RAILWAY PASSENGERS' AWARENESS ON SERVICES: A STUDY IN SALEM DIVISION OF SOUTHERN RAILWAY

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Abstract

India is a developing economy and recorded a growth rate which is second to China. The Indian economy is chugging merrily on to the green zone with the vagaries of nature and frequent rise in petrol and steel prices. Among the various factors contributing for the growth of Indian economy, the Indian Railways is an important one. The Indian Railways is 160 years old and is one of the largest and oldest railway systems in the world. It has an extensive network and is playing an integrating role in the social and economic development of the country. It is essential to improve Railways in order to increase the Gross Domestic Product of the nation as it contributes a significant role in the economic development of India. The contribution of the Indian Railways can be increased by attracting more number of passengers. It is possible by providing many services to its passengers. The loyalty of the passengers towards the railways can be increased only when quality services are provided to them. Further, the services provided to the passengers must be made known to them. This article highlights on the level of awareness of the railway passengers regarding the services offered to them. The null hypothesis has been framed and tested to know the level of awareness of the railway passengers.

Keywords: *Awareness, Factors, Passengers, Railway services*

1. Introduction and Execution of The Study

1.1 Introduction

Service sector is the lifeline for the social and economic growth of a country. It is the largest and fastest growing sector contributing more to the global output and employing more people than any other sector. The real reason for the growth of the service sector is an increase in urbanisation, privatisation and more demand for intermediate and final consumer services. Services comprise mostly a set of economic activities like transport, trade, tourism, communication, banking, insurance, real estate, public administration and defence. The activities under the purview of the service sector are quite diverse. The infrastructures including trading, transportation and communication, financial, real estate and business services, community, social and personal services come within the gambit of the service industry.

Transport is an important infrastructure in the economy of India. It assumes a greater role in developing countries since all the sectors of the development are closely dependent upon the existence of suitable transportation network. The whole structure of industry and commerce rests on the well laid foundation of transportation. Thus, an effective transport system is a pre-requisite for economic development of a country. The evident economic growth in India over the last two decades has increased demand for all transport services, particularly land transport through road and rail. The development of railways is one of the landmarks in the progress of human civilisation.

Indian Railways owned a total route length of 64,000 kilometers, 2,16,717 wagons, 39,263 coaches, 7,739 locomotives and runs about a total of 12,000 passenger trains and 7,000 freight trains daily. It carries nearly 23 million passengers every day and transports over 2.65 million tonnes of freight daily. The Head Quarters of the Indian Railways is in New Delhi. Indian Railways is controlled by the Government of India through the Ministry of Railways. At present, there are 17 zones and 68 divisions in the Indian Railways. Indian Railways has identified model stations for the provision of upgraded passenger amenities. Some of the stations have been identified for provision of certain 'touch and feel items' to transform them into modern stations in order to bring about visible improvements at stations.

1.2 Objectives of the Study

1. To measure the level of awareness of the passengers about the services offered by the Indian Railways.
2. To identify the group of determinants of awareness factors.

1.3 Hypothesis of the Study

On the basis of the framed objectives, the researcher's theoretical knowledge, discussion and deliberations with experts and from other research studies, the following null hypothesis has been framed. This hypothesis is subjected to appropriate statistical tests to enlighten the objective of the study.

H_0: There is no significant association between various independent variables (Gender, Age, Educational status, Marital status, Size of the family, Occupational status, Annual income, Annual expenditure, Frequency of train travel, Purpose of travel, Class of travel, Mode of buying ticket and Mode of ticket reservation) of the sample passengers and their awareness level.

The statistical significance of this hypothesis has been tested with the help of Chi-square test, 'F'test and 'Z'test at 5% level of significance.

1.4 Sampling Design and Methodology

This study is an empirical research based on survey method. The present study is confined to Salem Division of Southern Railway zone. In the selected Salem Railway Division, there are four railway junctions viz., Coimbatore, Salem, Erode and Karur. All these junctions have been selected for the study. It is decided to consider 10% of the passengers from the total passengers originating per day at each of the four Junctions of Salem Division. By using Simple Random Sampling technique, the passengers have been selected from all the Junctions of the Salem Division. On the basis of the records provided by the Public Relations Officer of Salem Division, it is found that approximately 9,300 passengers originate every day from all these four Junctions. Out of them, it is decided to collect data from 10% of the passengers from each Junction. It is considered to be adequate and representative. The details of selected sample passengers are given below.

S.No.	Junction	Average Number of Passengers Originating per Day	Number of Interview Schedule		
			Distributed	Collected	Used
1	Coimbatore	6,000	600	378	293
2	Erode	1,000	100	88	76
3	Karur	800	80	62	50
4	Salem	1,500	150	132	81
Total		9,300	930	660	500

Table 1 - Selection of Sample Passengers

The sample passengers are mobile population and they remain busy and hectic in reaching their platforms, finding their respective compartments, listening to the announcements and in enquiry. Hence, out of the target of 930 sample passengers, it is possible to collect the data only from 660 passengers. Of them, owing to non-response, inconsistency and other reasons, 160 Interview Schedules have been excluded. Thus, the total sample passengers is 500. This 500 consists of 293 from Coimbatore Junction, 76 from Erode Junction, 50 from Karur Junction and 81 from Salem Junction.

1.5 Collection of Data

In the present study, both primary and secondary data are used. The present study is largely based on the primary data. Required primary data have been collected in the course of interview with the railway passengers through survey method with a pre-tested, well structured and non-disguised Interview Schedule. The required secondary data for the present study have been collected through Annual Reports of Ministry of Railways, White Paper on the Indian Railways published by Railway Ministry, Reports of Comptroller and Audit General of India, various issues of RBI Annual Bulletins, data from Central Statistical Organisation, Indian Railways Year Book of various years, records from Public Relations Officer of Salem Division, various journals, periodicals and through web sites.

1.6 Period of the Study

The required primary data have been collected through a survey made on railway passengers from January 2012 to June 2012.

2. Passengers' Awareness about Railway Services

The passengers are inevitable for any mode of transport. The development of transport vests with the number of passengers originating. The passengers are the most important indicator of the growth of the Indian Railways. In order to increase their origination, it is important to provide quality services to the passengers. The railways face a keen competition both from road and air transport. Though there are various alternatives available to the passengers to choose their mode of travel, the number of passengers is increasing day by day in railways as it has its own unique features. In order to further increase the number of passengers originating, it is necessary to introduce more advancement in the services provided by railways.

The passengers expect multifaceted quality service both at the station and on-board the train. The passengers will prefer train travel only when their expectations are fulfilled. The Railway Authorities have to redesign their service module according to the changing requirement of the passengers in order to cater to the needs of their loyal passengers. It is essential to inform the passengers about the various amenities provided to them from time to time.

It is known fact that passengers' awareness level would play an important role in enacting various railway policies. It can be stated that only a limited number of passengers are having satisfactory level of awareness about the services offered by the Indian Railways. Hence, the Indian Railways has to seriously think it over to increase the awareness level. Hence, this is a modest attempt to examine the passengers' level of awareness about the services offered by the Indian Railways.

3. Analysis and Discussions

A comprehensive Interview Schedule is designed to collect the data from the sample passengers. Rensis Likert's method of summated ratings is applied to find out the aggregate awareness of the passengers. On the basis of the outcome of discussions with the passengers, Railway officials, academic experts and review of relevant literature, a list of 30 statements has been prepared and the same has been used for pilot study. On the basis of the outcome of the pilot study, item analysis technique has been used and five statements (railway police security, pay and use toilet, ATM facility, STD booth facility and luggage ceiling) have been excluded. Finally, 25 statements are identified as significant and the same are included for analysis. The sample passengers are called to respond to each statement relating to awareness of railway services, using 5 point rating scale ranging from very well aware to unaware. If a passenger is very well aware with the statement, a scale value of 5 is assigned, scale value of 4 is assigned if his response is well aware, 3 if it is

aware, 2 if aware to some extent and 1 if the passenger is unaware. The total score for each passenger from all the 25 statements are calculated by using the above scoring procedure.

3.1 Classification of the Passengers by Awareness Score

On the basis of above quantification procedure, the sample passengers have been classified into low level and high level. Details are shown in Table 2.

Awareness Level	**No. of Passengers**	**Total Score**	**Mean Score**	**S.D**
Low level	382 (76.4)	23102	60.48	9.73
High level	118 (23.6)	9828	83.29	8.04
Total	500 (100.0)	32930	65.86	13.47

Table 2 - Classification of the Passengers by Awareness Score
Figures in parentheses are percentage.

Table 2 reveals that 76.4 % of the sample passengers are having low level of awareness about the services offered by the Indian Railways. The mean score of the sample passengers is 65.86 and standard deviation is 13.47. Hence, it can be concluded that majority of the sample passengers are having low level of awareness about the services offered by the Indian Railways.

3.2 Association between Independent Variables and Level of Awareness

It is expected that the independent variables of the sample respondents would influence the level of awareness of the passengers about the services offered by the Indian Railways. The calculated values of chi-square, 'F' test and 'Z' test are given in Table 3 along with the results.

Factors	**Degrees of freedom**	χ^2	**F-value**	**Z-value**
Gender	1	1.289**	-	1.122**
Age	2	0.686**	0.699**	-
Educational Status	3	4.425**	2.435**	-
Marital Status	1	0.015**	-	0.770**
Size of the Family	2	5.120**	4.567*	-
Occupational Status	4	5.480**	0.901**	-
Annual Income	2	5.914**	3.567*	-
Annual Expenditure	2	7.358*	5.036*	-
Frequency of Travel	5	3.876**	2.145**	-
Purpose of Travel	8	7.013**	1.831**	-
Class of Travel	8	18.423*	1.303**	-
Mode of Buying Ticket	1	2.369**	-	1.103**
Mode of Ticket Reservation	2	8.574*	4.089*	-

Table 3 - Association between Independent Variables and Level of Awareness

* Significant
** Insignificant

It is found that hypothesis relating to gender, age, educational status, marital status, size of the family, occupational status, annual income, frequency of travel, purpose of travel and mode of buying ticket have been accepted and the hypothesis relating to annual expenditure, class of travel and mode of ticket reservation have not been accepted.

Further, the F - test and Z - test reveals that the hypothesis relating to gender, age, educational status, marital status, occupational status, frequency of travel, purpose of travel, class of travel and mode of buying ticket have been accepted and the hypothesis relating to size of the family, annual income, annual expenditure and mode of ticket reservation have not been accepted.

3.3 Passengers' Awareness: Factor Analysis

The data collected from the sample passengers regarding their level of awareness towards the services provided by the Indian Railways are classified, tabulated and processed for factor analysis which is the most appropriate multivariate technique to identify the group of determinants.

Factor Analysis is a method of summarising the information contained in a number of original variables into a smaller set of new composite dimensions. In this study, all the 25 statements rated by the passengers are taken up for analysis. The factor analysis is proceeded with the computation of correlation matrix. The matrix reveals the extent of relationship among the factors. Further, Bartlett's test of sphericity and Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy are applied to the resultant correlation matrix to test the significance of the relationship among the variables.

The Bartlett's test of sphericity is used to test whether the correlation matrix is an identity matrix. An identity matrix is one where all the diagonal terms in the matrix are 1 and the off diagonal terms in the matrix are 0. The KMO measure of sampling adequacy test is based on the correlations and partial correlations of the variables. If the KMO measure is more than 0.5, the factor analysis can be employed. The findings of KMO and Bartlett's test are shown in Table 4.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.829
Bartlett's Test of Sphericity	Approximate Chi-Square	2768.76 *
	Df	300

Table 4 - KMO and Bartlett's Test of Awareness Variables
**Significant at 1% level*

It is found from the Table 4 that the test value is 2768.76 at 1% level of significance. As the significance level is so small, it is clear that the correlation matrix is not an identity matrix. It implies that there exists correlation between the variables. It is also revealed that the value of test statistic is 0.829 which is more than 0.5. This indicates that the factor analysis for the selected variables is appropriate to the data. The Principal Component Analysis has been used to extract the factors since the objective is to summarise most of the original information in a minimum number of factors for prediction purpose. A Principal Component Analysis is a factor model used to transform a set of correlated factors into a set of uncorrelated factors so that the factors are unrelated and the variables selected for each factor are related. The variances extracted by the factors are called Eigen values. The total variance by successive factors is shown in Table 5.

Component	Initial Eigen Values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.455	21.818	21.818	5.455	21.818	21.818
2	1.856	7.422	29.241	1.856	7.422	29.241
3	1.515	6.059	35.300	1.515	6.059	35.300
4	1.432	5.729	41.028	1.432	5.729	41.028
5	1.225	4.898	45.927	1.225	4.898	45.927
6	1.058	4.232	50.159	1.058	4.232	50.159
7	1.034	4.136	54.294	1.034	4.136	54.294
8	0.996	3.984	58.278			
9	0.916	3.663	61.941			
10	0.877	3.508	65.449			
11	0.818	3.272	68.721			
12	0.795	3.178	71.899			
13	0.760	3.038	74.937			
14	0.708	2.832	77.769			
15	0.690	2.761	80.531			
16	0.646	2.585	83.116			
17	0.607	2.429	85.545			
18	0.544	2.178	87.723			
19	0.525	2.100	89.823			
20	0.507	2.027	91.850			
21	0.473	1.894	93.744			
22	0.445	1.781	95.525			
23	0.401	1.606	97.131			
24	0.372	1.486	98.617			
25	0.346	1.383	100.000			

Table 5 - Total Variance of Awareness Variables

Table 5 reveals that the extent of variance explained by each factor out of total variance is given as percentage in the third column of the table. It is found that factor 1 accounts for 22% of variance, factor 2 about 7% of variance and factor 3 about 6% of variance, factor 4 with 6%, factor 5

with 5%, factor 6 and 7 with 4% of variance each. The number of factors to be extracted are decided based on the Eigen value being 1 or above for each component. An Eigen value is the column sum of squares for a factor which represents the amount of variance in the data. Hence, the model identifies 7 factors for the given data. The Table 6 shows the Component Matrix for factors.

Statements	**Components**						
	1	**2**	**3**	**4**	**5**	**6**	**7**
Public address system	0.606	-0.094	0.029	-0.218	-0.088	-0.271	-0.212
Interactive telephone enquiry system	0.542	0.145	-0.091	0.248	-0.147	-0.362	-0.063
Assistance of TTE / Coach attender	0.527	-0.173	0.030	-0.330	-0.109	0.025	-0.021
Board showing train details	0.525	-0.346	-0.305	-0.013	0.044	0.247	-0.093
Platform indication board	0.516	-0.340	-0.429	-0.177	-0.244	-0.092	-0.018
Platform ticket vending machine	0.513	-0.124	0.107	-0.325	0.162	0.010	-0.171
First aid	0.502	-0.066	-0.398	0.302	0.204	0.085	0.183
Fare concession	0.501	0.039	-0.061	0.129	-0.458	-0.186	-0.161
Grievance redressal cell	0.500	0.168	0.183	0.181	0.375	-0.014	0.041
Retiring rooms	0.495	-0.096	0.095	-0.252	0.189	0.097	0.060
Unreserved ticketing system	0.486	0.174	-0.283	0.408	0.073	-0.140	0.061
Coach indication board	0.486	-0.254	-0.082	-0.397	-0.097	0.124	-0.073
Security cameras	0.480	0.006	0.420	-0.109	-0.046	-0.164	0.307
Availability of complaint book	0.463	0.233	0.358	0.196	0.045	0.131	-0.229
Porter service	0.437	-0.319	0.132	0.237	0.291	-0.169	0.128
Bed rolls	0.431	0.078	0.401	-0.166	-0.101	0.090	0.270
Pantry car inside the train	0.424	0.220	0.319	0.032	-0.095	-0.375	-0.132
On-line reservation	0.384	0.660	-0.213	-0.236	0.047	0.074	0.008
Touch screen	0.402	0.577	-0.094	-0.136	0.297	0.048	-0.134
Tatkal scheme	0.394	0.435	-0.350	-0.187	0.032	0.209	0.268
Refund of ticket fare	0.431	0.113	-0.115	0.358	-0.461	0.166	0.033
Purified drinking water facility	0.433	-0.418	-0.095	0.134	0.450	-0.110	-0.148
Provision of wheel chair	0.442	-0.032	0.267	0.094	-0.160	0.465	-0.203
Special compartment for ladies/army/disabled	0.296	-0.131	0.240	0.384	-0.035	0.411	-0.135
Cloak room	0.346	-0.181	0.110	0.047	-0.112	0.024	0.668

Table 6 - Component Matrix of Awareness Variables

Table 6 reveals that Principal Component Analysis has extracted seven factors which are the co-efficient used to express a standardised variable in terms of the factors. These are called as factor loadings which indicates the weight assigned to each factor. Although the factor matrix indicates the relationship between the factors and the individual variables, it is difficult to identify meaningful factors based on this matrix. To identify the factors that meaningfully summarise the sets of closely related variables, the rotation of the factor matrix is made. Oblique rotation is one of the popular

methods which is used in the study to simplify the factor structure and extract meaningful factors. The Rotated Factor Matrix using oblique rotation is shown in Table 7.

Statements	Component						
	1	2	3	4	5	6	7
Coach indication board	**0.686**	0.040	-0.067	-0.062	0.019	0.051	0.062
Platform indication board	**0.654**	-0.044	-0.139	0.097	-0.393	-0.178	0.000
Assistance of TTE / Coach attender	**0.570**	0.043	0.068	-0.045	-0.018	0.045	0.161
Public address system	**0.528**	0.032	0.381	0.098	-0.164	-0.045	-0.004
Platform ticket vending machine	**0.523**	0.117	0.173	0.126	0.199	0.097	0.005
Board showing train details	**0.508**	0.019	-0.310	0.277	-0.130	0.196	-0.086
Retiring rooms	**0.378**	0.166	0.012	0.156	0.208	0.089	0.199
On-line reservation	0.057	**0.819**	0.056	-0.150	-0.060	-0.045	-0.029
Touch screen	0.010	**0.744**	0.158	0.096	0.111	0.060	-0.147
Tatkal scheme	0.091	**0.713**	-0.272	-0.063	-0.096	-0.083	0.169
Pantry car inside the train	0.019	0.063	**0.620**	0.037	-0.175	0.033	0.116
Purified drinking water facility	0.284	-0.136	0.018	**0.705**	0.110	0.036	-0.122
Porter service	0.045	-0.192	0.105	**0.592**	0.021	0.045	0.242
First aid	0.030	0.235	-0.312	**0.530**	-0.256	0.030	0.073
Unreserved ticketing system	-0.148	0.269	0.020	**0.437**	-0.430	0.011	0.009
Grievance redressal cell	-0.113	0.278	0.182	**0.436**	0.118	0.204	0.149
Refund of ticket fare	-0.033	0.062	-0.084	-0.106	**-0.624**	0.347	0.111
Fare concession	0.232	-0.031	0.276	-0.092	**-0.597**	0.109	0.003
Interactive telephone enquiry system	0.028	0.112	0.354	0.239	**-0.504**	-0.050	0.039
Provision of wheel chair	0.191	0.011	-0.039	-0.125	-0.043	**0.700**	0.018
Special compartment for ladies/army/disabled	-0.073	-0.145	-0.109	0.120	-0.074	**0.687**	0.008
Availability of complaint book	-0.064	0.169	0.311	0.077	-0.019	**0.524**	-0.005
Cloak room	-0.018	-0.080	-0.206	0.101	-0.110	-0.081	**0.774**
Security cameras	0.090	-0.005	0.309	0.033	0.036	0.019	**0.589**
Bed rolls	0.112	0.097	0.148	-0.142	0.090	0.188	**0.532**

Table 7 - Rotated Component Matrix of Awareness Variables

It is clear from the Table 7 that each factor identifies itself with a few set of variables after 74 iterations. The variables which identify with each of the factors are sorted in descending order and are shown against each column and row.

After determining the common factors, factor score co-efficient is calculated for all variables as each factor is a linear combination of all variables. It is then used to estimate factor scores for each individual. The original values of the variables are retained for further analysis and factor scores are obtained by adding the values of the respective variables for that particular factor for each respondent.

The 25 variables are thus reduced to 7 factors. Details are shown in Table 8.

Statements	Factors	Factor Name
Coach indication board	Factor 1	Communication and retiring services
Platform indication board		
Assistance of TTE / Coach attender		
Public address system		
Platform ticket vending machine		
Board showing train details		
Retiring rooms		
On-line reservation	Factor 2	Reservation knowledge
Touch screen		
Tatkal scheme		
Pantry car inside the train	Factor 3	Catering services
Purified drinking water facility	Factor 4	Utility services
Porter service		
First aid		
Cloak room		
Grievance redressal cell		
Refund of ticket fare	Factor 5	Ticketing and fares
Fare concession		
Interactive telephone enquiry system		
Provision of wheel chair	Factor 6	Special services
Special compartment for ladies/army/disabled		
Availability of complaint book		
Unreserved ticketing system	Factor 7	Miscellaneous services
Security cameras		
Bed rolls		

Table 8 - Factors Identified Against Statements Relating to Awareness of Passengers

Table 8 shows that the Factor 1 is Communication and retiring services which comprises of variables like coach indication board, platform indication board, assistance of TTE / coach attender, public address system, platform ticket vending machine, board showing train details and retiring rooms.

The Factor 2 is Reservation knowledge which comprises of on-line reservation, touch screen and tatkal scheme. It gives knowledge on reservation aspects of train travel. The Factor 3 is Catering services which focus on the pantry car facility inside the train. The Factor 4 deals with Utility services comprising of variables like porter service, purified drinking water facility, first aid, cloak room and grievance redressal cell.

The Factor 5 is Ticketing and fares. It includes refund of ticket fare, fare concession and interactive telephone enquiry system. The Factor 6 is Special services which cover provision of wheel chair to physically challenged people, special compartment for ladies / army men / disabled

and availability of complaint book. The Factor 7 is Miscellaneous services like unreserved ticketing system, security cameras and provision of bed rolls.

4. Suggestions

In the light of the findings of the study, the following suggestions have been made to increase the level of awareness of the railway passengers regarding the services offered to them.

- It is found that 76.4% of the sample passengers have low level of awareness about the services offered by the Indian Railways. Hence, it is suggested that the Ministry of Railways should take all possible steps to propagate the various services provided to the passengers by keeping adequate index boards and bulletin boards in all possible places like rest room, at the entrance, ticket counter, passengers' lounge and platform. It may enable the passengers to know about the facilities provided by the Indian Railways.
- It is suggested that announcements could be made quite often regarding the services provided by the Indian Railways. By doing so, the level of awareness of the passengers about the services can be improved to the fullest extent.
- While examining the association between independent variables and level of awareness, it is found that there is a significant association between annual individual expenditure, class of travel, mode of ticket reservation and level of awareness of the passengers. Hence, it is suggested that the Ministry of Railways must create awareness among the passengers regarding various services offered to them in various classes of travel by printing them on their ticket. It will enable the passengers to choose their class of travel based on the amenities available to them and their level of expenditure.
- Further, it is also suggested that awareness has to be created among the passengers regarding the procedures involved in the mode of ticket reservation either at station counter or through agent or internet. It will facilitate the passengers to reserve their tickets easily in advance to their travel.
- The public may be created awareness through rallies by voluntary organisations or by issuing pamphlets and through placards regarding the safety measures to be adopted while travelling in train as well as in the railway track. This will enable to avoid unnecessary accidents in future.

5. Conclusion

It is well known that offering better services is essential for the growth of the Indian Railways. It is also equally important to make the passengers aware of the services. Still, Indian Railways has to take more possible steps to enhance the level of awareness of the passengers. On the basis of the findings of the present study, some constructive and viable suggestions have been made. If the suggestive measurements have been considered earnestly by the Indian Railways and the Policy Makers, it is hope that the Indian Railways will shine and bring grandeur to our country in the near future.

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