

RESEARCH METHODOLOGY

Research Methodology is a systematic plan for conducting research. It is used to solve research problem systematically and scientifically. It can be qualitative as well as quantitative in nature. The qualitative method of research comprises hypothesis testing, statistical tools, techniques and data interpretation, while quantitative method of research comprises a detailed explanation of observation. This chapter frameworks the steps followed by the researcher to identify the problem of the study. The present chapter describes the information about problem statement, objectives of the study, hypothesis, research design, types and methods of facts and data collection, sampling techniques and several other statistical techniques like Simple percentage, Cross tab, Chi-square test, Correlation Co-efficient and ANOVA test, have been employed in this study. Researcher examined the different steps by determining an eclectic approach, while exploratory and descriptive research design was used to study the problem. The over view of the present chapter has been divided into the following:

- 4.1 Statement of the problem
- 4.2 Need of the study
- 4.3 Objectives of the study
- 4.4 Formulation of Hypotheses
- 4.5 Research Design
- 4.6 Universe and Survey Population of the study
- 4.7 Survey sample of the Study
- 4.8 Developing Questionnaire
- 4.9 Data Collection Method
- 4.10 Tools for Analysis

A step by step detail description of these points is given as under:

4.1 STATEMENT OF THE PROBLEM

In the procedure of research the first and foremost step is defining the research problem. Research activity creates a cycle which starts with formulation and

identification of problem and end with a solution of problem. Consequently research problem is axis in which research activity rotates. The research problem expresses the aims and objectives of the research work until and unless, there is a problem research cannot be completed. After going through the literature review related to the service quality and customer satisfaction with Indian Railway, it is observed that there is a need to improve the platform services of Indian railways. As these platforms are the show case of Indian railways and give a first impression to the guest, hence it is utmost required area which needs to be improved in a number of manifolds.

4.2 NEED OF THE STUDY

So far as services for Railway travelers are concerned, the major findings of the research can work as a base for possible development in the services of platforms of Indian Railways. The major junction of North Central Railway zone can be counted in the pattern of some international platforms like Grand central terminal (United States), Berlin Hauptbahnhof (Germany), Jakarta Kota Station (Indonesia), Zurich Hauptbahnhof (Switzerland) and Rome terminal railway station (Italy) and many more. The effort can also be taken to ensure superb services to Railway travelers in the level of some international quality services also. The study focuses on travelers satisfaction traveling to Allahabad, Jhansi and Agra or going from and availing platform services. The major findings of the study can contribute into further developments of quality of platform services. The lacunae area can be identified and major policies and planning can be created to eradicate those issues. Also the recommendation for further necessary actions can be taken. The study will also contribute on services quality of platform and overcoming the lacunae with possible changes.

4.3 OBJECTIVES OF THE STUDY

The major objective of the research is encircled towards the analysis of the services offered and traveler's satisfaction with Indian Railways. This research attempts to recognize various determinants of service quality and travelers satisfaction in Indian railways platform services. The sub – objectives of the current study are canalizing into four in number and they are mentioned below:

1. To study the services offered by Indian Railways at Platforms of North Central Railway zone.
2. To analyze the service quality factors influencing the satisfaction level of travelers.
3. To determine the level of awareness about the services offered by Indian railways at platforms.
4. To examine the factors for enhancing the service quality of platforms.

4.4 FORMULATION OF HYPOTHESES

A hypothesis is considered as a foremost instrument in research. The complete research activity is focused towards making of hypotheses. It provides guidelines for a research to be carried out on the basis of prior available information. In a research study hypotheses can be describe as proposed assumption of a phenomenon. In order to accomplish the study objectives, the subsequent research hypothesis are posed:

Ho (1): The opinion of travelers about the existing services offered at Indian railway platforms of North central railway zone is not (null) equally distributed.

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

Ho (3): There is no significant level of awareness about the services offered by Indian railways at platforms.

4.5 RESEARCH DESIGN

Research design is a complete outline of how a research will take place. It is the description of procedure and methods for obtaining the information required to construct or to solve the problem.

This research design is exploratory, descriptive, diagnostic and applied in nature and based on different alternatives for optional solution. The research begins with the exploration of the study area to identify existing platforms services and their

contribution in traveler's satisfaction. Through various literature reviews the present research gets the shape of descriptive research which contributes into the process of research progress. It is clear from the various literature reviews that for customer satisfaction different variables are required for different services. It is also observed that research on services offered at Indian railway platforms especially North Central Railway zone, level of traveller's satisfaction and level of awareness has been missing. After getting the detailed information about platforms services forty indicators were identified, a questionnaire was drafted to collect data and further the data was analyzed. After the analysis the researcher concluded with some suggestions and recommendations to modify/ change/ enhance the platforms services of these three major junctions namely Agra, Jhansi and Allahabad (study area) of Indian Railway. Thus an attempt has been made to study travelers' satisfaction as well as level of awareness of travellers in the context of services offered at Indian railways platforms.

4.6 UNIVERSE AND SURVEY POPULATION OF THE STUDY

The analysis in this research focused the responses given by individual travelers at Agra, Jhansi and Allahabad junctions of North Central Railway zone. To satisfy the objective cross sectional data was collected from above railway junctions. The universe in this study was travelers coming to Allahabad, Jhansi and Agra or going to by different types of trains for different motives. All the individual travelers were surveyed population in this study.

4.7 SURVEY SAMPLE OF THE STUDY

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 750 sample were collected at different intervals of time which focused on services of platforms at above mentioned major railway junctions out of 750 Respondents 540 were found suitable for the analysis.

Table 4.1**Demographic Profile of Respondents**

Demographic Variables		Number of respondents	Percentage
Gender	Male	389	72%
	Female	151	28%
Age of respondent (in years)	Below 30	106	19.6%
	31-60	386	71.5%
	Above 60	48	8.9%
Background	Rural	79	14.6%
	Urban	461	85.4%
Marital Status	Married	333	61.7%
	Unmarried	207	38.3%
Education	Illiterate	8	1.5%
	School level	16	3.0%
	Graduate	232	43.0%
	Post Graduate	194	35.9%
	Professional	90	16.7%
Occupation	Student	67	12.4%
	Employed	254	47%
	Professional	94	17.4%
	Business	58	10.7%
	Others	67	12.4%
Monthly Income	Below 10,000	92	17.0%
	10,001-30,000	73	13.5%
	30,001-50,000	143	26.5%
	Above 50,000	232	43.0%

4.8 QUESTIONNAIRE DEVELOPMENT

The data was composed by means of self-administered questionnaires, which were developed in the following steps:-

- 1) Identifying variables and developing first draft
- 2) Pilot Survey
- 3) Finalizing the questionnaire
- 4) Reliability check

The questionnaire is set up by utilizing mainly close ended questions based on the 5-point likert scale “(1. Strongly Disagree, 2. Disagree, 3. Neutral, 4. Agree, 5. Strongly Agree)”.

To examine the demographic profile of the respondent's questions with multiple choices were enclosed in the study. The questionnaire was administered personally to bring out the information from the travellers who were using the platform services of Agra, Jhansi and Allahabad Junctions of Indian Railway. Every feasible measure was employed to increase response rate. It was assumed that respondents were similarly well-organized in information processing and response giving.

- 1) Identifying variables and developing first draft: SERVQUAL a multi- item scale developed by Parasuraman, Zeithaml, and Berry (1988) was used to measure the service quality of Indian Railway. SERVQUAL scale includes five dimensions namely reliability, responsiveness, assurance, empathy and tangibles which are summarized in table 4.2.
- 2) Pilot Survey: Actual data collection was preceded by a pilot survey. The pilot survey was carried out with a sample size of 90 respondents (travellers of Agra, Jhansi and Allahabad Junctions who avails the services of platforms at these junctions). We divided travellers in equal forms that are thirty. We distributed our questionnaire within these respondents. Some teething problems were encountered during the data collection. Some suggestions and comments were invited from respondents. This process helped in developing an insight to bring

about the required modification in overall configuration or taxonomy of the questionnaire by incorporating suggestion and observation. This also helped in improving the quality and texture of the questionnaire to ensure smooth data collection.

Table 4.2
Dimension for Measuring Service Quality

Service Quality Dimension	Description	Relevance from Literature
Tangibility	Appearance of Physical facilities, equipment, personnel and communication material.	Parasuraman, Zeithaml and Berry, 1998; Rosen and Karwan, 1994
Assurance	Awareness and politeness of the employees and their abilities to arouse faith and confidence.	Parasuraman, Zeithaml and Berry, 1998; Rosen and Karwan, 1994
Reliability	Capability to perform the service precisely and reliably, as assured.	Parasuraman, Zeithaml and Berry, 1998; Rosen and Karwan, 1994
Responsiveness	Readiness of the staff to help travellers and give prompt services	Parasuraman, Zeithaml and Berry, 1998; Rosen and Karwan, 1994
Empathy	Capability of the service providers to offer a caring and personalized consideration to each other.	Parasuraman, Zeithaml and Berry, 1998; Rosen and Karwan, 1994

- 3) Reliability Analysis: The questionnaire reliability is measured at various stages to make sure that data is collected is reliable and data can be evaluated further.

To determine the reliability of structured questionnaire Cronbach's Alpha test is utilized. The high value of Cronbach's Alpha (0.854) is suggesting the high reliability of the scale.

Table 4.3
Reliability Analysis of the Scale

Cronbach's Alpha	N of Items
0.854	40

- 4) Finalizing the questionnaire: after the pilot survey the drafted questionnaires were finalized. The questionnaire is divided into three sections, the first section deals with the questions related to the demographic details of the respondents. The second section of the questionnaire is based on the travel information of the respondents. The last section of this questionnaire is related to variables of customer satisfaction, service quality and awareness.

4.9 DATA COLLECTION

This research is based on both primary and secondary data. The essential background is constructed by information gathered through secondary sources and focused information was collected by primary data through a structured questionnaire.

- (a) Primary data: The Primary data for the present study was collected through structured questionnaire technique with travelers of Indian Railway through survey method. The question incorporated in the questionnaire focused on research objectives. To accomplish the objectives of the study the questionnaire has been divided into three parts. The first Part A has been made to collect the diverse demographic profile of the respondents. Part B of the questionnaire comprises of the questions related to travel details of the travelers. Part C of the questionnaire consists of questions related to traveler's satisfaction, service quality and awareness.
- (b) Secondary data was collected from the various websites like Indianrailways.com, IRCTC, and other similar websites sharing information

regarding Indian railways, annual reports of Indian railway, research obtain from Ministry of Railway Govt of India, various journals, periodicals and national survey report of Indian Railway. Though the research in the context of Indian Railways and platform services are very less and limited hence to get the construct hypothesis formulation and objectives, the researches that took place in allied fields like road transportation, metros, airlines services etc. were considered for the present study.

4.10 TOOLS FOR ANALYSIS

In this study, some related tools of statistics have been used for the purpose of analysis. Chi - square, Pearson co-relation, ANOVA is used. The uses of all these techniques have been made as per the requirement of the analysis.

1. 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 modest and most broadly 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. The quantity χ^2 describes the magnitude of discrepancy between theory and observation. In our research we have used this test to determine whether two independent random samples drawn from different populations are homogeneous.

It is defined as:

$$X^2 = \sum \frac{(o - e)^2}{e}$$

Where:

O = refers to the observed frequencies

E = refers to the expected frequencies

The test enables us to explain whether or not two attributes are associated. The calculated value of χ^2 is compared with the table value of χ^2 for given degrees of freedom at 0.05 level of significance. On the basis of data researcher calculated the expected frequencies and then work out the value of chi – square. If the calculated value of χ^2 is less than the table at a 0.05 level of significance, it is concluded that null hypothesis is rejected.

2. 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 method 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.
3. ANOVA test was implemented to examine the level of awareness towards 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.
4. To examine the factors for enhancing the service quality of platforms. To fulfill this objective necessary step to improve the quality of platforms services have been suggested.