OPTIMIZATION OF OPERATING COSTS OF AIRLINE

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This article provides a survey of the operating costs of full service carriers and their standardized distribution. It offers analysis of the operating costs of selected airlines, namely companies Alaska Airlines, Malaysia Airlines and Transaero as well.

K e y w o r d s: Full service carrier, optimization, operating costs, SWOT analysis, Transaero

1 INTRODUCTION

Information about operating costs belongs to strategic data of national airlines, and also in the world. They are divided into standardized categories which have enormous importance in planning activities and mutual comparison of airlines.[1]

Airlines protect information about these costs and they are available public only in a limited degree as economic results in current year, which are published in their annual reports. Detailed operating costs of airlines Alaska Airlines[2], Malaysia Airlines[3] and Transaero[4] were subjected to an analysis in an article.

According to the analysis of the annual report, Transaero for year 2011, a proposal of optimalisation areas of operating costs was provided, which helps to decrease and rejuvenate the costs and so to increase the profit of these companies.[5]

2 STANDARDIZED CATEGORIES OF AIRLINES´ COSTS

Existence of the standardized categories of the costs has an enormous importance in planning activities of airlines. We divide the costs into 2 groups:

- direct and indirect operating costs;
- direct variable costs, partially variable costs and costs for certain output level, so final fixed costs.

Direct operating costs include those which directly relate with a type of airplane. We can characterize them according to the following categories: fuel costs, wages and the costs of salaries of pilots and cabin crew, navigation and route charges, maintenance of aircrafts, depreciation of aircrafts and aircraft operating lease payments, hire of aircraft, aircraft insurance.

Indirect costs are costs on activities which aren´t connected with direct aircraft operation; however, they support separate transport operation of airlines. They provide activities such as services for passenger, manipulation with goods and transportation sales and they are dependent on running of the business. They include: station costs, handling, services for passengers, distribution and sale, provisions, propagation and advertisement costs, structural or overhead costs, other costs.

3 ANALYSIS OF OPERATING COSTS OF SELECTED CLASSIC AIRLINES

Alaska Airlines is a classic airline established in Seattle. It is the seventh biggest airline in United States and provides flights to 97 destinations in United States, Canada and Mexico.

Table 1. Operating costs of Alaska Airlines

ALASKA AIRLINES	2010 in thousands €	2011 in thousands €
Direct Operation Cost		
Salaries of pilots and cabin staff	576 686	585 337
The cost of aviation fuel	660 483	951 392
Airport charges	170 674	174 633
Maintenance and repair of aircraft	158 724	150 733
Depreciation of aircraft	168 988	181 011
Payments and Insurance Aircraft	101 832	85 263
Total	1 837 387	2 128 369
Indirect Operation Cost		
Handling	119 501	135 703
Commissions and incentives	67 448	27 199
Advertising and promotion	112 756	128 519
Other costs	189 296	221 774
Total	489 001	513 195
Total costs	2 326 388	2 641 564

Operating costs of Alaska Airlines were totally 2 641 564 000 € in the year 2011, that is an increase of 13,5% from the year 2010.

Alaska Airlines, in contrast with 2 previous companies, has very high direct costs, created mainly by incomes of pilots and cabin crew, and fuel and oil costs. They form together a sum of 2 128 369 000 € till 80,6% from total operating costs. In a comparison with other companies, the company spend considerable funds just to incomes of pilots and cabin crew. It is totally 22,2% from total costs. The most costly item is the same as in previous cases, aviation fuel and the oil used for air traffic. It forms with the sum of 951 392 000 € 36% of the total operating cost ratio. The company spends the

smallest funds on provisions and stimuli which form 1% from the total amount.

Malaysia Airlines belongs to the biggest Asian airlines. It is national airline of Malaysia which implements national and international flights with the main base on the airline Kuala Lumpur. In the present it offers flights into more than 100 destinations all over the world.

Table 2. Operating costs of Malaysia Airlines

MALAYSIA AIRLINES	2010 in thousands €	2011 in thousands €
Direct Operation Cost		
Salaries of pilots and cabin staff	455 880	482 458
The cost of aviation fuel	870 354	1 213 722
Airport charges	49 412	56 462
Maintenance and repair of aircraft	348 446	258 180
Depreciation of aircraft	79 144	89 539
Payments and Insurance Aircraft	323 943	370128
Total	2 127 179	2 470 489
Indirect Operation Cost		
Handling	299 815	308 351
Reservations and sales	42 174	44 468
Commissions and incentives	109 976	111 351
Advertising and promotion	19 216	27 221
Other costs	602 399	847 921
Total	1 073 580	1 339 312
Total costs	3 200 759	3 809 801

In the year 2011 the total operating costs of the company Malaysia Airlines represented 3 809 801 000 € together, what indicates the increase of 19% in comparison with the previous year. The ratio of direct and indirect costs is different from the company Transaero. Direct costs form 64,8% from the total sum, where the most costly item as in previous companies, form aviation fuel and the oil, on which was needed as many as 31,6% from the total amount of funding for operation. The future is expected to further increase of funding for covering this item. Malaysia Airlines spent the lowest costs on their own advertisement and propagation. This item forms with the sum of 27 221 000 € only 0,7% from the total amount of operating costs.

Portion of the indirect costs increased by 1,7% what contributed to a substantial increase in other costs, which form their biggest part. Total amount expended on this item was 847 921 000 €, what is 22,2% of the total amount of costs.

Transaero was established in 1991 as the first private airplane in the history of Russia. Home airport of this classic airline is Moscow Domodedovo International Airport. During the year 2011 the company transported overall 8,5million passengers, what is the increase by 27,2% compared to the last year.

Table 3. Operating costs of Transaero

TRANSAERO	2010 in thousands €	2011 in thousands €
Direct Operation Cost		
Salaries of pilots and cabin staff	173 889	255 445
The cost of aviation fuel	460 806	713 992
Airport charges	60 370	81 622
Maintenance and repair of aircraft	89 087	103 571
Depreciation of aircraft	76 723	102 347
Payments and Insurance Aircraft	118 630	159 053
Total	979 505	1 416 030
Indirect Operation Cost		
Handling	156 689	222 894
Catering	52 496	83 632
Reservations and sales	23 608	51 173
Commissions and incentives	29 164	33 452
Other costs	37 913	50 177
Total	299 870	441 328
Total costs	1 279 375	1 857 358

Operating costs Transaero formed a sum of 1 857 358 000 € in 2011, what represents the increase by 45% in comparison with the year 2010. Largely, this increase is caused by expansion of air traffic with new destinations, new airlines and last but not least purchase of new airplanes. Direct operating costs of the company formed totally 76,2% in 2011 from the total amount of funding spent on operation. The percentage of these costs decreased by 0,4% in comparison to the last year and represents the amount of 1 416 030 000 €. Indirect costs amounted to 441 328 000 € that forms 23,8% from the total sum.

The company spent the biggest funding on coverage of fuel costs, which belong to the direct costs. The fuel costs and oil form together 713 992 000 € , what makes 38,4% from the total costs of Transaero. The smallest share of costs in the amount of 33 452 000 € are the indirect costs of provisions and stimuli.

4 OPTIMALISATION OF TRANSAERO´S OPERATING COSTS

Optimalisation of operating costs is an important part of managing of every airline and increase the chance of successful and profitable operation.

4.1 Aircraft park

Transaero has the biggest aircraft park in the east and middle Europe consisting of 92 remote, wide body aircraft. The company can focus on different areas in optimalisation of operating costs connected with the ownership of aircraft park, e.g.: appropriate choice of aircraft for a specific track, determination of daily use, determination of a route, tracks and its individual sections, determination of flight profile, suitability of a particular flight schedule, structure of an aircraft park, formation of a flight plan, determination of a flight profile and the level of service provided to passengers.

The basic parameter of assessing the overall use of the aircraft park is average daily/annual usage of particular airplanes. Transaero should certainly take technical- organizational steps in increasing extensive use, which are:

- shortening of waiting and turning times to the flight – through and final airport
- lengthening of the total flight time (of own transport process), that is a span flight and a day-time

The effectiveness of increasing of airplane´s extensive use depends on a sufficient intensity of this use.

Table 4. Daily use of airplanes Transaero

2011			
Type of airplane	**Number of airplanes**	**Number of flight hours**	**Average daily use in hours**
B747	25	42 071	4,61
B767	13	38 888	8,19
B737	38	76 560	5,51
B777	13	34 304	7,22
Tu-214	3	4 249	3,88
Total	92	196 073	5,83

The table shows that the company uses its airplanes on average of 5,83 hours a day, which is relatively small daily use. This time use influences a lot of factors, such as a number of the company´s aircraft, a number of different types of airplanes, composition of destination networks, operational options, and others. It is possible to achieve increasing of aircraft park´s use with this operating performance of the company by decreasing of the number of aircraft, which ultimately leads to the reduction of the total operating costs. Least used airplanes are those of a type Tu-214, whose average daily usage is only 3,88 hours and the airplanes of a type Boeing 737, whose daily usage is 5,51 hours. Reducing of these airplanes would contribute to improve of daily use of other types of aircraft, due to more flights per one plane.

Another choice how to increase the annual number of the pilot hours without decreasing of the number of airplanes is to minimize downtime for maintenances and repairs, downtime at airports resulting from fault-free status of an aircraft and aircraft downtime in step over's and final airports.

Table 5. Operating income of Transaero

Operating income from transportation	**2010** in thousand €	**2011** in thousand €
international	972 941	1 323 422
national	231 935	288 498
Transportation of mail and cargo	41 291	55 254
Other income	269 672	486 945
Total	1 515 839	2 154 119

It is necessary to take account of operating revenues in optimization of operating costs, which are connected with costs. Transaero achieves most of the proceeds from the international personal transport. In 2011, the maximum increase in this area was 36%, which is an important indicator of the company development. The company has the smallest proceeds in the amount of 55 254 000€ from the transport of the post and the load. In 2011, the revenues were totally 2 154 119 000€, and the result is the increase by 42,1%. The operating costs in that year achieved the sum of 1 857 358 000€. So, the profit from the transportation activity in the year 2011 is 296 761 000€.

The process of optimalisation includes many areas. It is necessary to focus on overall use of aircraft capacity in optimalisation of costs related with aircraft park. There is an improvement in their business use by increasing seat aircraft removal and the result is the increase of the revenues from the operated flights and the overall costs are increasing.

Since 2009 Transaero has noticed a steady decline in overall capacity utilization of a cargo space. In 2011 this utilization dropped to 63,33% which is a decrease to 4,46% in a comparison with the previous year. There is 36,67% not used of the cargo space and the result is significantly increasing of revenues from the transportation of mail and the cargo. The company mentions in its annual report that in 2011 it achieved operating income from the transportation of the mail and the cargo in the sum of 55 254 000 €. From which it follows that at full capacity utilization of the cargo spaces it would increase its revenues of 31 993 749€.

4.2 Maintenance costs for aircraft

Transaero owns a big number of new airplanes which reduces the likelihood of the occurrence of disorders and this way the maintenance costs, too. In 2011 the company spent totally 103 571 000 € on maintenance and repair of aircraft. The company can reduce these costs by different measures, such as increasing of shift work process of aircraft maintenance, so by implementing of the night maintenance of the certain airplanes or by the

joint purchase of given type of maintenance work. It is possible to effectively use of manpower by optimalisation of maintenance plan which a given maintenance does and by this way saves a part of the operational costs.

4.3 Aviation fuel

The reduction of fuel consumption can be realized by reducing of transport intensity, by optimal division of work according to a distance and a transport limits, what, however, isn´t the best choice in a rapidly expanding company such as Transaero.

Table 6. Costs of Aviation fuels per flight hour in Transaero

Year	Costs of Aviation fuels per flight hour in €	Number of pilot hours
2007	2198	86 385
2008	3383	113 251
2009	2134	125 082
2010	2828	160 177
2011	3640	194 071

The chart 6: the costs of aviation fuel per flight hours of the company Transaero. The chart number contains information about the costs of aviation fuel to the Transaero flight hour and the number of the pilot hours during the years from 2007 to 2011. The costs of aviation fuel have had a rising trend since 2009. This increase is cause mainly by increasing of a price of aviation fuel. The company increases the number of the pilot hours every year, which markedly increases the costs of operation.

Optimalisation of aviation fuel needed for realization of a flight can be achieved by different ways. In reducing of fuel consumption, Transaero should focus on measures that can be summarized into the areas:

1. External conditions, which result from the operational use of aircraft to which we include the correctly identified weight of an airplane at take-off, appropriate choice of the airplane for a certain route, a profile of the route and operation density in a certain area, the number of interlandings and a length of the route, a distance of the final airport and a total fuel capacity and a qualification of the crew;
2. Internal conditions, which are defined by a construction of an airplane. This includes quality and a kind of used fuel, size and weight of an airplane, technical status of power units, ratio of power to weight of the aircraft and their optimal mode.

An important part in increasing of efficiency of an air operation is also flight planning. Fuel economy can be achieved by planning of lines for the shortest routes, by compilation of aircraft order so they wouldn´t be in a tight timing, and planning of backup locations for airports in places located in the least distance to the destination airport. The fuel economy can be achieved also by increasing of a flight punctuality of individual airplanes.

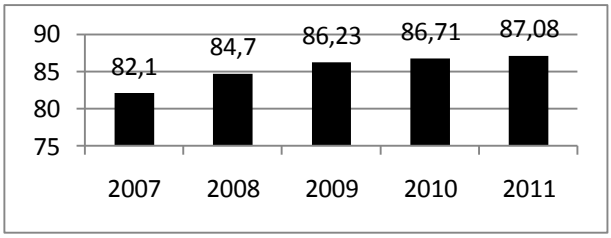

Figure 1. Time punctuality of flights in Transaero in %

From 2007 to 2011, the company reduced flight delays up to 4,98% and so it achieved better economic results and reduction of the costs which are closely related witch flight delays. In 2011 the flight delays decreased by 0,37% and increased the number of flights by 25% in comparison with 2010, by which the company saved quite a considerable amount of the costs. The time punctuality exceeded the threshold of 8% above the average value, which ranges from 73% to 85%. In the following years, the company is going to increase the punctuality of flights on wide body aircraft by other 3% and save other operational costs.

4.4 The crew costs

The most important factor of profitability of the crew is employee productivity. It is influenced by many factors, including the average length of flight, aircraft size, the number of flights made to individual destinations and many others. In optimizing costs of labour, it is necessary to focus efforts on increasing of overall employee productivity.

However, there exists many other ways how to save the costs of this area. It includes reduction of employees. In a rapidly developing company as Transaero, however, it wouldn´t be an appropriate choice because the company takes every year operation of new lines and secures new airplanes on which the operation is needed a certain amount of employees.

By outsourcing of certain activities, e.g. handling or catering, Transaero would decrease the number of their own employees necessary to carry out these activities. Altogether, the company spent on these activities 306 526 000€ in 2011. Transaero could save a part of the costs by using firms specialized on these activities. In outsourcing it is necessary to compare the quality of the performance and cost of outsourcing and custom implementation of given activities and assess the profitability of the introduction of each of them.

Labour costs can be reduced also by moving certain activities into the areas with lower costs. The comparison of the costs and the quantity plays an important role. Another possible solution is to limit the amount of stay over of flying personal in creating a flight

order or to look for cheaper options for overnight accommodation.

4.5 The costs of handling

In 2011, Transaero spent 222 894 000 € on technical equipment of airplanes. Totally it forms 12% from the total amount of the operating costs. Compared to 2010 when these costs were 156 689 000 €, it represents an increase of 42%. An important factor of increasing these costs is the purchase of 16 new airplanes. One option to reduce these costs in Transaero is a standardization of service quality conditions for delivering of service contracts and their revisions. The company can also make appropriate contracts with suppliers of these services or continually increase the pressure on hearing favorable price conditions and save the part of the operating costs.

4.6. The costs of catering

Catering costs formed a sum of 83 632 000€ together 4,5% of the total operating costs of Transaero in 2011. In comparison with 2010 it represents an increase of 59%. In optimizing costs for refreshments on a board aircraft it is necessary to focus mainly on a reduction of the costs per unit volume. It can be achieved by narrower selection of offered meals and by reduction of the overall costs of transportation logistics. The company should pay attention on the use of rubbish and save not only the environment, but also their costs.

4.7 Distribution and sales

In 2011, Transaero spent 51 173 000€ on booking and sale of tickets. Despite of using their own websites it is relatively high amount of the costs. In optimization of the operating costs for the distribution and sale of tickets Transaero should focus mainly on continuous improvement and expansion of electronic sales and improvement of their own websites. It is the easiest way how to save the costs of this area. Another possibility is continuous improvement of a customer centre which give information for all customers or optimization of using GDS systems.

5 CONCLUSION

Based on the analysis of the operating costs of the Transaero company, there were identified areas where is necessary to do their optimization, which ultimately will contribute to the reduction and cost efficiency and thereby to increase the company´s profits.

The proposal of optimization was realized in the areas of the aircraft park, aircraft maintenance, aviation fuel, pilot and cabin staff, handling, catering and distribution and sales. In each of them were also subsequently proposed other ways of optimization of the operating costs. The objective of the work was gradually being filled in individual chapters, mainly through information and data which were obtained from the annual reports of Transaero in 2010 and 2011 and from the main page of the this company.

The benefit of my article is to provide a clear proposal of the areas in which it is possible to optimize the operating costs of airlines. Each of these areas has specific proposals of possible optimization. Important information prior to the actual optimization is processed into transparent charts, which were created by examining the annual reports of the companies and offer the readers the possibility of simple comparison of the direct and indirect operating costs of various airlines.

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