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### **Modern trends in the development of the international hub airports.**

*An article provides the thorough analysis of the hub airports' development trends. Key pre- requisites and indicators, hub prototypes as well as the potential hurdles for hub development are structured and specified.*

In the aviation business, a hub is characterized, as “a special net-design, within which the traffic between two points is not directly linked, but linked via a central point called hub.”

Passengers also have to use a hub airport as a point of transfer. When their origin destination is not linked with a direct flight to their target destination, they have to transfer to another aircraft of the same airline family for their final destination flight. Hub airports therefore often offer better services, more destinations and greater frequencies than airports serving point-to-point traffic.

The best and most typical indicator for hub airports is the share of transfer passengers as compared to total passengers. The following are some international examples of hub airports (2016):

*Table 1*

Airports' passenger flows and transfer share

<b>№</b>	<b>Airport</b>	<b>PAX (Mio/Year)</b>	<b>Transfer PAX (%)</b>
1	Charlotte	44,4	75
2	Tocumen	14,7	73
3	Frankfurt	60,8	55
4	Salt Lake City	23,2	46
5	Amsterdam	63,6	38
6	Munich	42,3	37
7	Heathrow	75,7	36
8	Minsk	3,4	30
9	Zurich	27,7	28
10	Boryspil	8,6	27
11	Vienna	23,4	26
12	Helsinki	17,2	16
13	Gatwick	43,0	13 (2010)
14	Stansted	24,3	9 (2010)
15	Manchester	25,6	3 (2010)

Clearly, “real hubs” have more than 30% connecting passengers. However, not every airport with high volume of passenger traffic has to be a hub (see London – Stansted and Manchester Airport).

Key pre-requisites and indicators:

Here is our priority list of key pre-requisites a hub airport should fulfil:

- (1) Strong and financially sound home carrier
- (2) Large catchment area for originating traffic
- (3) Central geographic location
- (4) Incoming and outgoing tourism potential
- (5) Sufficient airside and landside capacities (runway, terminal, etc.)
- (6) Attractive fuel price
- (7) Efficient landside access
- (8) Attractive airside shops (e.g. assortment, quality, price)

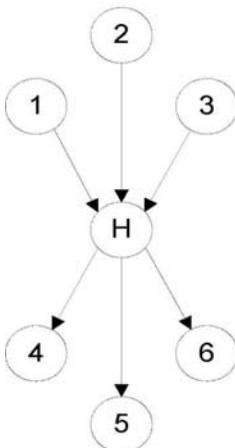
An airport’s potential to become a hub airport must therefore be carefully evaluated. There are several criteria which can be used. The most important indicators are the following:

- I. Percentage of transfer passengers
- II. Number of destinations
- III. Number of home-based aircraft
- IV. Home carrier’s share of passengers

Hub prototypes

There are two prototypes of possible hub airport models, which are shown schematic below:

a) Hourglass Hub



b) Catchment area Hub

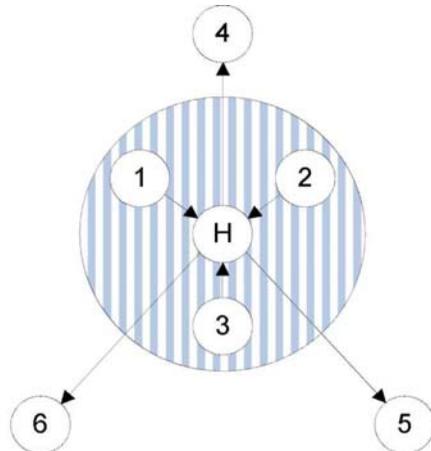


Fig.1 Hub prototypes

The hourglass hub depicts a typical north-south (could also be West-East) passenger stream which is bundled in the hub for distribution to southern

destinations in the morning. This model is typical for charter flights: e.g. Palma de Mallorca receives passengers from all over Germany, which Air Berlin then distributes to their final leisure destination in Spain. In the evening, the passenger stream returns via the hub – flights then connect from the south to the north.

The catchment area hub - or hinterland hub - collects passengers from its extended catchment area (blue circle) and distributes them to destinations outside of the catchment area.

Potential hurdles for hub development

Having described above the main pre-requisites for the organization of hub operations at the airport, it is necessary to define the potential hurdles, which currently exist and slow down or may even stop the development.

*Table 2*

Potential hurdles for hub development

<b>Airport Side</b>	<b>Airline Side</b>
Capacity Limitations (Terminal, Airside, Landside)	Problems of Home carrier development
Limited Incoming Tourism Development	Strategy difference Airline/Airport
Ineffective Access Roads	Unattractive price policy & service quality
Unattractive Shops in sterile Zone (e.g. assortment, quality, price)	Problems from main competing airlines
Lack of State Support	Bilateral Agreements

In accordance with the Decree of the President of Ukraine No.535 / 2015 on the basis of Boryspil International Airport the international hub airport should be developed.

**References**

1. Update of development concept International Airport Boryspil (KBP) December 2017, Airport Consulting Vienna, 136.
2. Airport’s Annual Reports.
3. Decree of the President of Ukraine No.535/2015 <http://zakon2.rada.gov.ua/laws/show/535/2015>