a new evidence for Ukraine and research has not shown the alternative option for Ukrainian airports yet. The following investigations will show possible strategies for Ukrainian airports development. Development of air transport and logistics centers in Ukraine is one of the main directions of improving the efficiency and quality of air service, primarily in international traffic. Air Freight Logistics is an integral part of the development of international relations and the economy of Ukraine.

Now in Ukraine there is a huge interest in the logistics service quality and, in particular, the creation of large multi-modal transport centers. When we are talking about air logistics center (ALC), we propose to understand the complex of structural and organizational business entity that operates on a cargo airport in a particular macro area, implements certain logistic functions to reduce the time of handling, minimize cost and best match the needs of consumers.[3] In Ukraine, the obvious leader is Kyiv region on which we can create an experimental air logistics center, which has following advantages. The advantage of air logistics center is a mere node distribution, it means the collection of cargo, repackaging and the new distribution. Large airports are not able to serve more cargo flows because of its busy with passenger flows. In such cases at the state level this problem is solved by opening or refurbishment of existing airports, directing them to the cargo. Airport "Boryspil" is in transition to international "hub", cannot withstand airflow download. An alternative, which would be dumped to the airport "Boryspil" may open a new cargo terminal in the Kiev region In 2011 a grant agreement was signed to fund a feasibility study on the project to create an international air cargo center in the city Bila Tserkva. To make ALC development more complex is providing of permanent and flexible logistics networks. Permanent networks are set up for unlimited time in order to serve a long lasting demand.

The continuity of the demand and the size of the orders determine the network into three main fields. To the first type belong permanent or fixed logistic networks which consist of logistic stations at fixed locations, such as receiving stations, transshipment points and logistics centers that are connected with each other by a permanent transport net. Many logistic network provider, e.g. freight forwarders, railways, postal, courier, express and parcel services and airlines, are owner of a permanent logistic network. The procurement networks of retail companies with dedicated logistic centers and regional warehouses are also fixed logistic networks. However, the flexibility of a fixed network is generally rather low. Hence, for seasonal or stochastic peak demand that exceeds by far the basic demand, a flexible network is opportune.

The second type is flexible or virtual air logistic networks are networks with changing stations, interaction with other transport links and altering partners involved. The operating costs of a flexible network are generally higher as for a fixed network. According to the demand, a fixed regional or national network can be connected with flexible local or global networks thus resulting in combined networks:

The third type is combined networks which consist of a number of fixed stations connected by regular main transports in combination with flexible local networks and international objects. In our case we should talk about not only creation of new ALC and close interconnection with "Boryspil" airport but also about the opportunity of working with 3-rd enterprises to provide efficient services to unpredictable clients.

In Euro-logistic network global logistic service providers, such as international freight forwarders, airlines and shipping lines, operate with combined logistic networks. They connect their own fixed global network with flexible local networks of contract partners or sub contractors. By this means, they can offer a complete logistic network that covers the whole globe. [4] After the realization of assigned ideas according to the building of new logistic center we should consider the possibility of opening similar centers in other regions with significant traffic (Chernivtsi / Khmelnytsky, Odessa, eastern and western regions). ALC distribution will be considered in future research [7].

On the other hand hubs are defined as collection points that serve the purpose of consolidating traffic flow. The concentration or consolidation of flow can reduce movement costs through economies with air network, mail delivery systems and in telecommunications. Hubs are defined in two general ways : one denoting whether an airport represents a hub within a carrier-independent system of air transport and the other denoting its role within carrier-specific network [8].

There are some **advantages** of hubbing.

The first and the most essential advantage is economies of traffic density – economies of scale occur when the average unit cost of production declines as the amount of traffic increases between any give set of points served. The usual argument is that a hub-and-spoke (H&S) network, through increased traffic density on the links to the hub, allows airlines to use larger, more efficient aircraft and to spread the fixed costs over more passengers, thus exploiting economies of scale [10]. Besides empirical evidence of improved returns from traffic density, other empirical studies underscore the cost advantage of hubbing. Some researchers suggest that a 10 % increase in hubbing associated with a 1.1 %

The second advantage of hubbing is a better capacity allocation. Hubbing has the added advantage of better allocation of capacity under demand uncertainty. Hubbing by pooling passengers from several markets into the same plane allows the firm to adjust the allocation of capacity once the demand conditions are revealed.

The third advantage is a high average yield. Hubbing allows airlines to have a high average yield due to a wider 'market power', which is the ability of a market participants to control sufficient/essential facilities, to set prices profitably above, or reduce supply below, those which would occur in a fully competitive market [8].

On the other side there are a lot of **disadvantages** of hubbing.

The first disadvantage is additional running cost. An additional costs of landing and handling at an intermediate point is avoided and more importantly, it doesn't add to unproductive ground time of the aircraft and crew. On product appeal, the seasoned traveler prefers the most direct itinerary, non-stop is possible without a change of an aircraft and flight at intermediate point.

The second disadvantage is congestion at hub airports. For airlines there is a restriction to expansion at congested hub airports due to lack of slots in which planes can land. As a result, there is reduced flexibility on scheduling, which increases susceptibility to delays emergency situation.

The third disadvantage is limiting of competition. Hub carriers limit competition through the excessive market power enjoyed at their hubs because they are free from competitive pressures. Hub carriers do face competition from specialized airlines, such as low cost carriers, and from technology changes, such as preferred use of regional jets and new aircraft like the "extended range" aircraft that fly over longer distances without the need to refuel.

Analysis of the structure and geography of freight traffic showed a significant potential of the Kiev region. Research prerequisites for the development of transportation service possible to conclude whether the creation of primary air logistics center at the existing airport, which will expedite the movement of cargo between Ukraine and other countries. Under the new strategic concept cargo airport in Bila Tserkva is positioned in the market as the main air logistics center in the country that can compete in the international market and turn Ukraine into a powerful transit center.

Airport "Boryspil" is in transition to international "hub", cannot withstand airflow download. An alternative, which would be dumped to the airport "Boryspil" may open a new cargo terminal in the Kiev region.

On the other hand the development of airport "Boryspil" to the level of international hub has significant role, as Ukraine is interested not only in the cargo transportation but in the passenger turnover too.

Conclusion. Analysis of the aviation situation in Ukraine shows as a significant but not realized potential for the Airline Industry development. Ukrianian airport system is a complex system. Ukrianian diverse airports range in size from small general aviation airports to huge airports, such as "Boryspil" international airport and other six strategic airports. An analysis of each airport and an overview of national transport system should be provided according not only to the current needs but also for the next decades.

Ukrainian airport system study must include identification of each airport's functional role within the system and evaluation of each airport's performance relative to its functional role.

There are two strategies for the development process for the main national airports as hub or formation of new logistics center on the basis of the cargo knot.

Creation and development not only of the permanent but also of the flexible logistics networks is rather critical in Ukraine in our days.

Taking into account advantages and disadvantages of proposed variants we can consider, that Ukraine has a potential to actualize both strategies. Which one will be most suitable for Ukraine we will define in our further researches.

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