

8047

MODELLING OVERALL SATISFACTION IN THE EUROPEAN AIRPORTS

Yeliz Mert Kantar

Professor Doctor
Eskişehir Technical University
Eskişehir, Turkey
ymert@anadolu.edu.tr

Serkan Olgaç

Lecturer
Anadolu University
Eskişehir, Turkey
solgac@anadolu.edu.tr

Nevin Yavuz

Lecturer
Eskişehir Technical University
Eskişehir, Turkey
nevin@anadolu.edu.tr

Semra Günay Aktaş

Professor Doctor
Anadolu University
Eskişehir, Turkey
semragunay@anadolu.edu.tr

Abstract

Transportation in tourism is most often seen as just part of the tourism system. Among transportation types, air transport involves an important part of a broader travel and tourism sector. Air transport consists of air/ground services. The first step of tourist's satisfaction is satisfaction in airports which depends on various factors. Thus, it is important to identify which factors in airport are unpleasant and which factors are enhancers of passenger satisfaction. In this paper, we seek to find the factors affecting the overall satisfaction at 100 airports receiving the highest number of passengers in Europe. Our analysis is based on a sample data obtained from Skytrax. We consider the airport ownership (private, public and private-public partnership), seating capacity, cleaning and waiting time as variables to explain overall satisfaction. We observed that the airport ownership is not statistically significant on overall satisfaction. We find that the waiting time is the major variable to explain overall satisfaction in airport. Direction for future research is presented.

Key Words: Airports, Regression, Overall satisfaction, Skytrax.

Introduction

The development of international tourism has increased the competition among tourist destinations and strategies of tourism management. It is known that "tourist satisfaction" is one of the most important factors in evaluating the success of tourism management. Similarly, customer satisfaction

is described as a critical determinant of behavioural intentions (e.g. revisiting, recommendation, and spending more) in the various industries (Han, 2013; Kim, Han, Holland, & Byon, 2009; Lam et al., 2011; Lee, 2014; Qiu, Ye, Bai, & Wang, 2015; Ryu, Lee, & Kim, 2012). Previous studies show that the overall physical environment (such as seat capacity and cleaning) affects customer satisfaction and therefore tourist satisfaction. (Ali and Amin, 2014; Heung and Gu, 2012; van Oel and van den Berkhof, 2013). On the other hand, since airports are the starting and ending point of travel of tourists, it is the first place where tourists will get their first impression of the holiday experience in the relevant destination and thus the satisfaction in airport for tourist is an important part of the satisfaction of holiday experiences. The airport sector is rapidly changing. In recent years, the number of international travellers has increased rapidly and thus huge and important investments in air transport in many countries have been done by private and public sector. Moreover, passengers in air transport make a choice among airports considering the quality of airport service covering all activities from departures to arrivals. Therefore, many studies have been conducted in this field to understand the level of overall satisfaction of passengers in different airport and as well as the degree of tourists' loyalty to the destination. For example, Mohammad Al - Haj Mohammad (2014) based on data taken from Queen Alia International Airport indicated that five tourist's satisfaction factors, "Support services", "Transportation and cleanliness", "Variety of services and hospitality", "Accommodation and food and beverage" and "Event and safety", effect on revisit and recommend Jordan as a tourist destination. Moon et al. (2017) found that airport cleaning has a positive impact on the desire to spend more time at the airport and Assaker (2011)'s finding supported the obtained results for satisfaction and revisit intention. On the other hand, Shirazi and Som (2011) claimed that "revisit and positive recommendation" are two important issues in relationship marketing in tourism destination. While Hui et al. (2007) indicated importance of satisfaction on loyalty, Wang et al. (2012) researched tourist experience, known as a mediator between service quality and revisit intention through Chinese tourists. Gim (2018) studied the relationship among attribute satisfaction, overall satisfaction, image, and tourist loyalty (intention to revisit and to recommend) in the three areas of the Korean: Seoul, Incheon, and Gyeonggi.

This study found that overall satisfaction positively affected image and loyalty in all models, lending support to the findings of previous studies. In Shirazi (2016), a survey questionnaire based on the earlier studies was developed and applied to international tourists in Penang. Evaluation of tourist satisfaction is done basic elements in destination including attraction, accessibility, image, amenities, price, and people working in tourism. 'Attraction' is found as the most liked element. The relationship between the tourists' perception and satisfaction is identified in (Gnanapala, 2015) by using regression analysis. Since airports are the starting and ending point of travel of tourists, the satisfaction in airport for tourist is an important part of the overall tourist satisfaction, thus, various studies have been conducted to evaluate passenger's or tourist's satisfaction in airport. For example, baggage access time is evaluated in terms of passenger satisfaction levels at airports in (Ofiac and Yumurtaci, 2014) and it is found that baggage access time (after arrival) is a significant factor in overall passenger satisfaction. Correia et al (2008) studied overall level of service data collection at airport passenger terminals. Design of seats and large corridors are other factors to provide great satisfaction at airport for users (Zheng, 2014). It is also concluded from studies on the aviation industry that the comfort of seating has a significant impact on visitors (Ahmadpour, Lindgaard, Robert and Pownall, 2014; Batra, 2014). Additionally, since passengers spend at least two hours before departure in airports, seating comfort is a vital element of main factors of physical environments in gratifying visitors (Moon, Yoon and Han, 2017). Passenger perceptions of service quality with eleven factors was studied in Park (2007). Sum up, in order to obtain high levels of passenger satisfaction, many performance indicators have to be taken into account by airport management.

The study was driven by the following questions in accordance with the main purpose:

1. How is the distribution of overall satisfaction level of European Airports?
2. Is there any difference between public and private airport in terms of satisfaction?
3. Which satisfaction is expository on overall satisfaction at airports?

Method

In this paper, we seek to find the factors affecting the overall satisfaction at 100 airports receiving the highest number of passengers in Europe. Our analysis is based on a sample data obtained from Skytrax. The overall satisfaction level for airports was determined by Skytrax based on the assessment of seating capacity, waiting time and cleaning variables. Satisfaction levels for airports are shown at 7 degrees. The highest satisfaction is given by 7, the lowest satisfaction level is given by 1. The places of low satisfaction on the map are indicated by cold spots (blue tones) and high satisfaction levels are indicated by hot spots (red tones). The first question of this research (How is the distribution of overall satisfaction level of European Airports?) is researched by map. In order to explain the second question of this research (Is there any difference between public and private airport in terms of satisfaction?), the chi-square test is used. For the explain of the question of “which satisfaction is expository on overall satisfaction at airports?” we use regression analysis to explain overall satisfaction in terms of other variables.

Findings

The distribution of general satisfaction with European airports is given in Figure 1. When Figure 1 is examined, it is understood that the distribution of satisfaction for airports demonstrates spatial patterns.

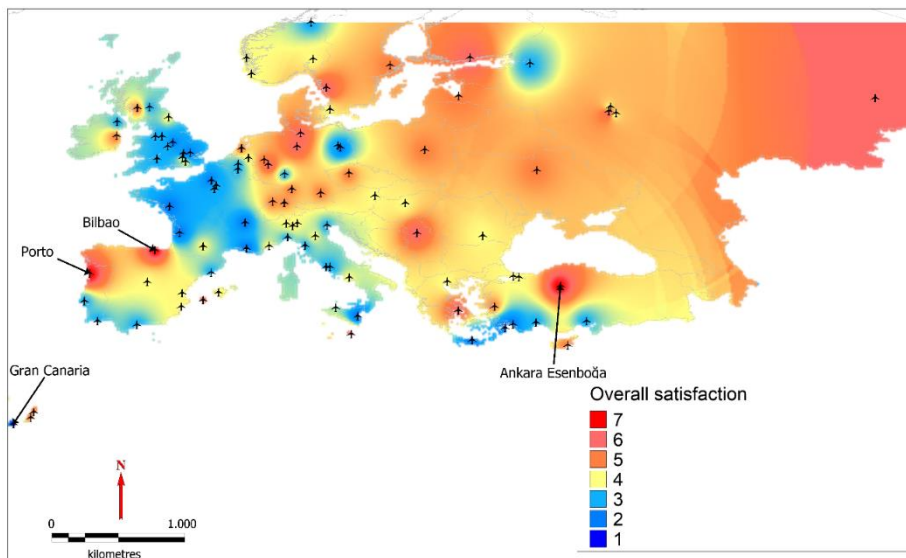


Figure 1. Distribution of airport’s overall satisfaction

It is observed that while the satisfaction level is low at the airports in the south of the Iberian Peninsula, the satisfaction level has increased in the eastern airports and the highest level of satisfaction is seen at the northern and north-western airports of this Peninsula. The overall satisfaction level of the airports in France, England and Italy is low. The satisfaction levels of airports

in Central, North and East European countries are generally moderate and good. Satisfaction level of the Turkey airports is determined is low in southern country but increases to northern side. Airports with the highest overall satisfaction level in Europe are Ankara Esenboğa in Turkey, Porto in Portugal and Bilbao in Spain. Gran Canaria has the lowest satisfaction level in the European continent.

Table 1. Correlation matrix for satisfaction in airports

Overall	Seating	Cleaning	Waiting time
1	0.694	0.677	0.823
	1	0.654	0.651
		1	0.638
			1

Correlation matrix is a square, symmetrical matrix. Each row (and each column) represents a different statistic, and the value at the intersection of each row and column except the diagonal elements shows the correlation between the two variables. Correlation matrices are symmetrical about the main diagonal, which means they are mirror images of themselves above and below the diagonal going from top left to bottom right (Tabachnick and Fidell, 2007). The correlation coefficient is used to determine the direction and degree of the relationship between the variables. The correlation coefficient (r) takes values between -1 and +1. As the absolute value r approaches 1, the degree of the relationship between the variables increases. In Table 1, correlation matrix which show the correlation coefficients between variables is given. According to Table 1, there is a strong relationship between general satisfaction and waiting times. There is a positive relationship between overall satisfaction and the seating capacity and cleaning. In other words, satisfaction level of airports increases as seating capacity increases. Likewise, if the airports are clean, satisfaction level increases in the same direction.

Table 2. The estimates of regression model parameters

Airport	1	2	3	4	5	6	7
Private	0	0	7	4	2	1	15
Public	0	6	4	5	9	3	27
Private-Public	1	4	13	17	7	6	50
	1	10	24	26	18	10	92

It is found that there is no the relationship between overall tourists' satisfaction and the airport ownership (private, public and private-public) based on the Chi-square test. Table 2 shows contingency table proving the frequency between ownership of airport versus overall satisfaction. The Chi-square test is 16, 81 with p -value, 0.157 and the values of Goodman and Kruskal tau, Cramer V coefficients are very close to zero. Thus, it can be concluded that there is no correlation between overall satisfaction in airport according to ownership (private, public and private-public).

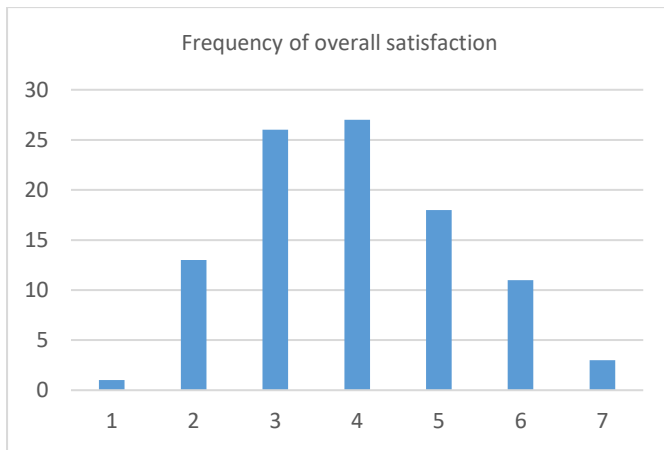


Figure 2. Frequency of overall satisfaction in airport

In the study, the overall satisfaction level for the airports are shown at 7 degrees. Figure 2 shows the frequencies related to this satisfaction. It is seen that the highest satisfaction frequencies are degree 3 and 4. According to this finding, it can be stated that tourists' satisfaction is the moderate/ average levels at the European Airports.

Finally, we use regression analysis to explain overall satisfaction in terms of other variables. That is, tourists' satisfaction as the dependent variable is modelled by seating capacity, cleaning and waiting time as explanatory variables.

Table 3. The estimates of regression model parameters

		Coefficient	Std.Error	t-Statistic	p-value
Model 1	Constant	0.158841	0.280899	0.565474	0.57307
	Seating capacity	0.321759	0.13897	2.31531	0.02273
	Cleaning	0.182495	0.130709	1.3962	0.16588
	Waiting time	0.902222	0.131074	6.88332	0.00000
Model 2	Constant	0.341476	0.249796	1.36702	0.17478
	Seating capacity	0.406462	0.125639	3.23514	0.00166
	Waiting time	0.976576	0.120352	8.11431	0.00000

It is seen that from Table 3 that there is positive relationship between overall tourists' satisfaction and satisfaction of seating capacity, cleaning and waiting time. Satisfaction for waiting time is the more efficient factor on overall satisfaction in airports.

F test shows that the model 1 is significant and $R^2=0.7084$ is high in terms of fitting ability (See Table 4). Also non-normality and non-constant variance (heteroscedasticity) for error term are rejected based on Jarque- Bera and Breusch-Pagan tests. The condition number is 13, thus, the regression has not multicollinearity problem. On the other hand, Simple Model 2 provides similar performance in terms of R^2 and AIC to Model 1. These results indicate that the linear model 2 is suitable to explain to overall satisfaction.

Table 4. Tests for the estimated classic linear regression model

		F test	Jarque-bera (Normality)	Breusch-Pagan (Heteroscedasticity)	Condition number (Multicollinearity)	R ²	AIC
Model 1	DF	4	2	3			
	Value	77.776	26.7579	10.3114	13.0701	0.7084	233.27
	Prob.	0.0000	0.0000	0.01610			
Model 2	DF	3	2	2			
	Value	114.56	14.7462	8.8521	9.63	0.7025	233.23
	Prob.	0.000	0.00063	0.01196			

Conclusions

Tourist satisfaction is crucial for loyalty for destination, which is explained as revisit and recommendation. Taken into account the review of literature concerning tourism studies, it is emphasized that satisfaction and loyalty for destination is one of the thrust areas of tourism research. Wöber & Fesenmaier (2004) stated that visitor satisfaction with the tourism product is one of the variety indicators which are frequently used to measure the success in tourism destination management. According to Fuchs and Weiermair (2004), many tourism destinations consider tourist satisfaction as one of the most important sources of their competitive advantage. As mentioned by Buhalis (2000), delight tourists by maximizing their satisfaction is one of the key strategic management objectives for destinations. Tourist destinations include an amalgam of industries such as accommodation, transportation, food and beverage services, recreation and entertainment, and travel agencies. Tourist destinations include also public services and facilities, and physical and natural attractions. All these elements are branded together under the name of the destination (Buhalis, 2000; Poonyth, et al., 2002; Ritchie and Crouch, 2003; Vassiliadis, 2008). Yen-Lun Su (2004) express that “the purpose of measuring customer satisfaction is to assess the quality of the existing management practices and identify directions for improvement”.

As the result of all the above literature and issues, strong relationship between satisfaction and loyalty provides a probably ground for repeat visitation. It is also taken into account that satisfaction levels of nationalities can be different (Aktas et al. 2009; Doğan, 2013). The objective of this study is to present the overall satisfaction at 100 airports receiving the highest number of passengers in Europe and explain it with other satisfactions Firstly, we analysed the distribution of satisfaction level of the airports in the European Continent. When the satisfaction level map is examined, it is observed that there is a spatial pattern of the distribution of overall satisfaction level. It is seen that satisfaction level increases from the south to the north and from the west to the east. Airports with the highest level of satisfaction in the European Continent are Ankara Esenboğa in Turkey, Porto in Portugal and Bilbao in Spain. Airport with the lower level of satisfaction is Gran Canaria. Secondly, we looked up whether there is difference of overall satisfaction in airport according to ownership (private, public and private-public). We observed that whether the airport is private or public does not affect the satisfaction. And finally we found that seating capacity and waiting time satisfaction are major as factors to explain overall satisfaction. In addition to these results, we intuitively concluded that the level of satisfaction at airports where is not crowded, is generally high. As a further study, we will investigate whether there is a relationship between the number of passengers and the level of satisfaction. It would be useful in examining all aspects of the current study.

Acknowledgements

This study was supported by Anadolu University Scientific Research Projects Commission under grant No: 1705E153

References

- Ahmadpour, N., Lindgaard, G., Robert, J.-M., & Pownall, B. (2014). The thematic structure of passenger comfort experience and its relationship to the context features in the aircraft cabin. *Ergonomics*, 57 (6), 801 - 815. doi:10.1080/00140139.2014.899632
- Aktaş, A., Çevirgen, A., & Toker, B. (2009). Assessing Holiday Satisfaction of German and Russian Tourists Visiting Alanya. *Tourism and Hospitality Management*, 15 (1) , 1-12.
- Ali, F., & Amin, M. (2014). The influence of physical environment on emotions, customer satisfaction and behavioural intentions in Chinese resort hotel industry. *Journal for Global Business Advancement*, 7 (3), 249 - 266. doi:10.1504/JGBA.2014.064109
- Aref Mohammad Al, B. & Mohammad, H. (2014). Examining Tourist's Satisfaction, Loyalty and Intention to Revisit Bashar, *International Journal of Management Sciences*, 2(6), 260 - 273.
- Assaker, G., Vinzi, V. E., & O'Connor, P. (2011). Examining the effect of novelty seeking, satisfaction, and destination image on tourists' return pattern: a two factor, non-linear latent growth model, *Tourism Management*, 32 (4), 890 – 901.
- Athula Gnanapala, W. K. (2015). Tourists Perception and Satisfaction: Implications for Destination Management, *American Journal of Marketing Research*, 1(1), 7-19. Retrieved from <http://www.aiscience.org/journal/ajmr>
- Buhalis, D. (2000). Marketing the competitive destination of the future. *Tourism Management*, 21, 97-116.
- Correia, A.R., Wirasinghe, S.C. & de Barros, A.G. (2008). Overall level of service measures for airport passenger terminals, *Transportation Research*, Part A, 42, 330 – 346.
- Doğan, H. (2013). Süpermarketlerin Hizmet Kalitesinin Değerlendirilmesi: Doğu Karadeniz Bölgesi Örneği, (Master's Thesis). Karadeniz Teknik Üniversitesi Sosyal Bilimler Enstitüsü, Trabzon.
- Eboli, L., & Mazzulla, G. (2009). An ordinal logistic regression model for analysing airport passenger satisfaction, *EuroMed Journal of Business*, 4 (1), 40 - 57.
- Fatemeh, S. & Shirazi, M. (2016). Assessing tourist satisfaction forms the basis for destination improvement, 4th Interdisciplinary Tourism Research Conference, Bodrum, TURKEY
- Gim, T.H.T. (2018). Article Tourist Satisfaction, Image, and Loyalty from an Interregional Perspective: An Analysis of Neighboring Areas with Distinct Characteristics, *Sustainability*, 10(4), 1283; doi:10.3390/su10041283
- Heung, V. C., & Gu, T. (2012). Influence of restaurant atmospherics on patron satisfaction and behavioral intentions. *International Journal of Hospitality Management*, 31(4), 3-18.
- Hui, T. K., Wan, D., & Ho Alvin (2007). Tourists' satisfaction, recommendation and revisiting Singapore. *Tourism Management*, 28, 965-975.
- Moon, H., Yoon, H.J., & Han, H. (2017). The effect of airport atmospherics on satisfaction and behavioral intentions: testing the moderating role of perceived safety, *Journal of Travel & Tourism Marketing* 34 (6), 749-763. DOI:10.1080/10548408.2016.1223779

- Oflac, B.S., & Yumurtaci, I.Ö. (2014). Improving passenger satisfaction at airports: an analysis for shortening baggage access time *Journal of Management, Marketing and Logistics*, 1(4), 339-347.
- Park, J.W. (2007). Passenger perceptions of service quality: Korean and Australian case studies, *Journal of Air Transport Management*, 13, 238 – 242.
- Poonyth, D, Barnes, JI, Suich, H. & Monamati, M. (2002). Satellite and resource accounting as tools for tourism planning in southern Africa. *Development Southern Africa*, 19 (1), 123 - 141.
- Ritchie, J.R.B. & Crouch, G.I. (2003). *The Competitive Destination a Sustainable Tourism Perspective*. UK: CABI Publishing.
- Shirazi, M. S., & Mat Som, A. P. (2011). Destination management and relationship marketing: two major factors to achieve competitive advantage. *Journal of Relationship Marketing*, 10, 76-87.
- Tabachnick, B.G. , & Fidell L.S. (2007). *Using Multivariate Statistics*, Pearson Education. Inc. USA.
- Van Oel, C. J., & Van den Berkhof, F. W. (2013). Consumer preferences in the design of airport passenger areas. *Journal of Environmental Psychology*, 36, 280–290. doi:10.1016/j.jenvp.2013.08.005
- Vassiliadis, C.A. (2008). Destination product characteristics as useful predictors for repeat visiting and recommendation segmentation variables in tourism: a CHAID exhaustive analysis. *International Journal of Tourism Research*, 10, 439 - 452.
- Wang, W., Chen, J., Fan, L., & Lu, J. (2012). Tourists experience and wetland parks: a case of Zhejiang, China. *Annals of Tourism Research*, 20 (4), 1763 – 1778.
- Wang, Y. (2016). *More Important Than Ever: Measuring Tourist Satisfaction*, (Report No: 10) Griffith Institute for Tourism Research.
- Zheng, M. C. (2014). How airport users luggage affects their perception of seat design at airports. *Journal of Asian Architecture and Building Engineering*, 13 (1), 141–148. doi:10.3130/jaabe.13.141

Biographical Notes

Yeliz Mert Kantar is a Professor in Department of Statistics, Eskisehir Technical University. Her research areas are statistics, robust statistics, econometrics, spatial statistics, theory of distributions.

Serkan Olgaç is a lecturer in the Department of Tourism Management, University of the Anadolu, Eskişehir, Turkey where he teaches courses on statistics and mathematics.

Nevin Yavuz is lecturer in the Vocational School of Transportation, University of the Eskişehir Technical, Turkey where she teaches courses on air transportation and cabin attendant training.

Semra Günay Aktaş is a Professor in the Department of Tourism Management, Anadolu University, Eskisehir, Turkey where she teaches courses on tourism development and tourism geography. Her research focuses on Geography, Tourism Geography, Geographic Information Systems