OPEN ACCESS

Saudi Journal of Business and Management Studies
Abbreviated Key Title: Saudi J Bus Manag Stud
ISSN 2415-6663 (Print) |ISSN 2415-6671 (Online)
Scholars Middle East Publishers, Dubai, United Arab Emirates
Journal homepage: http://scholarsmepub.com/sjbms/

Original Research Article

Airport Service Quality Dimensions and its Influence on Airline Passengers' Satisfaction in India

Dr. Joemon Pappachan*

Assistant Professor, CIASL Aviation Academy, Kochi Airport P.O. Nedumbassery, Cochin, India

DOI: 10.36348/sjbms.2020.v05i01.002 | **Received:** 28.12.2019 | **Accepted:** 08.01.2020 | **Published:** 14.01.2020

***Corresponding author:** Dr. Joemon Pappachan

Abstract

This paper is aiming at the refinement of Airport Service Quality (ASQ) dimensions based on passengers' experience. This new ASQ dimensions evolved are in contrast with the conventional method of setting apart areas concerning ASQ as recognized at every interaction points in the functional flow of passengers through various agencies in the airport. The new dimensions arrived in this study were obtained by analyzing the data regarding airport service quality attributes identified and surveyed with the support of instruments developed by Airports Council International (ACI) and are commonly used by airports in India. This study further analyzed and factorized those items into meaningful ASQ dimensions from passengers' perspective using exploratory factor analysis method and then confirmed the measurement model using confirmatory factor analysis. This study also attempts to find out the relationship between these core dimensional factors of airport service quality and its influence on overall satisfaction of passengers. The interrelationship between these ASQ factors and overall satisfaction level of passengers were estimated using structural equation modeling. The strength of each factor dimension was plotted and drawn implications for the airport operators.

Keywords: Airport Service Quality; Factor Analysis; Passenger Satisfaction; ASQ dimensions; Airport facilities; Structural Equation Modeling.

INTRODUCTION

Airport facilities and services play a significant role in the overall satisfaction of passengers travelling through an airport. Though airport service quality parameters have fewer roles in the purchase decision of an airline ticket, the service quality of the airport becomes momentous when the customers are in the airport.

An international airport typically handles air travelers from different countries around the world; different countries possess different types of culture, it is difficult to predict the nature of expectations of passengers and thereby the underlying ASQ dimensions [1]. It is widely accepted that airport service quality is the perception of passengers toward a product or service delivered by the Airport. Service quality can be understood as a consumer's overall impression about the company and its services [2] or it can be said that service quality are those efforts by the companies which include a chain of performances delivered often divided into a series of processes [3]. Airline service quality is composed of many interactions that involves customers and airlines in which employees trying to boost up the image of the airlines and influence passengers perceptions [4].

According to the research report of ACI 2017, passengers consider ticket price, direct flight availability, flight schedule time and brand image of the airline are significant airline related factors. ACI-ASQ customer satisfaction survey being conducted worldwide quarterly which includes 33 questions related to facilities and services offered by an airport. In fact these areas covers major customer contact points or the areas where customer experiences service quality of airports for instance; facilities related to access, check-in at the airports, passport personal id controls, security, way finding, airport facilities, airport environment and

arrival facilitation. The customer feedback so obtained would help airports to understand various shortfalls in their service delivery at each customer interaction points and could further improve these facilities. However the underlying dimensions or the factors that ultimately influence the customer satisfaction other than the level of performance at each functional interaction points were not very clearly understood so far or scarcely researched. As defined in an ASQ survey, an increase in one percent in the global passenger satisfaction would result in generating an average growth of non-aeronautical revenue by 1.5 per cent.

Bogicevic *et al.*, [5], studied about the satisfiers and dissatisfiers of airport service quality indicated that airport cleanliness and pleasant environment are the key satisfiers whereas security check, confusing signage and poor dining offer found to be major dissatisfiers however the overall influence of these factors together in assessing the overall satisfaction is not yet studied.

Engel *et al.*, [6] claimed that passengers attitude to a service is proportional to the strength of their beliefs about the different attributes attached with service and the weight of the attributes.

Fodness and Murray [1] had gone beyond the traditional service quality measures used in the airport industry and introduced new constructs such as function, interaction and diversion which are identified as three major areas in very board perspective; however the relationship with these constructs and overall satisfaction of passengers has not been identified.

Hansemark and Albinson [7] indicated customer satisfaction as an attitude of customers towards a service product, or a kind of emotional response to the gap between customer anticipation and customer perception in fulfilling their needs and wants however the attribute or factors that contribute significantly in generating customer overall satisfaction was not found in the literature.

Customer satisfaction is achieved by providing optimum level of services that customer expects particularly the highly- valued ones and simultaneously keep away those attributes that customers do not value. This could be ensured by constant reviewing of customer feedback and also knowing and assessing customer expectations accurately [8-11].

RATIONALE OF THE STUDY

Presently Airport service quality is assessed based on each customer interaction areas which are often considered as separate non-interactive sections, for e.g. Check-in and security functions are performed by different agencies. The airport service quality items were included under various sub headings corresponding to these areas in the ACI- ASQ survey questionnaire. Each sub headings demonstrates various interaction stages faced by passengers at the departing and arrival terminals of airports.

Industry trend shows that today airports are keen to develop facilities with the support of innovative technological advancements which simplifies passenger processing procedures. To keep up with the change in priorities of the passengers travelling through airports, it is now essential for airport operators to know in depth about the service quality facets specifically the expectations and perceptions of passengers and the key factors that influence their satisfaction which ultimately makes a better passenger experience.

OBJECTIVES OF THE STUDY

This study tries to accomplish the following objectives as stated below:

a. To explore the airport service quality dimensions from airline passenger's perspective
b. To appraise the strength of each airport service quality dimensions and its effect on overall satisfaction of passengers

MATERIAL AND METHODS

Data was collected with a standard questionnaire used by ACI-ASQ for survey among passengers. Passengers were asked to rate each item according to a 5-point scale. Passengers were located at the departure hall of various airports India. Out of 1100 passengers approached, only 957 responses were found to be completed after scrutiny of filled up questionnaires and taken for the analysis which forms the sample size for this study. It was ensured that all the passengers participated in the survey have already had air travel experience through any of the airports in India by verify them with a prerequisite question for participating in the survey. Since it was presumed that a passenger cannot respond to all the items in the questionnaire unless he/she had air travel experience.

Those factors extracted with Eigen value more than one and average variance extracted above 50 per cent were only taken for further analysis. The underlying dimensions that summaries the airport service quality dimensions were taken as a measurement model and were further verified with other statistical tests that ensures the internal consistency of items. Confirmatory Factor Analysis (CFA) was performed to validate the measurement model obtained from EFA. After verifying the measurement model, a structural equation modeling (SEM) was carried out to examine the relationship between the independent factor dimensions of airport service quality and the dependent variable in this study namely passenger satisfaction. The regression estimates of each measurement models (factor –constructs) that explain the passenger satisfaction were obtained from the SEM output text results.

The various indicator items that describe ASQ were identified from the ACI-ASQ survey questionnaire used by various airports in India. These 33 ASQ attribute items are classified in terms of their respective functional area as given in the ACI-ASQ survey instrument which is normally rated by the passengers on a 5 point scale. The functional area and the indicative items are as given in Table-1 below.

Table-1: Indicative items for measuring ASQ based on ACI-ASQ instrument

Functional Area	ASQ Indicative items
ACCESS	Ground transportation to /from airport
	Availability of parking facilities
	Value for money of parking facilities
	Availability of baggage carts/trolleys
CHECK-IN	Waiting time in check-in queue/line
	Efficiency of check-in staff
	Courtesy, helpfulness of check-in staff
PASSPORT/PERSONAL ID CONTROL	Waiting time at passport/personal ID inspection
	Courtesy and helpfulness of inspection staff
SECURITY	Courtesy and helpfulness of security staff
	Thoroughness of security inspection
	Waiting time at security inspection
	Feeling of being safe and secure
FINDING YOUR WAY	Ease of finding your way through airport
	Flight information screens
	Walking distance inside the terminal
	Ease of making connections with other flights
AIRPORT FACILITIES	Courtesy, helpfulness of airport staff
	Restaurant/eating facilities
	Value for money of restaurants/eating facilities
	Availability of bank /ATM facilities/money changers
	Shopping facilities
	Value for money for shopping facilities
	Internet access/Wi-Fi
	Business/ Executive lounges
	Availability of washrooms/toilets
	Cleanliness of washrooms/toilets
	Comfort of waiting /gate areas
AIRPORT ENVIRONMENT	Cleanliness of airport terminal
	Ambience of the airport
ARRIVAL SERVICES	Passport/Personal ID inspection
	Speed of baggage delivery service
	Customs inspection

Exploratory Factor Analysis (EFA) was performed with the data obtained as per the ratings provided by passengers based on their experience at the airport. Adequacy of the sample was examined in terms of its validity and reliability of the data.

RESULTS AND DISCUSSION

Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) was performed primarily for simple data reduction and understanding latent constructs. Hence the use of EFA is more pragmatic than theoretical and the intention was to consider a reasonably large number of variables and then reduce them to a smaller, more manageable number while retaining as much of the original variance as possible.

Exploratory Factor Analysis was performed with Principle component analysis method. Table-2 provides the details of factor loadings with total variance explained.

Table-2: Total Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	16.128	48.873	48.873	16.128	48.873	48.873	8.068	24.449	24.449
2	2.774	8.406	57.279	2.774	8.406	57.279	5.779	17.512	41.961
3	1.544	4.678	61.957	1.544	4.678	61.957	3.559	10.785	52.746
4	1.358	4.117	66.074	1.358	4.117	66.074	3.178	9.629	62.375
5	1.275	3.864	69.937	1.275	3.864	69.937	2.496	7.562	69.937
6	.945	2.862	72.799						
7	.849	2.572	75.371						
8	.810	2.455	77.826						
9	.667	2.021	79.847						
10	.604	1.831	81.678						
11	.552	1.674	83.352						
12	.485	1.469	84.821						
Extraction Method: Principal Component Analysis.									

EFA was performed with the data obtained as per the ratings provided by passengers based on their experience at the airport. Five components were obtained with varimax rotation and explained about 70 percent of the variance. Table-3 provides the details:

Table-3: Rotated Component Matrix

Factor item code	Description of items	Component				
		1	2	3	4	5
C2	Efficiency of check-in staff	**.813**	.087	.217	.076	.119
C3	Courtesy of check-in staff	**.780**	.125	.222	.044	.137
S1	Courtesy of security staff	**.776**	.265	.120	.247	.155
P2	Courtesy of inspection staff	**.765**	.195	.020	.233	.210
C1	Check –in queue	**.749**	.138	.219	.153	.110
S3	Waiting time for security check	**.739**	.310	.172	.266	.108
S2	Quality of security inspection	**.732**	.259	.169	.246	.094
P1	Waiting time for passport inspection	**.731**	.205	.046	.229	.195
S4	Feeling of safe and secure	**.700**	.249	.219	.255	.117
N3	Terminal walking distance	**.586**	.380	.145	.284	.079
N1	Navigational aids	**.578**	.309	.212	.305	.034
N2	Flight info screen	**.575**	.407	.136	.274	.045
N4	Flight connection easiness	**.533**	.393	.142	.291	.125
A1	Courtesy of airport staff	**.518**	.475	.200	.184	.136
A5	Shopping facilities	.206	**.796**	.266	.116	.145
A6	Value for money for shopping	.197	**.795**	.212	.135	.184
A4	Bank ATM facilities	.183	**.735**	.203	.195	.144
A2	Eating facilities	.352	**.733**	.154	.164	.089
A3	Value for money for eating facilities	.290	**.731**	.054	.190	.145
A7	Internet – wifi facilities	.250	**.662**	.277	.106	.205
A8	Business lounges	.189	**.623**	.354	.053	.142
E1	Terminal cleanliness	.164	.134	**.777**	.208	.127
E2	Airport ambience	.167	.191	**.761**	.139	.146
A10	Cleanliness of washroom	.256	.401	**.691**	.101	.169
A11	Comfort at waiting gate areas	.256	.376	**.685**	.106	.176
A9	Washroom – availability of toilet facilities	.267	.464	**.639**	.092	.159
AS2	Parking facilities	.327	.167	.183	**.815**	.116
AS3	Parking value	.339	.234	.095	**.750**	.170
AS1	Ground transportation to & fro from airport	.384	.191	.190	**.694**	.127
AS4	Trolley availability	.463	.180	.186	**.645**	.090
AR3	Customs inspection quality	.200	.197	.147	.086	**.805**
AR2	Baggage - delivery speed	.167	.234	.218	.169	**.798**
AR1	Arrival – passport & visa inspection	.234	.229	.201	.124	**.791**
Extraction Method: Principal Component Analysis, Rotation Method: Varimax with Kaiser Normalization.[a]						

Following ASQ dimensions were arrived based on the results obtained through EFA. Only those item with factor loading value greater than 0.6 were considered as an indicator item for each dimension. It was noticed that the new ASQ dimensions explored through factor analysis was more or less similar to the ASQ areas identified in the ACI –ASQ survey instrument, however the number of dimensions have further reduced and all factors related to people–counter interactions were converged together and formed into one single dimension. Five ASQ dimensions explored based on passenger perspective and the corresponding indicative items are shown in Table-4:

Table-4: ASQ dimensions and indicative items

Item code	Indicative Item - Description	ASQ Dimension
C2	Efficiency of check-in staff	People Interactions
C3	Courtesy of check-in staff	
S1	Courtesy of security staff	
P2	Courtesy of inspection staff	
C1	Check –in queue	
S3	Waiting time for security check	
S2	Quality of security inspection	
P1	Waiting time for passport inspection	
S4	Feeling of safe and secure	
A5	Shopping facilities	Airport facilities -Consumption value
A6	Value for money for shopping	
A4	Bank ATM facilities	
A2	Eating facilities	
A3	Value for money for eating facilities	
A7	Internet – wifi facilities	
A8	Business lounges	
E1	Terminal cleanliness	Hygiene - Comfort factors
E2	Airport ambience	
A10	Cleanliness of washroom	
A11	Comfort at waiting gate areas	
A9	Washroom – availability of toilet facilities	
AS2	Parking facilities	Access - Entry factors
AS3	Parking value	
AS1	Ground transportation to & fro from airport	
AS4	Trolley availability	
AR3	Customs inspection quality	Arrival Services
AR2	Baggage - delivery speed	
AR1	Arrival – passport & visa inspection	

Internal consistency of the factor items

Internal consistency of each factor item was checked using SPSS - reliability analysis scale items. Cronbach Alpha values obtained for all five factor dimensions are provided in Table-5. Since all the values obtained are above the acceptable threshold value of 0.7 [12], internal consistency (reliability) of items are found to be valid.

Table-5: Reliability of the factor items

ASQ Dimensions	No. of Items	Cronbach Alpha value
People Interactions	9	0.946
Airport facilities -Consumption value	7	0.921
Hygiene - Comfort factors	5	0.894
Access - Entry factors	4	0.896
Arrival Services	3	0.853

Test of sampling adequacy

To check the adequacy of the sample size used for factor analysis, Kaiser- Meyer- Oklin (KMO) and Bartlett's Test is used, results of which indicate significant values. KMO value 0.947 (see Table-6) - higher than the threshold value of 0.6, indicate good measure of sampling adequacy.

Table-6: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.947
Bartlett's Test of Sphericity	Approx. Chi-Square	28467.33
	df	528
	Sig.	.000

Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) provides better control for assessing uni-dimensionality than Exploratory Factor Analysis and is more in proportion to the overall process of construct validation. CFA provide evidences regarding confirmation of the measurement model taken in this study with five dimensions explored by EFA method. CFA can provide clarity on indicator items which are replicated in a given set of factor dimensions and its interrelationships are assessed with the goodness of fit indices. Fig-1 explains the hypothesized model followed by summary of model fit indices. It is found that the five underlying dimensions of airport service quality are statistically valid.

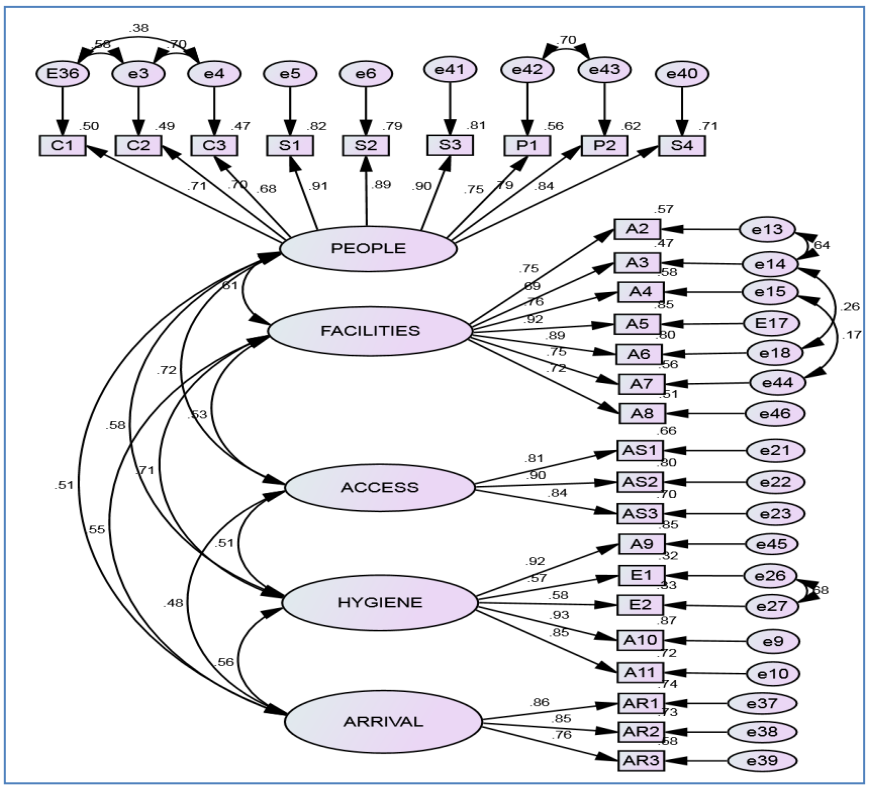

Fig-1: ASQ Dimensions: CFA – measurement model

Model indices which are not very sensitive to sample size like CFI, TLI, RMSEA are showing good fit results. It can be inferred that these five factors with reflecting indicators shows best fit the measurement model confirming Airport Service Quality. Table-7 provides the various model fit indices.

Table-7: Measurement model fit indices

Model	**NPAR**	**CMIN**	**DF**	**P**	**CMIN/DF**
Default model	72	1462.215	306	.000	4.778
Model	RMR	GFI	AGFI	PGFI	
Default model	.024	.899	.876	.728	

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.063	.060	.066	.000

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.938	.929	.950	.943	.950

CMIN/DF is called as the minimum discrepancy which is obtained as 4.77. Wheaton [13] suggested that if the minimum discrepancy is less than 5 the model is reasonably fit. If the fit indices values for CFI, RFI, NFI are greater than 0.9 and if RMSEA value is less than 0.08, it indicates model is fit and accepted as per the studies conducted by Bentler and Bonett [14].

ASQ measurement model: Regression Estimates - ASQ dimensions

Table-8 shows the details of variances of all ASQ dimensions, regression estimates and the level of significance at 95 % confidence level. It has been observed from the default model that the regression weights obtained for all the five ASQ dimensions are significant.

Table-8: Regression estimates for ASQ dimensions

ASQ dimensions	Estimate	S.E.	C.R.	P	Label
PEOPLE	.309	.017	18.029	***	
FACILITIES	.372	.028	13.459	***	
ACCESS	.323	.022	14.676	***	
HYGIENE	.066	.007	9.346	***	
ARRIVAL	.155	.010	15.652	***	

Though all the dimensions are significant, it was found that the Hygiene dimension has least critical ratio (C.R.) value when compared with other dimensions. However the influence of all dimensions on over all satisfaction of passengers is yet to be ascertained.

Effect of airport service quality dimensions on passenger overall satisfaction

Though the measurement model for ASQ dimensions were validated by Confirmatory Factor Analysis, it was necessary to appraise the effect of these dimensions on passengers' overall satisfaction. The relationship between the variables is identified with structural equation modeling (SEM) by using AMOS. The model identified is plotted in Fig-2.

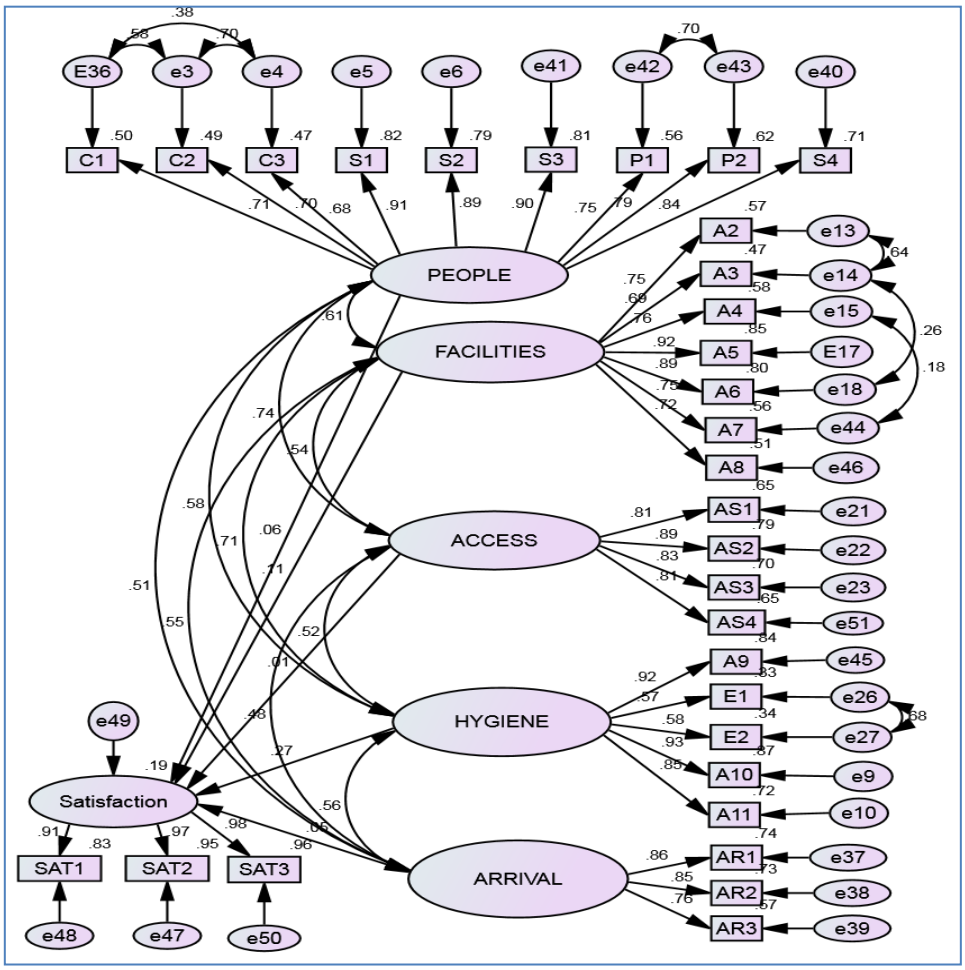

Fig-2: Effect of ASQ dimensions on overall passenger satisfaction

The model fit summary with all relevant fit indices is provided in Table-9. It was noticed that all the fit indices values are found to be within the acceptable limits and the model was accepted.

Table-9: Summary of model fit indices of Passenger satisfaction model

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	85	1820.664	411	.000	4.430

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.022	.893	.870	.740

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.937	.929	.950	.944	.950

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.060	.057	.063	.000
Independence model	.253	.250	.255	.000

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	242	253
Independence model	18	18

The regression weights of ASQ dimensions on passenger satisfaction were analyzed and the results obtained are plotted in Table-10.

Table-10: Regression weights: ASQ –Satisfaction model

Effect of ASQ variables			Estimate	S.E.	C.R.	P	Label
Satisfaction	<---	PEOPLE	.046	.038	1.220	.223	
Satisfaction	<---	FACILITIES	.071	.033	2.134	.033	
Satisfaction	<---	ACCESS	.008	.036	.214	.830	
Satisfaction	<---	HYGIENE	.406	.078	5.204	***	
Satisfaction	<---	ARRIVAL	.049	.043	1.134	.257	

The regression weights and the P values with regard to the relationship between ASQ dimensions on passengers overall satisfaction indicates that only Hygiene dimension has got significant effect on passenger satisfaction. This is in contrast with the regression estimate values obtained for Hygiene dimension in the ASQ measurement model. Airport facilities have also got reasonable influence on passenger satisfaction. This could be attributed by the fact that passengers attribute satisfaction with respect to pure airport specific factors such as facilities provided by airport directly which involve two dimensions namely 'hygiene' and 'airport facilities'. Whereas dimensions like 'access', 'arrival' and 'people' are those dimensions not fully under the control of airports as they are provided in the airport by various airline and govt. agencies. Even though all the five factor dimensions were found to be valid in the measurement model, only two dimensions namely, Hygiene and Airport facilities have got effect on overall passenger satisfaction.

This result put forward managerial implications for airport operators as passengers are satisfied mainly by airport specific factors and any improvement in airport hygiene and facilities would result in positive effect on both ASQ and Overall satisfaction of airline passengers.

CONCLUSION

Five ASQ dimensions are explored in this study as against to the conventional method of setting apart ASQ areas functional-wise which were identified from all contact points in the functional flow of passengers. The ASQ dimensions identified in this study are all well set to explain Airport Service Quality from a passengers' perspective rather than airport functional or passenger processing perspective. One of the major finding of this study is the identification of peculiar effect of hygiene factor dimension on the overall satisfaction of passengers. Hygiene to be specifically 'hygiene and comfort' factor was little dormant when compared with other ASQ dimensions in the measurement model of Airport Service Quality. While testing the effect of all five dimensions of ASQ on passenger satisfaction by using a structured equation model the Hygiene dimension was overridden above all other dimensions in depicting passenger satisfaction.

REFERENCES

1. Fodness, D., & Murray, B. (2007). Passengers' expectations of airport service quality. *Journal of Services Marketing*, 21(7):492-506.
2. Park, J. W., Robertson, R., & Wu, C. L. (2004). The effect of airline service quality on passengers' behavioral intentions: a Korean case study. *Journal of Air Transport Management*, 10:435-439.
3. Chen, F. Y., & Chang, Y. H. (2005). Examining airline service quality from a process perspective. *Journal of Air Transport Management*, 11(2):79-87.
4. Gursoy, D., Chen, M. H., & Kim, H. Y. (2005). The US airlines relative positioning based on attributes of service quality. *Tourism Management*, 26(1):57-67.
5. Bogicevic, V., Yang, W., Bilgihan, A., & Bujisic, M. (2013). Airport service quality drivers of passenger satisfaction, *Tourism Review*, 68(4):3-18.
6. Engel, J. F., Blackwell, R. D., & Miniard, P. W. (1995). Consumer Behavior, eighth ed. The Dryden Press, Forth Worth, TX.
7. Hansemark, O. C., & Albinson, M. (2004). Customer satisfaction and retention: the experiences of individual with employees. *Managing Service Quality*, 14(1):40-57.
8. Evelyn, J. J., & De Carlo, N. J. (1992). Customer focus helps utility see the light. *The Journal of Business Strategy*, 8-12
9. Miller, T. O. (1992). A customer's definition of quality", *The Journal of Business Strategy*, 4-7.
10. Peters, T. J., & Austin, N. (1985). A Passion for Excellence, Random House, New York, NY.
11. Sonnenberg, F. K. (1991). Marketing to Win, Harper and Row, New York, NY.
12. Nunnally, J. C. (1978). *Psychometric Theory*, New York: McGraw- Hill.
13. Wheaton, B. (1977). Assessment of fit in over identified models with latent variables. *Sociological Methods and Research*, 16:118–154.
14. Bentler, P. M., & Bonett, D. G., (1980). Significance tests and goodness of fit in the analysis of Covariance structures, *Psychological Bulletin*, 88:588–606.