THE USE OF REVENUE MANAGEMENT BY AIRLINES

Zuzana ŠUSTEROVÁ[1] - Daniela ČEKANOVÁ[2] - Peter KOŠČÁK[3] - Dorota LIPTÁKOVÁ [4]

Abstract: *The article deals with the fundamental nature of the use of revenue management by selling of the tickets by different airlines. For usage of revenue management must be fulfilled certain conditions, among which certainly belongs ability of market segmentation, relative fixed capacity, possibility of selling tickets in advance and variable demand for the product. In air transport, we know two common ways of usage of revenue management and it is overbooking and the way of distribution of discounts.*

Key Words: *revenue management, overbooking, segmentation, sales*

1 INTRODUCTION

Differences in the ticket prices is due to the fact, that airlines want to maximized their profits, often just by using of the revenue management. That is the reason, why the ticket for same travel class and on same airlines sometimes costs 360 EUR and other times much more, or much less. This pricing strategy lies in trying to sell the right seat to the right type of customer, at right time and for right price. The key is to find the compromise between the sale of discounted tickets for the purpose of filling the aircraft, and selling the tickets for full price in order to fill up only part of the aircraft. Since this process mainly involves the monitoring of customer behavior and analyzing of previous data, revenue management is quite challenging.

2 THE BASIC NATURE OF USAGE OF REVENUE MANAGEMENT BY SELLING OF THE TICKETS

Revenue management is applied under the following conditions, but just in companies, that provide services.

2.1 Relatively fixed capacity

If there will be the flexible capacity, so there would be no reason for compromise. If the airlines can add, or take away the seats as it is required, there will be no need for capacity management. But aircraft cannot be enlarged or reduced immediately according to the requirement, so the only think that we can do is to move passenger to the next flight. Therefore, one of the conditions of the use of revenue management is relatively fixed capacity. [1]

2.2 Ability of market segmentation

In Revenue Management in airlines we seek a compromise between maximum use of capacity and customer willing to pay more for a ticket. Quality market segmentation is another condition for the successful use of revenue management. As an example, we can mention a comparison between business passengers, who are sensitive to the time and flexibility, and passengers who are sensitive to the price of the tickets. One group represents segment of travellers who would pay more for the ticket in Exchange for providing some flexibility (such as a free option of flight cancellation, or an open return date in case of return flight) and the second segment represents the segment of travellers, who are able to give up some benefits and flexibility for lower price of the ticket. The proper segmenting of the customers, therefore allows airlines to fill the seats that would otherwise be empty. [2]

[1] Ing. Zuzana Šusterová, Rampová 7, Košice 041 21, +421 55 602 6194, zuzana.susterova@tuke.sk
[2] Ing. Daniela Čekanová, Rampová 7, Košice 041 21, +421 55 602 6194, daniela.cekanova@tuke.sk
[3] Ing. Peter Koščák, PhD. ING.PAED.IGIP, Rampová 7, Košice 041 21, +421 55 602 6186, peter.koscak@tuke.sk
[4] Ing. Dorota Liptáková, Rampová 7, Košice 041 21, +421 55 602 6194, dorota.liptakova@tuke.sk

2.3 Product sold in advance

If there were all of the tickets sell at the same time, the prices would be fixed, and there would be no benefits from the behaviour of the customers. As the demand for the tickets changing by the time, it makes sense to find a compromise between increasing prices and the time of sale. Compromise occurs, when the manager faces the possibilities to accept a reservation from the customer, who wants a low price, or wait if there appears a customer who is willing to pay more. [3]

2.4 The time of ticket sales

The time plays an important role in forecasting of demand, and has a direct impact on a ticket price determination. Each airline has its own tactics of increasing and decreasing prices of tickets based on long-term monitoring of customer's behaviour. For many airlines, it is true, that if the passenger buys the ticket later, he will pay a higher price for it. Some airlines however found, that it is more profitable offer certain number of tickets just before the departure for the best price. This situation occurs most often, when there is before departure still empty seats; it is better to sell them even in a low price, because every empty seat represents a loss for the airline.

2.5 Variable demand

On the top of the season, airlines can increase their profits by increasing prices of their tickets, and in out of the season they can increase the capacity utilization rate by offering lower prices for tickets on the same routes, as they offered during the top season. The collected data from the previous years helps the manager decide, when there is a top season. Demand varies seasonally (top season is expected in summer and the lowest interest, i.e. the bottom of the season in the fall), and also gradually (an increase of the demand for reservations is more noticeable a few days before departure). [4]

3 THE MOST FREQUENT USES OF REVENUE MANAGEMENT

The issue of revenue management includes among others, monitoring of customers' demand, the number of cancelled flights, group booking, cargo capacity and many other parameters, that may be in count several hundred thousand. After evaluating of individual indicators, are influenced mainly results of following three areas: overbooking, distribution of discount and transport management. [8]

3.1 Overbooking

The concept of overbooking is the practice, of deliberate selling of higher seating capacity, than what is actually available, because of the prevention of the problems arising from cancelling of the reservations, or due to passenger that will fail to appear on airport, or on the board of the plane in time. Estimates based on years of observations show that even though is purchased 100% of the seats in the aircraft, approximately 15% of the seats remain empty. On the other hand, it is necessary to assets the cost of overbooking (for example, to offer a free ticket for any flight, if you give up your seat, and you will agree with departure by the following aircraft, and so on). [9]

From the short-term point of view, it is loss of profits from the sale of single ticket, but from long term point of view we have to take in account customer loyalty, and not least the company's reputation. [5]

3.2 Assignment of benefits

The ratio of discount and full price (called as bucket) is not fixed and during the period of the reservation it is appropriately changing its value with the approaching date. Changes taking place on the basis of past experiences and special events. The advantages of selling discounted tickets instead of offering tickets for the full amount must be for the confirmation of the right decision, well considered. [10]

This concept can be illustrated by a simple example. Recently, the airline United Airlines has decided to simulate air route to Mexico. And they offered a special ticket Chicago - Cancun without the possibility of refund, in advance for one month only for $ 450 (compared to the original price of $ 650). Aircraft DC-10 used by United Airlines has a capacity of 150 passengers in economy class. Analysis of recent data has shown that the demand for tickets at full price was at number 60 and a standard deviation was 15. We introduce therefore CU as the price for excess (overage) which is understood as the price, associated with reservation of too small number of seats for the full price; CO

for excess - the price associated with a reserved too many seats at full price. CU is the lost opportunity of the additional $ 200 (which is the difference in price compared to the full amount before discounts). CO = 450$ because we assume that the extra seats reserved for the customers paying the full price, can be sold only for discount price. [11]

By using critical quantile model, we get:

$$P(f < x) \leq \frac{C_U}{(C_u + C_0)} \quad (1)$$

f- demand for tickets at full price
x- number of reserved seats for the full price.

The formula above shows that the value of the critical quantile P(f < x) = 200 / (200 + 450) = 0.31. From the table of normative distribution, we find, that the correspondent number to the result is -0.5. [6] Then we can calculate the number of full price seats intended for reservation = $\mu + z\sigma$ = 60 + (-0.50) (15) = 53 seats. [7]

4 CONCLUSION

The problems that you may face by applying revenue management are impulses for new ideas and solutions. It is good to consider for example, the sale of discount tickets to the large groups of passengers, which number exceeds the minimum number of occupied seats for full price - some employees are paid by percentage of the share of sales made by them, so if the system rejects the employee to sell such bulk purchase of discount tickets, for example to the group of 30 passengers more than 45 days in advance, the employee loses his possible share of sales.

It is important to find a compromise between short-term profits and long-term profits, which is based on providing good and reliable services. We must focus attention on the extremely important area of forecasting, that airline which is using revenue management can avoid too high refund.

In the article was described the possibilities of using revenue management by selling tickets. This tool allows airlines to segment the market and customers, and deal with uneven demand in specific situations. At the same time were described possibilities of overbooking and providing discounts in ticket sales, and also was here indicated possible problems that may arise (for example, by use of quantitative discount at a relatively large group of travellers, or problems arising from the use of provisional sales, and so on).

Another solution is to enrich input to predictive models that provide airlines a reasonable profit in the long term.

REFERENCES

1. FIALA P.: *Revenue management*. Professional Publishing, 2016
2. Revenue management. Available at: https://en.wikipedia.org/wiki/Revenue_management
3. ADAMS D., BURGESS C., KELLY J., RINGHAM K., VARINI K.: *Revenue Management, HOSPA*, 2013, Available at: http://hospa.org/static/cms_page_media/5712/HOSPA RM eBook_1.pdf
4. GARRET J. van RYZIN, KALYAN T. TALLURI: *An introduction to Revenue Management, informs*, 2015, Available at:
5. https://www0.gsb.columbia.edu/mygsb/faculty/research/pubfiles/3958/Tutorials2005-chapter06.pdf
6. JEFFREY I. MCGILL, GARRET J. Van RYZIN: *Revenue Management*: Research Overview and Prospects, 1999 Available at: https://www0.gsb.columbia.edu/faculty/cmaglaras/B9801-001/RMreview.pdf
7. Faculty of Aeronautics - Normative distribution chart, Available at: http://www.fhi.sk/files/katedry/ks/tabulky.pdf

8. VONECHE F.: *Yield Management In The Airline Industry*, 2005, Available at: http://www.ieor.berkeley.edu/~ieor166/Yield%20Management%20in%20airlines.pdf
9. ONDOVÁ Stanislava, FERENC Ján: ADF024 [166908] *Proposal passenger flow management at selected airports*, 2015. In: Acta avionica. Roč. 17, č. 2 (2015), s. 1-7. - ISSN 1339-9853
10. FERENC Ján, HARŇÁK Marcel: BDF014 [141433] *Marketing of airports*, 2013. In: Acta Avionica. Roč. 15, č. 27 (2013), s. 1-5. - ISSN 1335-9479
11. FERENC Ján, SEMAN Lukáš: ADF006 [130816] *Planning and design capacity and airport*, 2012. In: Acta Avionica. Roč. 14, č. 25 (2012), s. 60-65. - ISSN 133-9479
12. FEDOROVÁ Petronela, KIŠ Slavomír: ADF008 [128037] *Passenger and cargo insurance in air transport*, 2012. In: Acta Avionica. Roč. 14, č. 24 (2012), s. 122-126. - ISSN 1335-9479