

DATA ANALYSIS AND INTERPRETATIONS

Data analysis and interpretation is an important step of research. It is the process of assigning meaning to the collected data, revealing important facts and determines the significance and implications of result. Data from primary sources are gathered, reviewed and analyzed to arrive at the conclusion. Interpretation involves constructing a logical scientific argument that explains the data. This chapter is allocated into six sections. The first section represent the personal profile of the respondents, the second section describe the travel details of the travellers. The third section aims “to investigate the services offered by the Indian Railways at Platforms of North Central Railway zone” which is the first objective of this study. For achieving this objective chi square has been applied. The fourth section details out the second objective of the study, i.e. ‘to analyze the service quality factors influencing the satisfaction level of travellers. For this purpose Pearson correlation and chi-square analysis has been done. The fifth section describes the detail about the level of awareness about the services offered by the Indian Railway at Platforms which is the third objective of this study. To achieve this objective ANOVA and Chi- square test has been done. The last section which is the fourth objective of the study deals to examine the factors for enhancing the service quality of platforms. For achieving this objectives various steps are taken where Railways need to improve the service quality

5.1 SECTION 1

Personal Profile of the Respondents

The study conducted through convenience sampling. Data was collected from the travelers availing services offered at Indian railways platforms and travelling towards or going from Allahabad, Agra and Jhansi junctions. A total of 1020 sample were collected at different intervals of time which focused on services of platforms at above mentioned major railway junctions out of 1020 Respondents 540 were found suitable for the analysis. The respondents profile is outlined below. The profile of the respondents have been segregated in seven sections on the basis of gender, age, educational qualification, marital status, occupation, residence and monthly income.

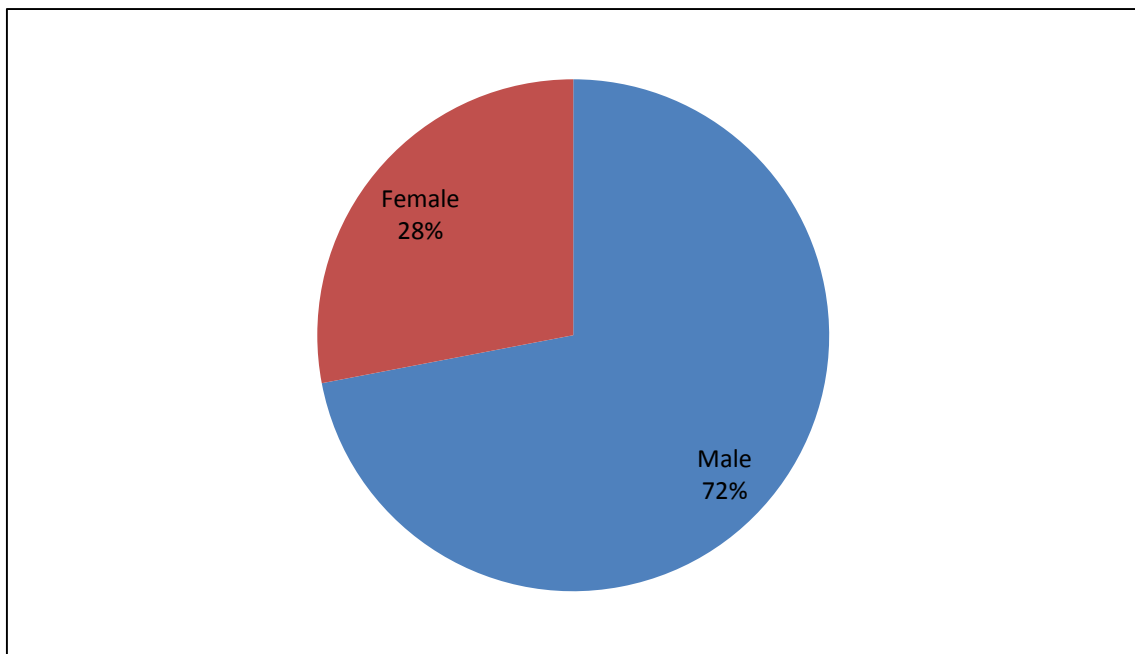
5.1.1 Characteristics of the Respondents on the Basis of Gender (N= 540)

The total numbers of respondents considered in the research study are 540. The demographic profile of the respondents on the basis of age is shown in table and figure given below. The total numbers of respondent are 540 where 151 (28.0%) respondents are females and 389 (72.0%) are males as shown in the table and figure 5.1.

Table 5.1
Characteristics of the Respondents on the Basis of Gender (N= 540)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	389	72.0	72.0	72.0
	Female	151	28.0	28.0	100.0
	Total	540	100.0	100.0	

Figure 5.1
Characteristics of the Respondents on the Basis of Gender (N= 540)



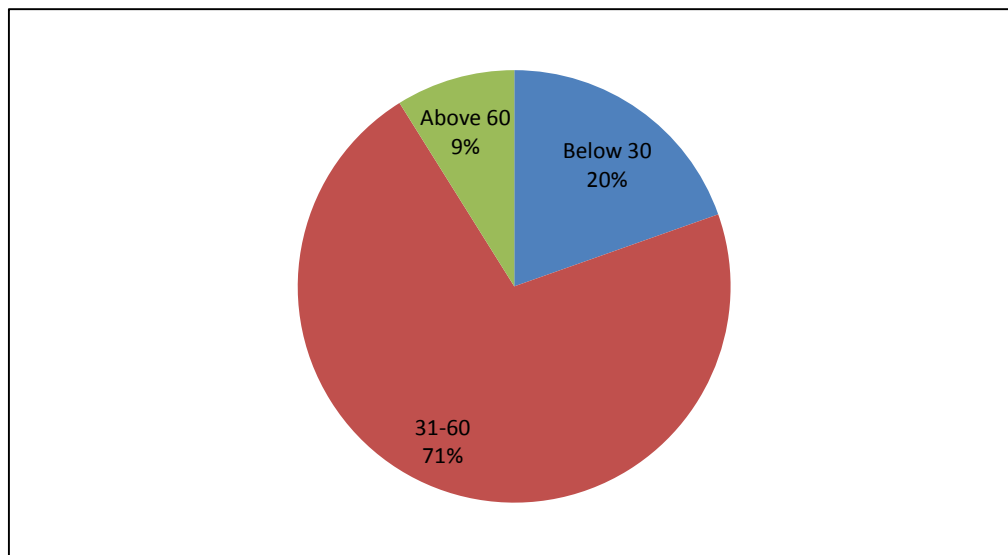
5.1.2 Characteristics of the Respondents on the Basis of Age Group (N= 540)

As shown in the table and figure 5.2 the respondents are grouped into three categories. 106 (19.6%) respondents are below 30 years of age, 386 (71.5%) respondents are between 31- 60 years of age and 48(8.9%) respondents are those above 60 years.

Table 5.2
Characteristics of the Respondents on the Basis of Age Group (N= 540)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 30	106	19.6	19.6	19.6
	31-60	386	71.5	71.5	91.1
	Above 60	48	8.9	8.9	100.0
	Total	540	100.0	100.0	

Figure 5.2
Characteristics of the Respondents on the Basis of Age Group (N= 540)



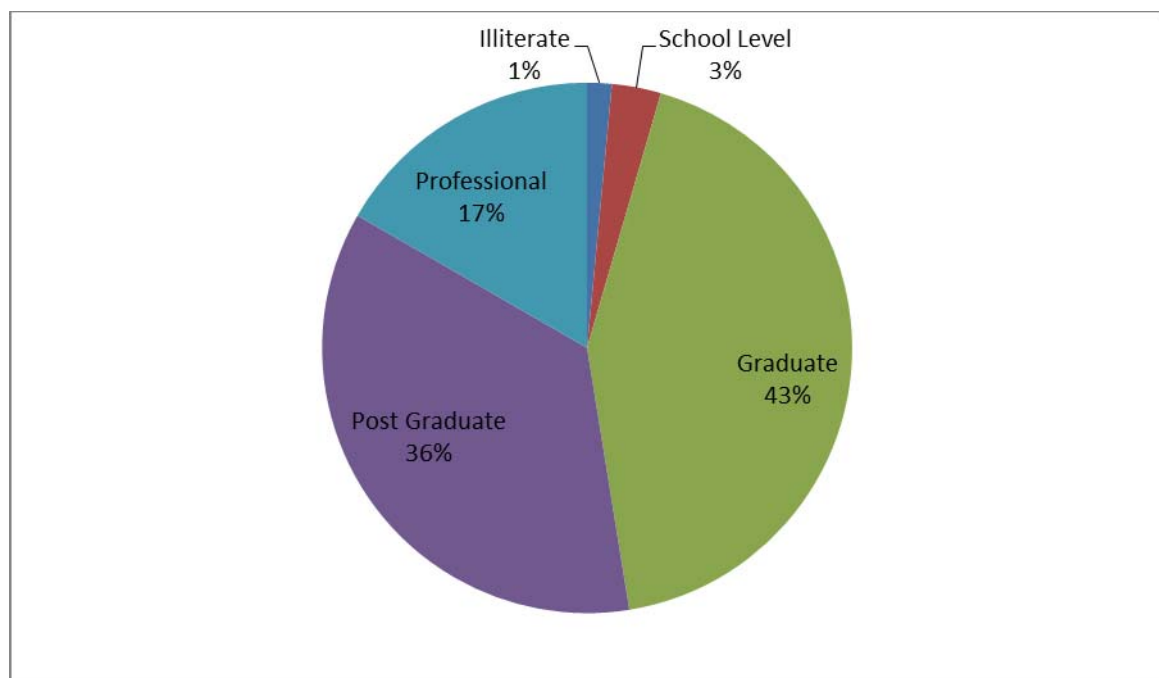
5.1.3 Characteristics of the Respondents on the Basis of Educational Qualifications (N= 540)

The table and figure 5.3 reveals that out of 540 there are 8(1.5%) respondents are illiterate, 16(3.0%) are up to school level. It is observed that out of 540 only 232(43.0) respondents are graduate, 194(35.9%) are post graduates and 90(16.7%) are having other type of qualification such as professional.

Table 5.3
Characteristics of the Respondents on the Basis of Educational Qualifications
(N= 540)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Illiterate	8	1.5	1.5	1.5
	School Level	16	3.0	3.0	4.4
	Graduate	232	43.0	43.0	47.4
	Post Graduate	194	35.9	35.9	83.3
	Professional	90	16.7	16.7	100.0
	Total	540	100.0	100.0	

Figure 5.3
Characteristics of the Respondents on the Basis of Educational Qualifications
(N= 540)



5.1.4 Characteristics of the Respondent on the Basis of Occupation (N=540)

Table and Figure 5.4 show the occupational backgrounds of the respondents. Out of 540 only 67(12.4%) are students, 254(47.0%) are employed, 94(17.4%) are professionals, 58(10.7%) are business owners and 67(12.4%) who are from other type of occupation.

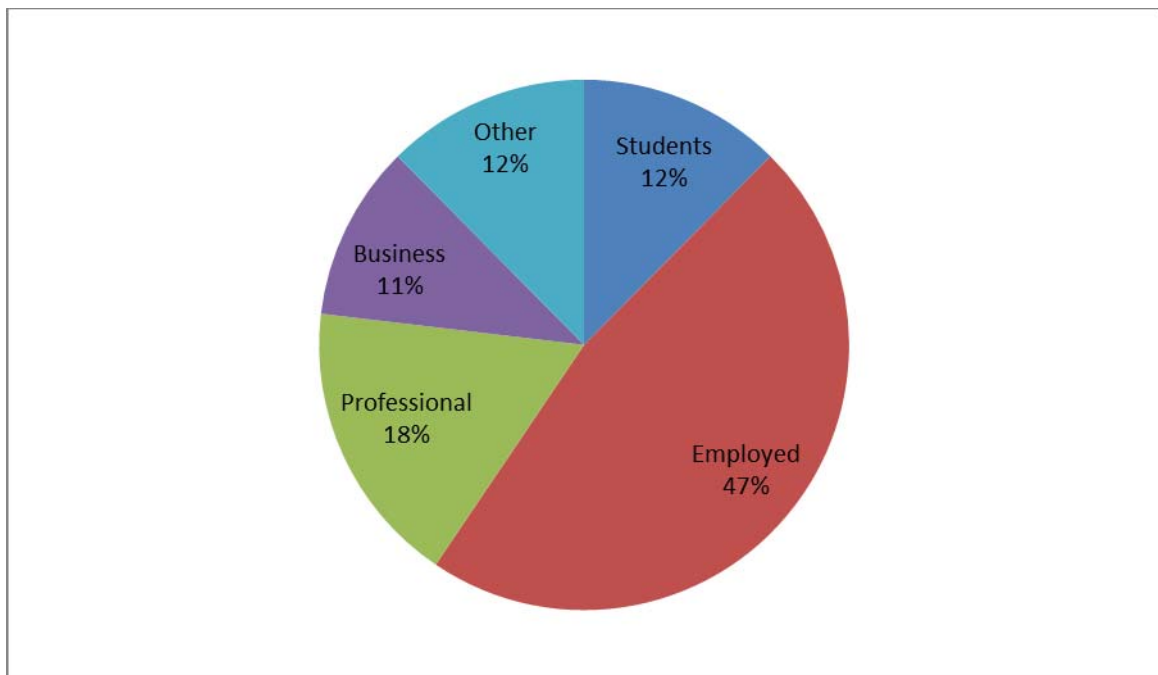
Table 5.4

Characteristics of the Respondent on the Basis of Occupation (N=540)

	Frequency	Percent	Valid Percent	Cumulative Percent
Student	67	12.4	12.4	12.4
Employed	254	47.0	47.0	59.4
Professional	94	17.4	17.4	76.9
Business	58	10.7	10.7	87.6
Other	67	12.4	12.4	100.0
Total	540	100.0	100.0	

Table 5.4

Characteristics of the Respondent on the Basis of Occupation (N=540)



5.1.5 Characteristics of the Respondents on the Basis of Marital Status (N=540)

The total numbers of the respondents in the study were 540, where 333(61.7%) respondents are married and 207(38.3%) are unmarried shown in the table and figure 5.5.

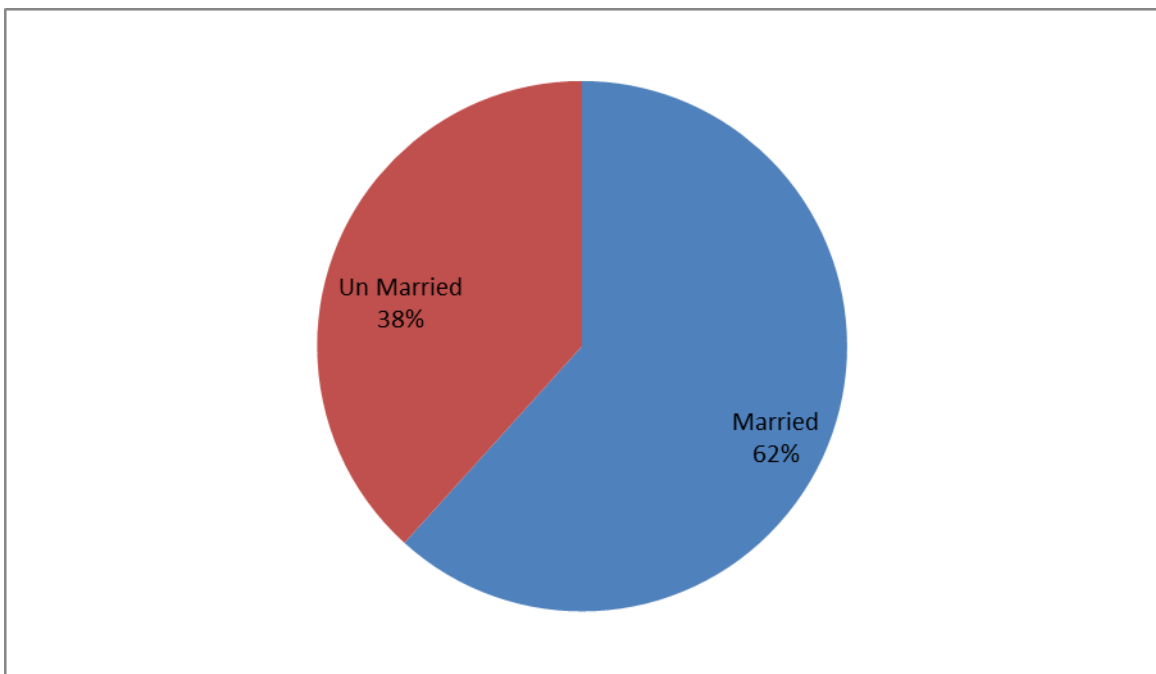
Table 5.5

Characteristics of the Respondents on the Basis of Marital Status (N=540)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Married	333	61.7	61.7	61.7
	Unmarried	207	38.3	38.3	100.0
	Total	540	100.0	100.0	

Figure 5.5

Characteristics of the Respondents on the Basis of Marital Status (N=540)



5.1.6 Characteristics of the Respondents on the Basis of their Residence (N=540)

The total numbers of respondents are 540, where 79(14.6%) respondents are those from rural background and 461(85.4%) respondents are from urban background as shown in the table and figure 5.6.

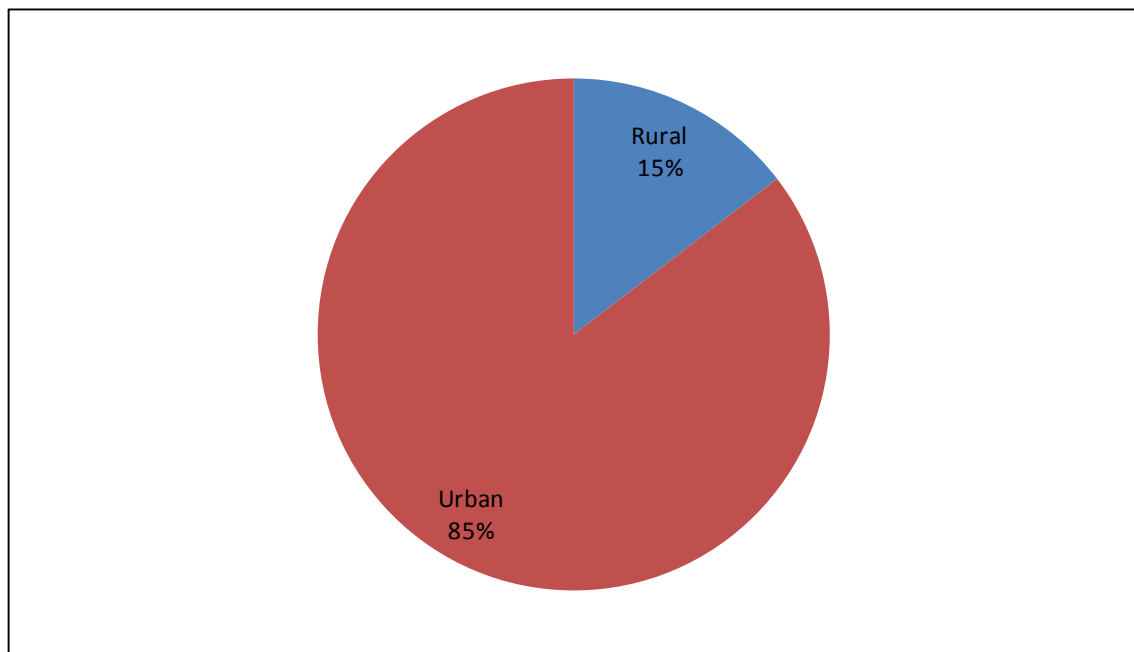
Table 5.6

Characteristics of the Respondents on the Basis of their Residence (N=540)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Rural	79	14.6	14.6	14.6
Urban	461	85.4	85.4	100.0
Total	540	100.0	100.0	

Figure 5.6

Characteristics of the Respondents on the Basis of their Residence (N=540)



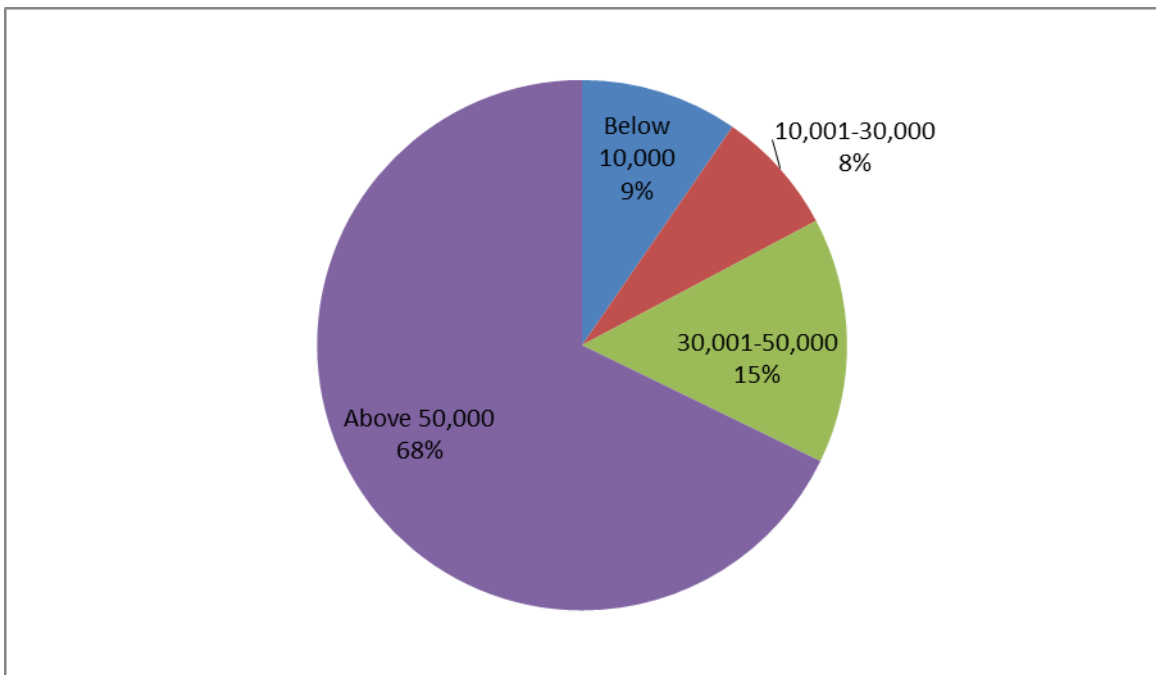
5.1.7 Characteristics of the Respondents on the Basis of Monthly Income (N=540)

On the basis of monthly income it is observed that 92(17.0%) respondents are those earning less than 10,000 monthly, 73(13.5%) respondents are those earning between 10,001- 30,000, 143(26.5%) respondents are those earning between 30,001-50,000, and 232(43.0%) are earning above 50,000 monthly as shown in the table and figure 5.7

Table 5.7
Characteristics of the Respondents on the Basis of Monthly Income (N=540)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Below 10,000	92	17.0	17.7	17.0
10,001-30,000	73	13.5	12.8	29.8
30,001-50,000	143	26.5	26.5	56.3
Above 50,000	232	43.0	43.0	100.0
Total	540	100.0	100.0	

Figure 5.7
Characteristics of the Respondents on the Basis of Monthly Income (N=540)



5.2 SECTION 2

Travel Details of the Respondents: The second section of the research is based on the travel details of the respondents have been segregated in six parts on the travelling pattern of the respondents, purpose of travel, class of travel, Average distance travelled by the respondent in a month, ticket booking system and reasoning for preferring rail transport.

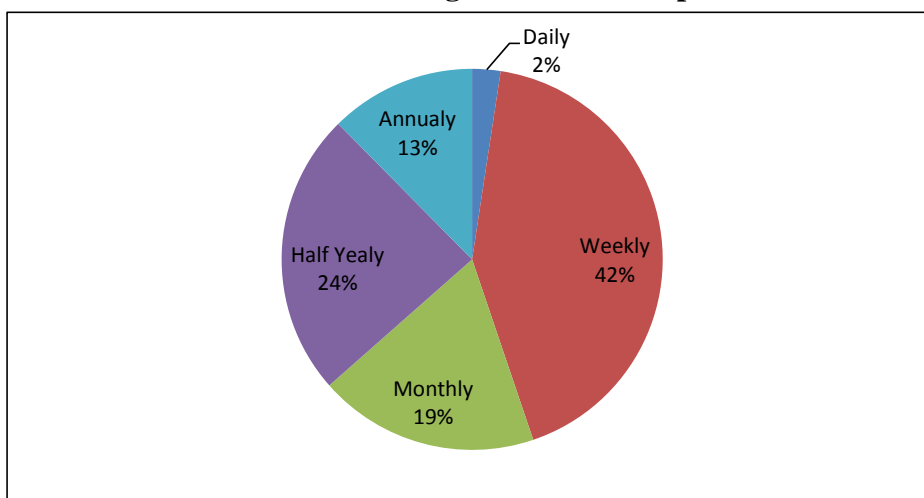
5.2.1 Travelling Patterns of Respondents: Table and figure 5.8 shows the respondents travel habits. In this table respondents daily travel by train are 13 (2.4%), travel in a week are 229 (42.4) is very high, travel in a month are 101 (18.7%), travel in half year are 130 (24.1%) and travel in a year are 67 (12.4%).

Table 5.8
Travelling Patterns of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	13	2.4	2.4	2.4
	Weekly	229	42.4	42.4	44.8
	Monthly	101	18.7	18.7	63.5
	half-yearly	130	24.1	24.1	87.6
	Yearly	67	12.4	12.4	100.0
	Total	540	100.0	100.0	

Figure 5.8

Travelling Patterns of Respondents

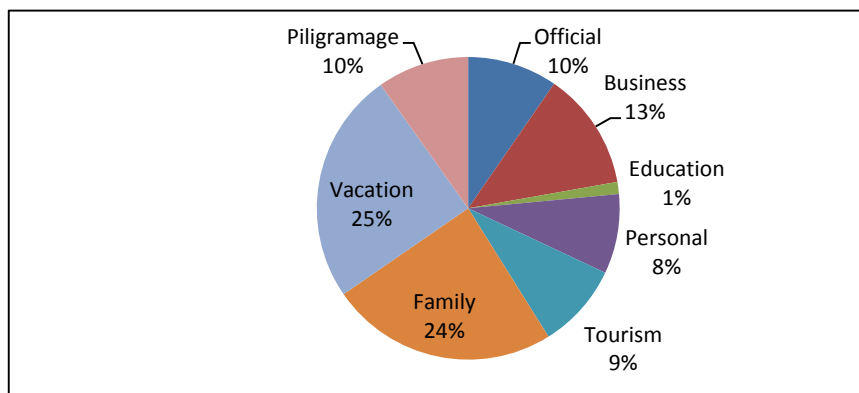


5.2.2 Respondents Purpose of Travel: Table and figure 5.9 shows the travelling purpose of the respondents. There are different purposes of travel for the respondents. Out of 540 respondents, who travel for official purpose are 52(9.6%), respondents travel for business purpose are 68(12.6%), respondents travel for education purpose are 7(1.3), respondents travel for personal purpose are 46(8.5%), for tourism purpose respondents are 49(9.1%), travel for family purpose are 131(24.8%), respondents travel for the purpose of vacation are 134(24.8%) and respondents travel for the purpose of pilgrimage are 53(9.8%).

Table 5.9
Respondent's Purpose of Travel

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Official	52	9.6	9.6	9.6
	Business	68	12.6	12.6	22.2
	Education	7	1.3	1.3	23.5
	Personal	46	8.5	8.5	32.0
	Tourism	49	9.1	9.1	41.1
	Family	131	24.3	24.3	65.4
	Vacation	134	24.8	24.8	90.2
	Pilgrimage	53	9.8	9.8	100.0
	Total	540	100.0	100.0	

Figure 5.9
Respondent's Purpose of Travel



5.2.3 Travel Class Wise Configuration of Respondents: Table and figure 5.10 shows in which class the respondent travel normally. Out of 540 respondents 146 (27.0%) are travel in 2A-AC 2 Tier, most of the respondent travel in 3A-AC-3Tier 269 (49.8%), respondents travel in FC-First Class are 8 (1.5%), respondents travel in SL-Sleeper class are 83(15.4) and travel in XC-AC Executive chair class are 34(6.3%).

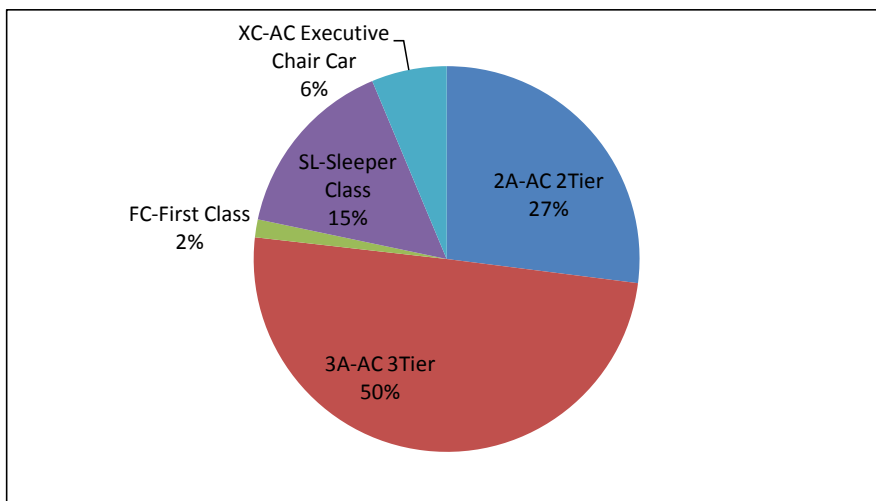
Table 5.10

Travel Class Wise Configuration of Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
2A-AC 2Tier	146	27.0	27.0	27.0
3A-AC 3 Tier	269	49.8	49.8	76.9
FC-First Class	8	1.5	1.5	78.3
SL-Sleeper Class	83	15.4	15.4	93.7
XC-AC Executive chair car	34	6.3	6.3	100.0
Total	540	100.0	100.0	

Figure 5.10

Travel Class Wise Configuration of Respondents



5.2.4 Respondents Average Distance of Travel in a Month: Table and figure 5.11 reveals about the average distance travelled in a month by the respondent. Out of 540 respondents 65(12.0%) respondents are those who travelled less than 250km in a month. 94(17.4%) Respondent travelled in a month of distance between 250-500 km, 227(42.0%) respondents are those who travelled 1000km in a month and 154(28.5%) respondents are those who travelled more than 1000km in a month.

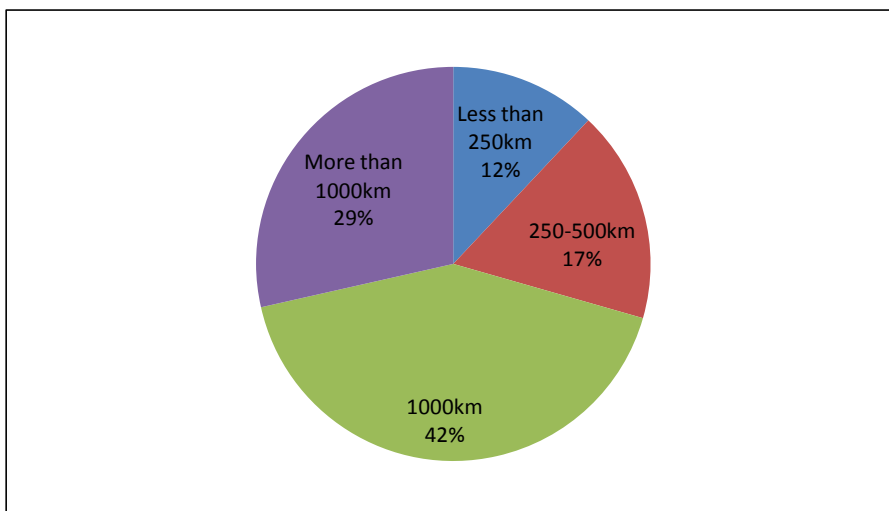
Table 5.11

Respondent's Average Distance of Travel in a Month

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 250km	65	12.0	12.0	12.0
	250-500km	94	17.4	17.4	29.4
	1000km	227	42.0	42.0	71.5
	More than 1000km	154	28.5	28.5	100.0
	Total	540	100.0	100.0	

Figure 5.11

Respondent's Average Distance of Travel in a Month



5.2.5 Respondents Preference for Ticket Booking : Table and figure 5.12 reveals about the ticket booking channel, out of 540 respondents 41(7.6%) respondents used current booking system for ticket.112(20.7%) respondents prefer reservation ticket from the counters.275(50.9%) respondents booked their ticket on IRCTC portal.112(20.7%) booked their ticket by application based ticketing system.

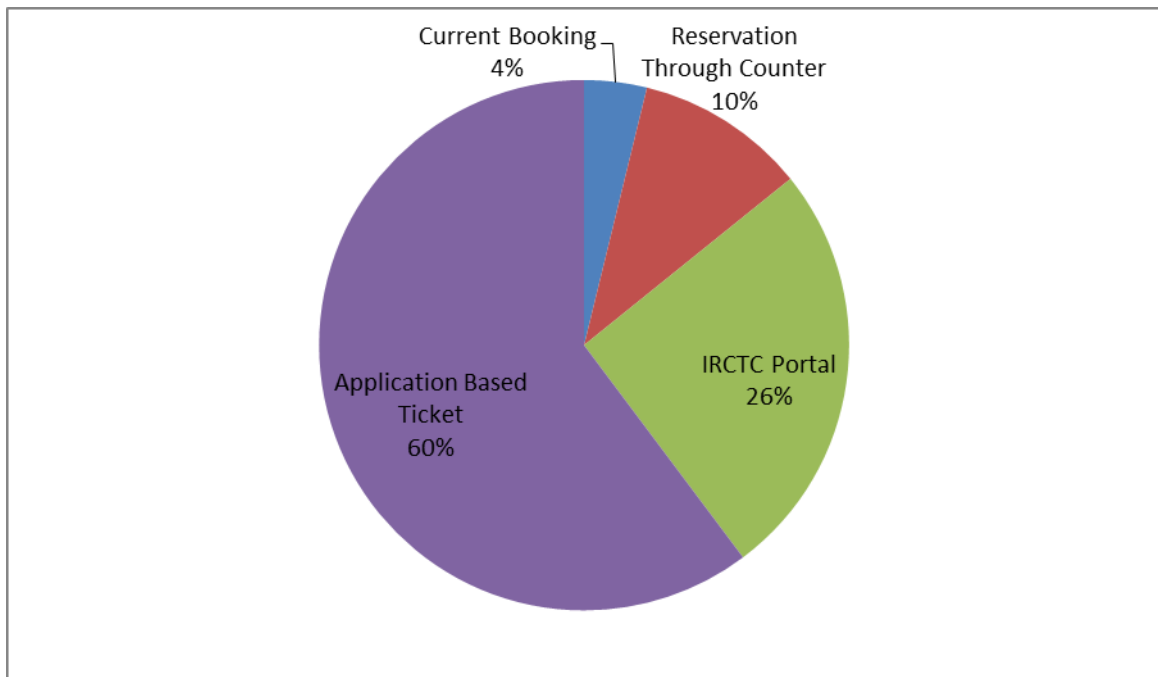
Table 5.12

Respondents Preference for Ticket Booking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	current booking	41	7.6	7.6	7.6
	reservation through counter	112	20.7	20.7	28.3
	ITCTC portal	275	50.9	50.9	79.3
	application based ticket	112	20.7	20.7	100.0
	Total	540	100.0	100.0	

Figure 5.12

Respondents Preference for Ticket Booking



5.2.6 Respondents Reason for Preferring the Rail Transport: Table and graph 5.13 reveals the reason for preferring the rail transport by the respondents, out of 540 respondents, 186 (34.4%) respondents are preferring the rail transport for convenient reason, 117 (21.7%) respondents are preferring rail transport for the reason of cost effective and 237(43.9%) respondents are preferring the rail transport for the reason of convenience.

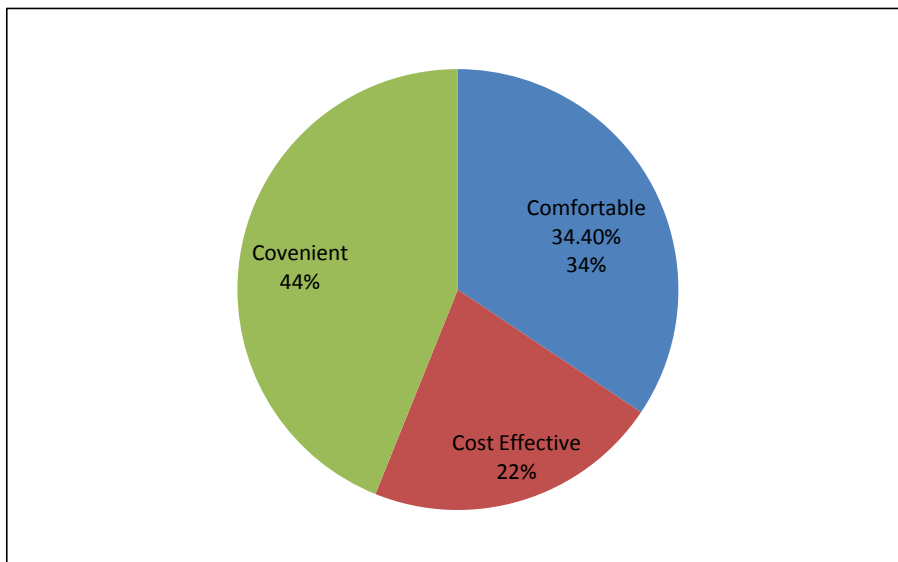
Table 5.13

Respondents Reason for Preferring the Rail Transport

reason for preferring the rail transport					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	comfortable	186	34.4	34.4	34.4
	cost-effective	117	21.7	21.7	56.1
	convenient	237	43.9	43.9	100.0
	Total	540	100.0	100.0	

Figure 5.13

Respondents Reason for Preferring the Rail Transport



5.3 SECTION 3

Objective 1: To study the services offered by Indian Railways at Platforms of North Central Railway zone.

Ho: The opinion of travelers about the existing services offered at Indian railway platforms of North central railway zone is not (null) equally distributed.

Chi-Square Analysis: Chi- square analysis was applied to study the services offered by Indian Railways at Platforms of North Central railway Zone. The chi-square test was developed in 1900 by Karl Pearson. Among the various test of significance chi square is one of the important test.it is one of the simplest and most widely used non-parametric test in statistical work not based on any assumption or distribution of any variables. Chi square test is a hypothesis test where the null hypothesis that the distribution of the test statistics is a chi square distribution, is true. In general the chi square is the test which we use to measure the differences between what is observed and what is expected according to an assumed hypothesis.

Table 5.14

Crosstab Table of Tangibility

Crosstab						
			Name of Platform			Total
			Agra	Jhansi	Allahabad	
Tangibility	3.625	Count	2	0	0	2
		Expected Count	1.2	.3	.5	2.0
	3.75	Count	0	1	0	1
		Expected Count	.6	.2	.2	1.0
	3.875	Count	7	1	0	8
		Expected Count	4.8	1.3	1.9	8.0
	4	Count	5	2	2	9
		Expected Count	5.4	1.5	2.2	9.0
	4.125	Count	18	3	8	29
		Expected Count	17.3	4.7	7.0	29.0
	4.25	Count	44	7	11	62
		Expected Count	37.0	10.1	14.9	62.0

4.375	Count	48	14	18	80
	Expected Count	47.7	13.0	19.3	80.0
4.5	Count	57	12	26	95
	Expected Count	56.6	15.5	22.9	95.0
4.625	Count	53	25	34	112
	Expected Count	66.8	18.3	27.0	112.0
4.75	Count	53	14	18	85
	Expected Count	50.7	13.9	20.5	85.0
4.875	Count	28	7	12	47
	Expected Count	28.0	7.7	11.3	47.0
5	Count	7	2	1	10
	Expected Count	6.0	1.6	2.4	10.0
Total	Count	322	88	130	540
	Expected Count	322.0	88.0	130.0	540.0

Table 5.15

Chi-Square Tests of Tangibility

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	24.026 ^a	22	.346
Likelihood Ratio	25.340	22	.281
Linear-by-Linear Association	1.888	1	.169
N of Valid Cases	540		

- a. 14 cells (38.9%) have expected count less than 5.
The minimum expected count is .16.

Table 5.15 shows that P value of Tangibility is higher than 0.05 it clear cut indicates that our null hypothesis is accepted in all services quality factors of Tangibility. From the above table, since the chi-square value is not significant as the significant value is greater than 0.05, there is no evidence to reject null hypotheses. It means the opinion of

travelers about the existing services offered at Indian railway platforms of North central railway zone is not (null) equally distributed.

Table 5.16
Crosstab Table of Reliability

Crosstab						
			Name of Platform			Total
			Agra	Jhansi	Allahabad	
Reliability	3.57	Count	2	0	1	3
		Expected Count	1.8	.5	.7	3.0
	3.71	Count	1	0	1	2
		Expected Count	1.2	.3	.5	2.0
	3.85	Count	7	1	1	9
		Expected Count	5.4	1.5	2.2	9.0
4		Count	11	3	3	17
		Expected Count	10.1	2.8	4.1	17.0
4.14		Count	22	7	12	41
		Expected Count	24.4	6.7	9.9	41.0
4.28		Count	37	9	11	57
		Expected Count	34.0	9.3	13.7	57.0
4.42		Count	52	23	31	106
		Expected Count	63.2	17.3	25.5	106.0
4.57		Count	86	22	25	133
		Expected Count	79.3	21.7	32.0	133.0
4.7		Count	60	12	25	97
		Expected Count	57.8	15.8	23.4	97.0
4.8		Count	33	11	16	60
		Expected Count	35.8	9.8	14.4	60.0
5		Count	11	0	4	15
		Expected Count	8.9	2.4	3.6	15.0
Total		Count	322	88	130	540
		Expected Count	322.0	88.0	130.0	540.0

Table 5.17
Chi- square Test of Reliability

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.509 ^a	20	.685
Likelihood Ratio	19.820	20	.469
Linear-by-Linear Association	.001	1	.971
N of Valid Cases	540		
a. 12 cells (36.4%) have expected count less than 5. The minimum expected count is .33.			

Table 5.17 shows that P value of Reliability is higher than 0.05 it clear cut indicates that our null hypothesis is accepted in all services quality factors of Reliability. From the above table, since the chi-square value is not significant as the significant value is greater than 0.05, there is no evidence to reject null hypotheses. It means the opinion of travelers about the existing services offered at Indian railway platforms of North central railway zone is not (null) equally distributed.

Table 5.18
Crosstab Table of Responsiveness

Crosstab		Name of Platform			Total
		Agra	Jhansi	Allahabad	
Responsiveness 3.875	Count	5	0	3	8
	Expected Count	4.8	1.3	1.9	8.0
4	Count	10	1	1	12
	Expected Count	7.2	2.0	2.9	12.0
4.125	Count	13	4	9	26
	Expected Count	15.5	4.2	6.3	26.0
4.25	Count	29	6	14	49
	Expected Count	29.2	8.0	11.8	49.0

4.375	Count	61	21	27	109
	Expected Count	65.0	17.8	26.2	109.0
4.5	Count	68	16	18	102
	Expected Count	60.8	16.6	24.6	102.0
4.625	Count	57	15	25	97
	Expected Count	57.8	15.8	23.4	97.0
4.75	Count	50	14	17	81
	Expected Count	48.3	13.2	19.5	81.0
4.875	Count	17	8	14	39
	Expected Count	23.3	6.4	9.4	39.0
5	Count	12	3	2	17
	Expected Count	10.1	2.8	4.1	17.0
Total	Count	322	88	130	540
	Expected Count	322.0	88.0	130.0	540.0

Table 5.19
Chi-Square Tests of Responsiveness

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.152 ^a	18	.513
Likelihood Ratio	18.875	18	.400
Linear-by-Linear Association	.000	1	.995
N of Valid Cases	540		

a. 8 cells (26.7%) have expected count less than 5. The minimum expected count is 1.30.

Table 5.19 shows that P value of Responsiveness is higher than 0.05 it clear cut indicates that our null hypothesis is accepted in all services quality factors of Responsiveness. From the above table, since the chi-square value is not significant as the significant value is greater than 0.05, there is no evidence to reject null hypotheses. It means the opinion of travelers about the existing services offered at Indian railway platforms of North central railway zone is not (null) equally distributed.

Table 5.20
Crosstab Table of Empathy

			Name of Platform			Total
			Agra	Jhansi	Allahabad	
Empathy 3.66	Count		0	0	2	2
	Expected Count		1.2	.3	.5	2.0
3.7	Count		1	0	1	2
	Expected Count		1.2	.3	.5	2.0
3.8	Count		4	1	2	7
	Expected Count		4.2	1.1	1.7	7.0
4	Count		5	0	3	8
	Expected Count		4.8	1.3	1.9	8.0
4.11	Count		16	4	6	26
	Expected Count		15.5	4.2	6.3	26.0
4.2	Count		27	12	15	54
	Expected Count		32.2	8.8	13.0	54.0
4.3	Count		47	9	11	67
	Expected Count		40.0	10.9	16.1	67.0
4	Count		58	20	20	98
	Expected Count		58.4	16.0	23.6	98.0
4	Count		59	16	16	91
	Expected Count		54.3	14.8	21.9	91.0
4.6	Count		54	12	25	91
	Expected Count		54.3	14.8	21.9	91.0
4.7	Count		25	9	19	53
	Expected Count		31.6	8.6	12.8	53.0
4.8	Count		17	5	9	31
	Expected Count		18.5	5.1	7.5	31.0
5	Count		9	0	1	10
	Expected Count		6.0	1.6	2.4	10.0
Total	Count		322	88	130	540
	Expected Count		322.0	88.0	130.0	540.0

Table 5.21
Chi-Square Tests of Empathy

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	28.310 ^a	24	.247
Likelihood Ratio	30.649	24	.164
Linear-by-Linear Association	.011	1	.915
N of Valid Cases	540		

a. 15 cells (38.5%) have expected count less than 5. The minimum expected count is .33.

Table 5.21 shows that P value of Empathy is higher than 0.05 it clear cut indicates that our null hypothesis is accepted in all services quality factors of Empathy. From the above table, since the chi-square value is not significant as the significant value is greater than 0.05, there is no evidence to reject null hypotheses. It means the opinion of travelers about the existing services offered at Indian railway platforms of North central railway zone is not (null) equally distributed.

Table 5.22
Crosstab Table of Assurance

Crosstab			Name of Platform			Total
			Agra	Jhansi	Allahabad	
Assurance	3.5	Count	1	0	0	1
		Expected Count	.6	.2	.2	1.0
	3.625	Count	1	1	1	3
		Expected Count	1.8	.5	.7	3.0
	3.75	Count	0	0	1	1

	Expected Count	.6	.2	.2	1.0
3.875	Count	5	2	1	8
	Expected Count	4.8	1.3	1.9	8.0
4	Count	7	4	2	13
	Expected Count	7.8	2.1	3.1	13.0
4.125	Count	13	4	11	28
	Expected Count	16.7	4.6	6.7	28.0
4.25	Count	29	8	14	51
	Expected Count	30.4	8.3	12.3	51.0
4.375	Count	54	14	21	89
	Expected Count	53.1	14.5	21.4	89.0
4.5	Count	73	15	22	110
	Expected Count	65.6	17.9	26.5	110.0
4.625	Count	60	17	23	100
	Expected Count	59.6	16.3	24.1	100.0
4.75	Count	50	14	25	89
	Expected Count	53.1	14.5	21.4	89.0
4.875	Count	23	9	9	41
	Expected Count	24.4	6.7	9.9	41.0
5	Count	6	0	0	6
	Expected Count	3.6	1.0	1.4	6.0
Total	Count	322	88	130	540
	Expected Count	322.0	88.0	130.0	540.0

Table 5.23

Chi-Square Tests of Assurance

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.713 ^a	24	.713
Likelihood Ratio	21.162	24	.629
Linear-by-Linear Association	.758	1	.384
N of Valid Cases	540		

a. 18 cells (46.2%) have expected count less than 5. The minimum expected count is .16.

Table 5.23 shows that P value of Assurance is higher than 0.05 it clear cut indicates that our null hypothesis is accepted in all services quality factors of Assurance. From the above table, since the chi-square value is not significant as the significant value is greater than 0.05, there is no evidence to reject null hypotheses. It means the opinion of travelers about the existing services offered at Indian railway platforms of North central railway zone is not (null) equally distributed.

5.4 SECTION 4

Objective 2: To analyze the service quality factors influencing the satisfaction level of travelers.

Ho (2): There is no significant relationship between existing services quality offered at platform and traveler satisfaction.

This Hypothesis addresses the question: Is there a relationship between services quality and traveler satisfaction?

If yes; how significantly services quality co-related to traveler satisfaction?

If not; how significantly services quality is not co-related to traveler satisfaction?

Pearson co-relation technique was implemented to analyze the service quality factors influencing the satisfaction level of travelers. Pearson's correlation coefficient is the test statistics that measures the statistical association or relationship between two

continuous variables. It is one of the well-known methods of measuring the association between variables of interest as it is based on the method of covariance. It provides information regarding the magnitude of the association, correlation and the direction of the relationship.

Correlation is a bivariate analysis that measures the strengths of association between two variables, these variables are self-efficacy and proactive behavior.

There are five assumptions that are made with respect to Pearson's correlation:

1. The variables* must be either interval or ratio measurements.
2. The variables* must be approximately normally distributed.
3. There is a linear relationship between the two variables*.
4. Outliers are either kept to a minimum or are removed entirely.
5. There is homoscedasticity

First assumption:

The variables must be either interval or ratio measurements. In this study, When multiple Likert question responses were summed together (interval data).

1. All questions were used the same Likert scale. Likert scale had been a defensible approximation to an interval scale (i.e. coding indicates magnitude of difference between items, but there was no absolute zero point).
2. All items measured a single latent variable (i.e. a variable that was not directly observed, but rather inferred from other variables that are observed and directly measured).

Analysis on the basis of using parametric tests such as Correlation.

Second Assumption:

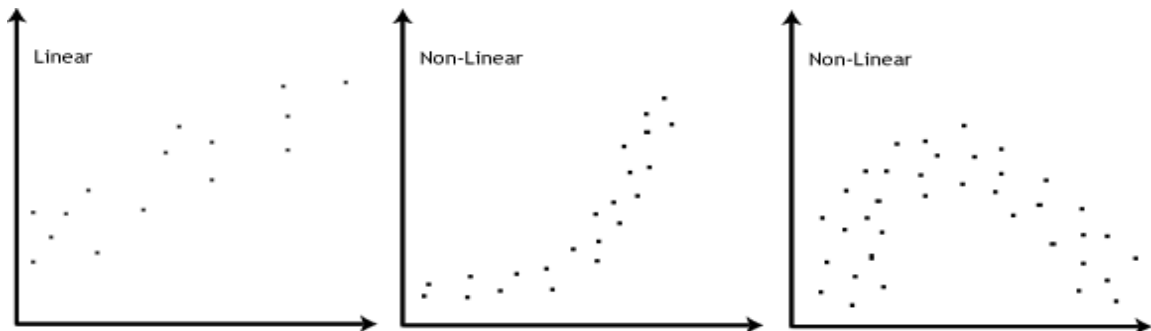
The variables must be approximately normally distributed. The Shapiro-Wilk Test is more appropriate to handle sample sizes < 2000. There were only 540 samples, for this reason, present study used the Shapiro-Wilk test as numerical means of assessing normality¹.

Third Assumption:

There should be a linear relationship between the two variables.

Figure 5.14

Linear relationship between two variables (third assumption of correlation)



Source: <https://statistics.laerd.com/spss-tutorials/testing-for-normality-using-spss-statistics.php>

Fourth Assumption:

Outliers are either kept to a minimum or are removed entirely.

Figure 5.15

Correlation co-efficient (Fourth Assumption)

Correlation Co-Efficient		
Strength of Association	Coefficient, r	
	Positive	Negative
Small	.1 to .3	-0.1 to -0.3
Medium	.3 to .5	-0.3 to -0.5
Large	.5 to 1.0	-0.5 to -1.0

↓

Resulting value $r = .940$ lie between .5 to 1.0

Source: <https://statistics.laerd.com/spss-tutorials/testing-for-normality-using-spss-statistics.php>

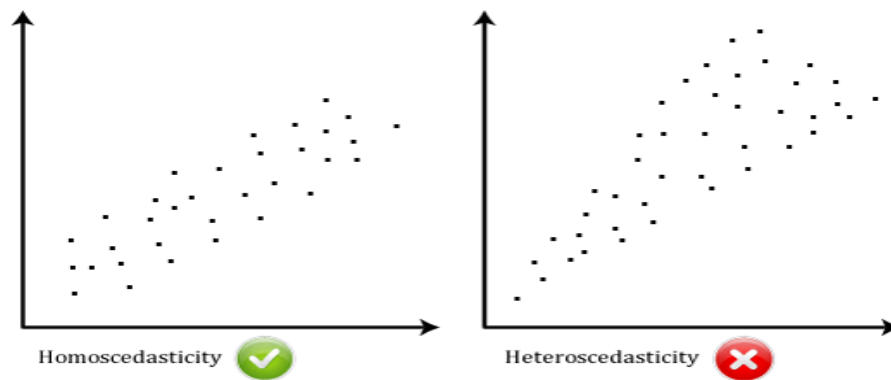
Fifth Assumption:

Fifth assumption is homoscedasticity. Homoscedasticity refers to the assumption that the career management variable exhibits similar amounts of variance across the range of values for independent variables (tangible, assurance, empathy, reliability, and responsiveness) of the data.

In statistics, the value of the correlation coefficient varies between +1 and -1ⁱⁱ. When the value of the correlation coefficient lies around ± 1 , then it is said to be a perfect degree of association between the two variables.

Figure 5.16

Homoscedasticity (Fifth assumption of Correlation)



Source:<https://statistics.laerd.com/spss-tutorials/testing-for-normality-using-spss-statistics.php>

Table 5.24
Correlations Between Gender and Tangibility

		tangibility	Respondent Gender
Tangibility	Pearson Correlation	1	.932
	Sig. (2-tailed)		.000
Respondent Gender	Pearson Correlation	.932	1
	Sig. (2-tailed)	.000	

Table 5.24 shows that the **Pearson Correlation** coefficient is .932; the significance level (sig.) is .000 and the number of participants with both variables is 540. In a report, this would usually be written as: $r = .932, p = .000$. A statistically significant correlation ($r = .932$) is obtain between the two variables indicating that the strength of correlation co-efficient is highly positive so there is strong association between (Tangibility) services quality and traveler satisfaction. So there is null hypothesis is rejected because p value > 0.05 and alternate hypothesis is accepted.

Table 5.25
Correlations Between Gender and Reliability

		Reliability	Respondent Gender
Reliability	Pearson Correlation	1	.732
	Sig. (2-tailed)		.035
Respondent Gender	Pearson Correlation	.732	1
	Sig. (2-tailed)	.305	

Table 5.25 shows that the **Pearson Correlation** coefficient is .732; the significance level (sig.) is .035 and the number of participants with both variables is 540. In a report, this would usually be written as: $r = .732, p = .035$. A statistically significant correlation ($r = .732$) is obtain between the two variables indicating that the strength of correlation co-efficient is highly positive so there is strong association between (Reliability) services quality and traveler satisfaction. So there is null hypothesis is rejected because p value > 0.05 and alternate hypothesis is accepted.

Table 5.26
Correlations Between Gender and Responsiveness

		Respondent Gender	Responsiveness
Respondent Gender	Pearson Correlation	1	.483
	Sig. (2-tailed)		.377
Responsiveness	Pearson Correlation	.483	1
	Sig. (2-tailed)	.377	

Table 5.26 shows that the **Pearson Correlation** coefficient is .483; the significance level (sig.) is .377 and the number of participants with both variables is 540. In a report, this would usually be written as: $r = .483, p = .377$. A statistically significant correlation ($r = .483$) is obtain between the two variables indicating that the strength of correlation co-efficient is not positive so there is no association between (Responsiveness) services quality and traveler satisfaction. There is null hypothesis is accepted because P value < 0.05.

Table 5.27
Correlations Between Gender and Empathy

		Respondent Gender	Empathy
Respondent Gender	Pearson Correlation	1	.304
	Sig. (2-tailed)		.120
Empathy	Pearson Correlation	.304	1
	Sig. (2-tailed)	.120	

Table 5.27 shows that the **Pearson Correlation** coefficient is .304; the significance level (sig.) is .120 and the number of participants with both variables is 540. In a report, this would usually be written as: $r = .304, p = .120$. A statistically significant correlation

($r=.304$) is obtain between the two variables indicating that the strength of correlation co-efficient is not positive so there is no association between (Empathy) services quality and traveler satisfaction. There is null hypothesis is accepted because P value < 0.05.

Table 5.28
Correlations Between Gender and Assurance

		Respondent Gender	Assurance
Respondent Gender	Pearson Correlation	1	.644
	Sig. (2-tailed)		.000
Assurance	Pearson Correlation	.644	1
	Sig. (2-tailed)	.000	

Table 5.28 shows that the **Pearson Correlation** coefficient is .644; the significance level (sig.) is .000 and the number of participants with both variables is 540. In a report, this would usually be written as: $r=.644, p = .000$. A statistically significant correlation ($r=.644$) is obtain between the two variables indicating that the strength of correlation co-efficient is highly positive so there is strong association between (Assurance) services quality and traveler satisfaction. So there is null hypothesis is rejected because p value > 0.05 and alternate hypothesis is accepted.

Table 5.29
Correlations between Gender and Satisfaction

		Respondent Gender	Satisfaction
Respondent Gender	Pearson Correlation	1	.596
	Sig. (2-tailed)		.000
Satisfaction	Pearson Correlation	.596	1
	Sig. (2-tailed)	.000	

Table 5.29 shows that the **Pearson Correlation** coefficient is .596; the significance level (sig.) is .000 and the number of participants with both variables is 540. In a report, this would usually be written as: $r = .596, p = .000$. A statistically significant correlation ($r = .596$) is obtain between the two variables indicating that the strength of correlation co-efficient is highly positive so there is strong association between travelers and their satisfaction level towards service quality of Indian Railways at Platforms.

Table 5.30

Crosstab table of Overall Satisfaction level of Travellers

Crosstab			Name of Platforms			Total
			Agra	Jhansi	Allahabad	
Satisfaction	3.63	Count	1	0	0	1
		Expected Count	.6		.2	1.0
	3.81	Count	0	1	0	1
		Expected Count	.6	.2	.2	1.0
	3	Count	1	0	0	1
		Expected Count	.6	.2	.2	1.0
	4	Count	5	0	3	8
		Expected Count	4.8	1.3	1.9	8.0
	4	Count	12	4	5	21
		Expected Count	12.5	3.4	5.1	21.0
	4.18	Count	16	4	3	23
		Expected Count	13.7	3.7	5.5	23.0
	4.27	Count	15	5	8	28
		Expected Count	16.7	4.6	6.7	28.0
	4.36	Count	36	11	15	62
		Expected Count	37.0	10.1	14.9	62.0
	4.45	Count	54	12	22	88
		Expected Count	52.5	14.3	21.2	88.0
	4.54	Count	59	12	19	90

	Expected Count	53.7	14.7	21.7	90.0
4.6	Count	60	14	17	91
	Expected Count	54.3	14.8	21.9	91.0
4.7	Count	34	14	24	72
	Expected Count	42.9	11.7	17.3	72.0
4.81	Count	22	3	8	33
	Expected Count	19.7	5.4	7.9	33.0
4.90	Count	6	6	5	17
	Expected Count	10.1	2.8	4.1	17.0
5	Count	1	2	1	4
	Expected Count	2.4	.7	1.0	4.0
Total	Count	322	88	130	540
	Expected Count	322.0	88.0	130.0	540.0

Table 5.31

Chi-Square Tests of overall Satisfaction Level of Travellers

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	29.627 ^a	28	.381
Likelihood Ratio	28.962	28	.414
Linear-by-Linear Association	1.212	1	.271
N of Valid Cases	540		

a. 20 cells (44.4%) have expected count less than 5. The minimum expected count is .16.

Table 5.31 shows that P value of overall satisfaction is higher than 0.05 it clear cut indicates that our null hypothesis is accepted. From the above table, since the chi-square value is not significant as the significant value is greater than 0.05, there is no evidence to reject null hypotheses. It means the travelers are not satisfied with the existing service quality offered at platforms by Indian railway.

Table 5. 32

ANOVA Test of Overall Satisfaction Level of Travellers

Satisfaction					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.070	2	.035	.768	.000
Within Groups	24.653	537	.046		
Total	24.724	539			

The results of ANOVA in the table 5.32 depict that there exists significant difference between the levels of satisfaction about the services offered by Indian railways platforms. As P value < 0.05. This show there is **significant** difference in level of satisfaction about the services offered by Indian railways platforms, proves the **acceptance** of the **alternate H1 hypothesis** and proves the **rejection** of **H0 hypothesis**.

5.5 SECTION 5

Objective 3: To determine the level of Awareness about the services offered by Indian railways platforms

Ho: There is no significant level of Awareness above services offered by Indian Railways.

ANOVA: ANOVA test was implemented to determine the level of awareness about the services offered by Indian Railway at Platforms. The Analysis Of Variance, generally known as the ANOVA, it is used in cases where there are more than two groups.

ANOVA is a statistical procedure which is used to test the degree to where two or more groups vary in an experiment. In maximum research, a great deal of variance commonly specifies that there was a significant outcome from the research.

Table 5.33

ANOVA Test of Tangibility

Tangibility					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.133	2	.067	1.101	.006
Within Groups	32.543	537	.061		
Total	32.677	539			

The results of ANOVA in the table 5.33 depict that there exists significant difference between the levels of awareness about the services offered by Indian railways platforms. As P value is $.006 < 0.05$. This shows that there is **significant** difference in level of awareness about the services offered by Indian railways platforms, proves the **acceptance** of the **alternate H1 hypothesis** and proves the **rejection** of **H0 hypothesis**.

Table 5.34

ANOVA Test of Reliability

Reliability					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.019	2	.009	.139	.870
Within Groups	36.625	537	.068		
Total	36.644	539			

The results of ANOVA in the table 5.34 depict that there is no significant difference between the levels of awareness about the services offered by Indian railways platforms. As P value is $.870 > 0.05$. This shows that there is no **significant** difference in level of awareness about the services offered by Indian railways platforms proves the **acceptance** of the **alternate H0 hypothesis** and proves the **rejection** of **H1 hypothesis**.

Table 5.35

ANOVA Test of Responsiveness

Responsiveness					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.074	2	.037	.653	.000
Within Groups	30.639	537	.057		
Total	30.714	539			

The results of ANOVA in the table 5.35 depict that there exists significant difference between the levels of awareness about the services offered by Indian railways platforms. As P value is $.000 < 0.05$. This shows that there is **significant** difference in level of awareness about the services offered by Indian railways platforms, proves the **acceptance** of the **alternate H1 hypothesis** and proves the **rejection** of **H0 hypothesis**.

Table 5.36

ANOVA Test of Empathy

Empathy					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.005	2	.003	.043	.000
Within Groups	31.388	537	.058		
Total	31.393	539			

The results of ANOVA in the table 5.36 depict that there exists significant difference between the levels of awareness about the services offered by Indian railways platforms. As P value is $.000 < 0.05$. This shows that that there is **significant** difference in level of awareness about the services offered by Indian railways platforms, proves the **acceptance** of the **alternate H1 hypothesis** and proves the **rejection** of **H0 hypothesis**.

Table 5.37

ANOVA Test of Assurance

Assurance					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.050	2	.025	.407	.000
Within Groups	33.075	537	.062		
Total	33.125	539			

The results of ANOVA in the table 5.37 depict that there exists significant difference between the levels of awareness about the services offered by Indian railways platforms. As P value is $.000 < 0.05$. This shows that there is **significant** difference in level of awareness about the services offered by Indian railways platforms, proves the **acceptance** of the **alternate H1 hypothesis** and proves the **rejection** of **H0 hypothesis**.

Table 5.38

ANOVA Test of overall Awareness level

Awareness					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.018	2	.009	.292	.747
Within Groups	16.756	537	.031		
Total	16.774	539			

The results of ANOVA in the table 5.38 these results depict that there is no significant difference between the levels of awareness about the services offered by Indian railways platforms. As P value is $.747 > 0.05$. This shows that there is no **significant** difference in level of awareness about the services offered by Indian railways platforms proves the **acceptance** of the **alternate H0 hypothesis** and proves the **rejection** of **H1 hypothesis**.

Table 5.39
Crosstab Table of Overall Awareness Level of Travellers

Crosstab			Name of Platform			Total
			Agra	Jhansi	Allahabad	
Awareness	3.8	Count	1	0	0	1
		Expected Count	.6	.2	.2	1.0
4	Count	3	0	0	3	
	Expected Count	1.8	.5	.7	3.0	
4.0	Count	3	0	1	4	
	Expected Count	2.4	.7	1.0	4.0	
4.1	Count	2	3	2	7	
	Expected Count	4.2	1.1	1.7	7.0	
4.2	Count	7	6	10	23	
	Expected Count	13.7	3.7	5.5	23.0	
4	Count	24	3	6	33	
	Expected Count	19.7	5.4	7.9	33.0	
4.3	Count	23	9	13	45	
	Expected Count	26.8	7.3	10.8	45.0	
4.4	Count	41	9	15	65	
	Expected Count	38.8	10.6	15.6	65.0	
4.4	Count	41	7	17	65	
	Expected Count	38.8	10.6	15.6	65.0	
4.5	Count	53	20	20	93	

	Expected Count	55.5	15.2	22.4	93.0
4.6	Count	46	8	16	70
	Expected Count	41.7	11.4	16.9	70.0
4.6	Count	34	11	13	58
	Expected Count	34.6	9.5	14.0	58.0
4.7	Count	24	6	9	39
	Expected Count	23.3	6.4	9.4	39.0
4.8	Count	14	5	6	25
	Expected Count	14.9	4.1	6.0	25.0
4.8	Count	6	0	1	7
	Expected Count	4.2	1.1	1.7	7.0
4.9	Count	0	1	1	2
	Expected Count	1.2	.3	.5	2.0
Total	Count	322	88	130	540
	Expected Count	322.0	88.0	130.0	540.0

Table 5.40

Chi-Square Tests of overall Awareness Level of Travellers

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	31.102 ^a	30	.410
Likelihood Ratio	34.242	30	.271
Linear-by-Linear Association	.570	1	.450
N of Valid Cases	540		

a. 20 cells (41.7%) have expected count less than 5. The minimum expected count is .16.

Table 5.40 shows that P value of Awareness is higher than 0.05 it clear cut indicates that our null hypothesis is accepted. From the above table, since the chi-square value is not significant as the significant value is greater than 0.05, there is no evidence to reject

null hypotheses. It means that travellers are not aware about the services offered by the Indian Railway.

Table 5. 41

Correlations between Gender and Awareness

		Respondent Gender	Awareness
Respondent Gender	Pearson Correlation	1	.597
	Sig. (2-tailed)		.000
Awareness	Pearson Correlation	.597	1
	Sig. (2-tailed)	.000	

Table 5.41 shows that the **Pearson Correlation** coefficient is .597; the significance level (sig.) is .000 and the number of participants with both variables is 540. In a report, this would usually be written as: $r = .597, p = .000$. A statistically significant correlation ($r = .597$) is obtain between the two variables indicating that the strength of correlation co-efficient is highly positive so there is strong association between travelers and their awareness level towards services offered by Indian Railways at platforms.

5.6 SECTION 6

Objectives 4: To examine the factors for enhancing the service quality of platforms.

When we analyze the fourth objective. We find that there are two factors “Responsiveness” and “Empathy” where the Railways need to enhance the quality of services.

1. Long queue and waiting time to get the ticket can be minimized by opening of more ticket counters.

2. The Audio visual system is an important segment of Responsiveness. It is suggested to introduce more visible public address system with multi language.
3. The staff role in responsiveness can be ensured by rotation of job or minimizing absenteeism which is a policy decision of North Central Railway Zone.
4. More motivation in terms of better facilities can ensure better responsiveness of clerk, police and RPF staff.
5. Behavior of porter and sanitary workers can be improved by providing proper training to handle guest and sanitary equipment with proper equipment handling training.
6. The station should be facilitated with E- complaints, application based complaints, timely follow actions.
7. Railway inspection team should ensure availability of the quality product at stations. In this regard the team should inspect food stalls at any time and can ban and discard the vendors immediately.
8. Red Cross and NSS Volunteers can deputed along with first aid kit at stations. A list of doctors and medical officers along with their contact details must be displayed. Also, the doctor's name and his/her duty area should also mention. Doctors on call facility can also be implemented.
9. A designated parking area for different types of vehicles like auto rickshaw, four wheelers must be clearly mentioned. The railway platform entry point should be restricted for all types of vehicles. A separate area is required for army vehicles and VVIP/VIP personnel's. Railway may have their own parking area for their employees which may be at different place.
10. Railway should ensure movable and immovable food stalls at every platforms selling packaged items, fruits or ready to eat items.
11. Though the cloak room facility is available on all the major junctions but the pest control is major concern. The railway authority must focus on providing a clean, healthy and pest free place for luggage keeping.
12. The need of touch screen terminal and train running information enquiry are required to give alternate arrangement for the passengers who are coming to

- railway stations in the last hours. Such touch screens must be operated and installed at prime location of the stations.
13. It has been observed that the travelers coming to NCR zone especially for tourism purpose, there must be travel information counter to assist domestic and international tourist, though Jhansi and Agra station are available with few hoardings of local attractions but proper place with necessary information and skilled persons for handling such queries required.
 14. During survey period it was observed that ATM, Telegraph and postal services are available outside the platforms. The railway authorities must concentrate on providing ATM facilities on the identified platforms.
 15. It was observed that except of platforms no 1 which is supposed to be important platforms for special trains but the rest platforms are lacking with low length passengers shades. The last coach and engine always stands outside the shades area. It is recommended that the length of the shades be increased to protect the travelers from rain and sun stroke.
 16. The railway authorities must announce, display the information regarding self help trolleys, stretchers, book stalls, medicine stalls at the platforms. They should also announce the area or location name of the in charge person for stretchers and self help trolleys to help passengers in any emergency.
 17. There are few escalators available on only platforms no1 of the major junctions of NCR zone. The railway authorities must ensure the operation and installation of escalators on other platforms too.