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## EFFICIENCY OF AVIATION TRANSPORT ENTERPRISES IN A PANDEMIC

*The article is investigated the consequences of the pandemic on air transport activities of Ukraine. The introduction of quarantine had significant negative consequences for the activities of transport market operators in Ukraine. The establishment of severe restrictive measures included complete cessation of passenger transport, which caused significant losses to various categories of operators: bus carriers; large corporations engaged in railway transportation (Ukrzaliznytsia) and air transport (UIA, SkyUp).*

*Quarantine has negatively affected rail cargo transportation, volume of which has decreased significantly in the first months of pandemic. The situation was even worse in the field of air cargo transportation: total ban on international flights has forced airlines to suspend operations. In general, during this period, the main problem for domestic transport services operators in Ukraine was the strategic uncertainty in the future and the constant changes in policy to ensure transportation in different countries. Under such conditions, transport companies were not able to respond and give clear answers to their customers inquiries. Operators were forced to return significant funds for booking unused tickets to customers; maintain aircraft fleets for an indefinite period, etc.*

*This situation has led to the cessation of travel planning by customers and the decline in operating performance of domestic transport operators (especially airlines) by almost 100%.*

*Since the next two years, according to experts, unfortunately, will not be able to overcome the coronavirus pandemic in the world, air transport companies, like everyone else, will have to adapt to the difficult situation of quarantine restrictions and reduced mobility of people around the world, reducing the volume of tourism and identify opportunities for the development of its activities in such conditions.*

**Key words:** *civil aviation, traffic volumes, airlines, pandemic COVID-19, ways (directions) out of the crisis.*

**Formulation of the problem.** The global situation related to COVID-19 and the restrictions imposed by countries to counter its spread have directly affected the world aviation industry, including Ukraine. World economy has undergone significant changes due to the spread of COVID-19 pandemic and the introduction of quarantine and restrictive measures to curb its spread. Such changes, according to experts, will inevitably lead to reorientation in consumption and use of own production facilities in many countries.

**Analysis of recent research and publications.** In 2020, there were many publications that determine the impact of coronavirus and security measures provoked by it (quarantine) on the world economy, oil prices, labor market trends, forecasts of the world economy as a whole and individual countries. Many authors point to detrimental effects of coronavirus pandemic on industries such as tourism, air transport and other industries.

In particular, domestic scientists N.O. Grisyuk, T.V. Sak predict an increase in transport costs, development of e-commerce and logistics, development of local production, maintaining the

trend towards remote staff work, reducing foreign travel, including business, which together will reduce demand for passenger transport services [1].

T.I. Efimenko in the article “Transformations of financial management and sustainable development of the national economy” characterizing reduction of Ukraine economy, the reason notes “mostly negative impact of quarantine restrictions due to the pandemic COVID-19” [2].

G.W. Kolodko considers the global consequences of pandemic on economies of both rich and poor countries, changes in exchange rates, possible social unrest and political sentiment in some countries and regions [3].

In 2020, many publications appeared on the impact of coronavirus pandemic and its means of overcoming the economic performance of air transport companies in Ukraine and the world in periodicals and on Internet, in the media, problematic and journalistic articles.

However, there are almost no publications on this topic in the scientific literature. But such external factor as the COVID-19 pandemic requires

comprehensive and thorough research, including the impact on economic activities of aviation companies.

**Formulation of article goals.** The main article goal is to assess the impact of coronavirus pandemic on transport activities of Ukrainian aviation enterprises and, based on the generalization of practical experience, offer recommendations for airlines development in the context of COVID-19 pandemic.

**Presenting main material.** Air transport accounts for a small share of GDP, but is closely linked to other sectors. Aviation sector is a key factor in many other economic activities. Air transport is a key factor for the lower sectors, as it allows for several economic activities through trade in goods and services.

Given the gradual public understanding that air transport is a tool for the dissemination of COVID-19, between March 2020 and May 2020, airlines began to implement a wide range of flights.

First, the suspension of flights had a uniform effect on the number of international and domestic flights. Probably May 2020 can be considered the

month with the fewest flights in recent aviation history. After that, many airlines began to reopen domestic flights – mainly due to initial success in the fight against the first wave of pandemic, as well as the beginning of summer (holiday) season in the Northern Hemisphere. At a very extreme level, this effect can be observed in China and Russia, where the share of active domestic flights reaches about 90% of the initial value (in January 2020). Similar observations can be made for Japan, which uses air travel to ensure movement between its islands. In fig. 2 compares the number of international and domestic air traffic from January 2020 to August 2020.

In the long run, the impact of COVID-19 on global air transport system looks deeper in the international market. This shift from international to domestic traffic poses challenges for airlines, especially in the use of aircraft, which can make the aircraft fleet a decisive factor in survival of airlines. Other notable examples of countries reactions are Germany and the United Kingdom, which have

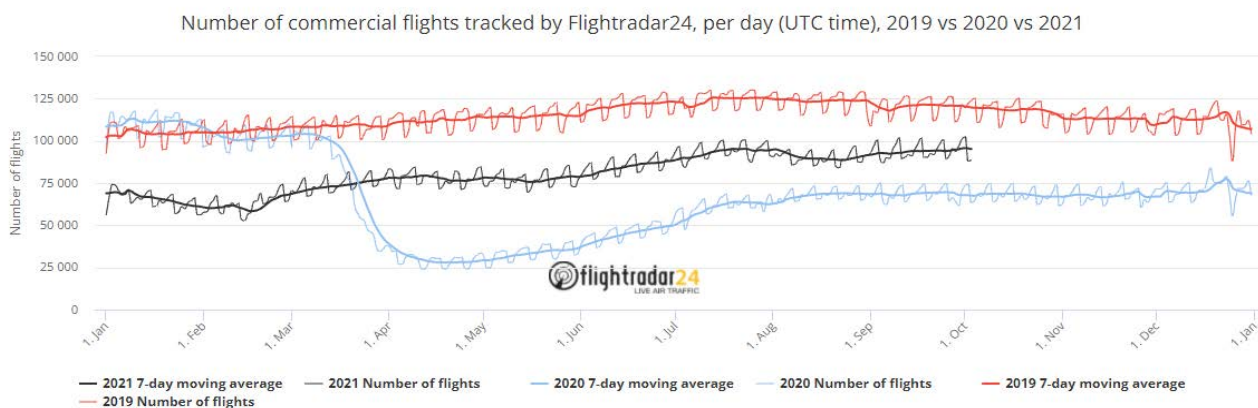


Fig. 1. Comparative analysis of the number of commercial flights in 2019, 2020 and 2021 [4]

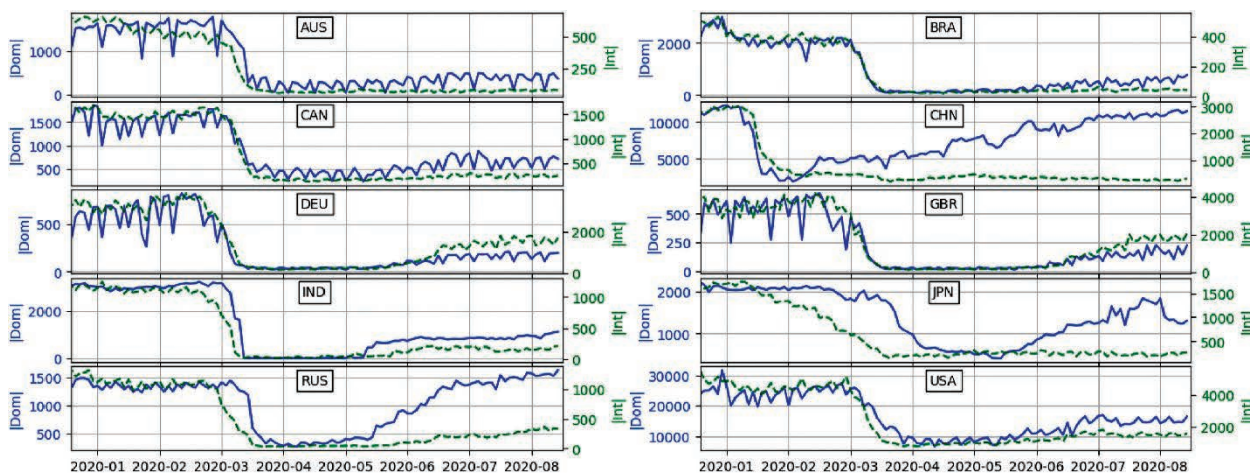


Fig. 2. Number of domestic and international flights for selected countries during the COVID-19 pandemic from January 2020 to August 2020 [5]

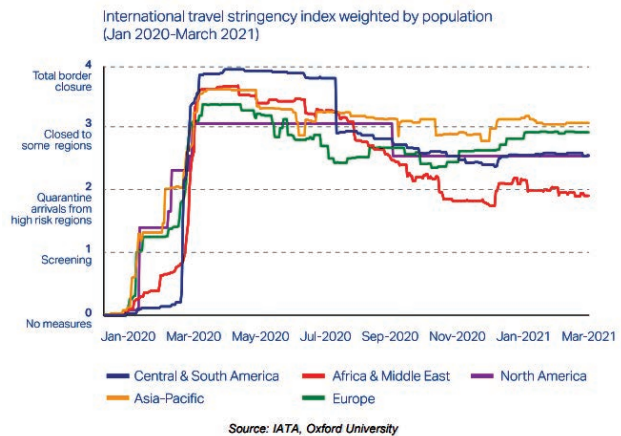
apparently introduced resumption of international flights through their flagship carriers Lufthansa and British Airways. In particular, freight flights have not been significantly affected, given the need to transport medical equipment and the ambition to maintain the exchange of critical goods across borders.



**Fig. 3. Air Canada passenger Boeing 777 convertible for cargo on the upper deck due to declining demand for passenger traffic during the COVID-19 pandemic**

COVID-19 has significantly affected the processes at airports: rules of social distancing combined with requirements of inspection have led to changes in passenger service. COVID-19 pandemic is causing drastic changes at airports, especially for operations that affect the safety and waiting times of passengers, leading to a conflict between safety and passenger comfort: in the presence of the virus, social distancing significantly affects airport capacity.

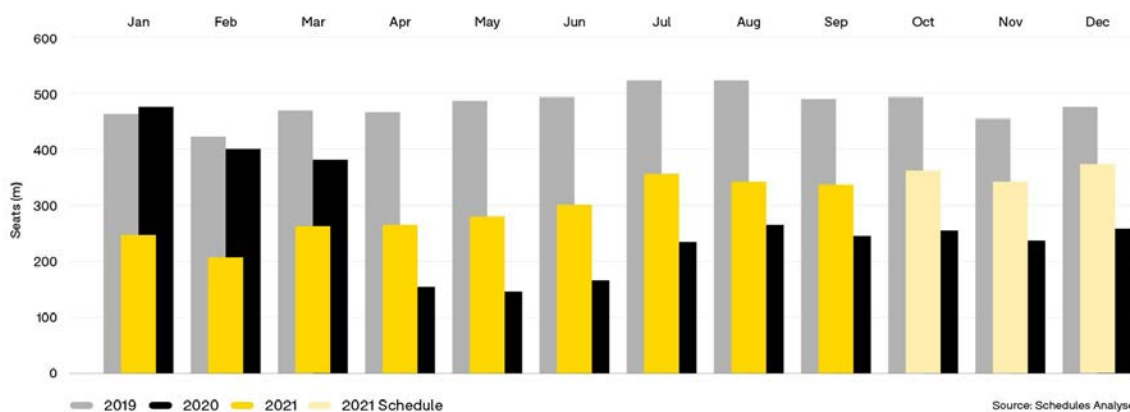
For example, researchers have found that waiting time for passengers at Taoyuan International Airport (Republic of China) is unacceptable once it exceeds 20 minutes. Ideally, airports should overcome current challenges to maintain passenger comfort and safety while keeping prices low.



**Fig. 4. Period of restrictions on passenger safety during the COVID-19 pandemic by region**

During COVID-19 pandemic, the issue of boarding passengers has changed dramatically: instead of finding a quick approach, consider the safest approach to seat all passengers without significantly increasing boarding time. In other words, how to change/use the position of seats and boarding the aircraft to minimize number of possible infections that occur during boarding/flight. In general, the International Air Transport Association (IATA) recommends keeping distance of 1–2 m between passengers at all times, trying to ensure social distance. It is difficult to maintain this distance with most seating methods; in fact, for the strict application of this rule, two rows must be left blank between each passenger. In addition, social distancing during seating requires not only a proper seating strategy, but also the readiness of passengers for social distancing, which may have a dominant impact on seating result.

Because airlines are for profit-making businesses, they make individual decisions about seating



**Fig. 5. Number of passenger seats in 2019, 2020 and 2021**

strategies, and these decisions are never driven solely by safety. Instead, profit-oriented airlines must compromise between economic performance and the impact of different health risks. For example, American Airlines announced the filling of all seats, as far as possible, which was not approved by epidemiologists and politicians. Accordingly, the seating strategies used during COVID-19 differ on most airlines. Examples of passenger seating strategies in some airlines are given in tab.1.

It is known that airlines have particularly high capital costs. For example, typical airline has the finances to cover only about two months of downtime, which apparently puts airlines at high risk due to COVID-19 pandemic. There are two main reasons for country to survive: maintaining key links and protecting millions of jobs in industries that are directly or indirectly affected.

Financial support of unprofitable enterprises of aviation complex through compensation of expenses is of great importance for preservation of aviation business and exit from crisis. Most governments around the world support air transport industry by establishing soft loans, providing non-repayable financial assistance, and introducing various benefits and preferences. The US government has allocated \$ 40 billion to support its airlines. European airlines also received financial assistance: Ryanair received a grant of 600 million pounds from the British government, “Air Europa” – 475 million euros from the Spanish government, “Lufthansa” – 9 billion euros from the German government, “Australian Air Lines” – 600 million euros from the Austrian. The total amount of financial support for air transport from governments of the world in 2020 amounted to 145,282 million euros, which allowed a number of airlines to avoid bankruptcy [6].

Table 1  
**Passenger seating strategies at some airlines during the COVID-19 pandemic [5]**

Airline	Procedure
Alaska Airlines	Empty middle seat
Delta Air Lines	Empty middle seat; from end to beginning in a row
Easyjet	By seat number
Go Air	From start to finish (seating through the door at the end of aircraft)
Hainan Airlines	At random
Southwest Airlines	In groups of 10 passengers
United Airlines	From end to beginning in a row; business class – the last
Wizzair	Empty middle seat

**World Scheduled Passenger Traffic by Airline Type, 2020**

Passenger Traffic	Traditional/Legacy Carriers		Low Cost Carriers		Leisure Carriers		Total	
	2020	% Change	2020	% Change	2020	% Change	2020	% Change
Passengers Carried (thousands)	1,200,555	-59.9	583,724	-60.3	22,784	-72.2	1,807,063	-60.2
Revenue Passenger-Kilometres (millions)	2,160,337	-66.6	757,176	-62.6	69,480	-73.3	2,986,993	-65.9
Available Seat-Kilometres (millions)	3,404,892	-57.1	1,090,678	-54.0	93,808	-68.6	4,589,378	-56.7
Passenger Load Factor	63.4%	-18.0	69.4%	-16.1	74.1%	-13.1	65.1%	-17.4
Revenue Tonne-Kilometres (millions)	431,298	-49.9	75,802	-62.3	6,974	-72.4	514,074	-52.7
Available Tonne-Kilometres (millions)	736,145	-41.8	117,463	-54.2	10,953	-68.1	864,561	-44.5
Weight Load Factor	58.6%	-9.4	64.5%	-13.8	63.7%	-9.9	59.5%	-10.4

Fig. 6. Statistics of scheduled passenger air transportation in 2020 by type of airline

**World Scheduled Passenger and Cargo Traffic, 2020**

World Scheduled Services	International		Domestic		Systemwide	
	2020	% Change	2020	% Change	2020	% Change
Passengers Carried (thousands)	476,043	-74.8	1,331,020	-49.8	1,807,063	-60.2
Cargo Tonnes Carried (thousands)	37,729	-10.4	19,801	-5.4	57,529	-8.7
Revenue Passenger-Kilometres (millions)	1,373,881	-75.5	1,613,112	-48.8	2,986,993	-65.9
Available Seat-Kilometres (millions)	2,167,755	-68.3	2,421,623	-35.8	4,589,378	-56.7
Passenger Load Factor	63.4%	-18.6	66.6%	-16.9	65.1%	-17.4
Cargo Tonne-Kilometres (millions)	197,407	-11.1	33,935	-0.8	231,342	-9.7
Available Cargo Tonne Kilometres (millions)	335,488	-22.4	94,528	-17.7	430,016	-21.4
Cargo Load Factor	58.8%	7.5	35.9%	6.1	53.8%	7.0
Revenue Tonne-Kilometres (millions)	330,715	-56.5	183,359	-43.9	514,074	-52.7
Available Tonne-Kilometres (millions)	545,045	-50.0	319,516	-31.6	864,561	-44.5
Weight Load Factor	60.7%	-9.1	57.4%	-12.6	59.5%	-10.4

Fig. 7. Statistics of scheduled passenger and cargo air transportation for 2020

Ukrainian government promises, but is in no hurry, to provide financial assistance to Ukrainian airlines. Grants and compensation for the costs of evacuation charter flights were promised, but so far these decisions have not been implemented. This is despite the fact that all Ukrainian airlines have worked at a loss.

**Conclusions.** According to the results of 2020, the civil aviation of Ukraine, as well as the world, was in a deep crisis due to the COVID-19 pandemic and its negative impact on airlines: direct bans on flights (lockdowns), negative impact of quarantine on effective demand of population, as well as the introduction of various restrictions on flights around the world and Ukraine.

State support is primarily provided to selected national airlines in each country, which have often benefited from COVID-19. Although this motivation seems reasonable for each country, given that aviation is considered a key strategic sector, combination of financial assistance leads to problems in the global context: size, distribution of different types of financial assistance raises concerns about competition between airlines, as this will have long-term implications for international air transport market in the future. In the days before COVID-19, airlines could receive

financial assistance from the private sector (banks or investors), but during COVID-19 pandemic, these private investors became extremely cautious due to the uncertainty of aviation economic future. Accordingly, grants offered by governments (direct wage subsidies, tax breaks, loans, etc.) may be the only option for airlines. But government intervention will create winners and losers among airlines, which will clearly change the “competitive landscape” for years to come and affect travelers and citizens.

The main tools for overcoming the crisis of Ukraine civil aviation are the following:

- to seek financial support for air transport from the country during COVID-19 pandemic;
- to improve the operational management of air transportation process by reforming structure of flights in the direction of increasing the volume of charter flights;
- pay more attention to air cargo transportation, which is practically not affected by COVID-19 pandemic;
- solve the problem of cost savings, but not by reducing the quality and safety of transportation;
- to increase the level of competitiveness of Ukraine air transport;
- integrate domestic and international flights.

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#### Волковська Г.Г., Жукова С.О. ЕФЕКТИВНІСТЬ ДІЯЛЬНОСТІ АВІАЦІЙНИХ ТРАНСПОРТНИХ ПІДПРИЄМСТВ В УМОВАХ ПАНДЕМІЇ

У статті досліджуються наслідки впливу пандемії на авіаційну транспортну діяльність України. Уведення карантину суттєво негативно вплинуло на діяльність операторів ринку транспортних послуг в Україні. Запровадження жорстких обмежувальних заходів включало повну зупинку пасажирського транспортного сполучення, що спричинило істотні збитки різним категоріям операторів: автобусним

перевізникам; великим корпораціям, які займаються залізничними перевезеннями («Укрзалізниця») та авіасполученням («МАУ», «SkyUp»).

Карантин негативно вплинув на залізничні вантажні перевезення, обсяги яких за перші місяці поширення пандемії суттєво зменшилися. Ще гірша ситуація спостерігалася у сфері авіаційних вантажних перевезень: повна заборона на здійснення міжнародних перельотів призвела до того, що авіакомпанії були вимушені зупинити свою роботу. Загалом у цей період для вітчизняних операторів ринку транспортних послуг в Україні головною проблемою стала стратегічна невизначеність у подальшій діяльності й постійні зміни в політиці щодо забезпечення транспортних перевезень у різних країнах світу. За таких умов транспортні компанії не мали можливості реагувати та давати чіткі відповіді на запити своїх клієнтів. Оператори змушені були повертати значні фінансові кошти за бронювання невикористаних квитків клієнтам; утримувати на невизначений термін парки літаків тощо.

Така ситуація призвела до припинення планування поїздок клієнтами й падіння операційних показників вітчизняних операторів транспортних перевезень (передусім авіакомпаній) майже на 100%.

Оскільки в найближчі два роки, на думку експертів, на жаль, не вдасться здолати пандемію коронавірусу у світі, підприємствам авіаційного транспорту, як і всім іншим, доведеться адаптуватися до непростой ситуації, що зумовлена впровадженням карантинних обмежень і зниженням мобільності населення різних країн світу, різким скороченням обсягів туристичної діяльності, і визначити можливості розвитку своєї діяльності в таких умовах.

**Ключові слова:** цивільна авіація, обсяги перевезень, авіакомпанії, пандемія COVID-19, шляхи (напрями) виходу з кризи.