Perception of Waiting Time in Queues and Effects on Service Quality Perception and Satisfaction: A Research on Airline Check-in Services

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Abstract

The service provided by the airlines starts with the check-in process. During this step, passengers interact with the airline for the first time. Also first impression about airline is formed at check-in counters. On the other hand passengers spend almost %80 of the total waiting time in terminal in check-in queues. Therefore perception of waiting time becomes more of an issue. Actual waiting time should be minimized in order to avoid negative effect of perception of waiting time on service quality perception. Also perceived time should be close to actual waiting time. If the gap between actual time and perceived time widens, passenger satisfaction will be affected. In our research, our goal is to approach perceived time, satisfaction and quality perception jointly. We collected data by making 412 face-to-face questionnaires at International Terminal of Antalya Airport in September 2015. Questionnaires include 4 mains sections measuring demographics, service quality expectation and perception, perceived times and satisfaction level. In our previous study we made SERVQUAL analysis and developed factors of check-in service quality. In this study we discuss perceived times over two important components, service quality perception and satisfaction. Besides we have collected additional actual waiting and service time data from check-in counters. Perceived and actual waiting times are compared. Satisfaction levels and changes are analyzed. Moreover effects of perceptions are handled with actual system values. Eventually, this paper researches intensively on time perception, service quality and satisfaction interaction through the perspective of service marketing.

Introduction

Airline service can be divided into three main parts. These three main parts are named as pre-flight services, during flight services and post-flight services. In order to evaluate service, cutting the whole service into slices helps researcher to achieve more accurate and detailed outputs. Therefore we have focused the check-in services and analyzed the process in perspective of service quality. Pre-flight services contain security screening, check-in, passport control, boarding subprocesses (Verbraeck and Valentin, 2002). In pre-flight services, check-in is the first step of service which is in charge of airline. So check-in has an important effect on passenger quality perception and airline image. Airline image starts to be shaped in passenger's mind beginning from check-in. According to service quality modal of Grönroos, there is a connection among functional quality, technical quality and company image (Grönroos, 1984). Check-in services should be considered for improving whole service quality of airlines.

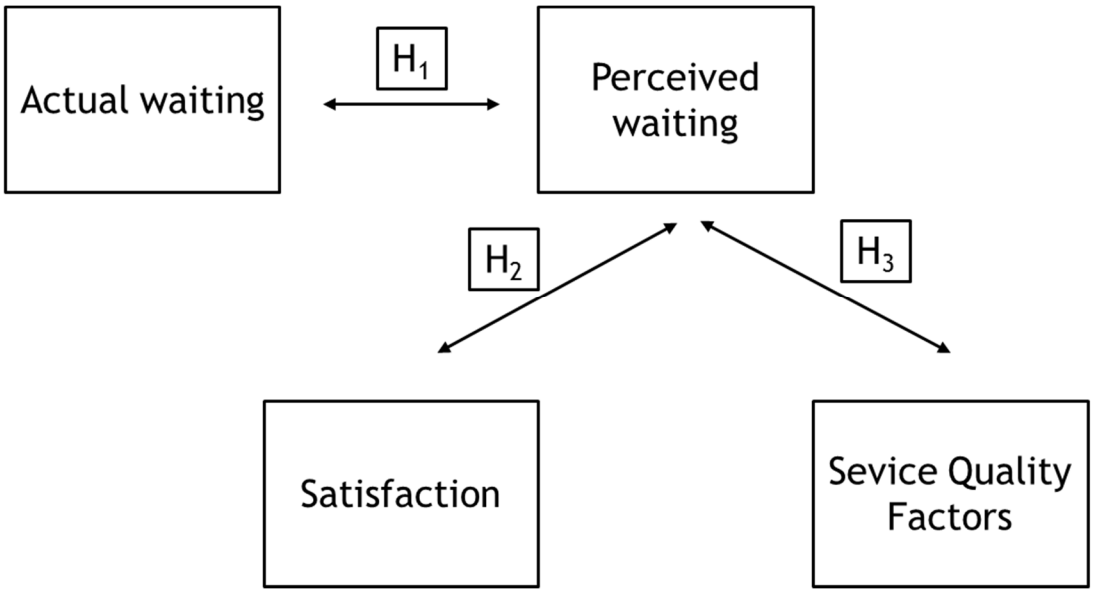
Check-in service is the process that passengers register their baggage and exchange his flight coupon for a boarding pass before flight (Lee and Longton, 1959). It is the first thing that passenger has to do about his flight just after entering the airport terminal. On the other hand there are different types of check-in that passenger can choose. These are counter check-in, internet check-in and kiosk check-in

(Lu, Choi, and Tseng, 2011). If passenger uses the counters in the airport terminal it is called counter check-in. Internet check-in is the check-in type which passenger performs check-in by using the airline web site. And the third type check-in is the kiosk check-in which passenger performs check-in by using kiosk machines in the airport terminal. Kiosk and internet check-in utilization levels are low according to counter check-in. Because of that we have focused counter check-in in our study.

In counter check-in process, there are limited resources which serves. On the other side passenger number is more than the resource number, so passengers have to get into the queue in order to get service. This makes the queues basic part of check-in process. Check-in personnel serve passengers in the discipline of first in first out. But in almost all cases passengers have to wait in the queues for check-in. Passengers spend %25 of their time by waiting in airport terminal. And approximately %80 of total waiting time of passengers occurs in check-in process (Takakuwa and Oyama, 2003). Most of the waiting is caused by check-in. And the less time passenger spends in the system means the higher the satisfaction (Appelt, Batta, Lin and Drury, 2007). On the other hand waiting influences the satisfaction negatively. As actual waiting time increases, overall customer satisfaction in tended to decrease (Katz, Larson and Larson, 1991). Because unoccupied time feels longer than occupied time (Maister, 1984). Due to these reasons counter check-in is dealt by taking waiting times, satisfaction and service quality into consideration. The aim of this study is to determine the relation between actual waiting time, perceived waiting time, satisfaction and service quality factors in counter check-in services.

Research Methodology

In this study, we have determined four main notions. Relations are searched between these notions by using appropriate methods and techniques. Before explaining these methods and techniques, reviewing the research modal below will be helpful in order to understand relations and hypotheses.



Hypotheses are defined as:

$H1_0$: There is no significant difference between actual waiting times and perceived waiting times.

$H1_1$: There is significant difference between actual waiting times and perceived waiting times.

$H2_0$: There is no significant relation between perceived waiting times and satisfaction.

$H2_1$: There is significant relation between perceived waiting times and satisfaction.

$H3_0$: There is no significant relation between perceived waiting times and service quality factors.

$H3_1$: There is significant relation between perceived waiting times and service quality factors.

Actual waiting time in the check-in queue is the real time which passenger spends in the waiting line of counter. Actual time and perceived time differ from each other. Perceived waiting time in the check-in queue is the time which passenger thinks that he spend while waiting in the line of counter. Perceived time in waiting line has an effect on satisfaction according to previous researches like Maister and Katz et al. (Maister, 1984; Katz, et al., 1991). In this study actual and perceived times in the check-in queues are compared.

Satisfaction is the general satisfaction level of passenger for check-in service. General satisfaction level of passengers is acquried from the satisfaction question in the questionnaire. By the way questionnarie has four main parts and 43 questions. Distrubutions of the quetions on main parts are defined below:

1. Demographic information of participants (6 questions)
2. Service quality expectation and perception questions (34 questions)
3. Satisfaction level question (1 question)
4. Perceived waiting time questions (2 questions)

Demographic information of participants are mostly used to control sample whether it fits universe or not. Especially distribution of gender in sample is compared with universe whether to find out the sample represents the universe or not. Other demographic information collected are age range, education level, flight frequency and number of passengers in the group travelling together.

Service quality expectation and perception questions are asked to obtain main service quality components of check-in service and analyze the gap between expectations and perceptions of quality. While making this comparison, weighted Servqual methodology is used. Weighted Servqual is just differs from traditional Servqual in calculation step of service quality factor scores. Traditional Servqual method is developed by Parasuraman et al (Parasuraman, Zeithaml and Berry, 1994). Servqual scale has five main components of service quality and evaluates the quality of service in that perspective. These five components are:

- Emphaty
- Reliability
- Tangibles
- Responsiveness
- Assurance

We have build a service quality modal (Servqual based) in order to find factors affecting service quality in check-in process. Service quality items are asked for both expectations and perceptions in the questionnaire. After this step we used weighted Servqual to calculate scores of each factor. The purpose here is to reduce negative effects of participants' extreme selections in Likert type service quality questions. For example participant group of 100 persons have answered a fivefold Likert type scale question as 50 persons chosen 1 and other 50 persons chosen 5. In this case arithmetic mean of the proposition will be calculated as 3 and there would not be seen any problem for this situation. But

while half of the participants mostly agree the suggestion, other half of the participants mostly disagree. As you see traditional Servqual factor score calculation can misdirect the researcher and hide the latent effects in the conceptual build. That is where weighted Servqual calculates the factor scores more accurate and avoid probable misdirection and misunderstanding (Pakdil and Aydın, 2007). Weighted Servqual factor score calculation formula is given below:

$$G_i = \sum_{j=1}^{n} w_j \, (P_{ij} - E_{ij})$$

In the weighed score calculation formula, G represents the total factor score of service quality component, w represents the factor loading of each item under related factor, P represents the perception score of item given by participant and E represents the expectation score of item given by participant.

After factor analysis and calculating weighted scores of each service quality factor, relation between perceived waiting time in the check-in queue and service quality perceptions are analyzed. Factor analysis steps and other relations are explained in the results section.

Sample

Data is collected by applying questionnaire to 412 participants at International Terminal of Antalya Airport in September 2015. All of the customers have taken check-in service by using counters at airport terminal. Sample size is adequate according to calculation presented below (Vaus, 2001):

$$n = \frac{z^2 \, p \, q}{d^2}$$

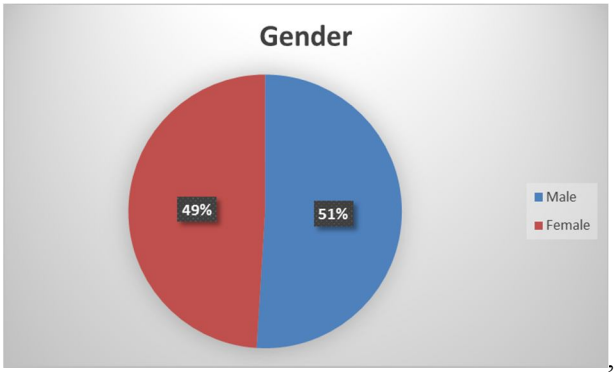
In the formula z represents the z value (1,96 for alpha=0.05), p represents the occurrence probability of event (p=0.5), q represents the non-occurrence probability of event (q=0.5) and d represents the margin of error (d=0.05). According to the formula and the values, 385 persons are adequate sample size for the study. On the other side, we have used factor analysis method for determining factors affecting service quality perception. Adequate sample size for factor analysis is accepted as 300 persons at least (Field, 2000). For both adequate sample size limits, our data collected from 412 passenger is sufficient to represent universe.

All of the passengers in the sample have taken check-in service in counters for economy class. In the study, nationality of passengers is not taken into account. So there is not any distinctive questions for flight class or nationality in our data collection tools.

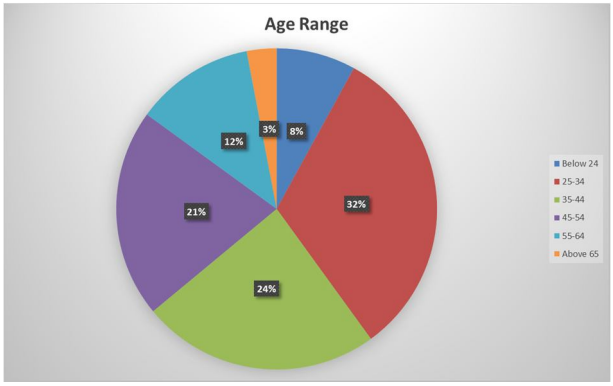
For the factor analysis there are extra few tests must be done. These are sample size adequacy test (Kaiser-Meyer-Oklin) and Bartlett's sphericity test. KMO value is between 0 and 1 and it should be above 0.5 (Field, 2000). Bartlett sphericity test shows the factorability of data. It has to be significant in order to make factor analysis. In this study, KMO value is 0.79 and is accepted. Relations between the variable are clear according to the KMO value. On the other hand Bartlett's test is significant at %95 confidence level ($p<0.05$). Our sample size is adequate and data is appropriate for factor analysis.

Findings and Discussion

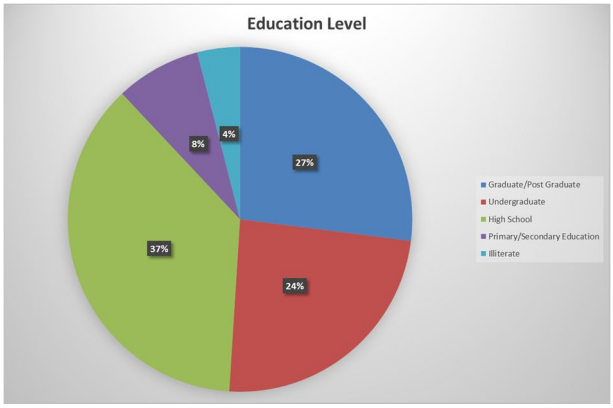
Before discussion of finding, demographic information distributions are given. There are gender, age range, education level, flight frequency and number of passengers in the group travelling together. Distributions are given in the graphics shown below:



As you see in the graph, %49 of participants are female and %51 of participants are male. Distribution of the gender variable is able to represent the distribution in the universe which has equal distribution of genders.

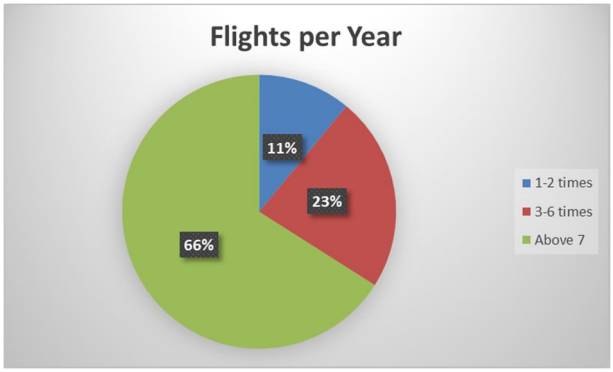


Age ranges are determined as below 24, 25-34, 35-44, 45-54, 55-64 and above 65. Categories are rational. %8 of participants are below 24 year old, %32 of participants are 25-34 year old, %24 of participants are 35-44 year old, %21 of participants are 45-54 year old, %12 of participants are 55-64 year old and %3 of participants are above 65 year old.

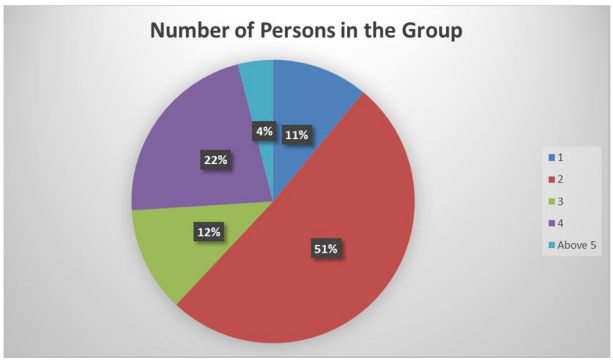


Education levels are determined as graduate/post graduate, undergraduate, high school, primary/secondary school and illiterate. %27 of participants have graduate/post graduate, %24 of

participants have undergraduate, %37 of participants have high school, %8 of participants have primary/secondary school education level and %4 of participants are illiterate.



Flight frequency categories are determined as 1-2 times per year, 3-6 times per year and more than 7 times in a year. %11 of participants fly 1-2 times in a year, %23 of participants fly 3-6 times in a year and %66 of participants fly 7 or more times in a year. Distribution of the flight frequency of passengers is not homogeneous. These values represent only our sample which uses Antalya Airport.



Person numbers in the passenger group is also asked in order to find out travelling behavior. Most of the passenger travel with one near him (%51). %11 of participants travel alone, %12 of participants travel as 3 persons, %22 of persons travel as 4 persons and %4 of participants travel as 5 persons or above.

Our last question in demographics part is the travel purpose of passengers. %67 of participants travel for entertainment, %25 of participants travel for business, %7 of the participants travel for educational and %1 of the participants travel for medical purposes. After investigating the demographic part, relations given in the research modal are presented in subheadings.

Actual Waiting vs. Perceived Waiting in Queue

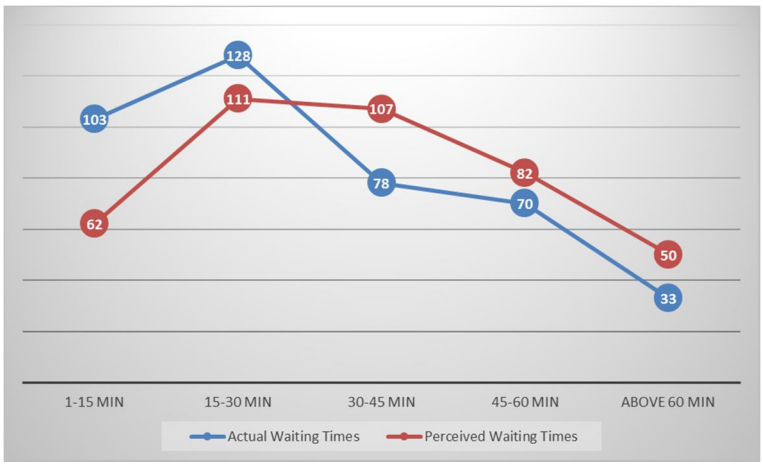
Perceived waiting times data are collected from participants via questionnaire. There are five categories for waiting time categories. These are:

- 1-15 minutes
- 15-30 minutes
- 30-45 minutes
- 45-60 minutes

- More than 60 minutes

On the other side, 412 actual waiting time data collected from the counter check-in queues. After that these two variables are compared by using chi square tests. Because of the variables are categorical, comparison is available by using chi square. There is significant difference between actual waiting times and perceived waiting times. Category frequencies are compared by using chi square test. ($p<0.05$).

Frequencies of actual waiting times and perceived waiting times in counter check-in queues are given in the graph below.



According to the graph we can tell that:

- Passengers waiting more than 30 minutes in the queue are tended to perceive waiting much more than actual waiting time.
- If actual waiting time is below 30 minutes, passengers are tended to perceive waiting less than actual waiting time. This situation can show us that reasonable waiting time is 30 minutes or less.

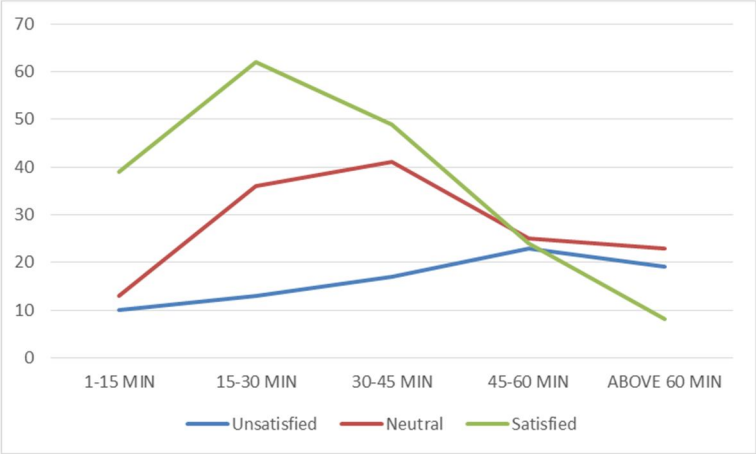
Perceived Waiting – Satisfaction

There are 5 categories of perceived waiting times as given before and 5 categories of satisfaction level in Likert type scale. We have re-categorized satisfaction scores in three levels as:

- Satisfied (4-5)
- Neutral (3)
- Unsatisfied (1-2)

After completing the preparation of data, frequencies are compared in crosstab. Again chi square test is used. There is significant difference between perceived waiting times and satisfaction levels ($p<0.05$).

Frequencies of perceived waiting times and satisfaction levels in counter check-in queues are given in the graph below.



According to the graph we can tell that:

- Satisfied passenger number is tended to decrease as perceived waiting time increases.
- Unsatisfied passenger number is tended to increase as perceived waiting time increases.

Perceived Waiting – Service Quality

In order to compare perceived waiting time in queue and service quality perception, we have determined the service quality components for check-in services by using factor analysis. Reliability of the scale is calculated and Cronbach's Alpha value of 17 items is 0.762 which is accepted in terms of reliability (Field, 2000). Our 17 items are asked for both expectation and perception of service quality in the questionnaire. Factor analysis is based on expectation scores.

Factor loadings of 17 items are given in the table below:

	Emphaty	Reliability	Tangibles	Responsiveness	The time spent	Assurance	Service speed
Communication of staff	0,742						
Helpfulness of staff	0,624						
Heedfulness of staff	0,532						
Faultless service		0,712					
Standart service		0,648					
Accurate and exact service		0,603					
Informative signs			0,782				
Staff clothing			0,741				
Trolley for baggage			0,586				
Accesibility				0,552			
Kindness of staff				0,463			
Time spent in queue					0,689		
Total time spent					0,637		
Comprehension ability of staff						0,612	
Expertness of staff						0,497	
Problem solving ability of staff						0,426	
Service speed							0,671

As you see in the table, there are 7 factors affecting service quality perception in counter check-in services. Explained total variance is %69.597 and each factor explains the variance as shown below in the table:

Factor	Explained Variance	Cumulative Explained Variance
Emphaty	13.251%	13.251%
Reliability	11.988%	25.239%
Tangibles	10.373%	35.612%
Responsiveness	10.067%	45.679%
The time spent	8.583%	54.262%
Assurance	8.412%	62.674%
Service speed	6.923%	69.597%

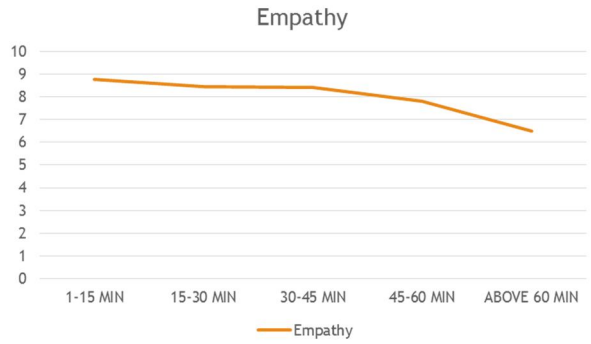
After obtaining the service quality factors, we have transformed the data set according to weighted Servqual method. Then relations between service quality and perceived waiting times analyzed. Difference between categories is researched. Significant differences found between perceived waiting time categories and service quality factor scores shown below:

Chi Square Significance Values	
Perceived waiting time - Empathy	p<0.05
Perceived waiting time – Reliability	p<0.05
Perceived waiting time – The time spent	p<0.05
Perceived waiting time – Service speed	p<0.05

Only 4 factors have relation with perceived waiting time and given in the table. Each of the four service quality factors presented in subheadings and relations explained.

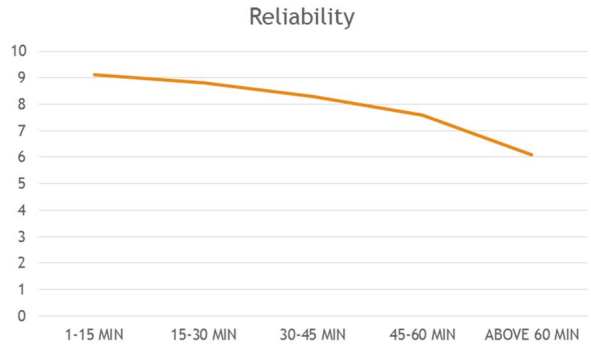
Perceived Waiting – Empathy

Empathy is tended to decrease as perceived waiting time increases.



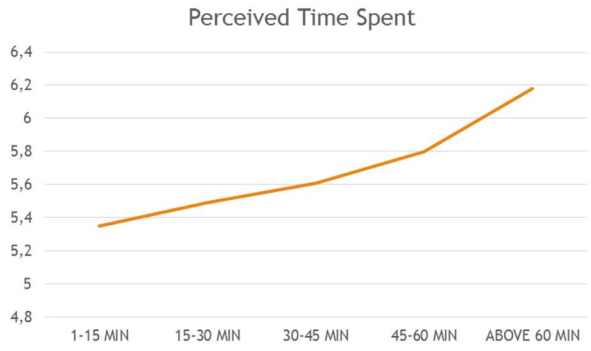
Perceived Waiting – Reliability

Reliability is tended to decrease as perceived waiting time increases.



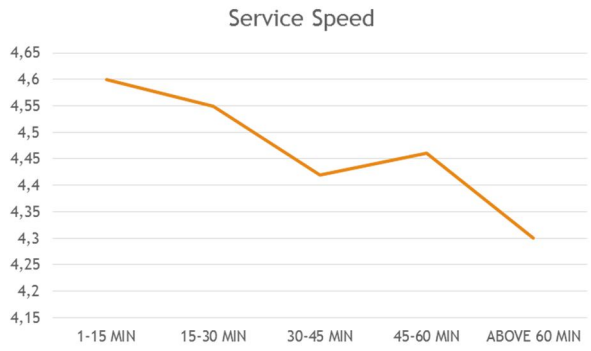
Perceived Waiting – The time spent

Perceived total time spent (including the value adding process time) is tended to increase as perceived waiting time increases.



Perceived Waiting – Service speed

Perceived service speed (perceived) is tended to decrease as perceived waiting time increases.



Conclusion and Suggestions

After 30 minutes, perceived waiting time in the check-in queue is more than actual waiting time. There is a breaking point at 30 minutes. Until that point, passengers perceive less waiting than actual times. This breakpoint have to be analyzed in further studied. It may show us reasonable waiting time limit.

Satisfaction of passengers decreases as perceived waiting time increases. But there is also a breakpoint at 30 minutes (which can be called reasonable waiting time).

In order to improve satisfaction level in check-in services, actual service time should be held below 30 minutes. Four of service quality factors are affected from perceived waiting time.

- Empathy
- Reliability
- The time spent
- Service speed

As perceived waiting time increases, passengers evaluate the items below poor:

- Empathy: Communication of staff, helpfulness of staff, heedfulness of staff (willingness to help passengers)
- Reliability: Faultless service, standard service, accurate and exact service

In order to prevent misevaluations of passengers, perceived waiting time should be restrained.

For further researches, ways of controlling perceived waiting time and its' effects can be studied. For example:

- Effects of components (music, signs etc.) in the waiting area on perceived waiting time
- Ways to prevent misevaluation, misinterpretation, misperception of service quality factors

Bibliography

Appelt, S., Batta, R., Lin, L., & Drury, C. (2007). Passengers' perceptions of airline lounges: Importance of attributes that determine usage and service quality measurement. Proceedings of the 2007 Winter Simulation Conference, 1252-1260. doi:10.1109/WSC.2007.4419729

Field, A. (2000). Discovering Statistics Using SPSS for Windows. London: Sage Publications.

Grönroos, C. (1984). A service quality model and its marketing. European Journal of Marketing, 18(4), 36-44.

Katz, K. L., Larson, B. M., & Larson, R. C. (1991). Prescription for the waiting-in-line blues: Entertain, enlighten, and engage. Sloan Management Review, 32(2), 44-53.

Lee, A. M., & Longton, P. A. (1959). Queueing processes associated with airline passenger check-in. Operational Research Quarterly, 10(1), 56-71. doi:10.2307/3007312

Lu, J.-L., Choi, J. K., & Tseng, W.-C. (2011). Determinants of passengers' choice of airline check-in services: A case study of American, Australian, Korean, and Taiwanese passengers. Journal of Air Transport Management, 17(4), 249-252. doi:10.1016/j.jairtraman.2010.12.011

Maister, D. H. (1984). The psychology of waiting lines. Boston: Harvard Business School.

Pakdil, F., & Aydın, Ö. (2007). Expectations and perceptions in airline services: An analysis using weighted Servqual scores. Journal of Air Transport Management, 13, 229–237.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1994). Servqual: A multiple-item scale for measuring consumer perceptions of service quality. Journal of Retailing, 64(1), 12-40.

Takakuwa, S., & Oyama, T. (2003). Simulation analysis of international departure passenger flows in an airport terminal. Proceedings of the 2003 Winfer Simulation Conference, 1627-1634.

Vaus, D. d. (2001). Research design in social research. London: Sage Publications.

Verbraeck, A., & Valentin, E. (2002). Simulation building blocks for airport terminal modeling. Proceedings of the 2002 Winter Simulation Conference, 1199-1206.