

ECONOMIC IMPACT ON AVIATION SAFETY

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The article points out an influence of economics on the safety of the air transport. It includes a delimitation of the air transport as one of the branches of the national economy, division of the elements of the air transport infrastructure and confrontation of the influence of economics on the individual elements from the safety point of view. The article also includes an analysis of the new elements which main intent is to increase the safety of the air transport.

K e y w o r d s. economy, aviation, safety, accident, incident

1 INTRODUCTION

The main task of transportation is to satisfy the needs of traffic movement. The most attractive mode of transport is air transport, which is also characterized by its comfort, speed and safety. It is statistically proven that air travel is the safest mode of transport. Despite the statistics, a fear of flying, safety issues and the relatively high price compared with other modes of transport are the most discouraging of air travel. The aim of civil aviation is reducing prices for transportation and safety improvements. It is quite a difficult task, as confrontation of price and safety is more proportional. To ensure the functionality, efficiency and safety in aviation it must be used the highest quality materials and well trained, qualified and skilled personnel, which is reflected in highercosts and ultimately a high price.

Nowadays is a very hot topic world economic crisis, which largely affects also the air transport market. In order airline companies could survive in a highly competitive market they must continually look for ways to cut costs. The economic crisis also affects the potential travelers who are trying to save their money for bad times, which reduce purchasing power and demand for air travel. If a potential passenger is forced to use air transport, he looks especially at the price of transport, which plays a major role in choosing an airline. The crisis has set price of transport to the forefront at the expense of comfort and safety. Also, airline companies often reduce their costs in the wrong places and often at the expense of the safety of passengers and the flight itself.

2 ECONOMICS AND AVIATION SAFETY

Time spent traveling is time unused. People want to be transported quickly, cheaply, comfortably and above all safely. Aviation meets these requirements the most. Compared to other modes of transport it stands out for its speed, comfort and safety.

2.1 Aviation safety

Often debated and important issue is safety. Statistics certainly show that air transport is on the first place of all modes of transport in terms of aviation safety. But despite this fact there are many individuals who have a fear of flying and air travel is so unthinkable to them. This is mainly due to accidents and incidents have large consequences, and attracted considerable publicity. Air transport is constantly growing, improving. This creates new companies, new airlines and new technologies. But with an increasing number of operations and technology also increases the risk or probability of aviation accidents. The development of aviation from its inception has been accompanied by a large number of accidents, especially in terms of imperfections in aviation technologies. Protection of human life has become a top priority of designers because initially in most cases they also were the pilots of its own aircraft. Change occurred when the aircraft began to be used for commercial flights and in addition to the pilot on board were passengers or cargo, too. The most effective method is prevention and this is why it is devoted considerable attention in aviation. Important role in aviation safety played mainly technology development. In the early days of aviation pilots did not have so many systems available as today and they had to rely only on

their pilot ability and a few simple devices such as altimeter, fuel and air speed indicator.

2.2 Factors influencing the safety

Currently, the aviation technology at a very high level, so pilots can fly with huge aircraft for almost zero visibility. Nevertheless there still appear aviation accidents and incidents in the world. The causes can be divided in several respects, which undoubtedly include the human factor and its failure, technical problems and the impact of weather or other hazardous weather events. The largest number of air disasters in aviation history was caused by human factor, which causes 80% of aviation accidents or incidents. This group of causes of accidents are not only errors caused by the pilot, but also includes errors in air traffic management, design defects maintenance of aircraft or terrorism and hijacking. Terrorism can also be regarded as the human factor, resulting in damage to life and property in the field of aviation.

The technical factor as a cause of aviation accidents and incidents includes errors in construction of fuselage, maintenance errors, and also weakness of different types of materials. It also includes errors of communication equipment, radars, condition runway, runway lighting and the different systems that are required for the safe conduct of air transport. One of the last major factors affecting aviation safety is the impact of weather and hazardous natural phenomena. Especially dangerous are snow storm causing a rapid drop of temperatures and low visibility, thunderstorms with hail and electrical discharges, snow and ice, threatening the ability of the flight of aircraft, volcanic ash in volcanic activity, tropical cyclones, chemical and radioactive clouds and finally, the occurrence of birds in around airports, which can cause engine malfunction.

2.3 Economy in terms of safety

Air transport is a set of organizations, institutions, facilities and businesses that are trying to produce a profit. Achieving this gain largely depends from the economic situation of the country. The most advantageous for aviation business are developed countries. For its

international character is not aviation realized only in affluent countries, but this need of movement also feel people in developing countries. The group of those countries includes especially Africa, South America, the countries of Eastern Europe, and developing countries of Asia. Also in these countries operate a regional or international air carriers which are mostly at very low level. To its business are using older types of aircraft, old technology, poor quality materials, staff training are often insufficient, what lead to frequent accidents and incidents, which significantly damages the name of air safety.

Nowadays going to Africa two accidents per million flights. In Asia, it is an accident, in Europe and North America this indicator shows 0.3 and 0.28 accidents per million flights, while the world average value is 0.45. Air safety is strongly influenced by the recent events of years 2008 and 2009, when the financial crisis began to affect the individual economies. This was also driven by political instability in the world, which led to the demise of some airlines. Due to concerns over the crisis, it is began conserve in all economic fields ranging from households to government establishment. People are spending less and less money and deposit their saved money to banks for the event of worsening economic situation and the deepening crisis.

Due to crisis it is declining demand for air travel especially by private travelers, which include passenger for visiting, students, tourists, retirees, which is reducing the incomes of airlines. On the other hand, it also saves on the state ministries and departments, and air transport received less necessary funds. Therefore, the individual elements of air transport infrastructure are forced to conserve in order to have some profit and to maintain market position. This are mainly newly established, or for small companies in developing countries which do not have strong capital and can not compete with the big giants of the air transport market. There are a lot of ways of economizing. Often it is reducing the number of the key personnel, do not purchasing more modern techniques, insufficient number of required training, buying cheaper and inferior quality of fuel and spare parts for maintenance, reducing the level of the airport, and others. That's saving on the expense of safety, sharply increases the probability

of serious aircraft incident or even accident. The economic situation and economizing becomes a modern factor of air disaster.

3 ANALYSIS OF NEW FEATURES AND ALTERNATIVES TO IMPROVE AVIATION SAFETY

Currently it is common for people that they use air transport more often, mainly due to its speed, comfort and safety. The aim is to maximize the use of company's aircraft fleet, in order to aircraft were the most productive and the company could show a profit. Aircraft accident statistics indicate that the largest share of aviation accidents is human error. The most common is stress, fatigue, inattention, and especially pressure from leaders who expect their workers produce above-average performance in insufficient terms. Today, technology is a very high level and the aircraft is fully automated and capable of independently taking off, flying and landing. Therefore, all products and materials used in aviation would be subject of certification to ensure their authenticity.

Airlines should strive for maximum elimination of accidents and they should not to operate to the detriment of any risk of an accident even if it is economically advantageous for the company. Ultimately, it is an airline that suffered the greatest loss in case of accident. Despite the many regulations, technology maturity, and recommendations for the maximum effort to aviation safety, sometimes there is an accident. The investigation has to prevent that similar accidents can not be repeated.

3.1 Certification and regulations in aviation

Air transport is carried by aircraft, which has to be in comparison with other types of transportation at much higher levels. Therefore, the design and the whole aircraft systems should be subject of much stricter criteria than other vehicles. Individual components of the aircraft must be maximum quality and reliable, because economizing on the expense of cheaper and less quality parts is in this regard not paid. Certified aircraft parts are very expensive and companies that have significant financial problems often

reduce costs by buying cheaper parts that are less quality. Companies must realize that such risk is not only their business, but they also risking the lives of people. But there are still airlines in the world, which are economizing on the expense of safety in this way.

Successful companies all around the world base their work on the total quality management (TQM) and can thanks to quality for their success. Therefore, the airlines should focus on this TQM system and they should introduce quality in every sphere of their activities. If the company will use quality parts, quality fuel, quality aircraft fleet, high-quality service on board and will have a motivated and trained staff, it will grow an aviation safety, airline revenue, and interest of the service of the airline. The introduction of such a system will require some financial resources, but it is an investment in the future for carrier. The company will build its brand and obtain a favorable market position against competitors. In addition, it benefits not only themselves, but also increases the safety of air transport. Introduction of total quality management in air transport is economically better than to raise funds through cost reductions, often at the expense of safety.

At present, there are many regulations and standards introduced in aviation. Air travel and lifestyle has changed over the years and therefore it is need to update some regulations, some need to be simplified and some need to be tightened. Especially in the case of regulations that have effect on aviation security. The most common problems are problems in linguistic communication, lack of experience, unfamiliarity with the system and background and not least the failure of working practices and safety regulations. Accidents caused by insufficient training or qualifications could be eliminated by the flight schools and other institutions which train their future workers and put emphasis on aviation safety and to teach them that they have to do their work conscientiously, and do not underestimate anything.

For increasing safety is necessary for carriers and authorities to strictly control the performed work in order to prevent errors. Or it would be necessary to ensure that the inspection authorities regularly and often carry out checks of all airline companies and not only when it is too late.

Infringement of regulations and falsifying certifications must be strongly penalized and the issue of security must become the main priority for the airline companies and for each individual worker.

3.2 Structural safety features

Structure and all systems in the aircraft must be accurate enough in order to ensure the maximum safety and hassle-free of whole flight. To increase safety in aviation has many systems a backup solution that should be sufficient for safe landing of aircraft at the nearest airport. In the past, the accident of aircraft type McDonnell Douglas MD 83 has occurred, where the screw of horizontal stabilizer was damaged. He is still insufficient secured only by one nut. To increase the safety it would be good if at the end of the screw lift were placed 2 separate nuts, between which was a small gap. When the first nut will be weak and broken, the screw would have a second backup nut. It could prevent a possible dislocation of the screw lift, and perhaps it would suffice to make a successful emergency landing.

After a few aircraft accidents caused by a bomb on board began research aimed to design reinforced luggage containers which would protect the aircraft from being damaged by a bomb. In 1997, at Bruntingthorp in the UK was a decommissioned Boeing 747 undergone an interesting test. In the front of cargo area were placed two bombs and two in the rear cargo area. The aircraft had a pressurized fuselage to simulated conditions of an aircraft in flight. The bomb in the back of the aircraft was placed in the normal luggage container. Bombs in the front compartment were placed differently. One was placed in a special container made with reinforced material which is used in the manufacture of bulletproof vests. The second was in a normal container, but was placed behind the coating of reinforced absorbent material. When the bomb exploded, the front of the aircraft was practically undamaged. Where was reinforced container or absorbent coating, it did not puncture the fuselage. The rear of the aircraft, where there were no adjustment has been transferred was completely devastated. The reinforced container and protective coatings body absorb the power of an explosion.

Despite the positive results of this test were not reinforced containers and absorbent coverings placed in aviation.

These containers could improve aviation safety, but are extremely expensive and they are not used only for economic reasons. Would be people willing to pay for such safe plane slightly higher amount? Or would rather use the cheaper flight and the aircraft without absorbing coatings and container as yet? It would mainly depend on the economic situation of each individual passenger.

3.3 Improving safety in air traffic management

The work of air traffic control staff is very laborious. It requires high expertise and proficiency, peaceful and quiet nature and the maximum concentration. Furthermore, with continuing growth of air transport is the lack of managerial staff. Many workers are under pressure and on these responsible places are nominated poorly trained individuals. Dispatchers, who are responsible for the aircraft accident receive different high levels of penalties. But these high penalties may lead to situations in which people will not want to admit mistakes and errors and will not want to work for their removal. Instead, they will try to mask errors in some way in order to get rid of punishment. And this does not increase overall aviation safety, but conversely it can be much more revenged.

On the basis of the European Parliament it is preparing a program of the Single European Sky, whose main objective is to increase performance in the areas of aviation safety, flight capacity, cost efficiency, reduction of delays and implementation of common rules by the air traffic control. It is expected that the volume of air traffic will double by 2020. Under this program, the airspace over Europe will be divided into several blocks. These airspace blocks will be designed to achieve maximum capacity and efficiency of air traffic management network. Slovak Republic, Austria, Bosnia and Herzegovina, Croatia, Czech Republic, Hungary and Slovenia, will be the part of a functional airspace block in Central Europe. This system can be considered as a new element in aviation, which could increased the level of aviation safety and can partly tackle the problem of

shortage of dispatchers. The problem could occur in dividing the fees which are levied for flights over the area of individual states. Or the question of responsibility in the case of an accident in the territory of some state. In any case, this system of Single European Sky will be benefit for aviation in economic as well as safety view.

4 CONCLUSION

Experts from the air accident investigation say that no accident has only one reason. It is a string of unexpected events, accidents, mistakes and misunderstandings, which perfectly fit into each other which finally result in an accident. Human actor can be considered among the most influential reason of the accident. Nowadays the affect of economy and economizing may been considered as a modern factor of aviation accidents. It is a need to devote adequate attention to economic problems and constantly take care of aviation safety.

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