

A study of numerous factors affecting service quality which causes variances in customers' satisfaction towards Indian railway

Dr. Vinay B. Nandre

Associate Professor,

IAEER's Pune Institute of Business Management, Pune

Dr. Sudarshan A. Pawar

Associate Professor,

JSPM's Jayawant Institute of Management Studies, Pune

Abstract

This research is attempts to identify the factors which explain maximum variance in service quality and measure the effect of factors on customers' satisfaction (Passengers) in Indian railways. For this study responses were gathered from the 145 respondents residing in the state of Maharashtra and travelled from Pune to various locations of India by train. Facilities on train, Reliability, Convenience, Tangibility on platform and Food facility factors have emerged from factor analysis. Only three factors facilities on train, reliability and tangibility have a contribution in explaining customers' (Passengers') satisfaction.

Keywords: Service quality, Satisfaction, Tangibility, Reliability, Convenience.

Introduction

Indian Railways are one of the biggest transporters of Passengers' traffic in the world. Indian railway covers 115,000 km of track length. It operates 12,617 trains to carry over 23 million passengers daily. The Indian Railways' passenger earnings in the year 2017-18 have been the highest ever and clocked a 4.2% increase to Rs 490 billion from Rs 470 billion during the previous financial year. But despite such remarkable dependence by the travelers, not enough attention is paid.

To survive and prosper, organizations must carefully assess the changes and conditions in their given environment (Agarwal, 2008). Indian railway has been enjoying monopoly till date. But, the situation is changing rapidly. With the lowering of airfare and the introduction of low-cost

airlines in the Indian skies, there is a high possibility that Indian Railways will lose out the confidence of its customers (Agarwal, 2008). The Indian Railways has realized that the mantra for making a profit is customer satisfaction through higher service quality (Vanniarajan & Stephen, 2008). Customer satisfaction is the key to survival in the market. Cost of acquiring a new customer is much more than the cost of retaining the customer. Therefore, identifying the dimensions that are critical for customers' satisfaction is a must.

Service providers are keen to maximize customers' satisfaction in every sector. SQ-related issues have received substantial research attention in every sector except railways sector. Research on identifying service quality is very scant in Indian content. Moreover, no research is conducted in the Indian context to measure service quality for those customers (Passengers) of Maharashtra who have to travel from Pune to other destinations. This study makes an attempt to fill this gap.

This study aims to identify the respondents' perception of the quality of performance of different parameters. Further, the study aims to find out the effect of these parameters on customers' satisfaction for a special category of customers' in Indian railways.

Literature Review

The unique characteristics differentiate services from products. These unique characteristics are; intangibility, heterogeneity or variability, a simultaneity of production and consumption and perishability. Due to these unique characteristics, service quality is difficult to define. According to Lewis and Mitchell, (1990), service quality is the extent to which a service meets customers' needs or expectations.

Service quality, as perceived by customers, involves a comparison of what they feel the service should be (expectation, E) with their judgement of the services they received (perceptions, P) (Parasuraman et al., 1985). Customer satisfaction is one of the most significant factors for profitability and it is an important tool that can increase profits by preventing customers from defecting (Reiche/d and Sasser, 1990). It incorporates the retention of shoppers for the future, which is more economical than attracting new customers (Reichheld and Kenny, 1990). Kotler (2000) expresses that satisfaction may be a person's feelings of delight or disappointment ensuing from examination a product's perceived performance (or outcome) in relevancy his or her expectations. It is a judgment that the merchandise or service feature, or the product or service itself, provided (or is [providing) a pleasurable level of consumption-related fulfilment,

including levels under- or over fulfilment' (Oliver 1997, p. 13).

Researchers have studied the link between service quality and satisfaction. Parasuraman et al. (1988) specifically urged that service quality is an antecedent of client satisfaction. It is a key consequence of service quality and can determine the long-term success of a service organization (Parasuraman, Zeithaml, and Berry 1994). Improved service quality can end in additional client satisfaction (Bitner et al., 1994).

Allen and DiCesare (1976) thought of that quality of service ' for the general public transport business contained 2 categories: user and non-user. The user class consists of speed, reliability, comfort, convenience, safety, special services and innovations. The non-user class consists of system potency, pollution and demand.

Silcock (1981) conceptualized service quality for conveyance business because of the measures of accessibility, dependability, comfort, convenience and safety.

Pollitt and Smith (2002) found train performance (delays per passenger train), train overcrowding, asset condition (broken rails per train mile), and safety or accident risk (signals passed at danger per train mile) as output quality measures for the rail system in Britain.

Vanniarajan & Stephen (2008) identified the attributes which passengers use to evaluate the service quality of Indian railways and developed a comprehensive instrument namely RAILQUAL. Dimensions of RAILQUAL are reliability, responsiveness, assurance, empathy and tangibility. The linkage between RAILQUAL and customers' satisfaction and image was also evaluated for the passengers of Southern Railways. The important RAILQUAL factors identified by the passengers are reliability, assurance and empathy.

Agarwal (2008) found the factors related to Indian Railway services that have an impact on customers' satisfaction. The factors are employee behavior, tangible platform amenities, services in the train, availability of trains and tickets, customer oriented basic platform services and reservation counters. Out of the various factors considered, employee behavior has the maximum effect on the satisfaction level of customers with Indian Railways as a whole the study is confined to respondents from the city of Pune only.

Objectives of the Study

Review of previous literature shows that there is limited research on public transportation in the Indian context. Hardly any research is conducted in the railway sector on passengers

(respondents) of Maharashtra who have to travel from Pune to other destinations. These respondents are considered as a special category of customers. The reason for taking this sample is that people in nearby locations of Pune want to reach to other places get good connectivity from Mumbai or Bhusawal compare to Pune. If trains are in the late night then it is not feasible for them to reach desired places, if they are not residing there. This is the reason that they have to go to Pune and factors like water, food, cleanliness, safety and security etc. affect their overall satisfaction.

This study focuses on the following objectives:

1. To identify the factors which explain the maximum percentage of variance in service quality
2. To measure the effects of these factors on customers' overall satisfaction.

Define service quality

When we conceptualize service quality, we compare perceived expectations (E) of a service with perceived performance (P). The items were identified from the previous research of Agarwal (2008) carried out in the railway sector. She considered 47 items to understand the perception of quality. The questionnaire was reduced to 34 items for this study. Respondents were asked to indicate their perception of the quality of performance of different parameters on a five-point scale, where 1 indicated highly unsatisfactory and 5 indicated highly satisfactory.

Customers' overall satisfaction

Overall satisfaction is an aggregation of all previous transaction-specific evaluations and is updated after each specific transaction (Jones & Suh, 2000). In general, overall satisfaction could be a moving average that's comparatively additional stable than transaction-specific satisfaction (Parasuraman, Zeithaml, & Berry, 1994).

In light of the literature reviewed, Customer satisfaction is measured by a single item (Cronin & Taylor, 1992). The respondents were asked to denote their satisfaction on a five-point scale with 1 indicates highly unsatisfactory and 5 indicates highly satisfactory and the statement was "overall satisfaction with Indian Railways".

Above mentioned two aspects namely service quality and customer satisfaction leads the research for understanding the relationship of various factors cause satisfaction or dissatisfaction.

Studies in different sectors and industries conducted. Here wanted to measure the effects of these factors on customers' overall satisfaction

Research Methodology

For the current study responses were gathered from the respondents residing in Maharashtra and travelled from Pune to various other locations of India by train as they were not getting connectivity to other locations of India from Mumbai or Bhusawal. It was decided to collect data from 150 respondents and at the end 5 questioners were not properly filled so data of 145 respondents collected. The convenience sampling method was applied in this survey.

A structured questionnaire was prepared for this purpose and data was collected through personal survey method. Demographic profile of shoppers is shown in Table one. Apart from variables, like; Age, gender, occupation, data on service quality and overall customer satisfaction were collected. Refer appendix for tabulation.

Data Analysis and Results

To establish internal consistency, Cronbach's alpha value for reliability was calculated for all variables individually. s6, s28 and s29 variables are dropped as Cronbach's alpha value have gone up from .936 to .940 after dropping these variables. There were 34 items related to service quality. Three items were deleted at the initial stage of reliability analysis.

Factor analysis was applied for the left 31 items. Appropriateness of factor analysis was checked through a measure of sampling adequacy (MSA) for both the overall test and individual variable and Bartlett's test of sphericity. Measure of sampling adequacy (MSA) measures the magnitude of observed correlation coefficients to the magnitude of partial correlation coefficients (Agarwal, 2008 Bartlett's test measures the correlation among variables within a correlation matrix, p-value (0.000) of Bartlett's Test of Sphericity is less than 0.05 and indicates there is a significant correlation between the variables, hence these data do not produce identity matrix (Table 2). It indicates appropriateness for factor analysis.

The objective of factor analysis was to obtain minimum factors with maximum variance. For rotation, the direct omission method under principal component analysis was used. Variables those had similar factor loadings for two or more factors and factor loading less than .45 were deleted from study. S13,s14,s12,s11,s34,s8,s21,s31,s1,s25,s4,s18,s23 were dropped from study.

Initially, the percentage of variance explained by 31 items was 56.19 and after dropping 13 variables it came to 63.99 %. Five factors extracted from factor analysis are shown in Table 3.

The per cent of variation explained by F1 (Facilities on the train), F2 (Reliability), F3 (Convenience), F4 (Tangibility on the platform) and F5 (Food facility) factors are 35.34, 10.65, 6.80, 6.08 and 5.1 per cent respectively. The narrated five factors explain the variance in service quality of Indian railways to 63.99 per cent.

In order to find out the effect of the factors identified on the overall satisfaction of customers with Indian Railways, regression analysis was made with the five-factor scores as the independent variables and overall customer satisfaction with Indian Railways as the dependent variable.

To check the appropriateness of multiple regression analysis, Durbin-Watson test and Tolerance Value (TV) and Variance Inflation Factor (VIF) tests are used. Assumption of multiple regression analysis is the absence of autocorrelation. Durbin-Watson test value 2.110 (Table 4) indicates the absence of autocorrelation as it is near to 2. Another assumption of multiple regression analysis is the absence of multicollinearity. A multicollinearity problem indicates that explanatory variables correlate with each other. Therefore, the effect of each variable on the dependent variable becomes difficult to identify. Here Tolerance Value (TV) and Variance Inflation Factor (VIF) for each explanatory variable were used to treasure multicollinearity. Explanatory variables are highly correlated if tolerance is low and VIF exceeds ten, thus presenting a multicollinearity problem (Bedi, 2010). The multicollinearity statistics are listed in Table 6. It can be seen that VIF does not exceed the recommending limit and shows the absence of multicollinearity.

The value of R² (Table 4) was found to be 0.531 which shows that the model is a good fit. The significance of the F-value (Table 5) came out to be 0.000 less than 0.05, which indicates that the model is statistically significant at 5 per cent level of significance. R² indicates 53.1 % change in overall customer satisfaction is due to F1 (Facilities on the train), F2 (Reliability), F3 (Convenience), F4 (Tangibility on the platform) and F5 (Food facility) factors. The relative importance of factors in predicting customer overall satisfaction can be determined by comparing standardized regression coefficients (Beta coefficient). Values of Beta are .187, .400, .129, .314 and .041 for facilities on train, Reliability, Convenience, Tangibility on platform and Food facility factors respectively (Table 6).

It indicates that among all aspects of service quality, the reliability factor had the most powerful impact on customer overall satisfaction. T statistics help to determine which variables in the model are good explanatory variables of the dependent variable. Table 10 Indicates that convenience and food facility factors. In the model don't contribute to explaining customers factors, a p-value is (.051) and (.478) respectively. It is more than .05, therefore these factors don't contribute to explaining customers' overall satisfaction.

Findings and Discussion

The important factors identified by the factor analysis are Facilities on train, Reliability, Convenience, Tangibility on platform and Food facility. There is a significant impact of facilities on train, reliability and tangibility on the platform on customers' overall satisfaction. Out of these three factors, the maximum contribution is made by reliability on customers' overall satisfaction and this factor is related to the human factor. This result confirms previous research findings. The people aspect of service quality contributes maximum in influencing customer satisfaction (Lenka, Suar and Mohapatra, 2009). Since reliability is making a maximum impact on customer satisfaction, the major focus of Indian railways should be made on complaint handling, enquiry handling, employees' cooperation, and their knowledge and security issues. Second best contribution is made by tangibility on customers' overall satisfaction which includes ATM and fan facility at the platform.

This also confirms previous findings. Tangible platform amenities have an impact on the overall satisfaction/ dissatisfaction of the customer with the services of Indian Railways (Agarwal, 2008). Next and last contribution to customers' overall satisfaction with the services of Indian Railways is made by facilities on the train. It includes a water facility, food quality, and cleanliness, updated information regarding the status of train on train and bedding and blanket facilities. The study by (Agarwal, 2008) confirms this finding. Convenience and food facility factors haven't contributed to explaining customers' overall satisfaction. It doesn't mean that these factors are not important in explaining customer satisfaction with the services of Indian Railways. Rather, the sample we have considered for the study hasn't shown the importance of Convenience and food facility factors in explaining customers' satisfaction. The convenience factor is related to connectivity, the number of trains on the route, the timing of trains, and the availability of tickets. The sample, we have taken for the study is not getting connectivity from

Maharashtra to their destination and thus forced to go to Mumbai or Bhusawal compare to Pune. Thus, this factor is not contributing to their satisfaction. Similarly, food facility factor is not contributing to customers' satisfaction. Food facility on train and platform doesn't mean the availability of quality food. Quality of food variable was considered under factor 'facilities on train' and contributing to overall customer satisfaction. So, the main focus should be given on the availability of quality food on train and platform.

Limitation

Limitation of the study is that it is confined to those people who are residing in Maharashtra and going from Pune to further travel to reach their destination. Therefore, findings can't be generalized to other passengers. Secondly, the sample size is also small to generalize the findings on the same population.

Conclusion

Service quality is an important factor in achieving customer satisfaction. There is a wider scope for more improvement in the service quality in railways.

The current study identifies area for improving the quality of services being delivered by the Indian Railways. Improvement in the quality of service leads to the passengers' satisfaction. Therefore, helps in making positive image of Indian Railways. There is need to develop a valid scale that captures services on train and platform in Indian context, moreover for those customers who are going to other city for getting connectivity of train to their destination. It will help in identifying the factors which are important for special category of customers in determining their satisfaction.

Outcome show that Facilities on train, Reliability, Convenience, Tangibility on platform and Food facility factors have emerged from factor analysis. Only three factors Facilities on train, Reliability and Tangibility have a contribution in explaining customers' satisfaction.

Appendix

Table 1: Demographic Profile of Passengers

Variable	N	%
Age		
16-25	86	59.3
26-35	37	
Above 35	22	15.2
Gender		
Male	56	38.6
Female	89	61.4
Occupation		
Students	85	58.6
Others	60	41.4

Table 2: Sampling Adequacy Measure & Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.867
Bartlett's Test of Sphericity Approx. Chi-Square	1002.597
Df	153
Sig.	.000

Table 3: Pattern Matrix

	Component				
	1	2	3	4	5
si	.848				
s2	.835				
s3	.822				

s9	.527				
s5	.522				
s30		.785			
s32		.758			
s24		.680			
s33		.611			
s26		.505			
sl7			.762		
sl5			.666		
s7			.587		
sl6			.466		
sl9				.814	
s20				.772	
s22					.567
s27					.561

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.729*	.531	.514	.72582	2.110

a. Predictors: (Constant), REGR factor score 5 for analysis 1, REGR factor score 3 for analysis 1, REGR factor score 4 for analysis 1, REGR factor score 1 for analysis 1, REGR factor score 2 for analysis 1

b. Dependent Variable: s35 (overall customer satisfaction)

Table 5: ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	83.008	5	16.602	31.513	.000 ^a
Residua	173.227	139	.527		
Total	156.234	144			

Predictors: (Constant), REGR factor score 5 for analysis 1, REGR factor score 3 for analysis 1, REGR factor score 4 for analysis 1, REGR factor score 1 for analysis 1, REGR factor score 2 for analysis 1
 Dependent Variable: s35(overall customer satisfaction)

Table 6: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	3.510	.060	-	58.238	.000	-	-
Facilities on train	.195	.067	.187	2.923	.004	.822	1.217
Reliability	.417	.067	.400	6.232	.000	.X19	1.221
Convenience	.134	.068	.1291	.966	.051	.7821	.279
Tangibility on platform	.327	.066	.314	4.950	.000	.8371	.195
Food facility	.043	.061	.041	.712	.478	.995	1.005

a. Dependent Variable: s35 (overall customer satisfaction)

References

- Agdiwal Reel!, (2008), "Public Transportation and Customer Satisfaction: The Case of Indian Railways", *Global Business Review*, 9,2,257-272. Allen W.G., DiCesare F, (1976), "Transit Service Evaluation:Preliminary Identification Variables Characterizing Level of Service", *Transportation Research Record*, 606,47-53.
- Bitner M.J., Booms, B.H. & Mohr, L.A., (1994), "Critical service encounters: The employee's viewpoint", *Journal of Marketing*,58,4,95-106. Cronin J. J., Taylor S. A., (1992), "Measuring service quality: A re-examination and extension", *Journal of Marketing*,56,3,55-68.
- Jones M., Suh J., (2000), "Transaction specific satisfaction and overall satisfaction: An empirical analysis", *Journal of Services Marketing*, 14,2/3,147-169.
- Kotler P., (2000), *Marketing Management*, 10* ed., New Jersey, Prentice-Hall.
- Parasuraman A., Zeithaml V. A. and Berry L. L., (1988),"SERVQUAL: A Multiple Item Scale for Measuring Customer Perceptions of Service Quality", *Journal of Retailing*, 64 (Spring), 12-40.
- Parasuraman A., Zeithaml V. A. and Berry L. L., (1994),"Reassessment of Expectations as a Comparison Standard in Measuring Service Quality: Implications for Future Research", *Journal of Marketing*, 58,111-124.
- Pollitt M.G., Smith A.S.J., (2002), "The Restructuring and Privatisation of British Rail: Was it Really that Bad?" *Fiscal Studies*, 23,4,463-502. Reichheld F F , Sasser W E, (1990), "Zero Defections: Quality Comes to Services", *Harvard Business Review*,September-October, 105-111. Reichheld F F, Kenny D (1990), "The Hidden Advantages of Customer Retention", *Journal of Retail Banking*, 7,4. Sarmah, Poonam Madan, (2003), "Indian Railways: Time to improve standards", *Business line*, 19 September.
- Silcock, D. T., (1981), "Measures of Operational Performance for Urban Bus Services", *Traffic Engineering and Control*, 22,12,645-48. Vanniarajan T., Stephen A. (2008), "Railqual and customer satisfaction: an empirical study in Southern railways", *Asia-Pacific Business Review*, Jan-March.
- Zeithaml V. A., Bitner M J., (1996), *Services Marketing: Integrating Customer Focus Across The Firm*, 3rd ed., Tata McGraw-Hill, New Delhi.