QUALITATIVE RESEARCH ON THE LEVEL OF SERVICE AT WROCLAW AIRPORT

Maria PAWLAK

Wroclaw University of Science and Technology, Faculty of Mechanical Engineering, Department of Maintenance and Operation of Logistics, Transportation and Hydraulic Systems, Poland, EU,
maria.pawlak@pwr.edu.pl

Abstract

The purpose of the paper was to determine the value of the global passenger service quality assessment index (LoS) at Wroclaw Airport. The passenger's rating directly affects the airport's profits as a result of non-aeronautical activities. The necessity to conduct the analysis was conditioned by the increase of traffic at Wroclaw airport, which resulted in the loading of the service system and the use of approx. 80 % of the airport capacity. Due to this fact, the improvement of the quality of services provided by the airport has become a priority. In order to optimise the level of service, the PAPI method was used. The measurement model was adjusted for the perceived level of quality created on the service in force in air transport. Then, the model's equivalence between differentiated passenger groups was tested. The validity of these assumptions was verified by means of surveys carried out on the real system. This method assigns quantitative values to individual services using a five-point scale. The lowest note reflects the value of 1, while the highest value is 5. The results obtained are taken as an alternative to the multidimensional approach in the context of port performance testing in relation to the quality of services. This approach justifies the analysis of the functioning of the airport in terms of LoS. In the future, questionnaire surveys will be used to build a model based on multiple regression.

Keywords: Level of service, survey, airport, passenger service

1. INTRODUCTION

The research conducted by Neufville [1] has indicated the required increase in line-related and point-related capacity of air transport infrastructure. This results from the constant development of air transport. In 2016, IATA reported that 3.6 trillion passengers travelled with airlines in 2015. Thus, there was an increase of 7.2 % compared to 2014. Over the past 5 years, the growth of passenger traffic has been estimated at 5.3 %. Maintaining dynamic growth in the upcoming years may exceed the demand in relation to the current capacity of air terminals.

There is a number of measures for evaluating the functioning of logistic and transport systems, which are presented in each of the fields of transport. Globally, the issues related to the reliability of transport systems have been addressed many times [2, 3]. Example issues related to modelling the evaluation of the railway transport system are presented in [4-6]. An evaluation of intermodal transport system functioning is presented in [7]. Measures of queuing system evaluation in air transport are presented in [8-10].

In order to optimise the level of service, various methods related to the quality of service are used. Improving the quality of service provided by the airport has become a priority. Unfortunately, the implementation of measurements and analyses of passengers' opinions is not easy to achieve due to the diversity of airport services.

Bezerra et al. [11] have presented two solutions. The first one concerns the adaptation of the measurement model for the perceived level of quality created by the air transport service. The other solution tested the equivalence of the model between different groups of passengers. The validity of these assumptions was checked by means of surveys conducted on the real system. The model shown is assumed as an alternative

to the multidimensional approach in the context of testing the airport's performance in relation to the quality of service. This approach justifies the validity of having airport functioning analysed in terms of LOS.

Correia et al. [12, 13] based the level of service at the terminal on a method which consists in observing passengers and collecting information affecting the airport users' opinions. This method helps to obtain a quantitative assessment from the data provided in the surveys. A corresponding analysis will provide the relationship between quantitative rating and global indices. Correia et al. also determine the quality of service by referring to the user's opinions. This method assigns quantitative values to individual services; it includes the research performed at airports. Research has shown that the level of service definitely depends on factors such as availability of space, waiting time and service time. These factors have been identified as important from the point of view of the process manager.

Addressing this issue is extremely important for air transport. Asian airports have recorded a significant decrease in passenger satisfaction [12]. The significance of passenger satisfaction through the impact on profit, resulting from non-aviation activity, is presented in [14]. It was shown that an increase of 0.1 on a five-point evaluation scale increases the profit resulting from non-aviation activity. The increase is $0.8 per passenger served.

The aim of the paper is to determine the value of the global passenger level of service (LoS) at Wroclaw Airport. Air operations at Wroclaw Airport are carried out at the terminal built in 2012. The investment in infrastructure provided an airport capacity of 3.2 million passengers per year. When the new terminal started to operate, Wroclaw Airport served about 1.7 million passengers. Terminal capacity was used in 53 %. The constant dynamics of passenger traffic development has led to an increase in the number of passengers served. In 2017, nearly 2.9 million passengers were served (90 % of the capacity) and, in 2018, the number will exceed 3 million (94 % of the capacity). Due to the uneven system load resulting from the timetable of the day-time air operations, passenger handling systems are overloaded, and the reserve of technical resources is fully utilised. The paper also assesses the current value of the passengers' quality of service, as a high quality passenger service is a priority for the airport managing body. The quality of service translates into profits from non-aviation activity, which account for as much as 60 % of the total airport profits. The analysis to be carried out will make it possible to verify the correctness of management of the passenger service process.

2. METHODOLOGY

In order to measure the level of passenger satisfaction, surveys were conducted in the summer at Wroclaw Nicolaus Copernicus Airport, which is currently served by seven scheduled airlines and a number of charter flights.

In order to achieve this goal, the PAPI method was used, which consists in conducting a direct interview by a pollster. Paper and Pencil Interview is quantitative research which is used to collect data through surveys [15].

The passenger surveys are as follows:

1) Which carrier are you (i) travelling with?
   a) LOT
   b) Lufthansa
   c) Ryanair
   d) Wizz Air
   e) SAS
   f) Charter (Enter Air, Nouvelair, Travel Service, Air Cairo, Pegasus Airlines, Nesma Airlines)

2) How did you get to the airport?
   a) public transport

b)   car
c)   taxi/Uber
d)   rental car
e)   on foot

(Depending on the answer to Question No. 2 - Question 3/4/5/6)

3)   How do you rate public transport access to the airport? What can be changed? (1-5)

4)   How do you rate the access to the airport by car? Is the number of parking spaces adequate? (1-5)

5)   How do you rate the access to the airport by taxi? What can be changed? (1-5)

6)   How do you rate the access to the airport by rental car? What can be changed? (1-5)

7)   How do you rate the legibility of the signs used to indicate air terminal circulation? (1-5)

8)   How do you rate the cleanliness of the air terminal? (1-5)

9)   How would you rate the waiting time for checking in baggage and the boarding pass? (1-5)

10)   How do you assess the fulfilment of duties by the staff of baggage check-in/boarding pass counters? (1-5)

11)   How do you rate the waiting time for a security check? (1-5)

12)   How do you assess the fulfilment of duties by the staff working in security check points? (1-5)

13)   Have you experienced any inconvenience during the security check? What kind?

14)   How do you rate (i) the services offered in the public access zone? (1-5)

15)   How do you rate the services offered in the duty free zone? (1-5)

16)   What method of boarding do you prefer?
    a)   apron
    b)   bus
    c)   on foot
    d)   doesn't matter

17)   How do you rate the boarding process? (1-5)

18)   What is your overall assessment of passenger quality of service at Wroclaw Airport? (1-5)

Passengers rate individual airport subsystems according to a five-point scale. The lowest value is 1 and the highest value is 5.

3.   RESEARCH RESULTS

The point of reference for the research was Wroclaw Airport, where 2,000 surveys were conducted, as the determinant of the assessment of the airport's performance.

Passenger traffic at the airport takes place mainly in a building called a passenger terminal. The terminal is a place to handle passengers and baggage changing the land means of transport to air transport. The terminal building consists of two parts: air side and land side. This division is the result of the restriction of access to the air side of the building only for travellers holding the relevant documents. The functional layout is the result of the arrangement and capacity of the runways, taxiways and aprons. The terminal is physically located at the airport in such a way as to provide the handling of both air and passenger traffic as well as the means of transport that handle the travellers before departure and after arrival. Furthermore, the internal layout of the building is based on safety rules and user-friendly recommendations. The principle of airside control and surveillance protects against entering the zone and the architectural aspects are devoted to the safety of aircraft and passengers.

The passenger terminal consists of subsystems, which are used to perform the subsequent stages of service:

•   check-in;

- baggage handling;
- security control;
- customs control;
- document control;
- boarding;
- deboarding;
- baggage claim.

The terminal subsystems are connected in a way that determines the direction of movement of passengers from the moment of entering the building to the moment of boarding the aircraft and vice versa.

The assessment included the subsystems of the passenger terminal in terms of departures:
- public access zone (landside);
- check-in;
- security control;
- departure lounge;
- document control;
- boarding.

The presented subsystems were selected for research, as departing passengers generate the highest profit for the airport. The research was conducted under conditions of a heavily loaded system to check whether the traffic volume at critical moments had a downgrading effect.

The determinants to be assessed differ from one air terminal subsystem to another. Independent subsystems, which include the public access zone (landside), the departure lounge and the boarding zone, are assessed in terms of services offered, cleanliness and legibility of signage. The results of the dependent subsystems, based on the queuing system, are conditioned by the waiting time of the passenger in the queue and the passenger service time at the counter.
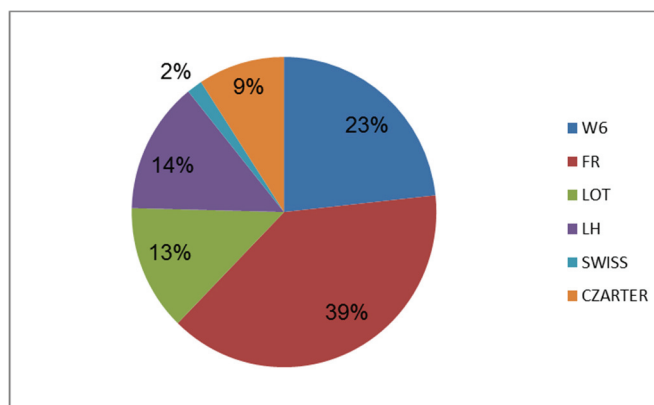

Figure 1 Question 1 - Choice of the carrier

The first determinant examined concerned the choice of the carrier. According to the research, Ryanair is the most popular one. When making a travel decision, as many as 39 % of the travellers choose the carrier. Wizz Air is the second on the list. Its popularity is 23 % among the passengers. Other airlines, including LOT, Lufthansa, SWISS and charter airlines, are chosen by 13 %, 14 %, 2 % and 9 %, respectively. This relationship is shown in **Figure 1**.

Another factor subject to the research was the choice of the type of access to the airport. Passengers can use public transport, go by car, taxi as well as rent a car. While conducting the research, it turned out that one's own car (52 %) is the most frequent choice. The reason for this decision is the high number of parking spaces. The use of taxi (29 %) is limited by a small number of parking spaces, while the low percentage of people

using public transport (18 %) chose not to use this transport means due to traffic congestion. The least popular is the car rental. It is used by only 2 % of the people surveyed. **Figure 2** shows the choice of the means of transport to access the airport.
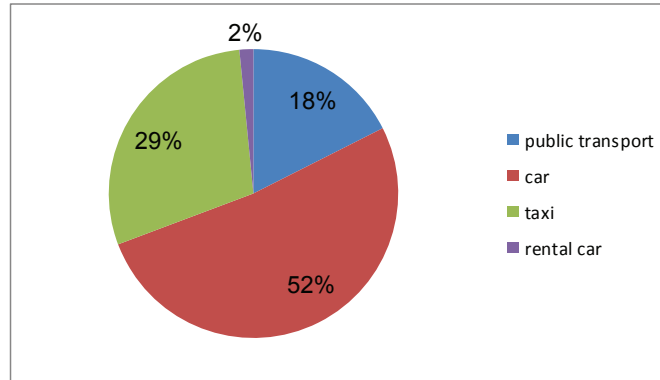

Figure 2 Question 2 - Choice of means of transport to access the airport

The means of transport presented hereinabove were assessed by the travellers on a five-point scale. The assessment was influenced by the availability of parking spaces, timeliness of public transport disrupted by road traffic congestion and the availability of long-stay parking spaces. The best rating was obtained by the car, and public transport was the least favourable (**Figure 3**).
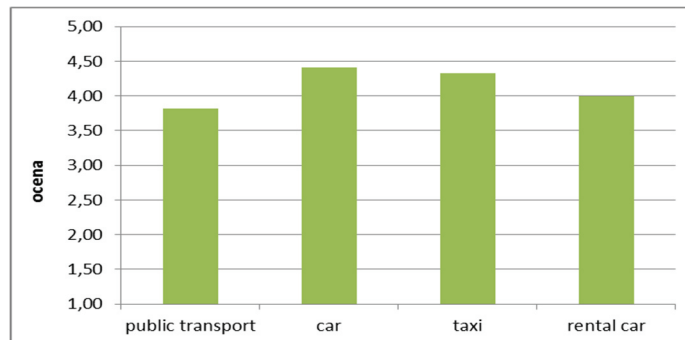

Figure 3 Questions 3 to 6 - Rating of the means of transport to access the airport

Another factor evaluated was the legibility of the signage and the cleanliness of the terminal. These determinants were rated high. The passengers assessed the cleanliness of the terminal at a value of 4.67, while the legibility of the signage was estimated at 4.5. The rating is shown in **Figure 4**.
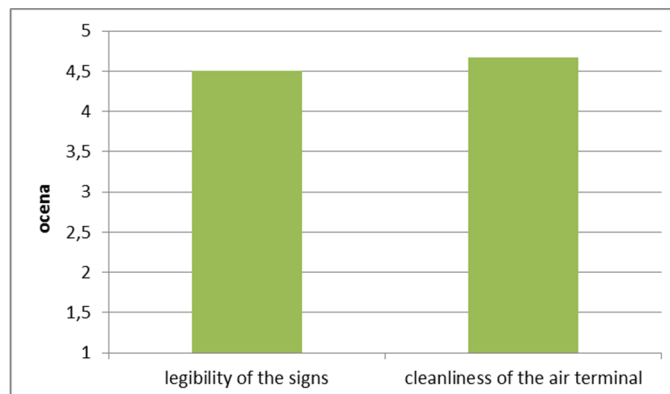

Figure 4 Question 7 - Legibility of signage and Question 8 - Cleanliness in the terminal

The determinants assessed in questions 9, 11 and 18 concerned the waiting time for baggage check-in and collecting the boarding pass, the waiting time for security control and the assessment of the boarding process. **Figure 5** shows that the shortest waiting time at Wroclaw Airport occurs during baggage check-in baggage and collecting the boarding pass, while the longest waiting time is during the boarding process in the departure lounge.
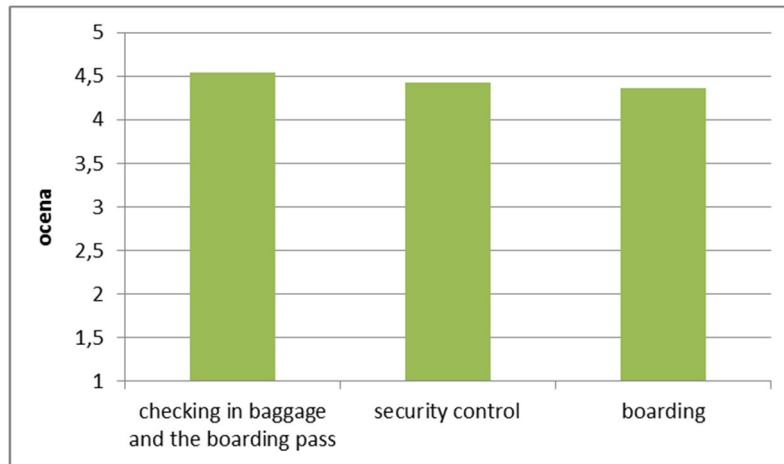

Figure 5 Questions 9, 11, 18 - Waiting time

The zones assessed hereinabove were also studied in terms of exemplary performance of duties by the staff at given counters and stations. The assessment was adequate to the assessment presented in **Figure 5**. The work performed at the baggage check-in and boarding pass counter was rated better than at the security control point (**Figure 6**).
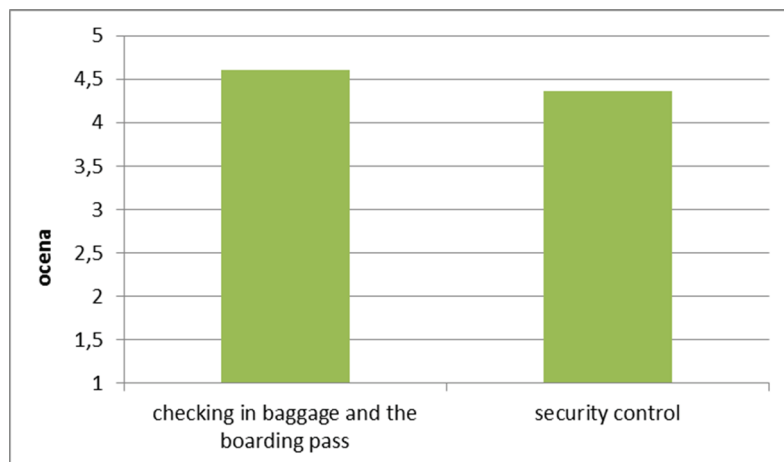

Figure 6 Questions 10, 12 - Assessment of staff performance

Other determinants referred to the public access and the duty free zones. Compared to the whole survey, these factors were the least rated by the travellers. Often, the rates of 3, 2 or even 1 were given here, giving the final score of less than 4 (**Figure 7**). The decision of the passengers was conditioned by the high prices in the zones.

The next-to-last question answered by the travellers concerned boarding preferences. There are four possibilities: through the apron, on foot, by bus or doesn't matter (**Figure 8**). As many as 72 % of the passengers chose the apron. The second answer was doesn't matter (21 %), followed by on foot (4 %). Boarding by bus turned out to be the least favourite method (only 2 %).

Figure 7 Questions 14, 15 - Assessment of the services in public access and duty free zones

All the assessed determinants influence the overall assessment of Wroclaw Nicolaus Copernicus Airport. Taking into account all the factors, the airport in Wroclaw achieved a rating of 4.47. The achievement of the maximum value was disturbed by the comments made to question 13. The comments included: disappearance of gadgets during security control, rudeness of the staff, chaos and long waiting time.
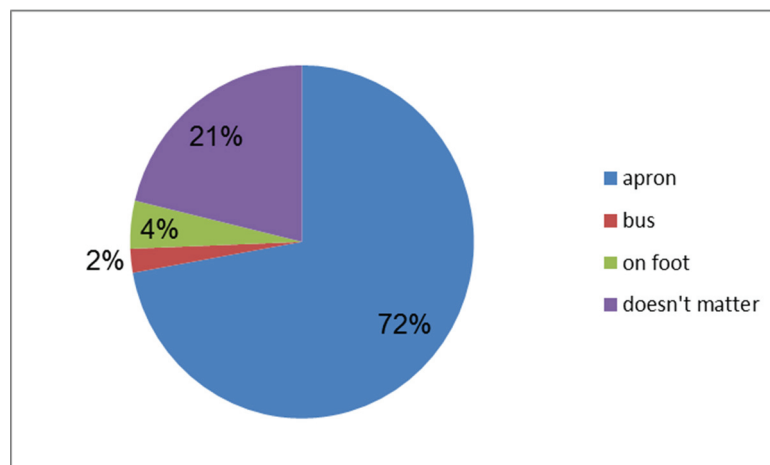

Figure 8 Question 16 - Boarding method

4.   SUMMARY

The aim of the paper was to determine the value of the level of passenger service (LoS) at Wroclaw Airport. This was achieved by using the Paper and Pencil Interview (PAPI) method.

The applied method allowed the authors to learn about the current evaluation of the system and may be the basis for taking actions to expand the infrastructure. Further research will concern the application of computer simulation enabling the prediction of the level index for various loads.

Investment planning, especially in air transport, is a complex process. It requires taking into account many factors and combining different aspects. The decision is based on an analysis of the needs, development strategy and passenger traffic forecasting. The number of elements to be taken into account is much higher. The lack of possibility of experimenting in real time and the dynamism of service processes confirm the validity of the simulation as a tool supporting decision making. Computer simulation can be applied to both existing and emerging airports, as this method takes into account the uncertainties, dynamics and multidimensional nature of the phenomena being analysed.

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