



Frequent Flyer Cost Estimation



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ABSTRACT

The marketing activity of a modern airline is quite diverse. Under the conditions of an oligopoly, airlines develop their business in competition for a passenger.

In modern conditions in Russia, the use of dumping methods of the early 1990s is very ineffective. There are no weak airlines left on the long-distance air transportation market, and in regional markets large companies lose to small regional carriers due to the high cost of performing flights on large-capacity aircrafts of the airline's fleet.

Generally, non-price methods of competition come out on top. Flexible tariff policy, advertising, and high service in servicing passengers remain leading traditional methods of competing for a passenger.

This article is devoted to the study of another marketing method for attracting passengers, or rather retaining passengers on the airline's flights, which is development of bonus programs, frequent flyer programs. PJSC Russian Airlines (Aeroflot) was chosen as

the object for the study. The subject of the research is the «Aeroflot Bonus» program.

The objective of the study is to study the cost of the program. For research purposes, this is the value of the frequent flyer program point. The problem proposed to be solved is to determine the amount of expenses for implementation of the bonus program of frequent flyers. When solving the problem in its staging part, the assessment is not limited to direct costs associated with the costs of marketing efforts in the form of costs for organising a special advertising department, issuing bonus cards, software, and wages. The estimation refers also to indirect costs in the form of unrecieved proceeds from free bonus tickets. Besides, a rough estimate has been made of the airline's hidden costs due to an unpaid seat on the plane. The study conclusions indicate that hidden costs will be taken into account in calculating the cost of a flight and the bonus program has a right to exist.

Keywords: civil aviation, airline, passenger, bonus program, frequent flyer program, bonus point, hidden costs.

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INTRODUCTION

Relevance of Bonus Programs

In 2020, airlines around the world faced big challenges due to the constraints due to the spread of coronavirus infection. Passenger traffic fell on average by 42 %. According to preliminary estimates, the loss of revenue of airlines amounted to more than 400 billion USD. Airlines in North America lost about 32 billion, Europe – about 98 billion, the countries of the Asia-Pacific region up to 86 billion [1].

Russian airlines have reduced passenger traffic by an average of 53 % compared to 2019. The most significant drop was in the volume of traffic for Aeroflot airline, as most of the airline's routes are related to international transportation. Sibir and Pobeda airlines slowed down the least of all in terms of the volume of passenger air traffic. Comparative figures for the volume of passenger air traffic of five largest airlines in the country are shown in Pic. 1.

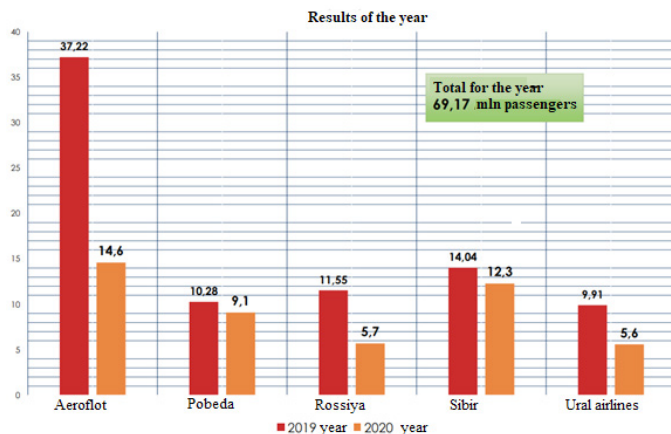
Whether economic conditions are difficult or favourable, airlines are working to attract passengers to their flights. Advertising campaigns, flexible tariff policy, sales, all this is part of marketing techniques to attract passengers. But the overarching goal of airline marketing is passenger retention policy. Organisation of work with passengers as service subscribers is a special policy of the entire range of marketing activities [2]. In this regard, airlines are developing bonus programs that allow them to reward regular customers, «frequent flyers» (FF)¹.

¹ E.g., concerning Russian air companies, see: Terchenko, E. How to earn free ticket [Kak zarabotat' na besplatiye bilety]. Vedomosti, August 10, 2018. [Electronic resource]: <https://www.vedomosti.ru/finance/articles/2018/08/10/777839zarabotatnaaviabilet>. Last accessed 01.05.2021.

Approaches to Definitions and Research Tasks

According to Laurens de Rooij and Zsoka Koczan, «A frequent-flyer program (FFP) is a loyalty program that is offered by a large number of airlines. In most cases, the customers that enrol in a program accumulate frequent-flyer miles, kilometres, points or segments corresponding to the distance travelled with that airline or their partners. Many programs also have other ways to accumulate miles such as through credit-cards, car rentals or hotel stays. In recent years the majority of air miles were awarded for the purchases made with credit and debit cards that offer air miles as a reward for using the card. Some frequent-flyer programs also offer miles through other means, such as purchasing products sold by affiliated companies» [3].

A quote from an article by O. S. Zhuravleva and M. M. Lembrikova illustrates the importance of FFPs: «From a marketing point of view, the airline's bonus program is conceived as an important tool for linking a client to a company. It significantly expands the possibilities for attracting passengers» [4]. According to those authors, «the basis of the programs for frequent flyers is the offer of various incentive schemes for acquiring additional points (options: miles, kilometres) following repeated use of the services of the airline or its marketing partners. At the same time, these marketing partners can be not only airlines, but also firms engaged in other activities, including those directly not related to aviation: these can include chains of hotels, shops, travel agencies, which have a system of receiving bonus discounts based on the customer's award points under the airline's frequent flyer program» [4].



Pic. 1. Volume of passenger transportation by leading airlines of the Russian Federation (compiled by the author).

According to Yi Gao, airline frequent flyer programs have gradually grown into a «multi-billion-dollar business» over the years, and «a fair and up-to-date assessment of the value of frequent flyer program miles has its business implications» for airlines, consumers (frequent flyer program members), airline partners, and investors [5]. This topic was subject to dedicated studies², as well as to numerous media publications³, particularly with regard to COVID-19 pandemics⁴.

A question on the profitability of the programs associated with attracting regular passengers to the airline's flights is then quite legitimate. Hence, in contrast with statement of the problem in the field of study the conditions of implementation of those programs, the objective of the research refers to the study of the cost of the programs. Assuming that «a unit of measure is a fundamental, measurable part that creates business value that can be measured» [1], for research purposes a unit of measure is the cost of the frequent flyer program point.

RESULTS

It is evident that the operation of bonus program requires significant expenses. First, these expenses include organisational expenditures referring to creation of a group of specialists to manage development of the program; software costs; communication with passengers by providing them with cards of the participants of FFP; maintaining personal information about program participants and reward points accumulated on their individual accounts; providing services and informing passengers through the existing call centre, or the airline's website.

Besides, there are costs associated directly with the provision of a bonus ticket to the airline passenger. These costs are direct costs of the airline referring to payment of all taxes, insurance, in-flight meals. These costs can be

calculated (e.g. [6]): if, for instance, airport taxes for using the airport terminal at a given time were on average of 110 rubles (depending on the airport⁵, and the costs must be counted twice (arrival and departure); fare for ground passenger handling was of 300 rubles (again, differentiated by airport); cost of in-flight meals (economy class) was of 400 rubles; insurance costs were of 16 rubles, then the total costs could be calculated as 936 rubles.

It is much more difficult to calculate the organisational costs.

Further estimates are basic and conditional ones, and are suggested exclusively to show the methodology, the numerical data extracted from the reports are used only for illustration purposes and are not intended to analyse the activity of an airline.

It is the development of the methods of the unit economics [see, e.g., [7]], when a service within FFP is considered a unit, and cost of attraction of a unit customer is studied. The article does not refer to the data on the programs of airlines and their economic and finance results during pandemics to avoid distortion of calculation results.

Let us first assume that the expense item for maintenance of an airline's frequent flyer program relates to advertising expenses and takes up about 30 % there. If taking this assumption, we consider that, i.e., Aeroflot has spent in 2019 3 528 252 thousand rubles on advertising⁶, then the estimated costs of FFP might amount to 1 058 475 thousand rubles. Researchers of effectiveness of bonus programs assume that up to 15 % of transported passengers participate in the programs [5]. Consequently, for Aeroflot it might be accounted as 5,5 million passengers⁷.

Then hypothetically it can be assumed that the organisational costs of the program will amount to 192 rubles per passenger.

The cost of a reward point can be calculated using the formula:

$$A = B/C, \tag{1}$$

where A is cost of a bonus point (rubles);

² See, e.g., Special Report – The Price of Loyalty, 2012. [Electronic resource]: <https://airlines.iata.org/reports/specialreportthepriceofloyalty>. Last accessed 01.05.2021.

³ See, e.g., Claire Bushey. US airlines reveal profitability of frequent flyer programmes. *Financial Times*, September 16, 2020. [Electronic resource]: ft.com/content/1bb94ed9-90de4f15ace0-3bf390b0f85e. Last accessed 01.05.2021.

⁴ See, e.g., So Yeon Chun, Evert de Boer. How Loyalty Programs Are Saving Airlines. *Harvard Business Review*, April 02, 2021. [Electronic resource]: <https://hbr.org/2021/04/howloyaltyprogamsaresavingairlines>. Last accessed 01.05.2021.

⁵ E.g., Airport dues rates and ground handling rates for aircraft of Russian operators at Pulkovo airport; Airport Tax. [Electronic resources]: <https://pulkovoiairport.ru/partners/airlines/rates/airlines/>; <https://pulkovoiairport.ru/partners/airlines/rates/foreignairlines/>. Last accessed 01.05.2021.

⁶ Aeroflot Annual reports [Electronic resource]: <https://ir.aeroflot.ru/en/reporting/annual-reports/>. Last accessed 01.05.2021.

⁷ The specific figure in the report for 2020 is indeed 8 mln persons.



B – the amount of expenses for transportation of a passenger with an award ticket (rubles);

C – sum of points required to receive an award ticket (i.e., 15000).

In the above hypothetical example, the cost of a bonus point might be 0,07 rubles. The amount is insignificant, emphasising high profitability of measures to attract passengers. Nevertheless, there are also hidden costs in the form of unearned revenue from unsold commercial tickets. In this regard, it is possible to make tentative calculations: the total revenue from program participants will be:

$$P = N \cdot T, \quad (2)$$

where P is total revenue from program participants (thousand rubles);

N – number of program participants (people);

T – average tariff (thousand rubles);

$P = 5\,500\,000 \cdot 8 = 44\,000\,000$ thousand rubles.

Different airlines use different conditions for earning bonus miles. So, Sibir Airlines [S7 airlines brand name] credit miles for flights on regular flights of the airline as a percentage of the distance and depending on the fare at which transportation is carried out⁸. With the average length of S7 airlines of 2200 km or 1375 miles, it is possible to get from 687 miles when flying in economy class to 3437 when flying in business class.

In Utair, miles are calculated in the range from 3 to 7 % of the ticket price, the percentage level depends on the service class⁹.

At Aeroflot, miles in the program are accrued in accordance with the distance in miles between the airports of departure and arrival⁶. Thus, with an average length of the airline's air route of 2670 km, or 1668 miles, the program participant is credited with an average of 2000 miles. An award ticket for this distance will cost at least 15000 miles.

Thus, using the averaged indicators of the distance of transportation and the cost of the ticket, we can conclude that to receive an award ticket, a passenger must use the services of the airline 7 times. With an average ticket price of 8000 rubles, the amount of revenue from one program participant will be 56000 rubles. The aviation mobility ratio of the country's population in 2019 was 87 % approximatively, given that

the population of the country in 2019 was 146 820 700 people, and the country's airlines carried 128 127 828 passengers.

Considering travelling rate of frequent flyers, it can be assumed that they use air transport services much more often than an average resident of the country, and despite general background of a relatively low indicator of aviation mobility of the population, it can be assumed that a frequent flyer on average has more air flights during the year. Let's calculate the total number of miles earned by the participants in the bonus program:

$$CM = N \cdot Hm, \quad (3)$$

where CM is the sum of miles earned by all program participants;

N – total number of program participants (people);

Hm – average number of miles per ticket for a program member.

In assumed figures, it might be calculated as $CM = 5\,500\,000 \cdot 2000 = 11\,000\,000\,000$ miles.

To obtain one award ticket it is necessary to cumulate 15 000 miles, therefore:

$$\frac{\text{number of bonus flights per year}}{15000} = \frac{11000000000}{15000} = 733333 \text{ tickets.} \quad (4)$$

With an average ticket price of 8 000 rubles, hidden costs due to the fact that these tickets were not available for commercial sale will amount to 5 866 664 thousand rubles, or 1 066 rubles per each program participant.

Then, considering hidden costs, the cost of one bonus point (1) will be:

$$A = \frac{936 + 192 + 1066}{15000} = 0,14 \text{ rub.} \quad (5)$$

It is possible to continue calculation of the cost of transportation for the awarded program participants borrowing in mind that part of the airline's operating costs will not be paid either. Let us consider the structure of expenses of Aeroflot airline at a given time (Pic. 2) and calculate those of them, that will also affect the cost of one bonus point.

Let's calculate the average cost of transporting one unpaid seat. Let's consider fuel costs, airport taxes and aircraft leasing costs for calculations.

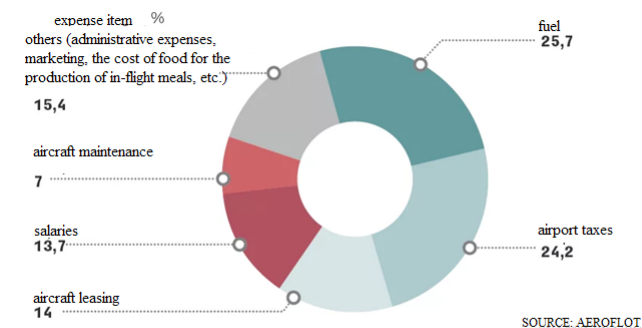
The Aeroflot Group's aircraft fleet numbered at a time 366 aircraft (Table 1).

To determine the cost of transporting an unpaid seat regarding refuelling, it is necessary to calculate the average specific fuel consumption.

$$SFC = \frac{AFC}{AASK}, \quad (6)$$

⁸ Official website of S7 airlines. [Electronic resource]: <https://www.s7.ru/en/>. Last accessed 01.05.2021.

⁹ Official website of Utair airlines. [Electronic resource]: <https://www.utair.ru/en/>. Last accessed 01.05.2021.



Pic. 2. Structure of the airline's operating costs⁶.

where SFC – specific fuel consumption (g/pax-km);

AFC – average fuel consumption per an average distance flight (kg);

$AASK$ – average available seat kilometres.

$$AASK = L \cdot S_k, \quad (7)$$

where L is average length of an air line (2670 km);

S_k – average number of available seats (221

from Table 1).

$$AASK = 2670 \text{ km} \cdot 221k =$$

$$589688,57 \text{ pax-km}. \quad (8)$$

When performing a flight with an average distance of 2670 km at an average speed of 720 km/h, it will take 3 hours 40 minutes, the fuel consumption will be:

$$SRT = 3,7 \text{ hour} \cdot 3581 \text{ kg} = 13278 \text{ kg}. \quad (9)$$

Therefore, specific fuel consumption will be:

$$SFC = \frac{13278}{589688,57} = 22,52 \frac{\text{gr.}}{\text{pkm}}. \quad (10)$$

That is, to transport one seat or passenger per kilometre, 22,52 grams of aviation fuel will be required, and to transport a passenger over an average distance, 60,12 kilograms of fuel will be needed. The average price of aviation fuel in April 2021 was 49747 rubles per ton¹⁰. The unpaid expense would then be 2990 rubles for each award ticket.

The second expense item is associated with airport dues¹¹. Average maximum take-off weight of aircraft, from Table 1 can be estimated at 139,7 tonnes. Airport dues for take-off and landing (for example, at the

Sheremetyevo airport) were 467,55 rubles per ton of maximum take-off weight, dues related to ensuring aviation security at the same airport were of 23,01 rubles per ton of maximum take-off weight. Then the unpaid expenses for ensuring take-off and landing and aviation security will be:

$$139,7 \cdot 490,56 = 68531,23 / 221 = 310,09 \text{ rubles per each award ticket}.$$

The third item of expenses⁶ selected for determining the value of the bonus point is aircraft leasing. It is difficult to estimate the exact costs in view of the wide variety of aircraft types, their service life, but if we focus on the average prices of the lease cost per a seat, then it will be 2000 USD per seat per month, therefore 24000 per year. If the average flight lasts 3,7 hours, then considering necessary stoppings of flights to perform routine maintenance, the aircraft can perform about 100 flights per month. Consequently, the cost per seat of an award ticket will be 20 USD or 1500 rubles.

The total cost of one bonus point will be:

$$A = \frac{936 + 192 + 1066 + 2990 + 310,09 + 1500}{15000} = 0,46 \text{ rubles}. \quad (11)$$

It turns out that the airline bears indirect and hidden costs in the amount of 46 kopecks per each point of the award ticket, or 6900 rubles per a ticket. In total, in 2019, according to the above author's calculations, we can estimate the number of issued award tickets as 733333, therefore, indirect losses might be 5059997,70 thousand rubles. These losses, in principle, exist speculatively, since they are reimbursed by the cost of tickets, at the expense of calculating the cost of a flight, considering the seat occupancy rate within 72–75 %, that is, empty and premium seats are paid for by passengers.

¹⁰ Official website of FAVT (Federal Agency for Air Transport). [Electronic resource]: <https://famt.gov.ru/?snm>. Last accessed 01.05.2021.

¹¹ Order of the Ministry of Transport of the Russian Federation of July 17, 2012 No. 241 «On air navigation and airport dues, tariffs for servicing aircraft at airports and in the airspace of the Russian Federation». [Electronic resource]: <https://base.garant.ru/70212130/>. Last accessed 01.05.2021.



Table 1

The composition of the aircraft fleet of Aeroflot airline

Aircraft type	Number of aircrafts	Number of seats	Hourly fuel consumption (kg)	Specific fuel consumption (g/pax-km)	Maximum take-off weight (tonnes)
A330-200	5	235	5600	30,74	233
A330-300	17	292	5600	26,64	233
B777-300	5	550	6800	17,17	299
B777-300ER	22	402	7800	26,95	351
B747-400	9	660	10300	21,68	397
A319	35	156	2350	20,92	75,5
A320	85	158	2500	21,98	78
A321	37	183	2740	20,80	93,5
B737-800	87	158	2480	21,80	79
DHC6-400	3	39	480	33,33	5,6
DHC8-200	2	39	540	19,23	16,4
DHC8-300	4	56	560	13,89	19,5
DHC8-400	5	78	680	12,11	29
SSJ100	50	87	1700	27,14	45,9
Total	366	3092	50130	314,37	1955,4
Average value		221	3581	22,45	139,7

It can be assumed that eliminating the cost per unit of measure of the loyalty program could lead to a decrease in the cost of tickets, which will increase the number of sales. But FF programs are aimed at increasing airline brand loyalty. This factor can be proved by the positive dynamics of the number of program participants, while the influence of other factors on the increase in the volume of transportation is more complicated.

BRIEF CONCLUSION

As a conclusion, we can quote: «Modern methods of marketing communications, using the additional points for the most important customers of the airline (for example, rewarding passengers of high service classes with points calculated with a ratio exceeding economy class by one and a half or two times for the same flight) are generally recognised factors that result in an increase in passenger turnover and airline customer retention rate» [6].

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