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Dr. SS Ramya
Assistant Professor, PSG
College of Arts and Science,
Coimbatore, Tamil Nadu,
India

A study on e-service quality of internet ticketing as perceived by the passengers

Dr. SS Ramya

Abstract
Indian Railways is becoming technologically highly developed and the fact that people can book their tickets online. The people who be acquainted with how to access internet on computers, can simply obtain reservation done on the internet itself. Indian Railway's online booking system has changed the system of reservation in India. The most excellent thing about this service is that one can get reservation done, sitting at home before the computer. Hence, customer oriented features with a range of services can be developed to make access of railways more simplified and comfortable. All the aspects bring out a positive return on the activities of IRCTC.

Keywords: Indian railways, internet ticketing services, e-services

1. Introduction
The internet is one of the more recent developments in communications and information transmits. It is a technology asset because of its ability to distribute large volume of information rapidly and efficiently to all types of stakeholders, including employees, customers, shareholders and suppliers. The internet is more accessible and less expensive than it was, and the number of internet users is growing rapidly. The internet world statistics, shows that the number of internet users around the world was approximately 3,885,567,619 by the end of June 2017. There were 462,124,989 internet users in India representing 34.4% of the population [1]. Indian Railways is becoming technologically highly developed and the fact that people can book their tickets online. The people who be acquainted with how to access internet on computers, can simply obtain reservation done on the internet itself. Indian Railway's online booking system has changed the system of reservation in India. The most excellent thing about this service is that one can get reservation done, sitting at home before the computer.

1.1 E-services of Indian railways
Indian Railways was going high tech, so in February 2000, Indian Railways web site was deployed. This web site is so popular all over the world that it is visited at least a million times a day either to find out the Train fare, ticket reservation or the availability status of a wait listed ticket. People who have access to a computer and the Internet can now easily reserve their tickets online by themselves. In fact, Indian Railways online reservation has made things easier for many people who would like to travel through trains. Electronic marketing is sharing of information, which allows railways to provide a wide range of information that the consumers need in decision-making over ultimate purchases. It is convenient for both railways and the consumers because of a marketing channel that eliminates time or distance constraints. It provides overall effectiveness to Indian Railways especially in monitoring their operations and performance because of easy organization, sharing and analysis of information from its electronic marketing operations.

1.2 Internet ticketing service
Indian Railways provides two types of online tickets - I-tickets and E-tickets. I-ticket was introduced in August 2002, which allows the traveller to place an order for a ticket, and get a physical ticket couriered to him.

Correspondence
Dr. SS Ramya
Assistant Professor, PSG
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India

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[1]Retrieved from http://www.internetworldstats.com/stats3.htm#asia

E-tickets (introduced in August 2005) on the other hand, allow the traveller to take a ticket print-out at their own end after booking the ticket. For heading towards journey, one is mandatory to take the e-ticket along with an appropriate identity card.

2. Literature Review

Premsanthi and Sivakami (2016) [1] identified the problems faced by the passengers while booking the tickets and analysed the level of satisfaction of train passenger in Erode District. The study emphasized that there is no significant association between the personal factors and overall satisfaction about the reservation system and also problems faced during the reservation in the counter. The study recommended that the passengers require more reservation and enquiry counters and they are in need of area wise service to book their tickets. Rengarajan, Sathya, and Dhivya (2016) [2] analysed the impact between the customer awareness and customer satisfaction towards e-ticket of Indian Railways. The study found that there was a significant impact due to the occupational status and customer awareness while using the internet services in Indian railways. Customers are satisfied with most of the services while using the online services in Indian Railways. Customers have stated that Indian Railways staffs give special care to the customers so that they frequently use the internet services provided by the Indian railways. Jallavi Panchamia and Gayatri (2015) [3] attempted to measure the customer's attitude and intention in using technology for railway e-ticketing in India. The study predicted the relationship between the internal factors of the technology acceptance model and the external factors of perceived risk and infrastructure support, which may influence the customers attitude towards e-ticketing. The study found that perceived usefulness is the strongest predictor of customers attitude and intention to use online services provided by e-ticketing website. Perceived ease of use factor was found to be the major predictor to perceived usefulness, as there was a strong correlation between these variables.

3. Objective of the study

To evaluate the dimensions of e-service quality of internet ticketing as perceived by the passengers

4. Research Methodology

The area of the research is confined to Coimbatore city. The data required for the study is received through primary data. 200 respondents are to be considered for the purpose of study. The different tools used for analyzing data are Percentage analysis, Chi-square analysis, ANOVA, Multiple Regression Analysis and Discriminate Function Analysis.

5. Analysis and Results
5.1 Personal Factors and Study Factors

- In this section the analysis and results of the study discussed. The majority (59.5%) of the respondents are residing in urban areas and (73.5%) are male. The study showed that a most (46%) of the respondents are in the age group of 21-40 years. Majority of the respondents (53.5%) are place of access to internet from their home, work place and cyber café and most of the respondents (41.2%) are access internet through mobile phone/smart phone, laptop/tablet and desktop (PC). Most of the respondents (42.5%) period of using e-service of Indian Railways is 2-4 years and majority of the respondents (78%) have planned their travel and majority of the respondents (79.5%) for their personal purpose. Majority of the respondents (63.5%) are using Debit card / ATM for making payment.

- The chi-square analysis is used to check the independence of two variables. In other words it is used to analyze the implication of one aspect over the other. From this study Area of Residence, Gender, Age, Marital Status, Educational Qualification, Occupation, Monthly Income, Type of Family and Size of Family have significant influence on place of access to internet and Period of usage of e-services of Indian Railways. Area of residence, Age, Marital status, Occupation, Monthly income, Type of family and Size of family have significant influence on the purpose of travel. Age, Marital status, Educational qualification, Occupation, Monthly income and Type of family have significant influence on Frequency of usage of internet ticketing service.

- The scaling technique of average score analysis is useful to convert the qualitative information into a quantitative one. From this study majority of the respondents irrespective of their personal classifications have high level of agreeability towards "Visually appealing" when compared to the other factors relating to the quality of internet ticketing website.

5.2 Personal factors and perception towards e-service quality of internet ticketing services in Indian railways

The ANOVA has been used to analyse groups of personal factors and perception towards e-service quality of internet ticketing services in Indian Railways.

Table 1: ANOVA - Personal Factors and Perception towards Efficiency of Internet ticketing Services

Variables	Groups	Mean	S.D	No.	t –value	F –value	p - value	Sig.
Area of Residence	Rural	30.77	6.59	104	-	9.389	.000	**
	Urban	31.90	5.54	238				
	Semi-Urban	34.88	5.58	58				
Gender	Male	31.67	5.89	294	4.311	-	.039	*
	Female	33.07	6.07	106				
Age	Upto 20 years	31.30	4.66	20	-	5.736	.001	**
	21-40 years	30.89	5.90	184				
	41-60years	32.85	5.98	149				
	61years and above	34.30	5.73	47				
Marital Status	Married	32.33	6.18	312	3.307	-	.070	NS
	Unmarried	31.02	5.00	88				
Educational Qualification	Up to school level	29.80	7.21	10	-	3.081	.016	*
	Under graduation	32.72	4.51	182				

	Post graduation	31.79	7.00	112				
	Professional qualification	32.23	7.03	70				
	Others	28.73	5.45	26				
Occupational Status	Government employee	33.60	6.39	52	-	2.396	.037	*
	Private employee	32.48	5.84	178				
	Student	31.15	6.49	27				
	Own business	31.78	5.36	88				
	Professional	30.14	7.28	35				
	Others	29.75	3.58	20				
Monthly income (In`)	Upto 20,000	34.90	3.68	39	-	12.145	.000	**
	20,001-40,000	30.77	6.23	218				
	40,001 - 60,000	32.39	5.67	112				
	Above 60,000	36.10	3.98	31				

(*5% significant level;** 1% significant level; NS-Not Significant)

The groups of personal factors namely Area of residence, Gender, Age, Educational Qualification, Occupational Status and Monthly Income differ significantly on their perception towards efficiency of Internet ticketing services.

Table 2: ANOVA - personal factors and perception towards reliability of internet ticketing services

Variables	Groups	Mean	S.D	No.	t-value	F –value	p - value	Sig.
Area of Residence	Rural	16.81	4.23	104	-	3.302	.038	*
	Urban	17.86	3.69	238				
	Semi-Urban	18.02	2.70	58				
Gender	Male	17.62	3.55	294	.018	-	.894	NS
	Female	17.57	4.23	106				
Age	Upto 20 years	17.90	2.71	20	-	.462	.709	NS
	21-40 years	17.41	3.31	184				
	41-60years	17.86	4.30	149				
	61years and above	17.47	3.82	47				
Marital Status	Married	17.62	3.87	312	.012	-	.911	NS
	Unmarried	17.57	3.22	88				
Educational Qualification	Up to school level	18.50	3.34	10	-	3.247	.012	*
	Under graduation	17.60	3.09	182				
	Post graduation	17.49	4.34	112				
	Professional qualification	18.47	4.16	70				
	Others	15.50	3.29	26				
Occupational Status	Government employee	18.08	4.17	52	-	4.185	.001	**
	Private employee	17.74	3.75	178				
	Student	17.11	3.82	27				
	Own business	18.00	2.77	88				
	Professional	17.66	4.70	35				
	Others	14.10	2.47	20				
Monthly income (In `)	Upto 20,000	19.92	2.30	39	-	10.932	.000	**
	20,001-40,000	16.82	3.97	218				
	40,001 - 60,000	17.93	3.28	112				
	Above 60,000	19.10	3.27	31				

(*5% significant level;** 1% significant level; NS-Not Significant)

The groups of personal factors namely Gender, Age and Marital Status do not differ significantly on their perception towards reliability of Internet ticketing services.

Table 3: ANOVA - Personal Factors and Perception towards Responsiveness of Internet ticketing Services

Variables	Groups	Mean	S.D	No.	t –value	F –value	p - value	Sig.
Area of Residence	Rural	20.51	5.96	104	-	12.840	.000	**
	Urban	23.40	5.51	238				
	Semi-Urban	24.53	5.25	58				
Gender	Male	22.21	5.89	294	12.344	-	.000	**
	Female	24.47	5.05	106				
Age	Upto 20 years	22.70	4.27	20	-	11.922	.000	**
	21-40 years	21.11	5.77	184				
	41-60years	24.09	5.57	149				
	61years and above	25.43	4.93	47				
Marital Status	Married	22.97	6.11	312	1.155	-	.283	NS
	Unmarried	22.23	4.26	88				
Educational Qualification	Up to school level	22.20	7.51	10	-	10.245	.000	**
	Under graduation	23.75	4.76	182				

					t –value	F –value	p – value	Sig.
	Post graduation	22.48	5.77	112				
	Professional qualification	23.33	7.05	70				
	Others	16.46	3.20	26				
Occupational Status	Government employee	25.08	5.54	52	-	3.589	.003	**
	Private employee	22.97	6.36	178				
	Student	21.63	5.18	27				
	Own business	22.10	4.47	88				
	Professional	20.51	6.04	35				
	Others	24.20	3.64	20				
Monthly income (In `)	Upto 20,000	27.26	3.23	39	-	17.102	.000	**
	20,001-40,000	21.46	6.02	218				
	40,001 - 60,000	24.35	5.11	112				
	Above 60,000	21.16	4.33	31				

(*5% significant level;** 1% significant level; NS-Not Significant)

The groups of personal factors namely Area of residence, Gender, Age, Educational Qualification, Occupational Status and Monthly Income differ significantly on their perception towards responsiveness of Internet ticketing services.

Table 4: ANOVA - Personal Factors and Perception towards Security and Privacy of Internet ticketing Services

Variables	Groups	Mean	S.D	No.	t –value	F –value	p – value	Sig.
Area of Residence	Rural	18.83	4.23	104	-	22.942	.000	**
	Urban	21.64	3.84	238				
	Semi-Urban	22.41	3.68	58				
Gender	Male	20.59	4.07	294	12.814	-	.000	**
	Female	22.24	4.08	106				
Age	Upto 20 years	20.80	1.67	20	-	6.960	.000	**
	21-40 years	20.11	4.72	184				
	41-60years	21.65	3.56	149				
	61years and above	22.68	3.19	47				
Marital Status	Married	21.22	4.26	312	3.408	-	.066	NS
	Unmarried	20.31	3.55	88				
Educational Qualification	Up to school level	19.00	4.74	10	-	5.350	.000	**
	Under graduation	21.68	2.99	182				
	Post graduation	20.46	4.82	112				
	Professional qualification	21.47	4.74	70				
	Others	18.38	4.49	26				
Occupational Status	Government employee	21.81	4.27	52	-	2.918	.013	*
	Private employee	21.60	3.84	178				
	Student	20.19	3.87	27				
	Own business	20.51	3.94	88				
	Professional	19.37	5.75	35				
	Others	20.15	2.91	20				
Monthly income (In `)	Upto 20,000	23.90	2.87	39	-	9.759	.000	**
	20,001-40,000	20.33	4.58	218				
	40,001 - 60,000	21.06	3.23	112				
	Above 60,000	22.16	3.24	31				

(*5% significant level;** 1% significant level; NS-Not Significant)

The groups of personal factors namely Area of residence, Gender, Age, Educational Qualification, Occupational Status and Monthly Income differ significantly on their perception towards security and privacy of Internet ticketing services.

Table 5: ANOVA - Personal Factors and Perception towards Personalisation of Internet ticketing Services

Variables	Groups	Mean	S.D	No.	t –value	F –value	p – value	Sig.
Area of Residence	Rural	16.60	3.90	104	-	4.183	.016	*
	Urban	17.85	3.79	238				
	Semi-Urban	17.51	2.50	58				
Gender	Male	17.22	3.68	294	5.496	-	.020	*
	Female	18.19	3.65	106				
Age	Upto 20 years	18.45	1.82	20	-	2.362	.071	NS
	21-40 years	16.96	3.78	184				
	41-60years	17.84	3.86	149				
	61years and above	17.91	3.17	47				
Marital Status	Married	17.55	4.00	312	.574	-	.449	NS
	Unmarried	17.21	2.29	88				
Educational Qualification	Up to school level	18.40	4.22	10	-	5.633	.000	**

	Under graduation	17.46	3.06	182				
	Post graduation	17.30	3.87	112				
	Professional qualification	18.65	3.86	70				
	Others	14.80	4.94	26				
Occupational Status	Government employee	18.25	3.12	52	-	2.721	.020	*
	Private employee	17.34	4.36	178				
	Student	17.70	3.11	27				
	Own business	18.07	2.50	88				
	Professional	16.51	4.11	35				
	Others	15.45	1.23	20				
Monthly income (In `)	Upto 20,000	20.10	2.37	39	-	9.597	.000	**
	20,001-40,000	16.97	3.82	218				
	40,001 - 60,000	17.23	3.71	112				
	Above 60,000	18.61	2.44	31				

(*5% significant level;** 1% significant level; NS-Not Significant)

The groups of personal factors namely Area of residence, Gender, Age, Educational Qualification, Occupational Status and Monthly Income differ significantly on their perception towards personalisation of Internet ticketing services.

5.3 Personal and study variables on the overall E-Service quality towards internet ticketing of Indian railways
The Multiple Regression Analysis is applied to find the effect of several personal and study variables on the overall E-Service Quality towards e-services of Indian Railways.

Table 6: Multiple regression analysis - dependent variable: overall e-service quality score of internet ticketing

	Regression Coefficients (B)	Std. Error	Beta	T	p-value	Sig.
(Constant)	104.355	9.585				
Area of Residence	4.226	1.669	.134	2.532	.012	*
Gender	3.940	2.096	.088	1.880	.061	NS
Age	2.452	1.325	.095	1.851	.065	NS
Marital Status	1.120	2.263	.024	.495	.621	NS
Education Qualification	-3.134	.988	-.155	-3.171	.002	**
Occupational Status	-1.831	.647	-.130	-2.829	.005	**
Monthly Income	-.548	1.326	-.021	-.413	.680	NS
Type of Family	-1.120	2.290	-.028	-.489	.625	NS
Size of Family	.379	1.351	.018	.281	.779	NS
Access to Internet	-1.360	.752	-.096	-1.810	.071	NS
Type of Device to Access Internet	1.694	.571	.151	2.965	.003	**
Period of Using Online Services of Indian Railways	.366	.950	.020	.386	.700	NS
Type of Travel	-16.730	2.396	-.352	-6.982	.000	**
Purpose of Travel	10.378	2.159	.233	4.806	.000	**

(*5% significant level;** 1% significant level; NS-Not Significant)

'Type of Travel' is considered as one of the predictor variable, which influence the E-SERVQUAL of Internet Ticketing services.

5.4 Type of travel with regard to e-service quality factors
The Discriminant Function Analysis is carried out to discriminate the respondents type of travel with regard to e-service quality factors

Table 7: Classification Results

		Type of Travel	Predicted Group Membership		Total
			Planned	Unplanned	
Original	No.	Planned	296	16	312
		Unplanned	37	51	88
	%	Planned	94.9	5.1	100.0
		Unplanned	42.0	58.0	100.0

(86.8% of original grouped cases correctly classified)

Table 8: Structure Matrix

	Function
Perception on efficiency of internet ticketing	.364
Access to internet	.352
Perception on reliability of internet ticketing	.333
Perception on personalisation of internet ticketing	.261
Purpose of travel	-.246
Type of device to access internet	-.231
Education qualification	.203
Monthly income	-.153
Type of family	-.120
Occupation	.029

The DFA variable 'Perception on efficiency of internet ticketing' is the maximum discriminating variable on their Planned and Unplanned travel.

Recommendations

- It is understood from the study that the majority of the respondents have stated that the log-in time for ticket booking is not adequate hence, in order to avoid this problem window log-in time and the processing speed of the website should be increased.
- It is identified from the study that the website contains too many pop ups and banner advertisement. Hence it is suggested that the pop up and banner advertisements should be avoided because they tend to confuse the customers during the process of online reservation. It is also suggested that the home page of the website should be precise with details regarding e-services alone and the search option which is very essential, is not present in the website portal of the IRCTC. For better information and clarification such search option should be provided in the website.
- It is observed that insufficient information about the usage of e-services is a main problem in using the e-service. Hence, the users must be educated about the online reservation process through video demonstration at railway stations or through online mode.

Conclusion

Indian railways is the only railway service provider in the country operated by Ministry of Railways, Government of India. It enjoys 100% monopoly in the railway travel market. The world's fourth longest railway network is in India. Indian Railways to meet the aspirations of the common man, the expanding market and changing technology, has undertaken integrated initiatives for exponential improvement in operational efficiency. The study reveals that majority of the passengers plan their travel and use the internet ticketing system and other e-services of Indian Railways. Hence, customer oriented features with a range of services can be developed to make access of railways more simplified and comfortable. All the aspects bring out a positive return on the activities of IRCTC.

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