

A Conceptual Study on the Crises Affecting the Aviation Industry

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Abstract

The aviation industry is one of the fastest and most affected industries by the developments in the world. In the study, the historical events that shape the development of civil aviation in the world and in Turkey and the events that cause the sectoral characteristics of the industry to change and develop were examined. It has been concluded that the contribution of the aviation industry to the global economy is 4.3 times higher than other business lines worldwide. For this reason, the resistances and activities of various airports from around the world to the crises were researched and suggestions were presented. The motivation of this study has been to investigate the factors affecting the aviation industry, which has such a global importance, and the managerial decisions that have allowed the industry to survive until now.

1. Introduction

The most basic activity of a business is the activities carried out to meet the needs between the buyer and the seller. To better understand businesses, it is necessary to understand the concept of systems. A system can be defined as a whole set of subsystems that are combined to serve a common goal. Systems are divided into two as open and closed systems. While open systems are systems that are affected by economic, social, and similar factors in their environment, closed systems are not affected by the factors inside themselves and are not affected from the outside. With this definition, it is possible to say that the aviation industry is a completely open system. Many factors such as an economic crisis in the world, a political decision, the actions of a group of people, terrorist activities and epidemics can affect this industry. The input and output of each system that has the scope of aviation, when we look at the aviation system of the input of manpower, money, materials, energy substances, such as that of the output of the aviation system in a safe manner to move passengers and cargo from one place to another we see. According to this definition, the most basic activity carried out by airport operators is to provide safe and efficient air transportation (Sengur, 2018).

In addition to being an industry that is open to such an impact, aviation is also an industry with a very large area of influence. According to data from Air Transport Action Group (ATAG), the contribution of the aviation industry to the economy on a global basis is approximately 4.3 times that of other business lines in the world ("Facts and Figures", 2022).

The aviation sector is of great importance in terms of the development of the economy, tourism, cultural activities and trade of the countries. One of the industries that relies most heavily on aviation is tourism. By facilitating tourism, air transport helps generate economic growth and alleviate poverty. Currently, approximately 1.4 billion tourists are crossing borders every year, over half of whom travelled to their destinations by air ("Economic impacts", 2022). With the increase in airline companies and the increase in the number of flights in our country, the sector has developed further. Today, there are airports in many cities, and the aviation sector has started to be used more widely when early ticket purchases, promotions and prices are close to the prices of road transportation.

In this study, historical events that led to the definition of the aviation industry as it is today and various crises that caused the industry to be affected were examined. In the next parts of the study, the developments that shape the sector, the historical development of aviation, economic crises, crises that threaten security, epidemics, and the methods of various airports to cope with these crises are discussed. Examined crisis examples and airports' coping/inability to cope with them were also discussed and suggestions were made. The study has been prepared in the form of a compilation article for small or large airport operators and decision makers to get information about the size of the sector's sphere of influence.

2. Historical cases that shaped the aviation industry

In the aviation industry, which is quite open to environmental effects, political, economic, safety and health-related problems have led to great changes. Under this title, these events were examined and the factors affecting them, and the results of the events were examined.

2.1 Wars events

Air power has undoubtedly succeeded in becoming the focus of nations and armies as an important element of war towards the end of World War I. As a result of the experience gained in this war, the use of aviation, especially in the military sense, has become one of the most important issues for armies and nations. However, the use of aviation for military reconnaissance was first carried out by the Italians on October 23, 1911, on the Turkish defense lines, in the Battle of Tripoli. Reconnaissance flights, which were normally made with balloons, were replaced by an airplane for the first time in this history. In this reconnaissance activity, which was carried out for the first time from the air, reconnaissance was carried out with the cameras placed under the pilot's seat (Tekin, 2020). In the Tripoli War, which had many firsts in the field of aviation, events such as the distribution of the first leaflets for propaganda from the air and the first night flight took place. In the First World War, airplanes accompanied the balloons, which were used for reconnaissance purposes in wars. The war between 1914-1918 witnessed the full use of the aviation industry as a war advantage. The production of aircraft, which has become an increasingly important competitive advantage for the nations in wars, also parallels the dates of the mentioned wars. 1350 aircraft were manufactured in 1911, 1425 in 1912, and 1296 aircraft in 1913 (Yalcin, 2016). While the countries were following the current developments, the first military aircraft was included in the American army and other countries tried to adapt to it in line with their possibilities. Following the United States, France and England also started to develop in military aviation. As a result, in the First World War, countries could not show a great development in the aviation industry due to high costs and technical inadequacies (Yalcin, 2009).

Whereas in 1919, the year in which international civil aviation was born, only 1,025,000 miles was flown by civil aircraft throughout the world (except for China and Russia) and 3,500 revenue passengers were carried, some thirty years later, in 1950, the corresponding figures for scheduled services were 890,000,000 miles and 31,200,000 passengers (Wassenbergh, 1962). As with Aviation in World War I, military investment during World War II drove aviation forward in leaps and bounds (“World War II”, 2022). World War II, which is another war that will affect the fate of countries, took place between 1939-1945 and aviation once again played a key role. The aviation industry, which gained significant advantages in important wars such as the First World War and Tripoli, showed great progress especially after the World War II and made great contributions to its current development. After these wars, the most important technological developments that carried the aviation industry to another dimension and proved its power to the whole world were the Spitfire, which was designed for the World War II with its small, light and maneuverable features, jet engines that made the aircraft fly faster, and the widespread use of radar systems. In the period following the end of the Second World War, the world found itself in a new environment of

competition and tension between the Eastern and Western Dec headed by the Soviet Union and the United States. In the early stages of this struggle, known as the Cold War, heavy bombers played a critical role in the balance of nuclear horrors as the only type of platform that could deliver nuclear weapons to the target (Egeli, 2021). One of the most striking results of the wars that took place in the post-Cold War period is the Gulf War. In the Gulf War, which was carried out to drive Iraq out of Kuwait in 1991, the experiences gained from the previous wars were abundantly used. Some of the consequences of the Ukraine-Russia war, which is one of the current wars, are the inability to make flights due to the insecurity of Ukraine's airports and the heavy sanctions imposed on Russia in the field of aviation. Due to this situation, the citizens of both countries were seriously affected by air transportation and their travels were prevented (Karabuga et al., 2022).

2.2 Economic events

The concept of economic crisis is expressed in the form of unexpected problems in the economy that have a negative impact on the economy on a global and national scale (Aktan & Sen, 2001: 1226). The most common reason for the economic crises that occur due to various reasons affecting each other is the wrong economic policies. In addition to this reason, excessive borrowing, international capital movements, inflation, exchange rate policies, fiscal policies based on public expenditures are among the important causes of economic crises (Taner, 2012). In the history of the world economy, the years 1929-1933 are accepted as the period of great depression (recession). During this period, unemployment increased, and great misery was experienced (İmren, 1994). One of the biggest factors in the 1929 economic crisis was the First World War. As a result of the 1929 world economic crisis, millions of people lost their jobs, the national income of the countries decreased, the economies shrank, and mutual trade was interrupted to a great extent. As a result, international trade rapidly contracted, employment and living standards began to decline (Egilmez, 2009). As a result, international trade shrank rapidly, employment and living standards began to decline, production decreased, unemployment reached its peak, and many establishments were closed. Although the world economy had its best period after the Second World War until the early 1970s, the crisis that emerged as an oil shock at a time when the economic recession was thought to be history, has been the second biggest shock the world economy has faced since 1929 (Erim, 2012). After these two crises overcame, in the 1990s, global economic crises started to emerge again. With the phenomenon of globalization, capital movements have accelerated between countries. Intensive capital inflows into countries with a high return potential have led to the spread of the economic crisis experienced by any country and to the formation of widespread economic crises. After the global economic crises that occurred in the 19th century, these crises continued in the 20th century. Especially the forerunner of the last 2008 global crisis was the mortgage crisis that emerged in the USA. Mortgage crisis emerged in the USA when 10 million people gave back the houses they bought with loans to banks (Erim, 2012). This has led to the fact that many global airlines are no longer able to provide services in the flight sector as profitably as they used to; this is felt more deeply in the United States and Europe (Capital Magazine, “The World Aviation Sector is Shrinking”, 19-9, 2011, s. 19). One of the most important points that the crisis affected the aviation

industry is the costs arising from the exchange rate difference on a global scale. Especially in the aviation industry, where fuel costs are high, economic crises have widened the exchange rate difference on a global scale. One of the issues that the crisis significantly affected was the decrease in the number of airports of the countries, their closure or the decrease in the number of people working at these airports. Especially, many airports in Europe became unusable due to the damage, the decrease in the number of waiting and transferring aircraft, and the decrease in the number of preferred landings. This has led to a decrease in investments made or to be made in airports.

2.3 Health related events

From past to present, epidemic diseases (Ebola, SARS, COVID-19, etc.) have continued to have a global impact for a long time, and many lives and property have been lost with the spread of the epidemic all over the world (Yilmaz, 2021). Between the months of March-June, when the epidemic was most effective and there was not much information about the disease yet, there was a decrease of up to 90% in air traffic around the world compared to previous periods, and flights around the world came to a standstill (Hopanci, 2021). Ebola virus first caused two simultaneous outbreaks in 1976 in Nzara, Sudan, and Yambuku, Democratic Republic of Congo. During the Ebola Virus Disease outbreak, existing requirements concerning the transport of biological specimens and affected individuals were reinforced and States were requested to reduce landing, take off and overflight restrictions (“Icao”, 2022). In order to cope with this epidemic, In the response phase of two recent major public health events, ICAO has coordinated a transport working group that has made of a number of UN agencies and representatives of the transport sector, to quickly develop and issue public statements on risk, with a view to encouraging aircraft operators to continue services to affected regions and passengers and crew to continue flying. Another epidemic that affected the aviation industry for the first time in late February 2003; It is an outbreak of the SARS virus that has been reported to originate in Asia, North America, and Europe. History shows that SARS has been the most serious epidemic impacting traffic volumes in the recent period. Overall, in 2003, the loss of confidence and fears of global spread impacted both business and leisure travel to, from and within the region, resulting in Asia-Pacific airlines losing 8% of annual RPKs (Revenue Passenger Kilometers) and \$6 billion of revenues (“IATA”, 2022).

In the past, the airline industry has shown some resilience to many crises, including pandemics. Even after the SARS epidemic, monthly international passenger traffic returned to pre-crisis levels within 9 months. Finally, the name of the disease that causes the greatest effects globally and causes one of the biggest crises in the name of Aviation is COVID19, and COVID19 is a respiratory disease with a high infectiousness. First detected in December 2019, COVID19 disease has spread from the Wuhan province of China to the whole world and was declared a pandemic by the WHO on March 11, 2020. As a result, while the total number of flights (passenger + cargo) organized worldwide in 2019 was 42.1 million, it decreased to 27.6 million in 2020. The decrease in the number of flights is 34.4%. In Europe, which became the epicenter of the epidemic in March-April, the rate is 52.4% (Hopanci et al., 2021). In order to reduce and minimize the effects of the Coronavirus on the sector, some measures have been taken by airlines from time to time, and many of them are still being implemented.

As a result of making too many changes in the procedure in line with the measures, such as increasing the number of call center employees, minimizing contact by making catering arrangements, creating a seating arrangement according to the number of guests, performing mask control and other necessary procedures, and increasing the amount of cleaning to be done on the plane. Many long-term but temporary effects in the sector remain quite simple besides the economic effects (Helvacioğlu, 2021). Considering its economic effects, the last updated report published by ICAO in 2022 will be one of the most reliable sources to examine. According to this report, when the first two months of 2022 and the whole of 2019, the period when the coronavirus had not yet appeared, there was a decrease between 26% and 30% in the total number of passengers flying in the world. When the same comparison is made for 2021 and 2019, this rate is 49%; When it is done for 2020 and 2019, it is concluded that it is 60%. In addition, when 2019 and 2021 are compared in terms of financial returns, it is stated that there is a revenue decrease of approximately 324 billion dollars (ICAO, 2022).

In times of epidemics, the extremely limited circulatory action is an important obstacle primarily for people. However, the restriction of circulation hits the transportation sector the most, being one of the large-scale and dangerous barriers to trade. In the last period of the Covid-19 pandemic, the effects of this problem have been greatly felt. The civil aviation sector has also been one of the sectors at the center of this problem. The problems experienced by the sector have made it compulsory for all actors in the sector to enter into a process of change and transformation based on a strategic management approach model. Airline carriers have taken measures regarding the Covid-19 pandemic within the scope of flight crews, aircraft, and in-flight products. The flight crews were notified about the Covid-19 disease, its symptoms, and the rules to be followed in the aircraft. Healthcare workers returning from abroad were subjected to a health check, and they were directed to use personal protective equipment and hand disinfectants. (Mert, 2020)

3. Conclusion

Transportation, which is defined as the transportation of people, cargo and mail by some vehicles, is in a very broad framework in terms of not only the means of transportation, but also from where to where it is transported (Sengur, 2004). Air transportation is defined as the transportation of passengers, cargo, and mail by air vehicles for a commercial purpose. Civil aviation activities generally refer to all types of transportation by air, excluding military aviation activities. The limits of these activities are determined by the regulations made by the International Civil Aviation Organization-ICAO. Countries become members of ICAO and documents called Annex are published by ICAO to ensure the order of flight traffic between these countries. Civil aviation activities are as follows: commercial air transportation services, airport services, air navigation services, general aviation, training services, civil aviation manufacturing services and maintenance and repair services (“Introduction to General Aviation”, 2016). The range of airline companies is quite wide. In the aviation industry, some companies' fleets consist of hundreds of aircrafts, while others only have one aircraft. There are businesses that make hundreds of trips a day in the sector, and there are also those that make trips periodically. Thanks to the aviation sector, it is possible to reach cities,

countries and even continents (Mishkin, 1996: 25). In addition to passenger and freight transportation services, the airline industry also contributes significantly to economic growth and development. The aviation industry is a very important industry, and it affects the social lives of individuals and their relations with other countries both economically and politically (Taylor, 2009: 16). Although the aviation industry has an important place in terms of economy and politics, as well as environmental factors, it is seriously affected by epidemics and political and economic crises occurring throughout the world. The fact that Turkey is in a geographically central location and connects two continents plays an important role in the development of the transportation sector (Bakirci, 2012: 343).

Air transportation is one of the most used sectors among the transportation sectors. Especially nowadays, it is preferred much more than other means of transportation. The aviation sector has been in constant change from the past to the present and has developed more and more day by day. This development and change of the aviation industry has been very closely related to the economies of both our country and rival countries. Activities in the field of civil aviation in Turkey started in 1912. Although the sector has developed over the years, the real developments started after the Second World War. With the development and modernization of THY in the civil aviation sector, increasing the number of passengers by providing quality service, Turkey has had a significant share in the international market. This study deals with the historical development of the civil aviation sector and how the economic crises affect the aviation sector. Especially in recent years, with the increase in technological developments, the removal of international borders and the development of the economy, developments have also been seen in the aviation sector. The aviation industry makes significant contributions to the development of the world economy, the increase of trade, the development of tourism and cultural developments. The aviation sector was not affected much by the crises in the first place, and later, the sector was partially affected by the decline in tourism and economic reasons. After the crises in the aviation sector, bankruptcies were experienced and the credit ratings of the airlines were lowered. The decline in the credit rating has left the airlines in a difficult situation, and since it is a sector with high capital, some negative tables have been faced. There has been a decrease in profit rates.

Parallel to the world economy, the air transport industry experienced one of the biggest contractions in 2009 after the Second World War, following the 2008 global economic crisis. In addition to the global shrinkage in the industry, significant company bankruptcies and job losses have occurred. In the air transport industry, it was observed that the passenger load factor decreased due to the increase in the demand realized in 2008 below the expectations and the inability to adjust the capacity, operational loss and high net loss with the increase in fuel prices. In 2009, demand and supply contracted compared to the previous year, and although total revenues decreased, the air transport industry achieved a limited operational profit due to the decrease in fuel prices and operational costs, and thus expenses, but the year-end was closed with a net loss.

The air transport sector has made a significant progress in Turkey with liberalization policies since 2003. Although passenger, freight and aircraft traffic in Turkey continued to increase in parallel with the Middle East region during the global crisis, the rate of increase in these traffic indicators

decreased. In passenger traffic, international routes were more affected, and in cargo traffic, domestic routes shrank in 2008 and 2009. It is understood that the operating profit of the airline companies in Turkey decreased in 2008 compared to the previous year due to the increase in fuel and operational expenses. Despite the increase in passenger-freight demand and revenue in 2010 and 2011, with the rise in fuel prices, it was understood that the profitability figures followed an unstable course and the operating profit margin in Turkey remained below the global industry operating profit margin. It has been concluded that more effective management of fuel costs in the air transport sector in Turkey can contribute to increasing profitability (Karaer, 2015:119).

The fact that the COVID19 virus began to be effective around the world, and then the World Health Organization declared the COVID19 disease a pandemic, greatly affected the aviation industry. We have been faced with a crisis even bigger than the crisis experienced in the September 11 attacks, where the aviation industry was the focal point. The failure to contain the rapidly spreading epidemic brought the aviation industry to a standstill. Airlines lost 1.7 billion passengers and 6.1 million flights; however, not only airline companies but also airports and air navigation service providers were affected by this crisis. European aviation announced a net loss of 56.2 billion Euros in this period. The economic hardship caused 191,000 direct job losses. With the relative control of the pandemic with the summer months, countries have lifted their travel restrictions. As a result, an increase in flight traffic was observed and the rate of flight loss was reduced from 90% to 50% compared to 2019. After the summer season, there was a normal decrease in flights until the end of 2020, but stability could not be achieved. The magnitude of the impact of the epidemic on the aviation industry can also be understood from the planes remaining on the ground. By the end of 2020, 51% of the aircraft of European airline companies remained on the ground (ICAO, 2021).

The aviation industry has started to implement new strategies after the crises. Airlines have developed strategies to reduce their costs and increase their revenues in order to be less affected by the financial crisis periods. At the same time, they have always started to make a second plan in order to put it into action in possible crisis situations. They also aimed to benefit greatly from the development of technology. Apart from all these, they aimed to make new plans for aircraft purchase and flight networks for short and long terms. It is important to realize these goals in order to keep up with the globalizing world, to reach an important position in the sector and to be strong against its competitors. Despite all the negativities experienced after all the crises, the sector developed itself and continued to grow rapidly. The number of airports in domestic routes increased in a short time, and most importantly, the opening of Europe's largest airport in Istanbul in 2019 has made Turkey take very important steps towards becoming one of the world's most important countries in the aviation sector and will contribute significantly to the growth of the aviation sector in Turkey. foreseen. The air transport sector is a sector with high fixed costs, requiring large investments, and therefore, it is not flexible enough to respond to demand changes. The problem of capacity adjustment in the aviation sector affects income items more than expenditures due to the decrease in occupancy rates, and the decrease in demand shakes the income-expenditure balance of the enterprises, causing bankruptcies and job losses. If the data of aviation sector indicators such as passenger, freight, and

aircraft traffic fall below certain reference values during economic crisis periods that lead to recession and decrease in demand, government incentives to the air transport sector or tax and social security premium deferral and structuring until the normal situation is restored. It is considered that putting it on the agenda will reduce the negative effects of economic crises on the balance sheets of airline companies. For this reason, it is important for decision makers to implement new policies by considering the evaluations obtained from the analysis of the study while deciding on the strategies to be applied in times of crisis.

There are some indicators that will help predict economic crises earlier. These indicators are determined by reviewing the data on the financial sector and the real sector. The data obtained from these sectors helps to identify the weaknesses, so that solutions can be produced before reaching the crisis. These data are very important to see the weaknesses and they need to be evaluated. These data have a great contribution in making crisis predictions (Mauldin, 2011). What the crisis has made most clear as a policy for airlines is that the work on the way products is presented is becoming more obvious and the products are being presented in this way. The most important point in this regard is the “distinction” and “reduction to private” policies (Rigas Doganis, *The Airline Business*, 1st Edition, London, England: Routledge, 2005, s.45). On the other hand, for those who choose certain periods when purchasing tickets or who have a clear preference for ticket purchases, airline companies offer their tickets for sale in times of crisis, in a way and at prices that will meet their wishes. By this means, airline companies try to keep their customers within their structure even in times of crisis by creating a special process (Stephen, Shaw, *Airline Marketing and Management*, Hampshire, England: Ashgate Publishing Limited, 2007, p. 137). It is seen that the level of damage suffered by civil aviation, which is very important in terms of employment and economic growth for countries, due to the global pandemic, is higher than ever before when the effects of previous crises are examined. To reduce the effects of sectoral losses reaching up to 90%, governments in many countries have supported aviation enterprises in order to get out of this process that the sector has entered (Kaygin, 2021).

In future studies, focusing on the wrong policies and wrong investments implemented by airline companies in times of crisis, and examining the data sources of the sectors in detail may be important research areas on this subject.

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