RELATIONSHIP BETWEEN SERVICE QUALITY AND CUSTOMER SATISFACTION IN AIRLINES INDUSTRY

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ABSTRACT

The relationship between service quality and customer satisfaction have been studied in the airlines service settings for more than decades. The purpose of this study is to test the relationship between service quality and customer satisfaction with reflective-formative measurement model. The use of industry specific scale AIRQUAL for measuring service quality in airlines service and conceptualising second order service quality construct with reflective-formative measurement model have been gaining importance recently in other services settings. However, higher order construct with reflective formative formative measurement models are not applied in predicting the relationship between service quality and customer satisfaction for airlines services. Using survey based methodology; responses from passenger travelling between India and Europe were collected. Partial Least Square Structural Equation Modelling (PLS-SEM) was used to test the relationship between service quality and customer satisfaction in Airlines. The findings of the study predicted the relationship between service quality and customer satisfaction in airlines service using second order reflective-formative measurement model.

Keywords: Airlines, Service Quality, Customer Satisfaction, Second Order Factor, Formative Measurement.

INTRODUCTION

Customer satisfaction is key performance areas for any organisation survival and growth. The satisfied customer gives more business and act themselves as brand ambassador for the organisations in promoting goods and services. However, customer groups evaluate the service experience on different criteria and vary depending upon situation and circumstances. Customer does not get same level of satisfaction out of the same service experience. Customers from different cultures may have different preferences and expectations from the service providers. The organisation can improve their performance and meet the customer's preferences and expectations based on measurement of customer satisfaction. There are several methods adopted for measuring the satisfaction.

Several Independent benchmarks have developed for measuring the customer satisfaction in various countries but there is no unanimity in accepting the measurement for both academicians and practitioners. Therefore, customer satisfaction remains to be an elusive, indistinct and ambitious construct. The several studies on relationship between delivering service quality and customer satisfaction was reported from early 1970. The earlier research studies argued that customer satisfaction impacts on service quality but was refuted that there is no relationship between service quality and customer satisfaction. The extant literature available on customer satisfaction disputed the claims made on the relationship service quality and customer

satisfaction and found empirical support that service quality leads to customer satisfaction. In advancing the concept of service quality, several studies further established with empirical supports on use of multi-dimensional and hierarchical nature in measurement of service quality. Service quality is to be measured at the global rather than attribute level and gaining significant importance. Moreover, measuring service quality concepts at the summary level (high abstraction) along with SEM approach found many support in the Business Management and Hospitality and tourism literatures. Equity theory and Expectancy disconfirmation theory are two prominent theories applied for customer satisfaction studies. Expectancy disconfirmation theory constitutes 20 % of the theories used in Hospitality & Tourism journals. However, Gap based SERVQUAL model of Expectancy disconfirmation theory is losing support in the literature and development of new Service Quality Scale / model by adding context specific attributes or adopting hierarchical approach is gaining momentum in the latest studies. The purpose of the paper is to : (1) Conceptualise service quality as higher order model with dimensions as first order reflective construct and overall service quality as second order formative measurement ; (2) Predict the relationship between service quality with customer satisfaction using hierarchical second order service construct as reflective-formative measurement model.

LITERATURE REVIEW

Oliver (1997) defines satisfaction as:

"Satisfaction is the consumer's fulfilment response. It is a judgement that a product or service feature, or the product of service itself, provided (or is providing) a pleasure level of consumption related fulfilment, including levels of under-or-over-fulfilment".

The definition for customer satisfaction varies from outcome based (Vavra, 1997) to process based (Pizam & Ellis, 1999) as well as cognitive perspective (Oh & Parks, 1996) to affective perspective (Westbrook, 1980). Oh & Kim (2017) identified 11 theories on customer satisfaction in Hospitality & Tourism literature published during the period 2000-2015. The theories are: (1) Expectancy disconfirmation (Oliver, 1980); (2) Equity theory (Adams,1963); (3) Servqual (Parasuraman, 1988); (4) Three factor theory (Kano, 1984); (5) Stimulus-organism-response (Mehrabian & Russel, 1974); (6) Attribution theory (Kelley, 1967); (7) Theory of reasoned action (Fishbein & Ajzen, 1975); (8) Prospect theory (Kahneman & Tversky, 1979); (9) Social identity theory (Tajfel & Turner, 1986); (10) Two factor theory (Herzberg, 1959); (11) Social Exchange theory (Homans, 1958).

Yuksel et al. (2008) after reviewing various models on customer satisfaction concluded that no consensus exists concerning standards to be appropriate for measuring customer satisfaction. Moreover, uses of expectations are less meaningful for experiential services, inadequate evidence on use of predictive expectations by customer for post purchase evaluations and unable to accommodate the potential effect of customer perceptions of performance of alternative products on evaluation judgements of the focal product /service (Yuksel & Yuksel, 2001).

Carrillat et al. (2009) Meta-analysis study found that relationship between service quality and customer satisfaction significantly stronger when service quality is measured with SERVQUAL (r equal to 0.63) than with SERVPERF (r equal to 0.45). The service quality was operationalized as multi-dimensional and hierarchical model. The higher order service quality is measured as reflective-reflective construct in various service settings (Kang, 2006; Bindu et al.,

2008; Caro & Garcia, 2008; Wu, 2012). Jarvis et al. (2003) concluded that 28 % of the latent constructs with multiple indicators published in the top marketing journals were incorrectly specified as reflective when they should have been formative. The misspecification of measurement model impacts the structural path leading to erroneous path coefficient (MacKenzie et al., 2005; Jarvis et al., 2003). The constructs are measured by causing individual responses to indicators of such construct in reflective model whereas the latent construct is determined by the combination of component factors. There is general tendency to model multi-dimensional and hierarchical variables wrongly as reflective-reflective due to misspecification error (Bollen & Lennox, 1991; Edwards & Bagozzi, 2000; Diamantopolous & Winklhofer, 2001). The use of formative model in SEM research have been growing recently with the availability of the new software such as smart PLS although origin can be traced back to the work of Blalock (1961). Wu (2012) study recommended that future research should attempt to measure service quality as a formative construct rather than traditional reflective measurement model as well as consider differences in applying the results to other regions or countries. Therefore, further research studies (Gary & Guy, 2013; Hallak et al., 2017) on measuring higher service order service quality adapted reflective-formative measurement for establishing the relationship between service quality and customer satisfaction.

Chiou (2012) conceptualised service quality as second order construct and validated the model in which service quality have impact on customer satisfaction in airlines services. Mahmud (2013) extended the conceptual frame work of second order construct of airline service quality to confirm the influence of service quality on customer satisfaction and loyalty of commercial airline service industry. The study found that second order service quality construct represented by tangibility, reliability, responsiveness, assurance and empathy are not significant to meet the customer satisfaction in Airlines services.

Yu-Kai (2009) found that assurance and responsiveness dimension have impact on overall customer satisfaction. The results of the findings can be generalisable to other contexts that share similar characteristics as tight regulation, open competition and where service quality is paramount. Suki (2014) found that empathy is a significant factor for customer satisfaction with the airline service quality and the main factor of airlines tangibles is not significant in validation of the study.

Shanka (2012) that passengers are dissatisfied for all five dimension of service quality and reliability was the highest with wide service gap. Assurance has strongest effect on the level of customer satisfaction. In tourism literature, Hallak (2017) supported the reflective first order, formative second order model of service quality impacting the relationship among perceived value, satisfaction and loyalty in tourism destination. Examining the service quality construct as second order, using partial leased squares structural equation modelling is more overcome measurement errors in the operation of the construct. The second order construct helps to measure the service quality on three levels-overall quality, dimensions, and individual attribute level items.

In the airline service settings, there is support for the positive relationship between second order service quality and Customer satisfaction (Park et al., 2006; Huang, 2009). However, in airlines services settings, misspecification and measurement of multi-dimensional and hierarchical service quality construct wrongly operationalized as reflective-reflective measurement model are limited and to be re-examined with alternate model of reflective-formative measurement model in airlines settings. Wu (2012) study recommended that future research should attempt to measure service quality as a formative construct rather than traditional

reflective measurement model as well as consider differences in applying the results to other regions or countries. Abdullah (2012) study suggested research on validation of industry specific scale AIRQUAL scale as second order construct in the airline contexts. Wu (2013) suggested that measurement of service quality through SERVQUAL, SERVPERF and SERVPEX are insufficient to capture the service quality constructs for airlines service settings and use industry specific scale developed for measurement of service quality. Farooq et al. (2018) examined alternate measurement model Reflective-Formative in establishing the relationship between service quality and customer satisfaction in airlines industry setting with service quality construct operationalized as single order reflective measurement and customer satisfaction measured in formative construct. Therefore, there exists gap in the literature on studying the relationship between higher order service quality and customer satisfaction using Reflective-Formative measurement model in airlines service. Thus, the hypothesis is proposed as

H1: There is significant relationship between overall service quality measured by 5 dimensions as first order reflective measurement and overall service quality as second order formative measurement and customer satisfaction.

RESEARCH METHODOLOGY

Research Design

The key research objective was to test the relationship between service quality and customer satisfaction in Airlines settings. Therefore, quantitative research is the appropriate approach in testing the proposed hypotheses. The survey based research along with cross-sectional data collection method is used for the research. As the population universe is unknown, the study adopted non-probability judgemental sampling technique to collect the data from the sample unit. A structured self-administered questionnaire was used for collection of the data from the respondents. The samples were drawn from Indian and European passengers at Delhi and Mumbai International Airports, to test the relationship between service quality and customer satisfaction.

Instrument

Airqual scale

The instrument employed for collection for quantitative data was adopted from industry specific *"Airqual"* scale available in the airlines literature. A questionnaire was constructed from 35 items of Airqual scale of Alotaibi (2015). Nedunchezian & Thirunavukkarasu (2018) validated *"Airqual"* scale for measuring service quality with 22 items service quality and 4 items for customer satisfaction with cross cultural samples from India and Europe. The data from validated 26 items was used for analysis purpose and 8 items of constructed scale belonging to service quality were not taken into consideration for analysis purposes. Each item on the first part of questionnaire was evaluated using five point Likert scale ranging from *"strongly disagree"* to *"strongly agree"*. The second part of the questionnaire presents respondents' demographic information of the respondents (sex, age, travel purpose, frequency of travel).

Sampling and data collection procedure

The departure gate close to the boarding area after Security and Customs / Immigration check at Delhi International Airport, Terminal-3 and Mumbai International Airport as well as passengers waiting at the baggage area of Arrival area of the airport were chosen to conduct on-site survey using judgemental sapling technique. A questionnaire was distributed to the passengers with prior consent to participate in survey. Few passengers expressed inability to accept the questionnaire as body language and verbal communication reflected that they were not interested in the survey. 82 % of the passengers agreed to participate in the survey. The average response time was approximately 10 minutes. Many passengers completed the survey within 10 minutes and discussed the questionnaire for further clarity on the items mentioned in the questionnaire (Bolton et al., 1994).

Sample Size

It is important and significant concern that the size of the development sample should be large enough to sampling errors. For study involving factor analysis, minimum sample size of 300 is adequate. Moreover, number of items used in the questionnaire is also to be taken into consideration in arriving at sample size. Item-to-response ratios ranging from 1:4 to 1:10 is recommended as minimum sample size for data analysis using SEM. As the Questionnaire contains 35 items for service quality and customer satisfaction, minimum 350 sample size is adequate for the purpose of the study. The researcher has planned for collection of 900 sample sizes comprising of 450 Indian and 450 European passengers. Therefore, sample planned is considered as very large in number as compared to minimum sample size requirement of 350 as estimated by Item-to-response ratios.

Participants

The target population for the study are: (1) Passengers travelled once between India and select European Sector namely London, Birmingham, Frankfurt, Munich and Paris or vice-a-versa. 2) Passengers travelled at least once on any of the followings Airlines; (a) Air India, (b) Jet Airways, (c) British Airways, (d) Virgin Atlantic, (e) Lufthansa, (f) Air France. The passengers other than Indian, British, German and French nationality travelled between India and Europe are excluded from the study. As a result, the passengers departing to European cities namely London, Birmingham, Frankfurt, Munich and Paris were samples representing the target population as per the objective of the study. A total 902 responses comprising Indian and European passengers travelled with native country airline and foreign country airlines were collected. Out of 902 responses, 449 are Indian passengers and 453 are European passengers.

Data Analysis

Partial Least square structural equation modelling (PLS-SEM) using Smart PLS M3 Version was used to use the test the theoretical model. SEM enables to examine the relationship between one or more independent variables and one or more dependent variables. The advantages of using PLS SEM are as follows: (1) Assumption about normality of the data is less restrictive; (2) Constructs with fewer items. The standard errors and t-statistics were generated by using bootstrapping (5000 resamples) techniques.

RESULTS

The result section presents the evidence for reliability, composite reliability, convergent and discriminant validity of the reflective latent constructs.

Reflective Measurement Model

In the model proposed, five dimensions forms the 1st order construct and therefore, traditional test were applied to measure the convergent validity and reliability. Table 1 shows that standardized loadings of all reflective measures are more than 0.7. The construct reliability measure by Cronbach Alpha and Composite Reliability are more than 0.7 and is within the acceptable limit (Hair e al., 2009). The convergent validity (AVE) for the entire construct is greater than 0.5 (Henseler et al., 2009). The AVE value of 0.5 and above indicates that 50% of the indicators variance can be explained by the 1st order service quality construct. The discriminant validity, which is the measure of the average shared variance of the construct and its indicators exceed the shared variance with the every other construct in the model is supported with the value more than 0.5.

Table 1 FACTOR LOADINGS, T-VALUES, ALPHA, COMPOSITE RELIABILITY AND AVE					
Items	Factor Loadings	T Statistics	Cronbach Alpha	C.R	AVE
ASS1	0.868	83.721	0.898	0.925	0.712
ASS2	0.88	88.754			
ASS3	0.831	63.294			
ASS4	0.85	68.1			
EMP1	0.75	42.203	0.912	0.932	0.695
EMP2	0.841	73.718			
EMP3	0.865	90.652			
EMP4	0.856	82.522			
EMP5	0.843	74.028			
EMP6	0.842	74.959			
REL2	0.743	35.181	0.849	0.899	0.69
REL3	0.825	64.688			
REL4	0.872	83.355			
REL5	0.876	70.867			
RES1	0.763	40.194	0.9	0.926	0.715
RES2	0.87	79.679			
RES3	0.86	81.75			
RES4	0.858	76.017			
RES5	0.873	90.642			
TAN1	0.816	56.052	0.715	0.841	0.637
TAN2	0.804	57.921			
TAN3	0.775	42.002			
CS1	0.851	68.589	0.853	0.901	0.695
CS2	0.729	27.503			
CS3	0.854	64.822			
CS4	0.892	102.445			

The cross loading of the indicator as given in Table 2 shows that discriminant validity of the reflective measurement models was confirmed with indicators of the reflective measure models have highest loading on their own underlying latent constructs compared to other constructs involved in the structural models.

Variables	Assurance	Empathy	Reliability	Responsiveness	Tangibility	Customer Satisfaction
ASS1	0.868	0.649	0.605	0.744	0.499	0.579
ASS2	0.880	0.676	0.618	0.724	0.491	0.563
ASS3	0.831	0.591	0.571	0.624	0.499	0.553
ASS4	0.850	0.641	0.574	0.718	0.447	0.521
EMP1	0.543	0.750	0.590	0.538	0.443	0.491
EMP2	0.661	0.841	0.622	0.644	0.466	0.572
EMP3	0.639	0.865	0.616	0.660	0.491	0.556
EMP4	0.644	0.856	0.603	0.652	0.467	0.550
EMP5	0.643	0.843	0.603	0.639	0.490	0.590
EMP6	0.651	0.842	0.624	0.662	0.517	0.622
REL2	0.419	0.442	0.743	0.414	0.376	0.488
REL3	0.609	0.684	0.825	0.633	0.470	0.563
REL4	0.656	0.664	0.872	0.638	0.557	0.588
REL5	0.614	0.614	0.876	0.618	0.487	0.592
RES1	0.596	0.603	0.582	0.763	0.452	0.493
RES2	0.705	0.650	0.597	0.870	0.482	0.571
RES3	0.726	0.637	0.590	0.860	0.457	0.556
RES4	0.684	0.624	0.562	0.858	0.447	0.544
RES5	0.735	0.699	0.634	0.873	0.490	0.579
TAN1	0.457	0.467	0.463	0.422	0.816	0.494
TAN2	0.450	0.470	0.468	0.440	0.804	0.435
TAN3	0.448	0.441	0.443	0.459	0.775	0.414
CS1	0.568	0.614	0.604	0.566	0.512	0.851
CS2	0.377	0.427	0.442	0.407	0.365	0.729
CS3	0.572	0.577	0.573	0.572	0.479	0.854
CS4	0.620	0.617	0.606	0.596	0.499	0.892

Table 2
CROSS LOADINGS AMONG REFLECTIVE MEASUREMENT SCALE ITEMS

## Formative Measurement Construct

Content validity of the higher order service quality construct was measured at individual level as well as at constructive level. The result of the boot step test for the individual level, have high significance level where both boot step based empirical 95% confidence level does not include 0. The Table 3 of multi-collinearity assessment shows that VIF coefficients are less than 4, which indicates that independent variables were not highly correlated to each other. In other words, these dimensions do not have same meaning to measure the variables and no redundant constructs in the model.

<table>
<tr><td colspan="2" align="center">**Table 3**
COLLINEARITY ASSESSMENT</td></tr>
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Dimensions	VIF
Assurance	3.33
Empathy	3.136
Reliability	2.57
Responsiveness	3.639
Tangibility	1.67
Customer Satisfaction	1

At the construct level, R square value of the endogenous service quality construct was used to measure whether theoretically sound formative specifications was appropriate. The R^2 value of 0.993 confirms that second order service quality was explained by 99 % of first order dimensions.

Inner Model Analysis

The path coefficients between the constructs using boot step with 5000 iterations of re-sampling was carried out. The value of 0.76 is considered to be very high at the significant level $p < 0.001$. Thus, the nomological validity of the proposed model was considered to be satisfactory. The predictive relevance of structural model was assessed by computing blind folding procedures for Stone-Geisser Q^2 values (cross validated redundancy measure). The value of 0.558 greater than zero indicates the substantial relevance in explaining the independent variable customer satisfaction (Figure 1).
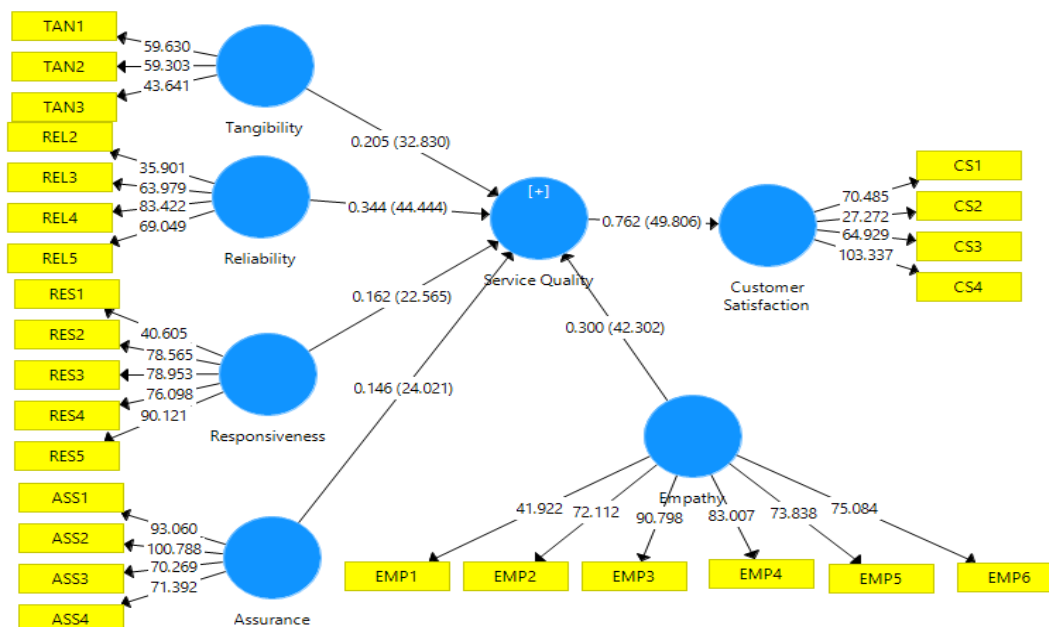
FIGURE 1
CROSS VALIDATED REDUNDANCY MEASURE MODEL

Goodness of Fit (GOF)

The Goodness of Fit for the analysis of Model using PLS-SEM Analysis cannot be evaluated and only R^2 value explains the explanatory power of the model (Hensler et al., 2016). However, In the Table 4 recent research study emphasis that geometric mean value of the Average Variance Extracted (AVE) and average value of R^2 (endogenous construct) can be used for measuring Goodness of Fit (GoF). Goodness of Fit (GoF) value of 0.62 is higher than cut-off value 0.36 reported for assessing the results of the GoF analysis (Wetzels et al., 2009).

Table 4
GOODNESS OF FIT (GOF) INDEX

Constructs	AVE	R^2
Assurance	0.71	
Empathy	0.70	
Reliability	0.69	
Responsiveness	0.72	
Tangibility	0.64	
Customer Satisfaction	0.70	0.56
Average Scores	0.69	0.56
AVE * R^2	0.39	
GOF = SQRT AVE *R^2	0.62	

DISCUSSION

The primary objective of the study is to test and validate the hypothesized model that there is significant relationship between service quality and customer satisfaction.

The findings of the study confirmed the hypothesis that there is positive predictive relationship between higher order service quality and customer satisfaction. The study is in continuation to measure the higher second order with first order as reflective and second order formative measurement model.

The study empirically examined the relationship between overall service quality conceptualized as higher order model in the airlines industry context with first order reflective construct with dimensions as Reliability, Tangibility, Empathy, Responsiveness and Assurance and formative second order construct. The result of the study supported the hypothesis that there is significant relationship between overall service quality measured by 5 dimensions as first order reflective measurement and overall service quality as second order formative measurement and customer satisfaction. The hierarchical and multi-dimensional service quality model with all five dimensions of regression coefficients (0.340, 0.292, 0.205, 0.158, and 0.160 for Reliability, Empathy, Tangibility Assurance and Responsiveness) contributes significantly in forming the overall service quality. The study supports the findings of earlier studies conceptualized service quality as second order (Chiou, 2012; Mahmud, 2013). Moreover, the study supports the findings of earlier studies : (1) Assurance and responsiveness dimension have impact on overall customer satisfaction (Kao, 2009); (2) Empathy is a significant factor for customer satisfaction with the airline service quality (Suki, 2014); (3) First order dimensions of Reliability and Empathy have strongest relationship with overall service quality (Mahmud, 2013)

The study contradicts the findings of previous studies: (1) Airlines tangibles is not significant in impacting the customer satisfaction (Suki, 2014); (2) Passengers are dissatisfied for all five dimension of service quality (Shanka, 2012); (3) Second order construct overall service

quality represented by tangibility, reliability, responsiveness, assurance and empathy offered by the airlines were not significant to impact the customer satisfaction.

Theoretical Implications

The study made major contribution to Airlines service literature is; (1) Service quality construct was operationalized as first order service quality as reflective and second order as formative measurement of service quality; (2) Using industry specific scale *"AIRQUAL"* in the measurement of service quality for Airlines. The confirmed service quality model with first order reflective and second order formative tested empirically with samples from India and Europe using PLS SEM approach adds value to literature in enhancing the applicability of model. The second contribution is validation of industry specific scale AIRQUAL with generic 5 dimensions in measuring the relationship between the higher order service quality and customer satisfaction in airlines settings.

Managerial Contributions

The findings of the study supported the positive relationship between the higher order service quality and customer satisfaction. The measurement model consists of 5 first order dimensions such as Tangibility, Reliability, Empathy, Responsiveness, and Assurance having positive relationships with customer satisfaction. The dimensions Reliability and empathy have emerged as strong contributor of overall service quality which influences customer satisfaction. To increase the customer satisfaction in the airlines, Reliability of the airlines service and Empathy of frontline employees are key focus areas for Airlines managers. Therefore, Airlines on time performance and frontline employee's motivation to provide best customer satisfaction are the key areas for airlines operations. Airlines management must devise all strategy and program to meet these key areas of operation.

LIMITATION AND DIRECTION FOR FUTURE RESEARCH

The current study has few limitations as the study can only be generalized to other geographical areas provided if future study with different cultures is included to confirm the relationship between hierarchical service quality and customer satisfaction in airlines service settings. A replication study with geographical areas in Australia and Africa will provide validation of relationship between service quality and customer satisfaction. Further studies are required to cross culturally validate the AIRQUAL scale with 5 generic dimensions as Reliability, Tangibility, Assurance, Empathy and Responsiveness. The future research may include new marketing concepts customer engagement as a mediating variable in understanding the relationship between the service quality and customer satisfaction.

CONCLUSION

The study on relation between service quality and customer satisfaction have been analyzed for many decades in the literature but the application of correctly specifying the measurement model reflective - formative with PLS SEM have been studied. The study confirms that there is positive relationship between multidimensional and hierarchical service quality and customer satisfaction in airlines service. The study extends the application of second order factor measurement concept in airlines services. The approach to study higher order factor

measurement model in Airlines settings have contributed to the literature. Airlines Managers have been viewing service quality as major areas for improving customer satisfaction. However, they have often perplexed to find an appropriate diagnostics tool to measure the service quality. The study findings will help to understand the perceptions of relationship between service quality and customer satisfaction of passengers on India - Europe routes and use this input for developing marketing mix for improving customer satisfaction.

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