



Development of aviation hubs as a tool for increasing Uzbekistan`s international competitiveness

Nargiza Achilova

Department of Macroeconomic Policy and Forecasting,
Tashkent State University of Economics, Islam Karimov street, 49. Tashkent city, Uzbekistan
Emails: n.achilova@tsue.uz

Abstract

The article reviews the issues of the development of aviation hubs in Uzbekistan, their importance in increasing the international competitiveness of the national economy as well as studies the features of Dubai model of aviation hub development as a case model. Cargo and passenger traffic of domestic airports have been analyzed, existing problems in the aviation industry of the country have been studied, prospects have been considered, and proposals for the development of aviation hubs in the country and their use as a competitive advantage were presented.

Keywords: international airport; aviation hub; airline; transportation and logistics terminal; transit potential.

1. Introduction

As a result of globalization and economic integration, world countries as participants of international economic relations, affect the international division of labor and diversification of production. This generates competition between countries for a certain niche in the international market, forcing them to compete with each other to attract human capital, tourists, investments, new technologies and innovations, and most importantly, increase capital inflow to the country through the promotion of goods and services. This requires not only improving the quality of goods and services offered, but also focusing production on the country's competitive advantages, which are not only inherent in historical, natural, climatic, and geographical factors but also created consciously. Relying on the availability of certain natural resources, natural natural-climatic factors, or military force is becoming far from relevant due to the paradoxical development of "resource-poor" countries, variability of natural factors; increasing environmental issues such as global warming and environmental disasters; the use of information, biochemical weapons, etc. have shaken the classical standards of the countries' advantages, and therefore the relevance of "soft" tools has increased. As a result, countries are trying to improve and consolidate their global positions with their economic power and international competitiveness. Entering international economic relations, countries choose the strategy of their foreign economic policy, including the development of foreign trade, and its success predominantly depends on the competitive advantages of countries.

According to Porter`s theory, no country can be competitive in all spheres, due to limited resources available, and regardless of the degree of its development, there are uncompetitive sectors of the state economy. This fact creates prerequisites for the development of the most effective and competitive segments of the economy and the relocation of less "attractive" segments abroad or complete abandonment of such, which stimulates the economic prosperity of the country. Porter also states that competitive advantage does not have to be inherited, it can be consciously created.

The author wants to review the problems and prospects for the development of an aviation hub in Uzbekistan, as the country has all the prerequisites for its use as a competitive advantage.

2. Methodology

The theoretical and methodological basis of the scientific article is derived from studies of domestic and foreign researchers in the field of aviation, logistics, and marketing, as well as materials from scientific and practical conferences. The following methods of analysis are used in the work: induction, deduction, comparative, logical, and content analysis.

Hub or hub airport (Eng.: airline hub) - An airport used by airlines as a transfer point for passengers and having a high percentage of connecting flights. It is an element of a hub-and-spoke network in which passengers traveling between airports not connected by direct flights can reach their destination by connecting from one flight to another. [2]

Up to several hubs may be used by airlines in both passenger and cargo transportation. Additionally, similar hubs can be formed in the route network of airlines operating several flights to different destinations without being connecting points. Such large hubs are also referred to as “secondary hubs”. In many cases, an airline’s hub is the largest airport in the country (for example, Dubai for Emirates Airlines).

3. Literature review

The framework of the modern air transportation network consists of the largest hub airports – also known as air hubs, which are not only the place of destination or departure but also act as transfer stations, redistributing passenger flows. Hubs are part of the new air passenger transportation model “hub and spoke”. It supplements the initial destination model. Under the hub and spoke model passengers from local airports are directed to a hub, and further they are transferred to either connecting hubs for international destinations or domestic routes. This model has helped to significantly reduce costs and optimize the air transport market by improving flight occupancy and reducing the cost of flights.

According to researchers, modern airports are drivers of regional economic growth.[3] The transition from a linear structure to the “hub and spoke” model was initiated by the deregulation of air transportation in the United States in 1978, which allowed air carriers to significantly reduce costs.[4]

Industry experts formed some approaches to the definition of a hub airport, emphasizing its key role in the “hub and spoke” model. In general, approaches to the definition of a hub as a hub airport reflect its peculiarity in relation to airports occupying a secondary position in the system through its key functions related to the organization of connections and redistribution of air transport flows between different settlements.

The main purpose of creating hubs is the concentration of passenger flows in the hub, which allows to increase the profitability of transportation, increase the number of destinations and frequency of flights to final destinations where it is not profitable for a mainline carrier to fly.[5]

Button (2002) defines that carriers typically utilize one or more major airports in a hub-and-spoke system. Flights are sequenced so that passengers continuing the flight are grouped onto flights departing to distant destinations. Later revising his initial notion, Button defines a hub and spoke system as a system of airlines which purpose is to consolidate flights from different points of origin going to different destinations at major hubs. [6]

Supporting this approach, Yegorov (2004) states that hubs are distribution centers which allows the passenger flows to gather at central point and be redistributed there, to further follow their destinations.[7]

According to Bryan and O’Kelly (1998), hubs are specific nodes in a system, located in such a way as to facilitate connections between interacting points.[8] The authors in their following researches (2002) further emphasize that hubs serve as transfer points, and allow the replacement of direct connecting networks between all nodes with fewer indirect connections.[9]

Pardo (2003) highlights that a hub airport is a connecting airport, which has a major transfer and transshipment transportation hub with a necessary set of services, as well as located in a geographical position that provides concentration of passenger flows and their distribution to destinations over destinations of another type. [10]

Kotin (2005) further states that in “hub and spokes” model, hub airport is a transit and transfer airport, where the hub collects passengers on local, interregional and intercontinental routes, and transfers these passengers by regional and local routes (spokes) to the final destination points, where it is not profitable for a large carrier to fly directly. [11]

Zvereva (2010) highlights that hub provides airlines with such advantages as increased frequency of flights; reduction of market risks due to the retention of passengers in their route network; expansion of the flight network with reduced cost. [12]

Frank and Rubanov (2012) believe that a necessary condition for the formation of a hub airport is existence of strong domestic carrier with a stable financial position. At the same time, it is the airport that can start implementing the hub strategy by convincing airlines to base several air forces at it. [13]

Analysis of different researchers show that, in general, the term “hub” refers to a point, which has sufficiently large transit and transfer airport with a favorable economic and geographical location at the intersection of transport routes. Thus, hubs act as distribution centers used for passenger flows to flow to central point, regroup there, and then further flow in a variety of directions. The construction of such distribution schemes takes into account the geographical orientation and capacity of flows.

4. Case study

For many international airports becoming a hub has long become not just a goal, but a reality, which provides the country with sustainable economic growth (GDP growth), connection of certain regions of the country with global markets, development of related industries and increasing employment of the local population in the industries serving such hubs, and most importantly, allows to distinguish a country or a city between hundreds of other competitors. By increasing the volume of passenger traffic and providing high quality service, airports receive a huge income and improve their competitive position in industry, attracting more and more airlines, as well as also benefiting from increased frequency of flights, winning the loyalty of their customers and others. Thus, the creation of a hub is beneficial for all stakeholders, urging them to take advantage of opportunities from this establishment.

Dubai's experience as an aviation hub is interesting for case study. The history of Dubai's busiest and most profitable aviation hub began in 1959, with a once small international airport that accepted only a limited number of small planes of a certain type for an asphalt runway of 1800 meters long. Due to the efforts and persistence of Sheikh Mohammed, the airport gradually expanded, initially becoming a major East-West refueling point [14], and subsequently, participating in “open skies” policy, displacing London Heathrow in terms of international passenger traffic. Today, more than 100 airlines are operating at the international airport.

At the same time, it should be noted that during the initial establishment, the airport's operation model was in direct contrast to other regional airports – Dubai airport did not enjoy privileges backed by national legislation that would have protected it from international competition. The Dubai model of airline development is associated with Emirates Airline, which started with two airliners leased from Pakistan in 1980, and today has more than 200 Airbus and Boeing aircraft, operating scheduled flights to Africa, Asia, Europe, North and South America, Australia, New Zealand and the Middle East [14]. In 2016, the company flew to 155 destinations, to 83 countries, carrying 55 million passengers on over 860,000 passenger flights. [14] Only the presence of two determining factors the airport itself and Emirates Airline company philosophy have allowed Dubai Airport to become the busiest international airport in the world, with passenger traffic of over 66 million in 2022 (ACI World, 2023). (See Tables 1 and 2)

Although the flagship carrier Gulf Air operated successfully in 1980s, serving flights from the UAE, but with the support of Sheikh Mohammed, a new airline launched in the region, Emirates, marked

the beginning of the end of Gulf Air's monopoly established with purely commercial goals. Despite certain risks and even in view of the policy of protectionism in the airspace - the government decided to follow the path of liberalization. Today, this philosophy fully supports the competitiveness theory of M. Porter, which is based on the "laws of the free market". This law highlights the pivotal role of free trade and healthy competition between domestic and foreign companies, and any manifestation of government intervention, whether it is subsidies or protectionist policies, has an extremely negative impact on the competitiveness of domestic producers. [1]

Less than half a century later, Dubai's airport and national airline epitomize one of the country's main competitive advantages, ensuring its position as a global aviation center that firmly maintains its leadership position.

As of today, a new airport in Jebel Ali, named Dubai World Central - Al Maktoum International Airport, is under construction and is expected to be the second largest airport in the world in terms of size. The airport which opened in 2010 and full construction is expected to be completed by 2027, will be able to handle up to 160 million passengers and 12-14 million tons of cargo per year.

Dubai, in collaboration with the Dubai Roads and Transport Authority (RTA) and US firm Joby Aviation, plans to launch a scheduled air cab service. Currently, there is no equivalent service provided by any other company in the world. [4] This project is scheduled to be realized in 2026. It is reported that the eVTOL air cabs, which will resemble helicopters in appearance will use vertical takeoff and landing, and will have zero operational emissions while maximizing travel time. The ability of the air cab has been praised by David Summerfield, head of the studio Foster+Partners, which will provide "seamless, eco-friendly city travel for international and domestic passengers" [15]. To achieve this goal, the construction of 4 heliports is planned in the initial stages.

Table 1: Top 10 busiest airports by passenger traffic

Passengers*						
2022	2021	2019	AIRPORT	2022	% change vs 2021	% change vs 2019
1	1	1	ATLANTA GA, US (ATL)	93 699 630	23.8	-15.2
2	2	10	DALLAS/FORT WORTH TX, US (DFW)	73 362 946	17.5	-2.3
3	3	16	DENVER CO, US (DEN)	69 286 461	17.8	0.4
4	4	6	CHICAGO IL, US (ORD)	68 340 619	26.5	-19.3
5	27	4	DUBAI, AE (DXB)	66 069 981	127.0	-23.5
6	5	3	LOS ANGELES CA, US (LAX)	65 924 298	37.3	-25.1
7	14	28	ISTANBUL, TR (IST)	64 289 107	73.8	23.2
8	54	7	LONDON, GB (LHR)	61 614 508	217.7	-23.8
9	13	17	NEW DELHI, IN (DEL)	59 490 074	60.2	-13.1
10	31	9	PARIS, FR (CDG)	57 474 033	119.4	-24.5

* Total passengers enplaned and deplaned, passengers in transit counted once

Source: ACI World. 2023

Table 2: Top 10 busiest airports by international passenger traffic

Intl Passengers*						
2022	2021	2019	AIRPORT	2022	% change vs 2021	% change vs 2019
1	1	1	DUBAI, AE (DXB)	66 069 981	127.0	-23.5
2	7	2	LONDON, GB (LHR)	58 243 060	230.5	-23.4
3	3	3	AMSTERDAM, NL (AMS)	52 467 346	105.8	-26.8
4	5	6	PARIS, FR (CDG)	51 763 569	128.9	-25.9
5	2	14	ISTANBUL, TR (IST)	48 521 725	83.3	22.6
6	4	8	FRANKFURT, DE (FRA)	44 771 711	97.3	-29.0
7	9	11	MADRID, ES (MAD)	36 231 191	136.2	-19.3
8	6	15	DOHA, QA (DOH)	35 726 721	101.8	-7.9
9	95	7	SINGAPORE, SG (SIN)	31 902 000	952.9	-52.8
10	55	13	LONDON, GB (LGW)	30 145 083	501.5	-30.1

* International passengers enplaned and deplaned

Source: ACI World. 2023

Luis Felipe de Oliveira, ACI World CEO, in ACI's Press Release dated April 5, 2023, noted that "The new top 10 busiest airports for passenger traffic reflects the resilience of the airport and aviation industry, and the eagerness of passengers to travel by air. While US airport hubs were able to recover quicker due to their strong domestic market, we are now witnessing global hubs joining upper ranks—including Dubai, Istanbul, and London Heathrow Airport." [16]

At the same time, three Turkish airports were included in the top 50 largest airports in the world in 2022, and the international airport in Istanbul entered the top 10 in terms of congestion.

It should be noted that because of growing trade relations between the countries, as well as the expanding investment activity of Turkish investors in the Uzbekistan national economy, Uzbekistan can successfully adopt the experience of Dubai and Turkey in the field of aviation – to shape leading international airports of the country into a global aviation hub. According to Shoirra Nurdinova, senior research fellow of the Center for Economic Research and Reform, "Turkey, as a member of the EU Customs Union, can help organize alternative routes for exporting goods from Uzbekistan to the European Union." [17]

These countries serve as a good example for the implementation of the Strategy of Uzbekistan's development as an aviation hub, for which Uzbekistan has the necessary prerequisites. Despite the efforts the country is taking to improve service standards at airports and their infrastructure, construct new passenger terminals, repair runways, and others, these measures are still insufficient to increase the attractiveness of the domestic aviation sector for foreign air carriers.

To improve the international competitiveness of the aviation sector and rationally use the potential available in the country, it is necessary to analyze the advantages and disadvantages, as well as to analyze the potential and opportunities of this sector.

5. Discussion.

This section examines the potential of the establishment of an aviation hub in Uzbekistan. It analyses current challenges and prospects of the country's aviation industry, as well as reviews how an aviation hub could enhance national competitiveness.

Uzbekistan government has been taking certain steps in this direction recently. Uzbekistan Airways, which was operating on the principles of monopoly, in the absence of competition, was reorganized in October 2019 and as a result two companies, Uzbekistan Airways and Uzbekistan Airports, were established to separate the functions of air transportation and airport services. Furthermore, to increase passenger traffic, provide high-quality services both in the country and in the whole region as well as expand the competitive environment in the aviation field, together with meet the needs of passengers both in the country and the region two more companies, "Humo Air" and "Uzbekistan

Helicopters”, were created [18]. To deepen the impact of the reforms, expand the geography of flights, and further liberalize the aviation market Uzbekistan introduced the “Open Skies” regime in 2019, with the application of the “fifth freedom of air” at international airports such as Karshi, Nukus, Termez and Bukhara. However, an expected sharp increase in the number of foreign flights and rapid growth in passenger traffic has not yet been observed.

Currently, Uzbekistan has 11 international airports, which are part of Uzbekistan Airports JSC, some of which can be successfully used as hubs. Uzbekistan Airports JSC also includes subsidiary handling companies such as Uzbekistan Airports Handling LLC, also known as UzPort, as well as Uzbekistan Airports Cargo LLC, a subsidiary established based on the airport’s mail and cargo complex, which has been operating since November 1, 2022. According to a company statement, the total passenger traffic of all airports in Uzbekistan amounted to 7.9 million passengers in 2022 and reached 10 million in 2023. [19] Despite such positive trends and noticeable changes in these indicators, they still lag far behind the global dynamics.

Table 3: Key indicators of air transport development in the CIS countries in 2022

Country	Armenia	Kazakhstan	Kyrgyzstan	Uzbekistan	Russian Federation
Cargo turnover (mln. t-km)	7,6	54,4	17,6	53,6	2 826,8
Passenger turnover (mln. pass-km)	1474,5	20109,3	2071,9	10900	227 951,6
Cargo transportation (thousand tons)	23,2	24,5	0,3	64,3	606,3
Passenger transportation (mln. people)	3,7	11,0	1,2	7,9	95,2

Source: Compiled by the author based on data from the Eurasian Economic Commission and the Report on the results of the road map by the Ministry of Transport of Uzbekistan in 2022. [20]

According to the Report on the results of the road map by the Ministry of Transport of Uzbekistan in 2022, 52 international agreements of interstate and intergovernmental nature in the field of air communication have been signed between the Republic of Uzbekistan and foreign countries.

Airports/Cities [21]

Tashkent. The main airport of the country, the Islam Karimov Airport in Tashkent, is currently serving the airplanes of more than 30 airlines both as refueling and flight connecting points. According to the prospective development plan, Tashkent Airport should transform into the largest international hub in the region, through which both passenger and cargo intercontinental air transportation will pass.

Samarkand. After the general reconstruction, Samarkand International Airport was certified under ICAO Category 1 and today it accepts all types of airplanes, becoming one of the important points of international transit routes, the capacity of its air terminal is 400 passengers per hour.

Bukhara. After the completion of the modernization program in 1999, Bukhara Airport acquired the status of “international”, and its modern terminal has a capacity of up to 150 passengers per hour. As noted by “Uzbekistan Airways”, more than 90 thousand passengers, including 15 thousand foreign tourists annually use the services of this airport.

Navoi. The International Intermodal Logistics Center was established based on Navoi Airport, which is considered one of the largest and most high-tech air cargo complexes in the region. Today

it connects Uzbekistan with the main logistics centers of Europe and Asia - Frankfurt, Milan, Vienna, Oslo, Basel, Zaragoza, Dubai, Delhi, Incheon, Tianjin, Hanoi, and Shanghai.

Based on the above, it is time for the country to utilize its transit potential to its full scope. However, this requires a comprehensive solution to the challenges and existing problems in this direction.

Advantages

- **Unique natural and climatic conditions.** Uzbekistan has around 300-320 sunny days a year, which is one of the most important factors in navigation and a competitive advantage in relation to other nearest competing countries. In addition, it is necessary to emphasize the convenient geographical position of the country, as it is located in the center of the region.
- **Tourism.** The rich tourism potential of the country can be a very attractive factor for transit flights, which allows spending the waiting time with “benefit”, especially if the time between connecting flights lasts for more than 24 hours. It is possible to develop smart packages that includes a short sightseeing tour to the historical cities of the country (Bukhara, Samarkand or Khiva), or provide possibility to enjoy “food tourism”.
- **Reforms.** To stimulate competition and diversify the services provided, the government is undertaking decisive sectoral reforms, which has become a new starting point in the development of the country`s aviation sector. The establishment of new aviation companies and private carriers such as Humo Air, Qanot Sharq, Panorama airways, Centrum Air, Silk avia, Uzbekistan Helicopters gave a good impetus to both competition and development of regional air transportation in the country and in the Central Asian region. There are already 8 airlines in Uzbekistan. To promote competition in the industry and attract new resident airlines to cooperate, the government started allocating state subsidies at the rate of 25% of the ticket price and offering privileges in the form of customs duties on imported aircraft maintenance equipment, as well as equipment and components until 2028. [22]
- **Logistics hub.** The existence and successful functioning of the international multifunctional logistics hub for humanitarian aid - Termez Cargo Center - not only opens up potential opportunities for the establishment of other large logistics terminals in the country but also improves the image of the country by assisting the world community and international organizations in their humanitarian activities in the region. This serves as a good example of mutually beneficial cooperation and the importance of the country`s transport system in transport and logistics.
- **Aircraft fleet.** An updated fleet of aircraft is also a good indicator of compliance with global standards.

Challenges, opportunities, and prospects

It should be emphasized that among all the advantages there are number of challenges that need to be addressed and shortcomings that need to be addressed to improve the attractiveness and competitiveness of the aviation industry in the country.

- **Infrastructural.** It should be noted that considering the international requirements, the infrastructure of the aviation industry in the country is still underdeveloped. It is necessary to comprehensively solve the existing problems, which are the increase in output capacity, reconstruction of runways and strengthening of taxiways, address the lack of machinery for aircraft maintenance, as well as the necessary equipment and components, the commissioning of new engineering services centers and competitive in-flight catering services, the appropriate terminal complex and station area, establish relationship with other hotels or build the airport hotel, restaurant complex, interesting shopping and entertainment facilities among many others. It is necessary to attract foreign experts to modernize and reconstruct the functioning airports of the country according to the international standards. Furthermore, it is necessary to develop related servicing industries and infrastructure to form the full functioning hub. Creation of new and expansion of existing chemical-technological clusters. Creation and improvement of related infrastructure based on Duty Free zones will assist in development if hotel, restaurant businesses

and commerce, as well as give foreign citizens an opportunity to get acquainted with the national culture of the country.

- At the same time, it should be noted that despite the commissioning of the Uzbekistan GTL synthetic liquid fuel plant, unique among the CIS countries in terms of technology and in accordance with the standards of the “green economy”, which was aimed to provide fuel for the national aviation industry and reduce its import dependence, there is still a shortage of fuel necessary for refueling transit airliners, which is one of the most important factors in the functioning of the aviation hub. There is a need to increase the capacity of the refinery and open new refineries of such type in the long run.
- **Personnel.** There is a shortage of qualified personnel employed both in the aviation and in related service industries. This issue requires expansion of the scientific and technical base, creation of new areas in the country’s universities and colleges to meet the demand for qualified personnel in the aviation and related industries that meet international standards, creation of special training centers for retraining and advanced training of employees, as well as close cooperation in this direction with advanced foreign educational institutions, to improve the quality of trained personnel and exchange experience.
- **Institutional reforms.** It should be further noted that despite the reforms undertaken by the government to liberalize the aviation industry, there are still some monopoly principles and limited conditions for competition in the aviation market. As an example, the government continues to support the state-owned national airline and its subsidiary airlines, which itself contradicts the principles of Porter’s theory of competitive advantage. Such support can be justified during the pandemic period, when a majority of the international airlines suffered huge losses. However, the continuation of such support in the future will undermine the competitiveness of the aviation sector.
- Tax exemptions and preferences granted to companies in the aviation industry lead to a shortfall in potential tax revenues to the state budget, and government subsidies cause damage, both purely economic and on a global scale, being a deterrent to improving global competitiveness.
- For an objective assessment of the state of the country’s aviation market, different indicators such as the number of tickets sold per capita, and the number of flights compared to competing countries should also be reviewed. Unfortunately, is not possible to analyze this aspect due to limited data available in open sources.
- It is necessary to accelerate the process of Uzbekistan’s accession to the WTO. This will open up additional opportunities both for the development of trade relations and the expansion of the aviation industry market.
- It is necessary to attract foreign air and helicopter companies to cooperate, as well as to promote national air carrier brands abroad, which can become a mutually beneficial and fruitful cooperation.
- To provide high-quality business services and develop tourism, it is necessary to purchase new flight carriers and helicopters.
- To meet the requirements of urban planning, it is also worth considering the project of construction of a new modern air harbor with a capacity of at least 50 million passengers per year outside the city.
- **Economic aspects.** It should be noted that the country has rather high tariffs for air services. Uncompetitive and expensive fares cause damage in the form of loss of potential customers, not fully loaded flight carriers, and others. This brings losses to the state budget, as unprofitable activities of air carriers are subsidized at the expense of tax revenues. To solve this problem, it is necessary to properly organize and provide “smart” marketing of the national tour products, which will increase the interest of foreigners in domestic tour products. Alisher Annazarov, the founder of the SilkJet low-cost carrier, proposed the Hub and Spoke model specifying the model as a very effective infrastructure solution in terms of logistics and emphasizing that “combining

these two progressive models - the low-cost carrier airline and the Hub and Spoke model - will make it possible to “drive” the air transportation market in the country, increase the affordability of flights by reducing fares for both tourists and the population of Uzbekistan”. [23] Aziz Abdulkhakimov, Minister of Ecology, Environmental Protection and Climate Change and former Deputy Prime Minister, highlighted that today’s goal is to transform Uzbekistan and open airports into transit hubs as quickly as possible. [24]

6. Conclusion

Uzbekistan has a good potential for the development of aviation hubs, which can be rationally used. It should be noted that today there is a growing interest of the International Organization for Migration, the International Committee of the Red Cross, the European Union, and other international structures, as well as other countries to use the transit potential of the country. Based on the growing demand, it is necessary to create several cargo hubs in the country. Increasing passenger transit numbers and cargo transportation should form the basis of Uzbekistan's development strategy as an aviation hub.

As a result, the effective and timely implementation of the set tasks will assist in the realization of the goals of the Uzbekistan-2030 Strategy. Development of aviation hubs in the country can become a competitive advantage, as well as a guarantee of stable, long-term development of both aviation and tourism industries, as well as an entire national economy.

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