Passengers Opinion Regarding Digitalization Process of Indian Railways

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1.1 Introduction

Indian Railways is one of the oldest and cheapest transport systems in the world. It plays a pivotal role in the growth of economy because of its usage in India (number of passengers and employment). "It is the world's eighth largest single employer with 13,26,437 employees in India. It has multi gauge system with total route kilometrage 66002.36 km of which 22197.01 km is electrified". (Source: Annual Statistical Statement of Indian Railways 2015-16)

At one point of time Indian Railways was facing the challenge of bankruptcy. But with the advent of technology in railways, 2004 was the turning point in the history of Indian Railways. Electronic transformation in Indian Railways not only created ease in availing railway services but also saved it from financial crises. In 2004, Ministry of Indian Railways took a major decision to digitalize the Indian Railways. The objective of digitalization of Indian Railways was to provide access and affordable mode of transport for every person of India. Digitalization of Indian Railways is not only expected to save the time and money of customers but also reduce the cost of infrastructure such as building, furniture, electricity etc for Indian Railways. It transforms the life of customer's right from ticket reservation to online food services.

2.1 Review of Literature

Cantos et. al (1999) concluded that in European Railways there was great need of autonomy and financial independence. Pr'rez et.al (*2007) discovered that service quality dimensions namely tangibility, reliability, receptivity, assurance and empathy have positive link with behavioural purchase intension. Palsaits and Ponomariovas (2010) revealed information, reliability and Punctuality was the most important factor in rail freight transport. Felleson and Margareta (2012) explored that transnational comparison of service satisfaction was different within the industry and individual dimension. Iqbal (2011) focused that Indian Railways should increase housing facilities,

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proper grievance handling system and human resources development programs. Balyan and Pandit (2014) extracted eight factors which affect the service quality of Indian Railways. Kaur and Mehra (2014) concluded that after reorganization of zones passenger and freight business influenced positively.

3.1 Objective

To study the opinion of Passengers using e-services of Indian Railways websites.

4.1 Scope and Methodology

The study is based on Primary data. The data was collected from 100 Passengers sitting on the platform and waiting room of Ambala Cantt. and Panipat Railways Station during the period of July – August 2017. The survey was conducted with the help of questionnaire.

5.1 Analysis of Data

Passenger opinion regarding the use websites of Indian Railways

Table 1.1 displays the Passenger using websites of Indian Railways with respect to the gender, residence, age and educational qualification of Passengers.

According to Table 1.1, out of 100 passengers 70 passengers use website of railways. 30% of passengers who do not use websites of Indian Railways is due to unfriendliness with technology and non-reliability about the information provided on the websites. The Chi Square results, regarding the use of websites of

Table 1.1: Use of websites of Indian Railways

S. No.	Categories		Yes	No	N	chi Sq Value	d. f.	P-value
1	Gender	Male	59 (71.1)	24 (28.9)	83 (100)	0.002	1	0.967
		Female	12 (70.6)	5 (29.4)	17 (100)			
2	Residence	Urban	51 (75)	17 (25)	68 (100)	1.651	1	0.199
		Rural	20 (62.5)	12 (37.5)	32 (100)			
3	Educational Qualification	Under Graduate	19 (50)	19 (50)	38 (100)	13.348	2	0.001
		Graduate	26 (81.2)	6 (18.8)	32 (100)			
		Post Graduate	26 (86.7)	4 (13.3)	30 (100)			
4	Age	0 - 30	44 (71)	18 (29)	62 (100)	0	1	0.993
		30 - 75	27 (71.1)	11 (28.9)	38 (100)			

Fig. in parenthesis represents percentage of share in total number of respondents.
** significant at 1% level

Indian Railways with regards to educational qualification, reveals statistically significant difference in the opinion of under graduate, graduate and post graduate at .001 level of significance (= 11.706) indicating that post graduate are more sensitive towards technology as 83.3 percent post graduate are using websites of railways as compared to graduate (81.2 percent) and under graduate (50 percent).

Chi Square value regarding gender (= 0.03), residence (=1.261) and age (=0.73) is not significant at 0.05 level of significance. Thus this reveals that highly educated passengers are more conscious about digitalization as compared to others.

A. Analysis of passenger opinion with regards to attributes of websites (simple in use) of Indian Railways in relation to gender, residence, age and educational qualification of passengers

$H_0$1: There is no significant difference between websites simple in use in relation to gender of passengers.

$H_0$2: There is no significant difference between websites simple in use in relation to residence of passengers.

$H_0$3: There is no significant difference between websites simple in use in relation to age of passengers.

$H_0$4: There is no significant difference between websites simple in use in relation to educational qualification of passengers.

Table 2.1 shows results of Mann Whitney test for awarenessregarding simplicity in website usage among the passengers with respect to gender, residence and age.

As per table 2.1, rural customers have higher mean scores(1.90) than urban (1.82) indicating that rural area passengers are more sensitive towards simplicity in website usage, while the mean score is highest in the age group of 30 to 75 years (1.96) and male group (1.88) in gender. The Z score value shows that

Table 2.1
Mann Whitney results for passenger awareness regarding simple in use

Dependent Variable	Independent Variable		N	Mean	Median	Mean Ranks	Sum of Ranks	Z	Sig
Simple in use	Gender	Male	58	1.88	2	36.60345	2123	-1.241	0.214
		Female	12	1.67	2	30.16667	362		
	Residence	Urban	50	1.82	2	34.82	1741	-.550	.582
		Rural	20	1.90	2.00	37.2	744		
	Age	0 - 30	44	1.77	2.00	33.24	1462.50	-1.506	.132
		30 - 75	26	1.96	2.00	39.33	1022.50		

Table 2.2
Kruskal Wallis Results for Passenger Awareness regarding Simple in Use

Dependent Variable	Independent Variable		N	Mean	Median	Mean Ranks	d.f.	H	Sig
Simple in use	Educational Qualification	Under graduate	19	2.00	2.00	40.42	2	5.866	.053
		Graduate	26	1.92	2.00	37.87			
		Post Graduate	25	1.64	2.00	29.30			

there is no significant difference ingender, residence and age group at 0.005 level of significance (Z= -0.132, -0.214,- 0.582)

Kruskal Wallis test results in Table 2.2 shows that the under graduates have highest mean value (2) than the Graduate (1.92) and Post graduate (1.64) indicating that the male customers are more sensitive towards the service procedure awareness. The H-value shows that there is no significant difference among under graduate, graduate and post graduate perception at 0.05 level of significance (H=5.86) regarding service procedure awareness.

Therefore, the null hypotheses Ho1, Ho2, Ho3 and Ho4 are accepted.

B. Analysis of passenger opinion with regards to attributes of websites (Complete information) of Indian Railways in relation to gender, residence, age and educational qualification of passengers

$H_0 1$: There is no significant difference between websites complete information in relation to gender of passengers.

$H_0 2$: There is no significant difference between websites complete information in relation to residence of passengers.

$H_0 3$: There is no significant difference between websites complete information in relation to age of passengers.

$H_0 4$: There is no significant difference between websites complete information in relation to educational qualification of passengers.

Table 3.1 shows the results of Mann Whitney test on passengers' opinion regarding use of website (complete information) in relation to the gender, residence, age and educational qualification.

It is observed from table 3.1 that rural area has higher mean score (42.18) than the urban area (1.84) indicating that the rural area passengers are more sensitive towards the complete information. The Z value show that there is no significant difference among urban

Table 3.1
Mann Whitney Results for Passenger Opinion regarding Complete Information

Dependent Variable	Independent Variable		N	Mean	Median	Mean Ranks	Sum of Ranks	Z	Sig
Complete Information	Gender	Male	58	1.97	2	35.48	2058	-0.018	0.985
		Female	12	1.92	2	35.58	427		
	Residence	Urban	50	1.84	2.00	32.83	1641.5	-2.065	0.0388
		Rural	20	2.25	2.00	42.18	843.5		
	Age	0 - 30	44	1.95	2.00	34.63	1523.50	-.557	0.577
		30 - 75	26	1.96	2.00	36.98	961.50		

Table 3.2
Kruskal Wallis Results for Passenger Opinion regarding Complete Information

Dependent Variable	Independent Variable		N	Mean	Median	Mean Ranks	d.f.	H	Sig
Complete Information	Educational Qualification	Under graduate	19	2.11	2.00	41.24	2	3.092	.213
		Graduate	26	1.92	2.00	34.29			
		Post Graduate	25	1.88	2.00	32.40			

and rural perception at 0.05 level of significance (z=-2.065) regarding complete information.

Kruskal Wallis test show that the H value for the educational qualification is not significant at 0.05 level of significance (H=3.092).

Therefore, the null hypotheses Ho1, Ho2, and Ho4 are accepted, while Ho3 hypothesis is rejected.

C. Analysis of passenger opinion with regards to attributes of websites (up-to-date information) of Indian Railways in relation to gender, residence, age and educational qualification of passengers

$H_0$1: There is no significant difference between websites up-to-date information in relation to gender of passengers.

$H_0$2: There is no significant difference between websites up-to-date information in relation to residence of passengers.

$H_0$3: There is no significant difference between websites up-to-date information in relation to age of passengers.

$H_0$4: There is no significant difference between websites up-to-date information in relation to educational qualification of passengers.

Mann Whitney test shows that the mean score of rural area in residence group is higher (2.40) followed by mean score of age group 30-75 years (2.19) indicating higher awareness towards up-to-date information. The Z value shows that gender, residence and age are not significant at 0.05 level of significance (Z=-0.573, -1.386 and -.688) respectively.

Kruskal Wallistest shows that the there is no significant difference among under graduate, graduate and post graduate regarding up-to-date information at 0.05 level of significance (H=4.273).

Therefore, the null hypotheses Ho1, Ho2, Ho3and Ho4 are accepted.

Table 4.1
Mann Whitney Results for Passenger Opinion regarding Up-to-date Information

Dependent Variable	Independent Variable		N	Mean	Median	Mean Ranks	Sum of Ranks	Z	Sig
Up-to-date Information	Gender	Male	58	2.19	2	36.07759	2092.5	-.573	0.565
		Female	12	2	2	32.70833	392.5		
	Residence	Urban	50	2.06	2	33.56	1678	-1.386	.165
		Rural	20	2.40	2.00	40.35	807		
	Age	0 - 30	44	2.14	2.00	34.33	1510.50	-.688	.491
		30 - 75	26	2.19	2.00	37.48	974.50		

Table 4.2
Kruskal Wallis Results for Passenger Opinion regarding Up-to-date Information

Dependent Variable	Independent Variable		N	Mean	Median	Mean Ranks	d.f.	H	Sig
Up-to-date Information	Educational Qualification	Under graduate	19	2.32	2.00	40.13	2	4.273	.118
		Graduate	26	2.31	2.00	37.90			
		Post Graduate	25	1.88	2.00	29.48			

D. Analysis of passenger opinion with regards to attributes of websites (well organized) of Indian Railways in relation to gender, residence, age and educational qualification of passengers

$H_0 1$: There is no significant difference between websites well organized in relation to gender of passengers.

$H_0 2$: There is no significant difference between websites well organized in relation to residence of passengers.

$H_0 3$: There is no significant difference between websites well organizedin relation to age of passengers.

$H_0 4$: There is no significant difference between websites well organized in relation to educational qualification of passengers.

Mann Whitney test shows that there is no significant difference among male and female, urban and rural, 0-30 years and 30-75 years age group at 0.05 level of significance (z=-0.951, -1.418 and-0.456) regarding well organized websites of railways.

It is observed from the table 5.2 that Mean score of graduation group is highest (2.19), whereas passengers of postgraduate group have minimum score (1.92) regarding well organized websites of railways.

Kruskal Wallis test shows that that the H-value for the educational qualification isnot significant at 0.05 level of significance (H=2.358).

Therefore, the null hypotheses Ho1, Ho2, Ho3and Ho4 are accepted.

E. Analysis of passenger opinion with regards to attributes of websites (mobile compatibility) of Indian Railways in relation to gender, residence, age and educational qualification of passengers

$H_0 1$: There is no significant difference between websites mobile compatibilityin relation to

Table 5.1
Mann Whitney Results for Passenger Opinion regarding Well Organised

Dependent Variable	Independent Variable		N	Mean	Median	Mean Ranks	Sum of Ranks	Z	Sig
Well Organized	Gender	Male	58	2.14	2	36.396	2111	-.951	.342
		Female	12	1.83	2	31.1666	374		
	Residence	Urban	50	2.02	2	33.64	1682	-1.418	.156
		Rural	20	2.25	2.00	40.15	803		
	Age	0 - 30	44	2.09	2.00	34.77	1530	-.456	.648
		30 - 75	26	2.08	2.00	36.73	955		

Table 5.2
Kruskal Wallis Results for Passenger Opinion regarding Well Organised

Dependent Variable	Independent Variable		N	Mean	Median	Mean Ranks	d.f.	H	Sig
Well Organized	Educational Qualification	Under graduate	19	2.16	2.00	38.95	2	2.358	.308
		Graduate	26	2.19	2.00	36.96			
		Post Graduate	25	1.92	2.00	31.36			

gender of passengers.

$H_0 2$: There is no significant difference between websites mobile compatibilityin relation to residence of passengers.

$H_0 3$: There is no significant difference between websites mobile compatibilityin relation to age of passengers.

$H_0 4$: There is no significant difference between websites mobile compatibility in relation to educational qualification of passengers.

It is observed from Mann Whitney test that there is no significant difference among male and female, urban and rural, 0-30 and 30-75 age group at 0.05 level of significance (Z=-0.384, -1.541, -0.206) regarding mobile compatibility.

Kruskal Wallis test shows that the H-value for the educational qualification is not significant at 0.05 level of significance (H=0.202) regarding mobile compatibility.

Therefore, the null hypotheses Ho1, Ho2, Ho3and Ho4 are accepted.

Table 6.1
Mann Whitney Results for Passenger Opinion regarding Mobile Compatibility

Dependent Variable	Independent Variable		N	Mean	Median	Mean Ranks	Sum of Ranks	Z	Sig
Mobile Compatibility	Gender	Male	58	2.03	2	35.14	2038	-.384	.7008
		Female	12	2.08	2	37.25	447		
	Residence	Urban	50	1.98	2	33.48	1674	-1.541	.1232
		Rural	20	2.20	2.00	40.55	811		
	Age	0 - 30	44	2.07	2.00	35.83	1576.50	-.206	.8361
		30 - 75	26	2.00	2.00	34.94	908.50		

Table 6.2
Kruskal Wallis Results for Passenger Opinion regarding Mobile Compatibility

Dependent Variable	Independent Variable		N	Mean	Median	Mean Ranks	d.f.	H	Sig
Mobile Compatibility	Educational Qualification	Under graduate	19	2.05	2.00	36.47	2	0.202	.904
		Graduate	26	2.04	2.00	35.96			
		Post Graduate	25	2.04	2.00	34.28			

Table 8.1
Mann Whitney Results for Passenger Opinion regarding Easy to Understand

Dependent Variable	Independent Variable		N	Mean	Median	Mean Ranks	Sum of Ranks	Z	Sig
Easy to Understand	Gender	Male	58	2.09	2	36.50	2117	-1.073	.2831
		Female	12	1.83	2	30.66	368		
	Residence	Urban	50	2.02	2	34.92	1746	-.447	.6544
		Rural	20	2.10	2.00	36.95	739		
	Age	0 - 30	44	2.07	2.00	35.60	1566.50	-.065	.9482
		30 - 75	26	2.00	2.00	35.33	918.50		

Table 8.2
Kruskal Wallis Results for Passenger Opinion regarding Easy to Understand

Dependent Variable	Independent Variable		N	Mean	Median	Mean Ranks	d.f.	H	Sig
Easy to Understand	Educational Qualification	Under graduate	19	2.05	2.00	35.74	2	0.667	.716
		Graduate	26	2.08	2.00	37.33			
		Post Graduate	25	2.00	2.00	33.42			

F. Analysis of passenger opinion with regards to attributes of websites (easy to understand) of Indian Railways in relation to gender, residence, age and educational qualification of passengers

$H_0$1: There is no significant difference between websites easy to understand in relation to gender of passengers.

$H_0$2: There is no significant difference between websites easy to understand in relation to residence of passengers.

$H_0$3: There is no significant difference between websites easy to understand in relation to age of passengers.

$H_0$4: There is no significant difference between websites easy to understand in relation to educational qualification of passengers.

Mann Whitney test shows that the Z value for gender, residence and age are not significant at 0.05 level of significance (Z=-1.073, -0.447 and -0.065).

It is observed from the Table 8.2 that the mean score of graduate group is highest (2.08), whereas postgraduate customer has minimum score (2) regarding ease to understand website of railways, indicating post graduate group are less sensitive in this regards.H value for educational qualification is not significant at 0.05 level of significance (H=0.667).

Therefore, the null hypotheses Ho1, Ho2, Ho3and Ho4 are accepted.

Table 9.1
Mann Whitney Results for Passenger Opinion regarding Secure

Dependent Variable	Independent Variable		N	Mean	Median	Mean Ranks	Sum of Ranks	Z	Sig
Secure	Gender	Male	58	2.21	2	36.65517	2126	-1.225	.220
		Female	12	1.92	2	29.91667	359		
	Residence	Urban	50	2.08	2	34.17	1708.5	-1.014	.310
		Rural	20	2.35	2.00	38.825	776.5		
	Age	0 - 30	44	2.20	2.00	36.11	1589	-.385	.700
		30 - 75	26	2.08	2.00	34.46	896		

Table 9.2
Kruskal Wallis Results for Passenger Opinion regarding Secure

Dependent Variable	Independent Variable		N	Mean	Median	Mean Ranks	d.f.	H	Sig
Secure	Educational Qualification	Under graduate	19	2.26	2.00	39.63	2	1.748	.417
		Graduate	26	2.08	2.00	32.73			
		Post Graduate	25	2.16	2.00	35.24			

G. Analysis of passenger opinion with regards to attributes of websites (secure) of Indian Railways in relation to gender, residence, age and educational qualification of passengers

$H_0$1: There is no significant difference between websites securein relation to gender of passengers.

$H_0$2: There is no significant difference between websites secure in relation to residence of passengers.

$H_0$3: There is no significant difference between websites securein relation to age of passengers.

$H_0$4: There is no significant difference between websites secure in relation to educational qualification of passengers

It is observed from the table 9.1 that mean score of rural group is higher (2.35) than urban group (2.08) indicating rural group are more sensitive towards secure, While the mean score is higher in male group(2.21) than female group (1.92).

The Z value shows that there is no significant difference among male and female, urban and rural , 0-30 and 30-75 age groups at 0.05 level of significance (Z=-1.225, -1.014 and-0.385) regarding secure.

Table 9.2 shows that the mean score of undergraduate groups is highest (2.26), whereasgraduate group passengers has minimum score (2.08), indicating that passengers are less sensitive towards the secure of websites. H value for educational qualification is not significant.

Therefore, the null hypotheses Ho1, Ho2, Ho3and Ho4 are accepted.

H. Analysis of passenger opinion with regards to attributes of websites (feedback) of Indian Railways in relation to gender, residence, age and educational qualification of passengers

$H_0 1$: There is no significant difference between websites feedback in relation to gender of passengers.

$H_0 2$: There is no significant difference between websites feedback in relation to residence of passengers.

$H_0 3$: There is no significant difference between websites feedback in relation to age of passengers.

$H_0 4$: There is no significant difference between websites we feedback in relation to educational qualification of passengers.

Mann Whitney test shows that the Z value for gender and age is not significant at 0.05 level of significance (Z=-1.027 &-.208), where as Z statistic in respect of residence are significant at 0.05 percent level of significance (Z=-1.965) indicating that feedback have considerable effect on passengers opinion.

Kruskal Wallis test show that H value for educational qualification is not significant at 0.05 level of significance (H=2.213) regarding feedback of websites.

Therefore, the null hypotheses $H_0 1$, $H_0 3$ and $H_0 4$ are accepted, while $H_0 2$ is rejected.

6.1 Conclusion and Recommendations

The study revealed that 70 percent of the passengers are using these services. This means people have not only accepted the change but are also taking benefits from that. The study found a positive opinion of passengers towards various attributes of websites of Indian Railways which included simple to use, completeness of information, well organized, mobile compatibility, ease to understand and secure. On the other hand,

Table 10.1
Mann Whitney Results for Passenger Opinion regarding Feedback

Dependent Variable	Independent Variable		N	Mean	Median	Mean Ranks	Sum of Ranks	Z	Sig
Feedback	Gender	Male	58	2.57	3	36.56034	2120.5	-1.027	.304
		Female	12	2.33	2	30.375	364.5		
	Residence	Urban	50	2.40	2.00	32.68	1634	-1.965	.049
		Rural	20	2.85	3.00	42.55	851		
	Age	0 - 30	44	2.52	2.50	35.14	1546.00	-.208	.835
		30 - 75	26	2.54	3.00	36.12	939.00		

Table 10.2
Kruskal Wallis Results for Passenger Opinion regarding Feedback

Dependent Variable	Independent Variable		N	Mean	Median	Mean Ranks	d.f.	H	Sig
Feedback	Educational Qualification	Under graduate	19	2.74	3.00	40.55	2	2.213	.331
		Graduate	26	2.46	3.00	35.19			
		Post Graduate	25	2.44	2.00	31.98			

some customers were not satisfied with the attributes, like up-to-date information and feedback system. On the basis of above analysis we can say that there is a great need to improve the Indian Railways running status system and solve the queries within the reasonable time.

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