CHAPTER 8

Post-Lockdown Flights: New Strategies for Civil Aircraft Manufacturers and Airlines

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Introduction

The history of the aviation industry demonstrates an exceptional example of how progressive innovative technologies have become fundamental to the success of the ever-developing economies of many powerful countries (Dierikx, 2008). The aviators who gave their names to the designed aircraft and aviation companies not only went down in history, but also created effective brands and a worthy reputation for their achievements. Aviation provides an opportunity to develop the country's image (Kobierecki, 2020; Raghuraman, 1997) and so can act as a tool of soft power in political issues (Bilkay & Yilmaz, 2017). Now there is international cooperation in the production of new passenger narrow-body and wide-body aircraft, because, despite the competition among the world's

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leading aircraft companies from the USA, the EU, Canada, Brazil, Russia, and China, any modern passenger airliner is in fact the product of interaction among engineers and suppliers from different countries who strive to make productive, high-quality, eco-friendly, and super-technological aircraft.

Aircraft are always distinguished by exceptional reliability and safety—this is not only a guarantee from the manufacturers, but a responsibility to the passengers. Thanks to the global innovative development of aviation, the production of different types of aircraft in terms of the number of passengers on board and the range of flights has evolved, so society has been able to fully feel the freedom and speed of airborne movement when making their business trips or traveling. However, in 2020, the world was faced with a cruel reality that has led to the suspension of flights around the world; of course, this has affected not only the unfulfilled plans of passengers, but also the operation of airlines and aircraft manufacturers.

The COVID-19 pandemic has been a global shock to the economy. The pandemic had a huge negative impact on the global aviation sector—various indicators of the scale of the decline in 2020 show how far the industry, which has 80 million jobs in the world, has been pushed back (Garrow & Lurkin, 2021). The number of passenger aircraft in overall fleet returned to its 2008 level at the end of 2020, and the number of passengers transported fell to the level of 2003 (CAPA Centre for Aviation, 2020). The aviation industry has also been severely affected and is in crisis: the end of 2020 has seen a 66% decline in demand compared to 2019 (de Juniac, 2020), which has led to losses of $118 billion, and airlines on average lost about 75% of their revenue from passenger transportation, although they increased revenue from cargo transportation by 36% (IATA, 2021). This development is good, because cargo transportation has become the basis for maintaining the functioning of certain supply chains in industry (Thies et al., 2021).

Global airlines experienced a shock from the suspension of flights: in 2020, traffic in Europe alone decreased by 71% (Dunn, 2021) and global passenger traffic amounted to only 1.8 billion people (ICAO, 2021a)—the last time the airlines carried so few passengers was in 2003. Revenue Passenger Kilometers (RPM) returned to the numbers of 1999, while the passenger load factor fell back to as was in 1993. Before the pandemic, tourism was the main driver of demand for passenger air travel, providing from 30 to 70% of passenger traffic depending on the season. Tourism and business travel have seriously declined due to the danger and will recover

slowly depending on the opening of borders and balancing consumer spending. Overall, airlines made 19 million flights in total—this is about the same as in 1999, and half what it was in 2019.

Such a fall was previously unthinkable. All this data tells us about the extremely difficult situation that has developed in the aviation and airline industry. During the development of aviation, despite some accidents and aircraft incidents, until 2020, global passenger traffic had fallen only three times in history: (a) with a decrease of 2.6% in 1991 due to the global recession; (b) with a decrease of 2.9% in 2001 after the September 11 attacks; (c) with a decrease of 1.0% in 2009 during the global financial crisis. Even then, passenger traffic has never fallen so rapidly as by 66%, and it is demand that determines revenue in the aviation industry (Drabas & Wu, 2020).

The only positive result of the suspension of flights in the pandemic was the reduction of CO_2 emissions into the atmosphere. This was an important task that airlines and aircraft manufacturers have been trying to solve for many years. However, no one imagined that it would happen in this way. Now, during the recovery period, it is important to understand how to maintain this course of reducing emissions while returning to the pre-crisis level of the number of flights and increasing the number of modern fuel-efficient aircraft.

Therefore, these theses indicate the critical impact of the pandemic on the aircraft industry and air transportation, and this requires the search for strategic solutions to support the activities of aircraft corporations and airlines until passenger traffic is restored to pre-pandemic values.

Methodology

The analysis of the current crisis situation in aviation was made on the basis of open aviation statistics posted on the Internet from The International Air Transport Association (IATA), International Civil Aviation Organization (ICAO), The Airline Group of the International Federation of Operations Research (AGIFORS), and the Federal Air Transport Agency at the Ministry of Transport of The Russian Federation. This allows us to significantly increase the validity and reliability of the study.

When systematizing the main strategic decisions to restore the activities of aircraft manufacturers and passenger traffic for airlines, the methods of strategic analysis were used, including an analysis of the external environment and the company's competitiveness, assessing risks and potential

threats in the spread of negative effects of a shock event (i.e., a pandemic). Taking into account the variability of the proposed actions on the part of different representatives of the aviation industry and the objective competition among airlines for the most popular air routes, a scenario analysis and modeling was conducted, considering the possible trajectories of a gradual increase in the number of flights as the borders are opened and vaccination is carried out around the world.

Results

It is difficult to predict with high accuracy what a return to the pre-crisis indicators will look like for the airline industry or to estimate the number of flights and the number of passengers—this process will take more than one year. Many countries have entered a third wave, international flights are closed again, and passenger demand has fallen. Nevertheless, even in this situation, there is a small increase in domestic flights—even though they can become a threat and further spread the disease. Airlines no longer plan their earnings and are ready for emergency refunds and ticket exchanges—this has become the "new normal" for them. The lack of confidence in the rapid recovery of demand has an impact on aircraft manufacturers, as airlines are no longer interested in updating the aircraft fleet, have losses, and may refuse to supply new aircraft. All this creates great challenges for the aviation industry and increases the need to design solutions to support airlines and aircraft manufacturers in this new environment.

The distribution of flights in 2020 shows the dilemma of the divergence between the international and domestic aviation markets of each country. Participants of the international aviation market have high hopes for the upcoming summer periods, due to the easing of certain restrictions in countries and the opening of the season in resorts, as well as vaccination. ICAO identifies two borderline recovery scenarios: (a) in the optimistic scenario, passenger numbers are expected to recover to 71% of the 2019 level by June 2021 (53% on international flights and 84% on domestic flights); (b) in the pessimistic scenario, only a 49% recovery is envisaged (26% on international flights and 66% on domestic flights) (ICAO, 2021b).

For example, the passenger traffic of Russian airlines in 2020 almost halved (to 69.2 million people), with international traffic falling dramatically by almost 75% (Federal Air Transport Agency, 2021); yet Russia was

the only domestic market that grew more in the summer of 2020 than even in the prosperous 2019 (Pearce, 2020). Now, it is possible to fly from Russia to about a couple of dozen countries (including the United Arab Emirates, the Maldives, Tanzania, and Greece). It is noteworthy that the USA, even from the very beginning of the pandemic, did not include Russia in the so-called black list (which, for example, included European countries and the United Kingdom); in the USA, Russians could—and still can—fly on tourist visas.

The Moscow air hub ranked fourth in the world in 2020 in terms of passenger traffic (Levinsky, 2021), surpassed by only three Asian "lions"—Shanghai, Bangkok, and Beijing—and overtaking the London air hub (consisting of six airports). The airports of the Moscow air hub—Sheremetyevo, Domodedovo, and Vnukovo—served a total of 48.6 million passengers. Although they lost 52% of passenger traffic (75% on international routes and 30% on domestic ones), these three airports were among the top ten busiest airports in Europe in 2020, including airports in Istanbul, Paris, London, Amsterdam, Frankfurt, Madrid, and Barcelona. Of course, Russia (as well as, for example, China) is pulling a more active recovery of flights within the country—in the absence of foreign resort programs, Russians have switched to domestic tourism.

This inflicted heavy losses on Aeroflot Group; with its main shareholder being the state, it is the largest airline in Russia. Nevertheless, as it specialized in international flights, the airline suspended 94 scheduled international flights and lost 60% of passenger traffic. The airline, which will be 100 years old in 2023, has a goal to reach 100 million passengers by its 100th anniversary and become one of the top ten airlines in the world. In the spring of 2020, however, the airline carried no more than 5 thousand passengers per day instead of 120 thousand, as was the case last year. The difficult situation, due to the pandemic, was the impetus for the development of the Strategy 30/30 (Aeroflot, 2020), which is focused on restoring flights as the borders open, increasing passenger traffic by 30% and reducing prices in economy class by 30%.

Meanwhile, domestic airlines Pobeda and Azimut completed the pandemic year 2020 with a profit. This was facilitated by a slight drop in passenger traffic—Pobeda has 12%, and Azimut has only 2%. The strategic decisions of these airlines were based on price adjustments, including the sale of tickets for domestic flights, as well as the receipt of state subsidies to support regional aviation and the operation of Russian-made aircraft. In general, the different levels of declines in the directions of flights served

to make the national carrier—Aeroflot—revise its development strategy to the Strategy 30/30. This will be facilitated by the reallocation of roles in the air transportation market and the diversification of the activities of three of the four companies of the airline group—Aeroflot, Rossiya, and Pobeda.

Aeroflot, as the parent company of the group, will continue to operate in the premium segment, but will focus on international flights, and plans to carry 35–40 million passengers a year by meeting the needs of Russians for foreign travel and transit of passengers from Southeast Asia to Europe and America through the largest international airport of the Moscow air hub, Sheremetyevo. The company's fleet will consist of long-haul and medium-haul aircraft exclusively of foreign production.

Pobeda is an airline discounter. At the beginning of the epidemic, it completely stopped flights, and in the summer of 2020, it returned to domestic flights. Therefore, it will be advisable for this airline to transfer to short- and medium-haul routes on domestic flights. To do this, Aeroflot plans to transfer all Boeing 737–800 aircraft and the rights to all its domestic flights, which will increase passenger traffic to 55–65 million passengers per year and reduce the cost of tickets in economy class by 30%.

Taking into account the territorial extent of Russia and the long distances across the country, it would be correct to form social programs on the basis of one airline. Thus, Rossiya will serve subsidized domestic flights, use only Russian planes, and carry up to 25 million passengers a year.

For other airlines, the development of niche segments—inter-regional and intra-regional transportation, transportation in hard-to-reach areas, special international flights (including tourist flights)—can be suggested as strategies for restoring activity. One of the best private Russian airlines, S7 Airlines, received a 30% reduction in traffic in 2020, but maintaining its basic strategy as a route network from the center of Siberia (the city of Novosibirsk) allowed domestic flights to ensure stability during the difficult period of lockdown.

It is difficult for airlines to keep their ticket prices due to losses and debts accumulated during the pandemic alongside the inflation of the main items of expenditure (fuel, airport maintenance, leasing payments, etc.). Therefore, an increase in ticket prices is favorable for airlines, but is not considered as a good strategic decision due to the obvious decline in

passenger traffic in the future. Therefore, the most popular flights, especially during the summer season, are expected to increase prices, which will allow airlines to gradually increase their income from the pandemic indicators.

Also, interesting options can be seen from the practice of airlines that refuse free food and drinks in economy class. This will reduce the current cost of implementing the flight.

In any case, these strategies will give new trajectories to overcome the consequences of the pandemic and the decline in passenger traffic, will enable keeping the employment of flight and engineering workers, and will still save income; after all, the crisis is not only a negative event, but is also a new opportunity. For Russians, domestic tourism as "staycation" format (stay+vacation) turned out to be very relevant.

The development of domestic tourism and the gradual reopening of international flights are being promoted by testing and vaccines—this could lead to a 50% increase in the total number of flights as early as 2021 (IATA, 2020). Future tourists are ready to be vaccinated for the sake of travel, and vaccinated citizens are vaccinated to travel without restrictions. Therefore, airlines are expected to increase the number of flights to sea resorts in the summer and to mountain resorts in the winter.

The Strategy 30/30 from Aeroflot Group is not merely ambitious, but also aims to increase the airline's capitalization. This is an important factor for obtaining private investment, in addition to significant financial assistance from the state. Already in February 2021, shares of global airlines rose by 20.9% due to optimistic data on vaccination, as well as investors' expectations of an increase in the number of flights during the summer tourist season. The largest growth is shown by the shares of American airlines (+29.1%) and European airlines (+21%) (IATA, 2021). The efforts of all representatives of the aviation market are aimed at restoring passenger traffic (including through the promotion of vaccination) and increasing their income, but the most expected result of these tasks should be considered an impulse to restore pre-crisis indicators in civil aviation for aircraft manufacturers, which also suffered from the pandemic.

Turning to the activities of the two world giants of the aircraft industry, then because of the pandemic, they also experienced negative consequences. Boeing received an absolute "anti-record" for 43 years: −60% of the figures for 2019 (Boeing, 2020). A total of 157 aircraft were delivered to customers in 2020—this is a quarter of the volume of its European

competitor, Airbus Corporation. Airbus, nevertheless, reduced deliveries in 2020 by a third, and only submitted 566 aircraft (Airbus, 2020).

It is obvious that the drop in supplies also affected other aircraft manufacturers. The history of the aviation industry in Russia is associated with the successes and innovative achievements of the Soviet Union's aviation, so the United Aircraft Corporation (UAK) was established in 2006. Despite the epidemiological situation, the UAK's enterprises did not stop their work. Modern IT solutions made it possible to quickly transfer employees of engineering and corporate centers to remote workplaces. Factories also did not stop: shift support for continuous production processes was organized, on which the implementation of aircraft production programs depends, strict control over the health of employees was introduced, and security measures were taken.

The UAK development strategy focuses on the implementation of projects for new Russian aircraft: the Sukhoi Superjet 100 short-haul airplane, the MC-21 medium-haul airplane, and the Russian-Chinese CR929 long-haul airplane (UAK, 2021).

The main project of Russian civil aviation has in recent years been the MC-21, a new generation narrow-body medium-haul airplane; now it continues the flight test program. Due to the pandemic, there was a short break, but work has already resumed. Currently, as part of the certification program for Russian and European standards, the MC-21 is undergoing a large complex of ground, flight, and bench tests. The airplane is equipped with new PD-14 engines and has the widest fuselage in the class with a wing made of polymer composite materials—only three aircraft in the world have this: Boeing 787 Dreamliner, Airbus 350 XWB, and Bombardier CSeries. The airplane is focused on the commercial niche, where the Boeing 737 and Airbus A320neo are already leading. The direct competitor of the Russian airplane is the Chinese Comac C919, which is more focused on domestic demand and is supported more by the Chinese government. For the Russian airplane, the most important task—which is being actively solved in the conditions of sanctions and during the pandemic—was import substitution and increasing the number of components from Russian suppliers with a sufficiently high level of international cooperation in the aircraft manufacture. Ideally, it is difficult to compete with Boeing and Airbus, but there is potential for competition in niche segments of aircraft.

For example, great prospects are associated with the regional airplane Sukhoi Superjet 100, which has sales around the world (Mexico, Thailand, Kazakhstan) in competition with Bombardier C Series and Embraer E-Jet in different configurations. Because of the pricing policy, Embraer's position has become very strong, and the promotion of the Superjet in foreign markets has some problems.

Nevertheless, due to the pandemic, new favorable prospects have opened up, which should be included in the strategies of the Russian aircraft manufacturer. This is due to the fact that many flights, which were flown by large aircraft from Airbus and Boeing, are carried out with a low load, and it is more cost-effective for airlines to fly small aircraft with 100-passenger capacity, which will provide 100% load of the liner. Therefore, the Strategy 30/30 from Aeroflot Group is quite appropriate due to the planned diversification of domestic flights.

UAK is a state-owned corporation, so the government is actively implementing a policy of supporting the aviation industry by subsidizing Russian airlines if they have domestic-made aircraft in their fleet. This makes it possible to ensure the functioning of production chains and employment, as well as to improve the image of the Russian civil aircraft industry in the world. Therefore, the state strategy is focused on stimulating the aircraft industry and the development of air transport as an economically affordable and convenient transport in the large country of Russia.

Conclusions and Recommendations

The presence of a national aircraft industry is an indicator of the country's development, a reason to be proud, and a great incentive for innovation and technology development. Therefore, even during the period of the strongest crisis in the history of world aviation with the almost complete shutdown of traffic on international routes in the spring of 2020, governments around the world made great efforts to financially support this industry and to preserve qualified personnel and production facilities. This allowed this industry to partially weather the negative impacts the crisis had on the financial results of airlines and aircraft manufacturers.

Now, the airline industry is gradually coming out of lockdown. High expectations for passenger traffic growth are associated with the introduction of vaccines and testing. Strategies for overcoming the crisis for aircraft manufacturers are associated with the possibilities of technological

improvement of aircraft and increasing their fuel efficiency, when assessing the demand of the aviation market for medium-capacity aircraft.

Airlines design strategies must take into account the opening of borders and the development of domestic tourism in their countries, while noting the limits of saving operating costs and the inevitability of increasing costs (regarding ensuring the safety of passengers and crew in all travel processes). It is obvious that the air transport market will also be strengthened by business jets, which create a steady demand for aircraft manufacturers and the potential for premium airline strategies. In general, the joint strategic efforts of the aviation industry and governments are aimed at ensuring that after the pandemic, passengers again enjoy the speed and convenience of flying and enjoy traveling around the world.

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