

# Problems of world and Ukraine international airports in a pandemic condition

Galyna Zhavoronkova, Vladimir Zhavoronkov, Irina Panasiuk,  
National Aviation University,  
Kyiv, Ukraine  
zhavor@ukr.net

**Annotation.** Features of activity of the international airports of the world in the conditions of a pandemic are considered. The losses of the world's airlines are given. The condition of aircraft manufacturers is assessed. The activity of the main international airports of Ukraine in recent years is analyzed. The programs of development of the international airports of Ukraine for the near future are considered.

**KEYWORDS:** AIRPORT, AIRLINE, PASSENGER TRAFFIC, PANDEMIC.

## 1. Introduction

To ensure the stable and efficient functioning of international air transport, it is necessary to have a global network of airports that will ensure the regularity of flights, their safety, the quality of passenger service at the airport. Airports are strategically and socially important government facilities [8, 9].

The world airport market is well developed. The best airports in Europe include: Charles de Gaulle International Airport; Heathrow International Airport; Frankfurt am Main International Airport; Madrid Barajas Airport; Schiphol International Airport.

The global transport and logistics system has been one of the worst hit by the COVID-19 pandemic. Today, countries are in transition: the transport sector is adapting to new operating conditions and is gradually beginning to recover from the crisis, in particular, the resumption of travel to individual countries.

Due to the actively progressing processes of globalization and internationalization of the world's economies, the share of the air transport industry is becoming increasingly important every year. The proper functioning of flights, the provision of an appropriate level of ground handling and the attraction of more tourists are performed by airports. It is worth noting that the situation with the COVID-19 pandemic has negatively affected the development of this industry, but gradually destinations and flights are being restored.

## 2. Features of the international airports in the world in a pandemic

The global transport and logistics system has been one of the worst hit by the COVID-19 pandemic. Today, countries are in transition: the transport sector is adapting to new operating conditions and is gradually beginning to recover from the crisis, in particular, the resumption of travel to individual countries.

With the cancellation of most passenger flights, airlines in the pandemic have begun to pay more and more attention to the transportation of commercial goods by air. In fact, these shipments have traditionally been less common due to the high cost of air tickets. The total number of flights in 2020 decreased by 62% compared to 2019 [4].

According to the Joint Research Center of the European Commission, the economic costs of airlines and airports due to the inability to intensify activities during the pandemic will lead to a significant reduction in world GDP, not taking into account the consequences for each economy.

In contrast to the transportation of commercial cargo, air transport accounts for the bulk of international passenger traffic. The closure of borders and the imposition of restrictive measures by governments have had a very negative economic effect on the operation and development of airports and airlines. There have been large-scale job cuts.

According to the analysis of the International Air Transport Association (IATA), the total revenue loss of the global aviation industry in 2020 amounted to almost 400 billion US dollars.

According to economists, the air transport industry will no longer be the same as before the coronavirus. In order to adapt to modern realities, carriers are remodeling business models, introducing innovative approaches and changing technologies. It is assumed that the average passenger traffic will be reached no earlier than 2024.

After the onset of coronavirus on aircraft, the crew was forced to wear masks, at airports and on board passengers, the temperature is measured, passengers are given antibacterial wipes, and aircraft cabins and airports are additionally disinfected. Companies that continue to operate during the pandemic have begun to block seats so that there is at least 1 empty seat between passengers.

To prevent the virus from spreading, airlines have stopped cooking hot meals and are offering packaged snacks and sandwiches to passengers instead.

Losses on the example of airlines [5]:

1. Aeroflot: in 2020 carried almost 35% fewer passengers.
2. All Nippon Airways and Japan Airlines have canceled about 90% of international flights, although domestic flights are scheduled.
3. American Airlines canceled about 60% of flights.
4. British Airways has prepared a restructuring program with 12,000 jobs.
5. Air Canada canceled about 80% of flights, 15,200 employees went home.
6. Condor Airlines proved to be unprofitable during the coronavirus crisis and the Polish company LOT withdrew from the agreement (estimated amount of EUR 300 million).
7. Delta AirLines canceled 80% of its flights.
8. "EasyJet" completely stopped flying for a while, hoping to overcome the consequences with a loan from the National Bank of England.
9. "Flybe" experienced difficulties in 2019, but the pandemic completely exacerbated the situation.
10. Air France-KLM is gradually resuming flights.
11. Gol canceled orders for 34 Boeing aircraft.

The European branch of the International Airport Council has estimated the effects of the coronavirus to be 14 times greater than the global financial crisis of 2008-2009. But now the number of flights is gradually increasing.

However, freight traffic did not suffer as much as passenger traffic. In general, without loans or state aid, it will be difficult for airlines and aircraft companies to overcome the crisis caused by the pandemic.

Small carriers that are not established in the market or serve only seasonal summer flights are in danger of extinction. Less crisis will affect government-backed companies or large airlines as they raise additional funds.

The International Air Transport Association (IATA) predicted that the financial losses would be very significant. At risk of layoffs of 25 million workers. CEO Alexander de Junyak predicts that airlines that have used the "free space" strategy will have to raise prices by 50% to operate with at least a minimum profit.

As for aircraft manufacturers, the situation is as follows:

1. Airbus plans to reduce aircraft production by a third, the company's share price has halved.
2. Boeing has abandoned an agreement to buy 80% of the Brazilian manufacturer Embraer, which will be prepared in 2018. The company also plans to cut 10% of its 160,000 staff.
3. Bombardier sent 2/3 of its employees on unpaid leave. The company's share price has tripled.
4. Embraer sued Boeing for the purchase of 80% of the Brazilian manufacturer. From January 2020 to April, the company's share price fell twice.

Regarding the situation in some countries:

1. USA: Donald Trump has signed a law to provide assistance to the economy in the amount of about 3 trillion dollars, of which 61 billion is intended for the aviation industry. Due to declining demand for air travel, the country's eight leading airlines have laid off about 100,000 workers and reduced the number of aircraft by 900.
2. United Arab Emirates: Authorities have suspended flights for some time.
3. Norway: The least restricted air service among all European countries.
4. People's Republic of China: China's air passenger traffic has decreased by almost 80%. Local low-cost carriers offer even lower ticket prices. This is not very critical for Chinese airlines, as some airlines receive government subsidies to serve the most popular destinations. The Chinese Civil Aviation Authority has decided that Chinese airlines can fly to each country once a week.

### 3. Activities of international airports in Ukraine in recent years

Beginning in 1999, the structure of enterprises in the airport industry of Ukraine began to change dramatically due to the introduction of the program of division of the state airline into separate - the airport and the airline. Today, most airports have an independent status.

According to the plan of the State Department of Air Transport of Ukraine, all buildings and structures, as well as most of the movable land property and equipment, were included in the airport infrastructure. Priority for distribution was given to airports, which led to losses for airlines and aggravation of relations between airlines and airports, as well as weakening of airlines, stratification of airports in terms of congestion and profitability.

The number of flights operated by airlines dropped significantly during the pandemic. For example, in 2020, Sky UP operated 8,745 flights, in 2019 - 12,198 flights, despite the fact that in 2019 there were 5 aircraft, and in 2020 - 11. In 2020, the number of passengers carried by UIA fell more than 4 times, the company's fleet includes 35 aircraft.

Boryspil International Airport served 5.16 million passengers, which is 66% less than in 2019. But against the background of a decrease in passenger flights, the airport recorded an increase in freight traffic.

Consider the passenger traffic of 3 international airports (IA) of Ukraine for 2009-2019: IA "Boryspil", IA "Lviv" them. Danylo Halytsky, IA "Dnipro".

From fig. 1. we see that the passenger traffic of IA "Boryspil" from 2009 to 2012 increased, from 2012 to 2014 slept, from 2015 to 2019 increased.

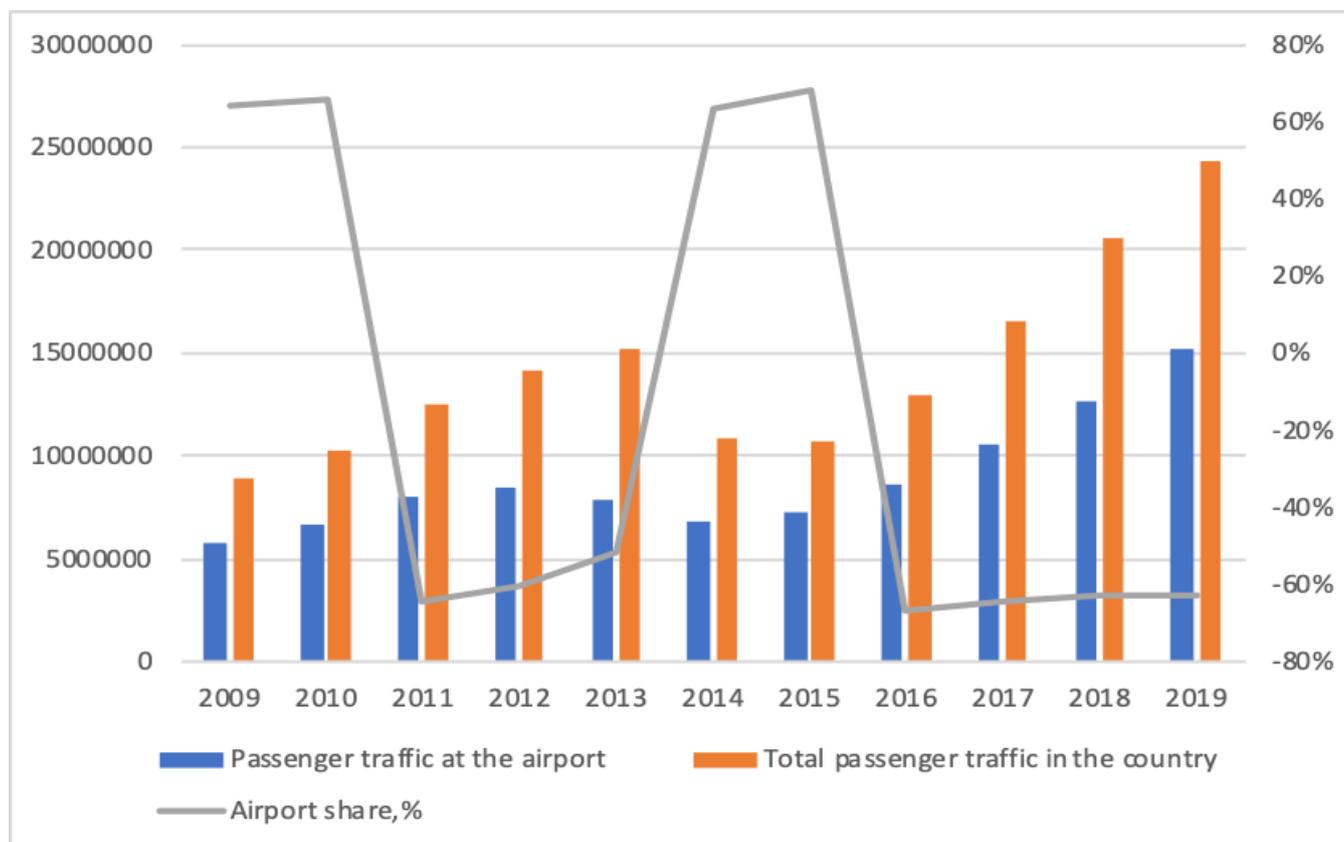


Figure 1. Passenger traffic of IA "Boryspil" from 2009 to 2019 [2]

From fig. 2. we see that the passenger traffic MA "Lviv" them. Danylo Halytsky grew from 2009 to 2010, slept from 2010 to 2011, grew from 2011 to 2013, slept from 2013 to 2015, grew from 2015 to 2019, slept in 2020.

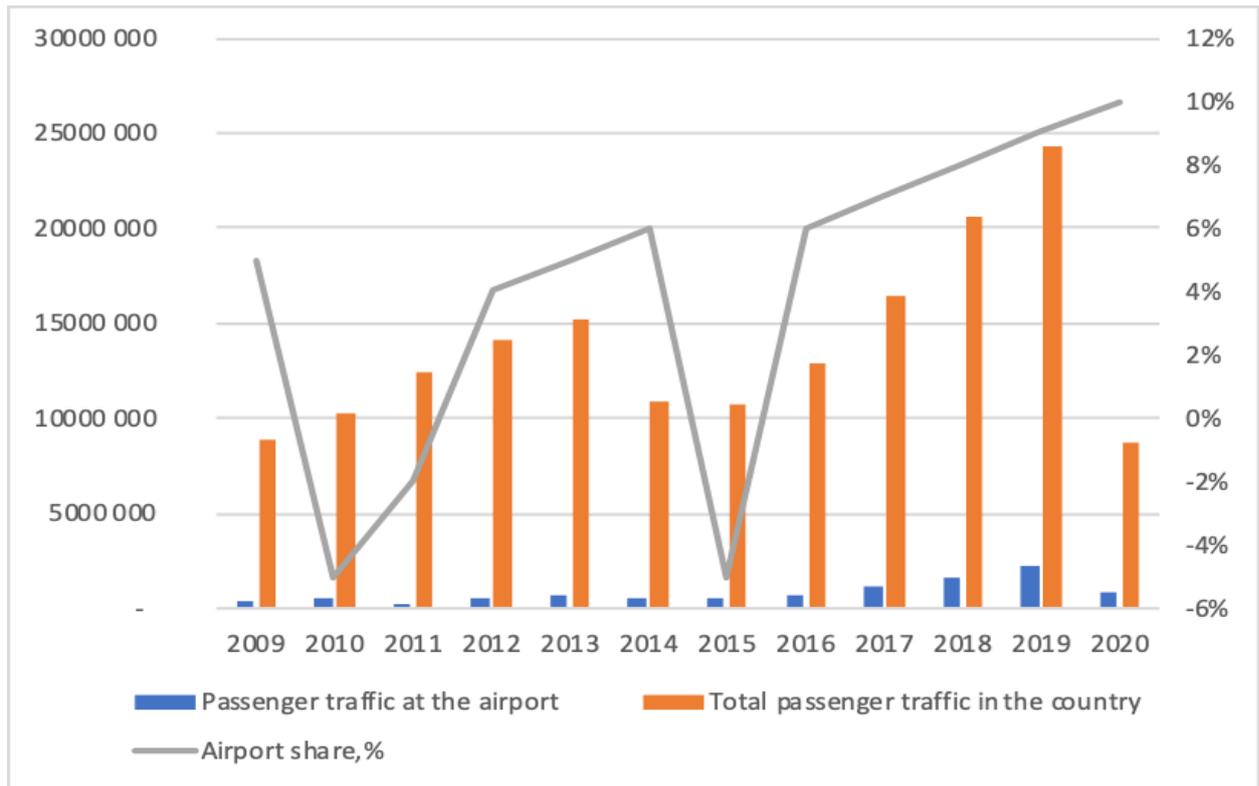


Figure 2. Passenger traffic MA "Lviv" them. Danylo Halytsky from 2009 to 2020 [1]

From fig. 3. we see that the passenger traffic of IA "Dnipro" from 2010 to 2013 increased, from 2013 to 2017 slept, from 2017 to 2019 increases.

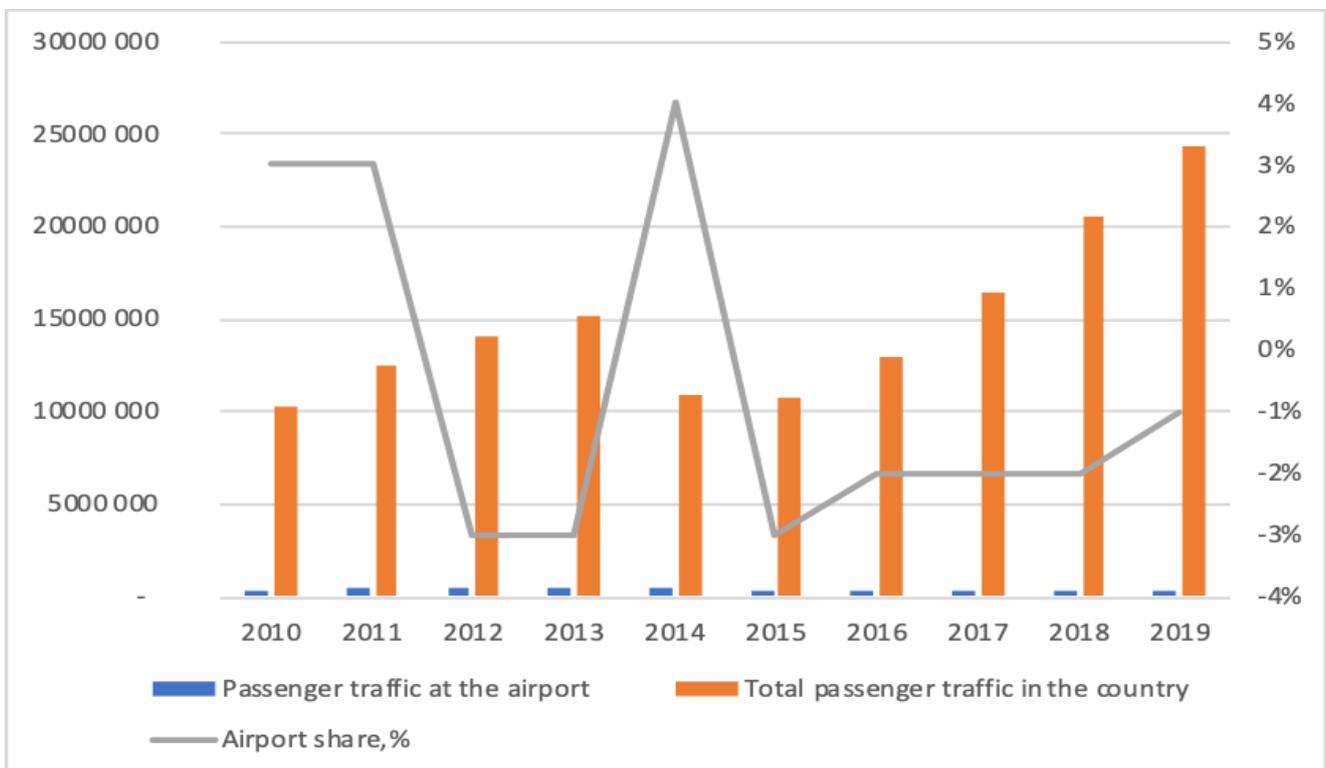


Figure 3. Passenger traffic MA "Dnipro" from 2010 to 2019 [3]

The decline in 2013-2014 at all international airports is due to the military conflict in eastern Ukraine, and in 2020 due to the global pandemic COVID-19.

#### 4. Development programs of international airports of Ukraine

The main airport of Ukraine, IA Boryspil, is actively involved in the development of domestic infrastructure. Today, the transfer zone is being created, the gallery is being expanded, and the parking lot near Terminal D is being completed. In May 2019, the Concept for the Development of Boryspil International Airport for the period up to 2045 was approved. According to the document, the purpose of the concept is:

1. Improving the level of flight safety and aviation security [6].
2. Increasing the level of passenger service.
3. Ensuring sustainable development of the Airport as an international hub.
4. Creating a favorable investment climate to ensure the development of airport infrastructure.
5. Overcoming growing competition from European airports.
6. Taking into account the possibility of servicing low-cost airlines in the coverage area.
7. Differentiation of passenger and cargo flows to and from the Airport.
8. Ensuring the possibility of building an underground railway track to the central terminal.

Regarding the main tasks for 2020-2021, among them are the following: reconstruction of the runway №2, improvement of Terminal D, development of a detailed plan of the airport, expansion of the transfer area for transfer passengers, reconstruction of the baggage claim area for domestic passengers.

Also in 2016, the State Target Program for the Development of Airports for the period up to 2023 was approved. The purpose of this program is to meet the needs of the state in ensuring the stable development of the aviation industry, bringing air transport infrastructure in line with international standards, ensuring Ukraine's transit status, taking into account its unique geographical location, improving the management of state property.

As a result of this Program, the following is envisaged [7]:

1. Reduction of time for ground maintenance of each aircraft to 35-40 minutes.
2. Doubling the transit potential of the main international aviation transport hub of the state.
3. Development of non-aviation activities of airports up to 40% of total revenues of airports.
4. Intensification of public-private partnership for maintenance and operation of airports and creation of a favorable investment climate for the development of the aviation industry.
4. Intensification of public-private partnership for maintenance and operation of airports and creation of a favorable investment climate for the development of the aviation industry.
5. Increasing the share of low-cost airlines.
6. Increasing the total passenger flow to the level of 24, 3 million passengers by 2023 [2].
7. Creation of at least 1000 additional jobs.
8. Doubling the capacity of airports, as well as bringing the level of service provision at airports in line with international standards.
4. Intensification of public-private partnership for maintenance and operation of airports and creation of a favorable investment climate for the development of the aviation industry.
5. Increasing the share of low-cost airlines.
6. Increasing the total passenger flow to the level of 24, 3 million passengers by 2023 [2].
7. Creation of at least 1000 additional jobs.
8. Doubling the capacity of airports, as well as bringing the level of service provision at airports in line with international standards.

Zaporizhzhya International Airport is an international airport that operates around the clock and uses two runways (ground and artificial). Created on October 15, 1943. The situation regarding the development of the airport changed in 2013, when the Zaporizhzhya

airport changed its form of ownership and was transferred to the ownership of the local community.

Since 2015, the airport has been cooperating with such carriers as: Turkish Airlines, Pegasus Airlines, Atlasglobal. In 2016, measures were developed to develop the airport and ensure its operation. The terminals were overhauled, the runway lighting equipment was reconstructed, and several units of necessary equipment were purchased. In 2017, contracts were signed with AndaAir and Bravo. In 2018, the company began working with one of the largest European carriers Polish Airlines LOT. And in 2020, the airport took the first flight from Budapest (direct). Also in 2020, a new terminal was opened to serve passengers. In the future, the airport plans to deepen cooperation with other global airlines and improve the airport's infrastructure.

Danylo Halytskyi Lviv International Airport is the largest international airport in Western Ukraine in terms of passenger traffic and route network. The airport serves the following airlines: Ukraine International Airlines, LOT, Azur Air Ukraine, Pegasus Airlines, Atlasjet Ukraine, Austrian Airlines, Turkish Airlines, Deutsche Lufthansa AG, Wind Rose, "Azerbaijan Airlines", "Belavia", "Dniproavia", "Motor Sich", "Bravo Airways", "Jan Air", "Ellinair", "Sprint Air SA".

The strengths of the SWOT analysis of the airport include:

1. Convenient slots.
2. Extensive work experience.
3. High quality of services.
4. The system of work is adjusted.
5. Modern passenger terminal with reserve capacity.
6. Availability of modern RESA software.
7. Tourist attractiveness of the city of Lviv.
8. Powerful recreational potential of the surrounding areas.
9. Possibility to accept wide-body aircraft (CAT - D) on the runway.

Features:

1. The open sky.
2. Growth of air mobility of passengers.
3. The potential for the development of air cargo.
4. Development of airlines in the business aviation segment.
5. Changes in the formation of policy in the field of air transport.
6. Announcement of the open sky with the United States of America.
7. Attracting new traditional and low-cost airlines.
8. Investments in the development of aviation and non-aviation activities and infrastructure.
9. Improving the sphere of tourist services in the region.

Weak sides:

1. A small number of air cargo.
2. Lack of a perfect procedure for regulatory regulation of air carriers' bases.
3. Seasonality of the airport.
4. Development of non-aviation activities.
5. Insufficient ground connection with regional centers of the service area.
6. Lack of basic low-cost airlines.
7. Excessive bandwidth for current demand.
8. Non-optimal organizational structure of the airport and number of staff.

Threats:

1. More dynamic development of competing airports.
2. Competition with other modes of transport.
3. Low purchasing power of citizens.
4. Social and political instability.
5. Polish airports with low-cost airlines.
6. Intensification of the armed conflict in eastern Ukraine.

In 2021, it is planned to install electric boilers to provide thermal energy to the airport for the heating season. In 2022, the replacement of external water supply networks with plastic polyethylene pipes.

Airport Dnipro International Airport is owned by Dniproavia, a member of the Privat group. It can serve up to 3,000 passengers daily.

In 2021, the name changed from "Dnipropetrovsk" to "Dnipro". About \$ 3 billion has been invested to address the airport's pressing issues. Today began a large-scale reconstruction, which involves the construction of a new terminal, runway, modernization of airfield infrastructure. Also, production processes are constantly being improved, continuous training and advanced training of staff is underway.

In 2021, it is planned to install electric boilers to provide thermal energy to the airport for the heating season. In 2022, the replacement of external water supply networks with plastic polyethylene pipes.

Airport Dnipro International Airport is owned by Dniproavia, a member of the Privat group. It can serve up to 3,000 passengers daily.

In 2021, the name changed from "Dnipropetrovsk" to "Dnipro". About \$ 3 billion has been invested to address the airport's pressing issues. Today began a large-scale reconstruction, which involves the construction of a new terminal, runway, modernization of airfield infrastructure. Also, production processes are constantly being improved, continuous training and advanced training of staff is underway.

## 5. Conclusions

The main feature of the airport is that, despite the need to make a profit, you need to remember to solve government problems for the development of transport infrastructure. Therefore, the state controls the operation and development of airports. This feature complicates the solution of commercial problems facing owners and managers.

The main feature of the airport is that it cannot change the type of activity, its location, limited in the ability to diversify production. This situation limits the range of strategies chosen and further raises the importance of the stage of implementation of the chosen strategy.

Today we are witnessing the processes of globalization and internationalization, which are deepening and expanding their borders. Airports play a significant role as they expand foreign cooperation. Unfortunately, today, due to the events of the COVID-19 pandemic, many airports have suffered losses and the number of passenger and cargo flows has decreased significantly.

The value of airports for each specific region of Ukraine is much higher than that of airlines. They act as commercial enterprises. Airports are also large investors in infrastructure, as they provide new jobs, provide tax revenues, investments, and initiate tourism. Airports without tourist orientation are the initiators of business or business trips.

## 6. References

1. IA "Lviv" named after Danylo Halytsky. URL: [https://uk.wikipedia.org/wiki/Міжнародний\\_аеропорт\\_«Львів»\\_і\\_мені\\_Данила\\_Галицького](https://uk.wikipedia.org/wiki/Міжнародний_аеропорт_«Львів»_і_мені_Данила_Галицького)
2. IA "Boryspil". URL: [https://uk.wikipedia.org/wiki/Міжнародний\\_аеропорт\\_«Бориспіль»](https://uk.wikipedia.org/wiki/Міжнародний_аеропорт_«Бориспіль»)
3. IA «Dnipro». URL: [https://uk.wikipedia.org/wiki/Міжнародний\\_аеропорт\\_«Дніпро»](https://uk.wikipedia.org/wiki/Міжнародний_аеропорт_«Дніпро»)
4. Panasiuk I.V. International air transportation market in the conditions of a pandemic shock // Scientific Journal "Almanac of Science", №1 (46) March 2021. P. 7-13.
5. Panasiuk I.V. Strategic development of the aviation industry of Ukraine in a competitive environment // Electronic professional scientific and practical journal "Market Infrastructure". 48 - 2020. P. 83-86 [http://www.market-infr.od.ua/journals/2020/48\\_2020\\_ukr/17.pdf](http://www.market-infr.od.ua/journals/2020/48_2020_ukr/17.pdf)
6. State target program for the development of airports until 2023. URL: <https://mtu.gov.ua/files/Державна%20цільова%20програма%20розвитку%20аеропортів%20до%202023%20року.pdf>
7. The concept of development of the international airport "Boryspil" for the period up to 2045. URL: <https://www.kmu.gov.ua/npas/pro-shvalennya-koncepciyi-rozvitku-mizhnarodnogo-aeroportu-borispil-na-period-do-2045-roku>
8. Zhavoronkova G., Miziuk S., Zhavoronkov V. Processes of Ukraine's integration into the common aviation area // TRANS & MOTAUTO WORD. 3/2020, P. 101-104.
9. Zhavoronkova G., Zhavoronkov V., Volvach N. Development of the market of aviation transportation in Ukraine: problems and prospects // TRANS & MOTAUTO WORD 3/2018, P. 116-120.