

Low-cost airlines traffic evolution in South-East Europe

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Abstract

Low-cost airlines take up an increasing share in the structure of the aviation market. Currently, there are more than 40 low-cost airlines operating in Europe and they generate 38 percent of total passenger traffic and 23 percent of total Instrumental Flight Rules (IFR) operations [1, 2, 3]. There are contrary opinions about the future of low-cost business model; from the scenario of survival of two or three biggest low-cost airlines in Europe, to the scenario of taking the role of primary operators in most European short and medium haul routes.

This paper elaborates business model of low-cost airlines and defines forecasting methods of growth of air transport with the aim of forecasting traffic share of low-cost airlines operations in South-East Europe.

Key words: low-cost airlines, forecasting, South-East Europe, market share

1. Introduction

There is no unified definition of low-cost airline (LCA); moreover, there is no single term that refers to such companies because they often use terms such as low-fare airlines, low-cost carriers and no-frill airlines. However, there exists a unique understanding and public perception what LCA is because it comes mainly from the features of utilized business model. Although the business models of the individual airlines may vary, there are many common characteristics, that can generate overall picture what low cost business model is and what low cost airlines represent.

Strategic planning of air transport development is closely related with the development of aviation market forecasts that will ensure better allocation of available resources. The forecasts must take to consideration two fundamental aspects of development: transport efficiency and economic growth which shows the level of gross domestic

product (GDP). Relationship of GDP to the criterion of traffic indicators is in range 1.5 to 2.5 – which means that eg. 3 percent of GDP growth suggests a possible growth of passenger traffic (passenger kilometres) from 4.5 to 7.5 percent [4].

2. Low cost airlines operating model

Low cost airline is airline company that offer transportation services at lower prices in exchange for the elimination of many services provided by traditional airlines. The concept originated from United States, after which in the early nineties of last century, spread through Europe and the rest of the world.

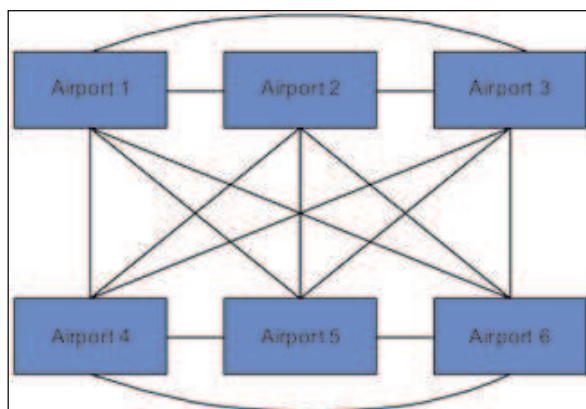
To the great expansion of low-cost airlines favours their exceptional adaptability to the market. Low-cost operators built their business model on the permanent elimination of unprofitable lines and introducing new ones.

Characteristics of low-cost airline concept [5, 6, 7]:

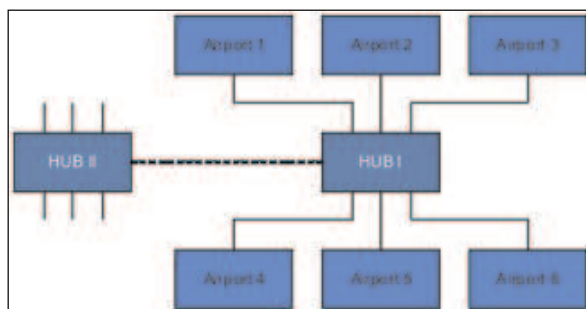
- focus on minimum costs and prices, and maximum efficiency
- commonly use secondary and regional airports
- point-to-point network
- single class in airplane
- direct services between regions
- short haul flights
- no free in-flight service
- single type of airplane in fleet
- younger and environmentally friendly fleet
- low operating costs.

One of major difference between traditional and low-cost airlines is choose of network route model. Low-cost airlines usually operate by point-to-point network model and traditional airlines use hub and spoke network model. The choice of network will have consequences for the physical

expansion of the network. Figure 1 describes the function of hub and spoke and point-to-point network model.



(a)



(b)

Figure 1. (a) Point-to-point network
(b) Hub and spoke network [8]

Airport pairs in Figure 1 (b) (1-2, 3-4, 5-6) are connected through a hub (hub I). It takes six air routes that will create the six direct links to the hub and fifteen indirect connections through the hub to other airports. In point-to-point network, theoretically, there are no indirect connections through the hub. To connect all the airports in point-to-point network, fifteen routes are needed - seven more than in the hub and spoke model. If, for example, we want to connect hub I to the hub II, which would be connected with six airports, the system of 78 airport pairs would be created. Different lines create a larger range of the network, picking up passengers at hubs and by that filling international and transcontinental flight that can fly with lower costs and greater frequency. Important disadvantages of hub and spoke networks are complex costs associated with the first network. These additional costs increases with a transfer of

passengers to another plane, which generates additional costs and reservation costs related to the transfer of luggage [9].

In order to offer lower prices and remain profitable at the same time, European low-cost airlines must have a significantly lower unit cost than traditional operators. From above-mentioned features of the concept of low-cost airlines, it is clear in what way they manage to achieve that.

Among the most important operational benefits by which LCA realize that much difference in cost compared to traditional companies are a greater density of seats (16 percent), greater utilization of aircraft (2 percent), low costs of flight and cabin staff (3 percent), usually a single model aircraft in the fleet and the outsourcing of maintenance (2 percent). Additionally they have 12 percent lower costs associated with the production/service features (minimum station costs and outsourced handling, no free catering, less passenger services). Because they do not use the services of agencies and Global Distribution System and have reduced sales/reservation costs, the distribution costs are reduced by additional 9 percent. To perform the same or similar scopes of work LCA have fewer administrative staff and offices which reduces operating costs by a further 3 percent. This ultimately results in a 49 percent lower cost per seat/kilometres, compared to traditional operators [10].

3. Forecasting methodology in air traffic

Air transport growth, development and demand forecasting is intended to provide necessary information's to create the basis for developing city and counties development plans that already have an airport or have a need for the development of the new one. On the basis of traffic growth forecast the development plans will define the space needs and requirements that are required for the airport infrastructure development.

For example, obtaining all necessary permits and approvals for the construction of a new passenger terminal at Zagreb airport lasted more than ten years, since booking space was not conducted in the physical plan of the city Velika Gorica [4].

An additional problem occurred with the necessary space to build a second runway, which is planned for the long term development. The situ-

ation that enabled the illegal construction of individual objects has occurred in space in which airport authorities should build a basic runway.

Airports represent complex infrastructure facilities that require high investments and hence it is necessary to take account of the planning documentation that should provide conditions for safe use of airport facilities and provide long-term capacity increase with the necessary supporting infrastructure.

Airports represent important component of transport infrastructure, which is a catalyst for regional economic development while contributing to better regional cooperation.

Infrastructure and transport facilities are in direct dependence with the growth and development of air transport in Europe and the changes that occur in the internal market.

Increasing the capacity of air traffic control and airports should be planned 15-25 years ahead.

Traffic growth requires increased capacity that must be sufficiently provided in advance to allow sufficient time for a decision for the construction or replacement of outdated technology, drafting tender documentation, implementation of tender, preparation of preliminary and detailed design and the construction of an airport.

The airlines are in a somewhat better position, because the need to increase capacity in a short time period can be satisfied by leased aircraft and cooperating companies. In order to anticipate future need to increase the individual capacity or for introduction of new technologies, traffic growth forecasts are essential.

In civil aviation in the development of aviation market forecasts, predominantly are used qualitative methods (expert assessment, research of the market, Delphi method), a projected time series method (exponential, linear trend) and causal methods.

For forecast to be more precise, it is necessary to develop the short, medium and long term forecasts.

For a clearer understanding of the short, medium and long-term forecasting methodology, an overview of forecasting methods is described in the following subchapters.

3.1. Short-term forecasts

Short-term forecasts are developed normally for a period of two years in advance. During this

period it is necessary to compare current data with a forecast data and if necessary to carry out the necessary corrections.

The short-term forecasting method is a combination of analyzing data from a number of other forecasts which play a major role in modelling time series. The final traffic impacts must be adapted with the airport capacity.

Short-term forecasting focuses on modelling of the time series movement of traffic on a monthly basis. The final result of short term forecasting is the number of flights per pair of zones or regions in one month: within Europe there are formed starting points for landing-zone (group of airports is often smaller than the State); outside of Europe a large region are formed (group of countries). Four separate factors are used for forecasting to obtain the final forecast (Figure 2):

1. The State-flow forecasting method is the historical method. This method has been used for many years in the development of short-term forecast. Forecasts are made individually for each country with the aim model a separate forecasts for several major transport routes - domestic, over flights, etc.,
2. Zone or region pairs forecasting method is based on modelling of time series (8,000 sets).
3. The schedule forecast method uses data from the published flight plans for the coming months and compares planned flight plans with actual flight.
4. Initial years used in medium-term forecasts are also used for modelling traffic in the future

After short-term forecasting, the combined results of previous modelling are applied to airport capacity in a way to use the same methods used in the medium to long term forecasting. Over-flights are calculated in a way to use data obtained from the medium-term forecasts and yearly number of flights that were used in the medium-term forecasts.

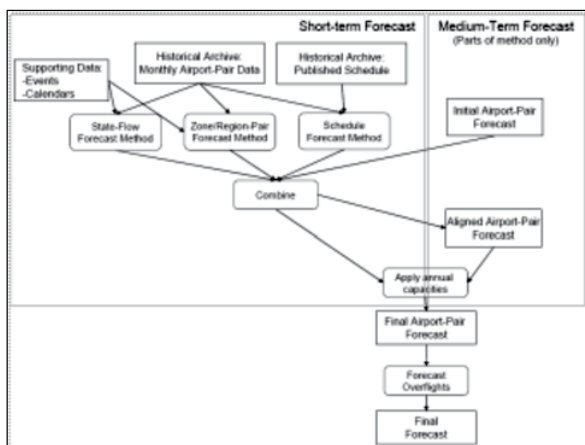


Figure 2. Summary of short/medium-term forecasting method [11]

3.2. Medium-term forecast

Medium-term forecasts are made for the period of 7 to 10 years.

Medium-term forecasts take into account traffic statistics, economic growth, development and impact of other transport modes, industrial production growth and cost growth, the capacity of airports and air carriers that service the region or the country, the number and impact of low-cost carriers, the development of network destinations, a load factor, fleet composition, demographic changes, the impact of tourism, city pairs and the frequency of flights between city pairs.

When making consideration of the dynamics of transport activity it is necessary to take into account traffic growth in neighbouring and competing airports or countries. For the medium-term forecast two to three scenarios are developed, that are determined by the growth of pre-defined parameters.

Medium-term forecast is a combination of short-term and medium-term forecast modelling (Fig. 2). The data to be analyzed in short-term forecasts are based on monitoring of recent trends in traffic. Medium-term forecast except using data from short-term forecast includes a broader range of economic and industrial development potential [12].

3.3. Long-term forecast

Long-term forecasts are typically made for a period of 15 to 30 years but usually used for a period of 20 years. They are based on possible

scenarios in which direction the air transport will develop in the long run. Typically, three to four scenarios are developed that depend on predetermined parameters.

Long-term forecasts, as well as the medium-term forecasts give the view of the future flow of air traffic. This two abovementioned forecast methods are using models of economic and industrial sectors growth that are resulting in increase in air traffic between pairs of smaller airports and future traffic flows.

When creating long-term forecasts the latest data obtained with the medium-term forecast are included where the last year used in medium-term forecast is used as a base year for long-term forecast. This has a negative implication for the development of long-term forecasts which does not include all events that could occur during the period from the present until the last year of medium-term forecast.

Figure 3 describes an overview of long-term forecasting model and a series of sub-models that are used for passenger and freight traffic, military transport, business aviation and airport pairs connectivity forecasting. Finally, all these data are included in traffic growth forecasting.

As passenger traffic has the highest percentage in the number of IFR flights (about 85 percent in 2010.) sub-model that analyzes the passenger traffic is described in detail. Passenger traffic long term forecast is focused on five main factors:

- The global economy factor represents key events in the economic market that are directly related to the air traffic demand.
- Factors that characterize the passengers and their travel plans (changing patterns in the traffic demand and choice of travel destinations).
- Airline fares that cover the operating costs of an airline (affect passenger decision on which mode of transport to make the trip).
- A large number of hub-and-spoke or point-to-point networks can change the number of connections and flights arriving/departing from/to the origin/destination.
- The air traffic market structure describes the size of aircraft that are used to meet the traffic demand and to adjust the number of flights.

Modelling of freight and military traffic, business aviation and pairs of smaller airports are done by smaller and more sophisticated models based on historical data that are sometimes correlated with trends in the economic market. Forecasting of the takeoff and landing is limited with airport capacity.

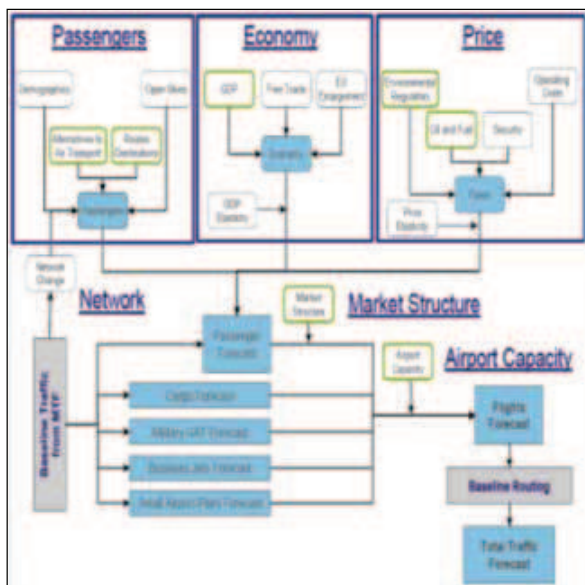


Figure 3. Overview of long-term forecasting method [13]

4. Market share growth of low cost airlines in South-east Europe

Air traffic in South-East Europe is growing rapidly from a low base, as a shadow of a series of armed conflicts and economic turbulences of the past decades. Traffic growth in South-eastern Europe can be described by two main characteristics. First characteristic is that the main drivers of passenger traffic in the region are tourism and the migrant communities. Second characteristic is that much of passenger traffic between the EU and South Eastern Europe is land based. Air transport in the SEE is driven by GDP growth and exponential relationship between per capita income and tendency to fly [14]. The EUROCONTROL medium term report (which includes over-flight traffic) assumes an average annual 4 percent growth for the selected countries between 2010 and 2017, while base case scenario for EU 27 predicts 2.7 percent annually. The main drivers for air transport demand in SEE region are tourists (mostly EU nationals) and large migrant community (mostly based in EU).

When comparing the traffic demand in 2010, in EU 27 there has been 8,805,000 IFR movements while traffic demand in SEE region was around 1,705,000 IFR movements. The 2010 highest share in market segment in EU 27 was of traditional scheduled flights with 57.12 percent. The second highest market share segment with 22.83 percent was the low-cost segment.

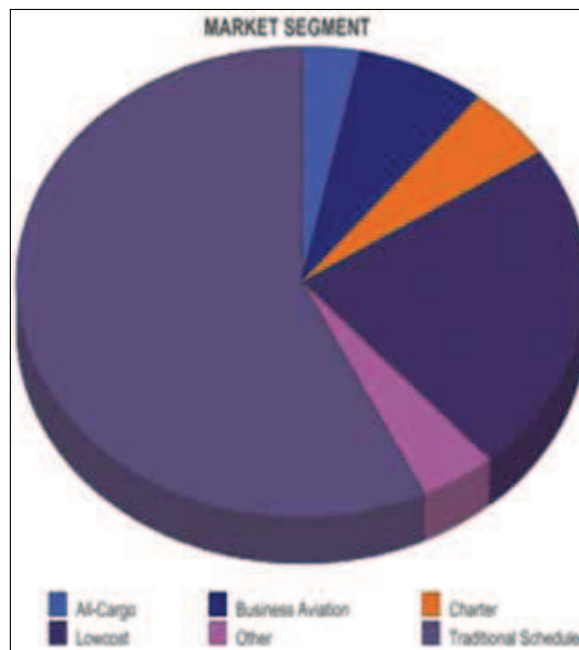


Figure 4. EU27 air transport market segmentation 2010 [3]

The figure 5 describes the market share traffic evolution of IFR movements between 2005 and 2010. It is obvious that the LCA market share is increasing while market share of other airlines is decreasing.

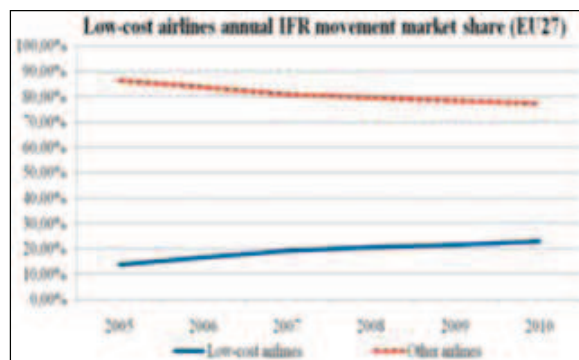


Figure 5. IFR movement's evolution 2005-2010

When making comparison between IFR movements and passenger market share of low-cost

airlines and other airlines it is evident that the passenger market share of low-cost airlines is increasing with higher growth rate than the growth of low cost airlines IFR movements (Figure 6.). This is because the average load factor of low cost airlines in Europe is 80 percent, while the average load factor of traditional airlines is 70 percent



Figure 6. Passenger traffic evolution 2005-2010

In Europe low cost airlines market is representing significant share in overall air transport market share. Low cost airlines IFR flight movements' market share in 2010 was presented with 23 percent while LCA passenger market share was around 38 percent [3]. Analyzing the market share in South-East Europe countries it has to be noted that each country has its own market share distribution. As an example, 2010 air traffic market share distribution in Croatia is presented in the Figure 7.

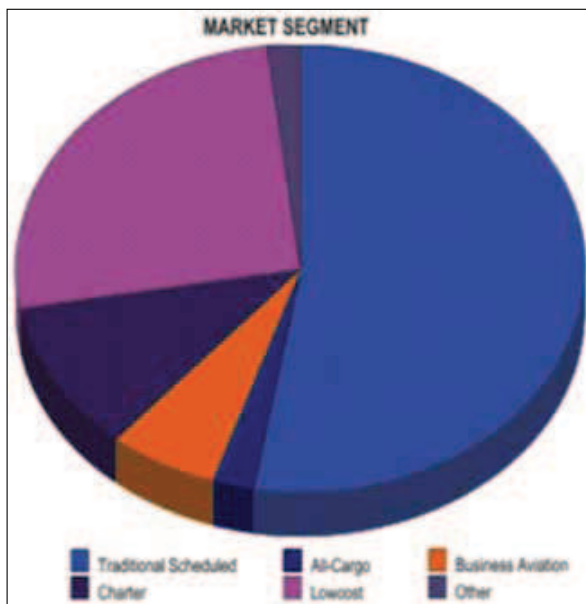


Figure 7. Air transport market segmentation in Croatia [3]

There is slight difference in the low-cost market share between EU 27 and SEE region. From the Table 1 it is apparent that the low cost IFR movements' market share in 2010 is higher in countries of SEE region than in the EU27. Statistical data used for this analysis regarding Serbia and Montenegro is combined because the Serbian service provider is providing services in Montenegro airspace, and thus IFR movements are summarised together.

Table 1. LCA Market share 2010

Country	LCA Market share 2010
Bosnia & Herzegovina	26,33%
Croatia	26,14%
FYROM	26,54%
Serbia and Montenegro	25,74%
Slovenia	24,53%
EU27	22,83%

There is significant difference in the number of low cost airlines operating in the countries of SEE region. Croatia has the most representative number of low cost airlines, as a result of their tourist orientation (Figure 8) [15].

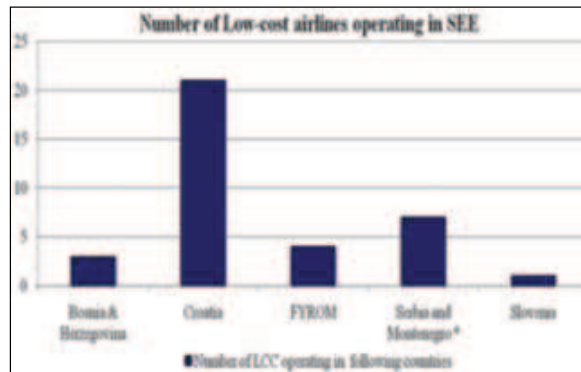


Figure 8. Number of low-cost airlines operating in SEE

The figure below sets out the yearly low cost airline traffic market share in SEE countries and in EU27. The average low cost airlines market share yearly growth between 2005 and 2010 in EU 27 has been around 1.8 percent, while in the SEE countries was around 3.4 percent.



Figure 9. Low-cost airlines IFR movements traffic share evolution 2005-2010

According to the EUROCONTROL med-term forecast the most significant growth rate of low-cost airlines market share in the SEE region will be in Serbia and Montenegro and Croatia. Reason for this forecast mainly lies in the Serbia and Montenegro opening procedures for joining EU and Croatia joining EU in 2013 and because of the tourist orientation of all three countries.

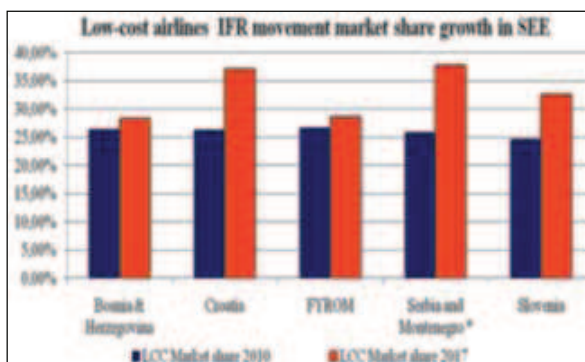


Figure 10. Low-cost airlines IFR movements' traffic share evolution 2010-2017

5. Conclusion

Low-cost airlines are more and more represented in the European air transport market, taking every year bigger "piece of the cake" from traditional airlines market share. There is a difference on average of 10 percent in the market share between passenger market share and IFR movement's market share between low-cost airlines and traditional airlines, which is a result of low-cost airlines higher load factor.

The South-East Europe is experiencing higher growth of low-cost airlines market share, mainly

because of the stabilisation of the political and socio-economic situation in the region and because of the high tourist potential of the region. In next five to seven years low-cost airlines market share in South-east Europe will reach more than 1/3rd of the overall air transport market share.

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