Chapter 4

Research Methodologies
Research Methodology is a way to systematically solve the research problems by logically adopting various steps. Methodology helps to understand not only the product of scientific enquiry even the process itself, aim to describe and analyze methods, throw light on their resources and limitations. Research Techniques is a behavior and instruments used in research operations. Methods and Techniques are used in performing the research operations like collection of data, Statistical processing/analysis and to evaluate the accuracy of the result obtained. Main aim of Research is to find out the truth which is hidden and which has not been discovered yet. Research methodology can be defined as a method or way to systematically solve the research problem.

This Chapter will outline the method used in answering the research questions. The research methods consist of techniques and procedures that were used to obtain and analyze relevant data from respondents. Methodology is the overall approach which underpins the research process. The purpose of this is to understand and state the methods used for this research work in order to fulfill the research aim and objective.

4.1 Research Purpose

The main purpose of this study is to investigate the factors influencing the adoption of Mobile banking in India and how is it best to evaluate a mobile banking in India. The second purpose is analyzed the comparison between Private and Public Sector banks regarding Mobile banking adoption in India.

4.2 Research Design

Research Design can be classified into two types. Primary data and Secondary data. Primary research is the collection of data for the specific purpose of this study which is from the original source and this can be directly from consumers.
This report is based on Primary data. Secondary data collection has been the most common method of research and it involves the use of data which has already been collected for other purposes.

4.3 Data Sources

The data are collected from the various places like Jhunjhunu, Sikar, Jaipur, Jodhpur, Delhi and Gurgaon, the respondents are belong to urban and rural areas and the respondents are Students, Employed, Self-Employed and Pensioners/Retired.

4.4 Questionnaire Design

A structures questionnaire was designed covering only close ended question. A paper based survey questionnaire was prepared and distributed to the various places and various private and public sector banks. A questionnaire is simple ‘tool’ for collecting and recording information about a particular interest. It is mainly made up of a list of questions. The primary instrument used in this research study is questionnaire and interview. The questionnaire contains two sections.

- Section one contains personal details which includes Name, Gender, Age, Education, Work status and having Mobile phone or not etc. and show the general understanding of the respondents towards Mobile banking usage.

- Section second contains the questions aimed at identifying the factors that affect or put influence on the consumer behavior adoption of the respondents using close ended questions.

Advantage of using Questionnaire

- We can contact a large number of people at a relatively low cost.
- Respondents have sufficient time to give well through answers.
- We gather straightforward information relating to people’s behavior.
- The results of the questionnaires can usually be quickly and easily quantified by a researcher.
4.5 Questionnaire Distribution

A paper based survey questionnaire was prepared and distributed to the different cities in different public and private banks. Questionnaires were sent to different categories of respondents personally and via email. The respondents include any respondent who is a bank customer or any employed person, Self-employed, students and Retired/Pensioners person. Questionnaires were distributed to students through email. It was easier to retrieve data from the students because of the internet facilities while the government workers were handed over questionnaires which was filled and then taken back immediately. Several questions were constructed based on the objectives of the research work. In various cities like Jhunjhunu, Jodhpur, Sikar, Jaipur, Delhi and Gurgoan different private and public sector banks were chosen and officially letter was written asking for their consent to distribute the questionnaires to the customers of their bank and their employees. This was approved without any hesitation.

4.6 Research Methodology

4.6.1 Hypothesis Testing

Hypothesis testing is the process used to evaluate the strength of evidence from the sample and provides a framework for making determinations related to the population. It provides a method for understanding how reliably one can extrapolate observed findings in a sample under study to the larger population from which the sample was drawn. The investigator formulates a specific hypothesis, evaluates data from the sample and uses these data to decide whether they support the specific hypothesis.

4.6.2 Purpose of Testing

The purpose of statistical inference is to draw conclusions about a population on the basis of data obtained from a sample of that population.
4.6.3 Steps of Hypothesis Testing:

The first step in hypotheses testing is the transformation of the research question into:

- **A Null Hypothesis (H0):** The null hypothesis is conventionally used to describe a lack of association between the predictor and the outcome.

- **An Alternative Hypothesis (HA):** The alternative hypothesis describes the existence of an association and is typically what the investigator would like to show. Hypothesis Testing is to convert the research question into the Null and Alternative Hypothesis. The null and alternative hypotheses are concise statements, usually in mathematical form, of 2 possible versions of “truth” about the relationship between the predictor of interest and the outcome in the population.

4.6.4 Goal of Hypothesis Testing

The goal of statistical testing is to decide whether there is sufficient evidence from the sample under study to conclude that the alternative hypothesis should be believed. Such Hypothesis is tested with the help of Chi Square test.

4.7 Chi Square Statistic

Chi-square is a statistical test commonly used to compare observed data and expected data. With observed data we would expect to obtain according to a specific hypothesis. The Chi-square test is always testing what scientists call the null hypothesis, which states that there is no significant difference between the expected and observed result. The Chi-Square Test is used to determine whether there is a significant difference between The Expected Frequencies and The Observed Frequencies in one or more Categories.

Chi-Square Test Requirements-
1. Quantitative data.
2. One or more categories.
3. Independent observations.
4. Adequate sample size (at least 10).
5. Simple random sample.
6. Data in frequency form.
7. All observations must be used.

The formula for calculating Chi-Square test ($x^2$) is:

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

Where
- $o$ is the Observed Frequency in each category
- $e$ is the Expected Frequency in the corresponding category is sum of
- $df$ is the "degree of freedom" (n-1)
- $x^2$ is Chi Square

That is, Chi-Square is the sum of the squared difference between Observed ($o$) and the Expected ($e$) data divided by the expected data in all possible categories.

### 4.8 Sample and Data Collection Techniques

#### 4.8.1 Sampling

The Survey method was used in this study. A random sample of 6 Places (Jhunjhunu, Delhi, Jaipur, Jodhpur, Gurgoan and Sikar) was selected. In determination of the sample size, geographical location of the place was considered in order to have both urban and rural areas. The respondents Related to Urban and Rural areas were people knowledgeable with the questions at hand. The Respondents were Students, Employed, Self-Employed, Pensioners/Retired and Bankers.

The questionnaire was used as a survey instrument for the research work by collecting data from Mobile banking users. Several questions were constructed based on the objective of the research work. The Urban and Rural Place was chosen and questionnaires were distributed to Students, Employees, Self-Employed and Pensioner/Retired Persons.
4.8.2 Sample Size:
Sample size comprises of people from various places. The samples of respondents actually represent customers of various banks who are either users or non-users of Mobile banking in India in order to ensure its suitability. A total of 600 respondents were considered as sample.

4.8.3 Data Collection Techniques
There are several methods that can be used to collect data through survey. The data can be collected through Primary or Secondary data collection techniques. Primary data collection is for the specific purpose of study from the source of origin, which can be collected directly from users. Primary data can be collected by survey, Personal interview, telephonic interview, questionnaire, Personal observation etc. each method has its merit and demerit. The choice will depend upon the type and size of sampling being studied, the purpose of study, time limit, available budget and resources.

The collection of Secondary data involves the use of data already collected. Secondary data were also used in this study because of the easy access to books, websites and materials from different libraries, related journals etc. The collected data was used to examine the theories of adoption of the innovation and the data were used to analyze and answer the research question in order to achieve the objective of the research objectives.

4.8.4 Data Presentation and Design
Data has been presented with the help of diversified tables, graph, pie chart, line graph. All the presentation tools and techniques are instrumentals in compares analysis of the variable included in the research.

4.9 Demographic Details
4.9.1 Place of Stay
The Pie Chart shows classification of Respondents 64.16% Urban Respondents and 35.83% Rural Respondents out of 600.
4.9.2 Gender

The Pie Chart shows 71.33% Male and 28.66% Female Respondents.

4.9.3 Age

The demographic data shows the various categories of people belonging to different age groups. There are four categories of 16-29 years, 30-39 years, 40-49 years and 50+ years of age groups. 16% respondents belong to the first category,
45.83% respondents are of second category, 23.5% respondents are presented as third category, and 14.66% are related to the 50+ category of respondents.

4.9.4 Work Status

The questionnaire included different categories of people showing work status as Employed - 58.33%, Students - 9%, Self Employed - 22.66% and Pensioner/Retired-11%. Thus, out of total sample of 600 the most of the people were belonged to employed category and self employed were very less.
4.9.5 Education Level

The demographic data shows the various categories of people belonging to different Education levels. There are four categories - School level, Graduate, Post Graduate and Technical Education. 6.66% respondents belong to the first category, 40% respondents are of second category, 30% respondents are presented as third category, and 23.33% are related to the fourth category of respondents respectively.

![Figure 4.5 Classifications of Respondents (Based on Education Level)](image)

In response of sixth question of questionnaire it was found that out of total 95% respondents were having Mobile phones. When asked to respondents about having bank account or not, 15.16% respondents said that they do not have any bank account.

32.16% people were using Mobile banking out of total sample. 60% people were not using the services and 7.83% did not show any interest in Mobile banking. This chapter includes graphical representation of various responses.

The qualitative part of the study included various factors influencing the adoption of Mobile banking system.