CHAPTER-III
RESEARCH METHODOLOGY

The purpose of research methodology is to explain the research procedure and to establish a truth and gain wide acceptability for the research. This chapter covers different aspects of research methodology such as problem formulation, need and objectives of the study, hypothesis, scope of the study, primary and secondary sources of data collection, sample size and sample design, statistical tools and techniques used for the analysis of data, limitations and organization of the study. These aspects are described as follows:

3.1 Research Problem Formulation

Mobile phones have become part and parcel of our life and have made their own unique place. Once considered as a luxury, is now almost become a necessity for a common man. Besides being a mode of interpersonal communications, mobile phones serve the purpose of wristwatches, personal diaries, calculators, alarm clocks, cameras, music players and games etc.

Telecom sector is one of the fastest growing sectors in India. Government of India has taken several initiatives to increase tele-density. It has allocated through the provision of the required spectrum to existing and new operators. Telecom Regulatory Authority of India (TRAI) was established in 1997 to regulate telecom services in the country. Originally, the telecom sector was run by the Government but with the liberalizations in National Telecom Policy way back 1999, Government has allowed various private players to run local and long distance telecommunications. In the year 2008, Indian Government has granted 22 new licenses to mobile service providers, prominent among them are - Datacom, Sistema Shyam, Unitech Wireless, Swan Telecom, Loop Telecom. Entry of such a huge number of service providers has made the telecom service market highly competitive and the results of the same will become visible in the near future when these operators will start offering their services. Already the intense competition among the service providers has led to lowering of the mobile call rate to one paisa
per second, which is one of the lowest in the world. Though launched initially by Tata Docomo, certain other leading players like BSNL, Airtel etc. have introduced the same or similar call rates.

With the increasing competition in mobile telephony, the customers are becoming more demanding and now it is the buyers’ market in the case of telecommunications. So, it is important for the mobile service providers to understand the customers’ perception towards mobile services. The present competitive market scenario have a strong bearing on wide and varying customer expectations from their existing mobile service provider as they become more concerned about the value for money. Thus, the understanding of customer perception is needed to raise service quality level to satisfy them.

The war between the two key mobile telephony technologies-GSM and CDMA seems to have settled with GSM emerging as the clear winner. As, in the case of a CDMA based mobile services, the biggest barrier is the handset, since CDMA handsets are operator specific. In contrast, GSM allows users to change handset at will, since the service is deliverable via a small removable chip. Further, the telecom services scenario will become intensely competitive with the entry of new advanced technology called 3G services that is expected to offer better quality voice, data and video applications at faster throughput. This would allow operators to offer high-end value added services such as movie download, mobile TV and high-end gaming, which could improve the realizations of mobile service providers. Thus customers have got ample choices to make among the latest available mobile services offered by different service providers.

The increase in the number of service providers, the choice among different types of technologies (CDMA, GSM, 3G Services) and the wide variety of services offered at low prices are influencing the usage pattern of mobile customers. The tariff / call rates have become as low as one paisa per second. This is likely to have influence on the talk time and consequently average revenue per unit (ARPU) earned by telecom companies, So it becomes imperative for a mobile service provider to have an understanding of the usage pattern of various services by the customers in order to develop appropriate marketing strategies.
Now, the government has allowed mobile number portability (MNP) at a nominal charge of Rs.19 from Jan, 2010. This is likely to have an impact on the competition and service quality as the customer has got the freedom to switch from one service provider to another without changing his existing mobile telephone number, which was not the case earlier.

The review of literature and the above discussion raises some prominent issues about mobile telephony. These are listed as follows:

- How do customers feel about the quality of mobile services that they are using now?
- What are the factors contributing to the customers’ perception towards overall service quality?
- What are the major considerations influencing the customers’ decision while choosing a particular mobile service provider?
- What is the usage pattern of mobile phone users with respect to the various services offered by mobile service providers?
- Whether the customers would like to shift from one service provider to another?
- What measures mobile service providers are required to take to cope with the rapid changes taking place in the telecom industry?

In the light of above reasons, it becomes evident that in a highly competitive and evolving mobile telephony environment, the service providers need to pay due attention to the king of market i.e. the customer for ensuring their success. Hence, the present study entitled ‘Customers’ Perception towards Service Quality in Mobile Telephony’ has been chosen to resolve the above mentioned issues concerning the same.
3.2 Objectives of the Study

The broad objective of the study is to analyze the Customers’ Perception towards Service Quality in mobile Telephony. The specific objectives of the study are as follows:

1. To find out the customers’ perception towards the quality of services provided by mobile operators.
2. To identify the factors contributing to the customers’ perception towards overall service quality.
3. To find out the factors influencing customers’ decision to purchase mobile connection of a particular service provider.
4. To study the usage pattern among mobile phone users with respect to various services.
5. To find out the customers’ intention to switch from one mobile service provider to another.
6. To examine the influence of demographics on the customers’ perception about: service quality, choice of a particular mobile service provider, usage pattern of various mobile services and availing the mobile number portability (MNP) facility.

3.3 Scope of the study

The scope of the present study covers the customers of mobile service providers operating in the Punjab State. The customers of six major/ top mobile telecom companies viz - Bharti Airtel, Vodafone Essar, BSNL, Reliance Communications, Idea Cellular and Tata Teleservices operating in the state form the target population for the study. These six mobile service providers account for 93.08 per cent (Telestat as on June, 2011) of the total market share in the State.

3.4 Hypothesis

The hypotheses formulated for the present study are as follows:

H₀ (1): The customers’ perception towards service quality does not vary across their age, gender, occupation and monthly income.

H₀ (2): The customers’ perception towards service quality does not vary across various mobile service providers and type of connection.
Ho (3): Factors influencing customers’ decision to purchase a mobile connection does not vary across age, gender, occupation and monthly income.

Ho (4): There is no significant difference in the level of factors influencing customers’ decision to purchase a mobile connection across various mobile service providers and type of connection.

Ho (5): The customers’ usage pattern of various mobile services does not vary across age, gender, occupation and monthly income.

Ho (6): The customers’ usage pattern of various mobile services does not vary across various service providers and type of connection.

Ho (7): The customers’ intention to switch from one service provider to another does not vary across age, gender, occupation and monthly income.

Ho (8): The customers’ intention to switch from one service provider to another does not vary across various service providers and type of connection.

3.5 Research Design

After the identification of research problem and development of theoretical framework, the next step is to design the research in such a manner that the required data can be collected and analyzed effectively. It is an arrangement of various aspects of research design with regard to the type of investigation, the unit of analysis, sampling design, data collection method and data analysis process. The present study is designed to measure the customers’ perception towards service quality in mobile telephony. In order to study the same, the descriptive – survey method of investigation including various other statistical techniques like factor analysis, ANOVA, t-test and multiple regression was used.

3.6 Data Collection Sources

In order to achieve the objectives, data was obtained from primary as well as secondary sources. Secondary research helped largely to understand the customers’ perception towards service quality in mobile telephony. Secondary data concerning trends in mobile telephony such as growth rate, subscriber base and Average Revenue Per Unit (ARPU) was collected from the authentic sources namely: publications of Telecom Regulatory Authority of India (TRAI), Department of Telecommunications (DoT), International Telecommunications Union (ITU), Government Reports, The Economic Survey (various years), The Hindu Survey of
Indian Industry (various years), Databases of COAI, AUSPI and ETIG, Journals, Newsletters, Newspapers etc.,

The primary data was collected with the help of a structured questionnaire. The questionnaire was developed after reviewing existing research studies, discussions with sales and marketing managers of a few telecom companies and the mobile service customers. To avoid misinterpretations, the pre-testing of questionnaire was conducted on a pilot group selected from the population. For pilot study, a survey of 45 respondents chosen from the target population was conducted. After making the required modifications, the questionnaire was finalized.

3.7 Development of the Research Instrument: Questionnaire

In order to develop the construct and to begin the scale development process, a comprehensive review of the literature related to customers’ perception regarding factors influencing choice to buy a particular mobile connection, usage pattern of various mobile services, service quality, mobile number portability (MNP) facility and related aspects was undertaken. On the basis of these viewpoints and others, the measures for customers’ perception regarding factors influencing choice to buy a particular mobile connection, usage pattern of various mobile services, service quality, mobile number portability facility and important sources of information in decision making were operationalized. The major components of the research instrument are:

The factors influencing customers’ decision to purchase connection from a particular mobile service provider were measured with the help of a question comprising 28 statements. The 5-point Likert scale ranging from ‘Very Important’ to ‘Least Important’ was used to measure the factors influencing customers’ decision to purchase a mobile connection. A weight of ‘5’ was assigned for ‘Very Important’ and ‘1’ for ‘Least Important’. The other categories of scale were ‘4’ for ‘Important’, ‘3’ for ‘Moderately Important’ and ‘2’ for ‘A Little Important’.

The customers’ usage pattern of various mobile services was measured by asking a question comprising 19 statements. The 5-point Likert scale ranging from ‘Very Often’ to ‘Never’ was used to measure the usage pattern of various mobile
services. A weight of ‘5’ was assigned for ‘Very Often’ and ‘1’ for ‘Never’. The other categories of scale were ‘4’ for ‘Often’, ‘3’ for ‘Sometimes’ and ‘2’ for ‘Rarely’.

The overall service quality was measured with the help of a single statement using a scale ranging from ‘Very Poor’ to ‘Very Good’ where ‘5’ stands for ‘Very Good’ and ‘1’ for ‘Very Poor’. The other three categories of the scale were ‘4’ for ‘Good’, ‘3’ for ‘Neither Good nor Poor’ and ‘2’ for ‘Poor’.

Service quality of mobile telephony was measured with the most widely used SERVQUAL and SERVPERF models exhibiting five dimensions. Various researchers have supported the 22 items of SERVQUAL and SERVPERF instruments propounded by Parasuraman et al. (1988) and Cronin and Taylor (1994) as good measures of evaluating service quality of mobile telephony customers. However, it was argued that the competencies of the instruments in addressing the critical dimensions of service quality subject to further investigations keeping one thing in mind that the notion of service quality is industry and company specific.

Customers’ perception towards service quality was measured with the help of a question comprising 36 statements adapted to the mobile telephony industry. For this the present research included statements representing the five dimensions of service quality developed by Parasuraman et al. (1991a). Further, few statements were added to the original instrument to capture extra dimensions of service quality. This was so because of the existence of cultural differences between countries, regions which reinforced the importance of adding additional dimensions of service quality in the mobile telephony industry. Moreover, in addition to functional quality dimensions some authors namely – Seth et al. (2008) and Khan (2008) have also developed new dimensions of service quality viz – ‘Convenience’ and ‘Network Quality’ which examines technical quality of mobile telephony services.

There are some doubts expressed by Cronin and Taylor (1994) and others viz – Bolton and Drew (1991), Babakus and Boller (1992), Mazis et al. (1975) about the empirical usefulness of expectations and suggested that the performance-minus-expectations (P-E) is not an appropriate basis for use in the measurement of service quality. They have maintained that the expectation-perception gap is not appropriate
for measuring service quality (Berry et al.2009). Further, customers’ expectations for continuously provided services such as the telephony service or long-lasting durable goods, as Oliver and Swan (1989) argued, are passive and disconfirmation will not operate unless service changes occur that are outside the range of experience-based norms. This was reinforced by Bolton and Dew (1991), who claimed that as mobile telephony service is a continuous service, customer responses should be affected only by performance evaluations. Thus, for the present study, the performance based measure was considered as an enhanced means of measuring the service quality construct.

The 5-point Likert scale ranging from ‘Strongly Agree’ to ‘Strongly Disagree’ was used to measure the customers’ perception regarding service quality in mobile telephony. A weight of ‘5’ was assigned for ‘Strongly Agree’ and ‘1’ for ‘Strongly Disagree’. The other categories of scale were ‘4’ for ‘Agree’, ‘3’ for ‘Neither Agree Nor Disagree’ and ‘2’ for ‘Disagree’.

The customers’ intention to switch over to another mobile service provider due to advent of Mobile Number Portability (MNP) facility was measured with the help of a question comprising 6 statements. The 5-point Likert scale ranging from ‘Strongly Agree’ to ‘Strongly Disagree’ was used to measure the customers’ intention to switch over to another mobile service provider due to advent of Mobile Number Portability (MNP) facility. A weight of ‘5’ was assigned for ‘Strongly Agree’ and ‘1’ for ‘Strongly Disagree’. The other categories of scale were ‘4’ for ‘Agree’, ‘3’ for ‘Neither Agree Nor Disagree’ and ‘2’ for ‘Disagree’.

The final draft of the questionnaire was developed after pre-testing the research instrument and making the final selection of various items. A five page questionnaire consisting of five sections was prepared. The first section was composed of 28 statements exploring the factors influencing customers’ decision to subscribe a particular mobile service provider. The next section comprised of 19 items measuring customers’ attitude relating to the usage of various mobile services. The third section sought to study the customers’ perception regarding the overall service quality of mobile service providers. The fourth section included 36 statements measuring customers’ perception towards service quality in mobile
telephony. The last section was made up of 6 statements measuring customers’ intention to switch from one service provider to another. The final questionnaire has been revised many a times in the light of the findings of pilot study as well as on the basis of experts’ recommendations and suggestions. The final draft is attached in Annexure I.

The development of good measures to obtain valid and reliable estimates of the construct under study is a critical aspect in the evolution of a fundamental theory in any management concept. Thus, if the reliability and validity tests are not conducted, it is difficult to standardize the measurement scales and to present that whether the scale is able to measure what was actually intended or not.

The reliability coefficient called Cronbach’s alpha is used to estimate internal consistency. An alpha value of 0.60 and 0.70 or above is considered to be the criterion for demonstrating internal consistency of new scales and established scales respectively. Reliability of the measurements was determined using cronbach’s alpha. Table 3.1 shows the Cronbach’s alpha for various dimensions. The values of cronbach’s alpha indicate that the scale used for measuring all the four dimensions is quite satisfactory and reliable.

Table 3.1
Reliability Indices for the Research Instrument

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Dimension</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Factors influencing customers’ decision to purchase a mobile connection.</td>
<td>.811</td>
</tr>
<tr>
<td>2</td>
<td>Usage pattern of various mobile telephone services.</td>
<td>.892</td>
</tr>
<tr>
<td>3</td>
<td>Customers’ perception regarding service quality.</td>
<td>.932</td>
</tr>
<tr>
<td>4</td>
<td>Customers’ intention to avail mobile number portability (MNP) facility.</td>
<td>.711</td>
</tr>
</tbody>
</table>

Note: Alpha values of 0.70 and above are satisfactory and reliable.

3.8 Sampling Design and Sample Size

Customers of mobile telephony in Punjab are the target population for sampling. For this study, judgement sampling method is adopted to draw the sample. At the first stage, three major cities in the Punjab Telecom Circle are considered.
These are - Chandigarh, Ludhiana and Amritsar. These cities are selected logically because Chandigarh is the capital of Punjab State and other two cities - Ludhiana and Amritsar have population higher than the other cities of Punjab. At the second stage, top six mobile service providers viz; Bharti Airtel, Reliance Communications, Vodafone Essar, BSNL, Idea Cellular Services and Tata Teleservices, operating in the Punjab Telecom Circle are selected. These six service providers account for 93.08 per cent (Telestat as on June, 2011) of market share in Punjab. Finally, the sample consists of 596 respondents representing different age, income, occupation and gender. The sample comprised of both pre-paid and post-paid customers using mobile telephony services of top six service providers (see tables 3.2 and 3.3). The respondents were approached personally to get the questionnaire filled. The objectives and purpose of the study were explained to them so as to ensure proper response.

### Table 3.2

<table>
<thead>
<tr>
<th>Districts</th>
<th>Population</th>
<th>Percentage of Population</th>
<th>Bharti Airtel</th>
<th>BSNL</th>
<th>Reliance Communications</th>
<th>Vodafone Essar</th>
<th>Idea Cellular Services</th>
<th>Tata Tele services</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ludhiana</td>
<td>3030532</td>
<td>45.77%</td>
<td>80</td>
<td>40</td>
<td>20</td>
<td>80</td>
<td>40</td>
<td>10</td>
<td>270</td>
</tr>
<tr>
<td>Amritsar</td>
<td>2152182</td>
<td>32.51%</td>
<td>40</td>
<td>22</td>
<td>31</td>
<td>35</td>
<td>36</td>
<td>34</td>
<td>198</td>
</tr>
<tr>
<td>Chandigarh</td>
<td>1438000</td>
<td>21.72%</td>
<td>24</td>
<td>24</td>
<td>21</td>
<td>33</td>
<td>18</td>
<td>8</td>
<td>128</td>
</tr>
<tr>
<td>Total</td>
<td>6620714</td>
<td>100.00%</td>
<td>144</td>
<td>86</td>
<td>72</td>
<td>148</td>
<td>94</td>
<td>52</td>
<td>596</td>
</tr>
</tbody>
</table>

Table 3.3 show that out of 596 respondents 61.7 per cent are Male and 38.6 per cent are Female. Age-wise profile shows that 38.6 per cent of respondents are of upto 25 years of age, 37.2 per cent are in the age group of 26-35 years, 17.4 per cent belongs to 36-45 years age group and 6.8 per cent are 46 years and above. In case of occupational profile, 32.2 per cent of respondents belong to service class, 20.1 per cent are businessmen, 29.5 per cent are students and remaining 18.2 per cent are housewives. It can also be observed from the profile of the respondents that 11.1 per cent of respondents have monthly income up to Rs. 15000. 38.9 per cent of respondents belong to Rs. 15001-30000 income group, 26.8 per cent are in the Rs. 30001-45000 income group, 11.6 per cent falls under Rs. 45001-60000 income
Most of the respondents i.e. 66.8 per cent are using pre-paid connection while the remaining 33.2 per cent respondents account for post-paid connection. Further, it is clearly shown in the table 3.3 that majority of the respondents i.e. 24.8 per cent are using the services of Vodafone Essar. It is followed by the Bharti Airtel having 24.2 per cent of customer base. Idea Cellular Services account for 15.8 per cent of mobile users. 14.4 per cent of respondents are using BSNL, 12.1 per cent of respondents are using are using Reliance Communications and only 8.7 per cent of respondents have a mobile connection of Tata Teleservices.
3.9 Statistical Techniques Used

In order to arrive at meaningful conclusions regarding the hypothesis framed for the present study, various statistical tools and techniques were used. Firstly, the coding technique was used to transfer the actual data from questionnaire manually into the computer through excel software program. The rows of the excel sheet exhibits individual responses and the columns presents variables undertaken for the study. The demographic profile of the respondents was given codes ranging from 1 to 2 in case of gender of the respondents (1 for Male and 2 for Female), 1 to 4 for age of respondents (1 for upto 25 years, 2 for 26-35 years, 3 for 36-45 years and 4 for 46 years and above), 1 to 4 for occupational status of respondents (1 for Service Class, 2 for Business Class, 3 for Students and 4 for Housewives), 1 to 5 for monthly income of respondents (1 for upto Rs. 15000, 2 for Rs. 15001-30000, 3 for Rs. 30001-45000, 4 for Rs. 45001-60000 and 5 for Rs. 60001 and above), and also codes ranging from 1 to 6 for mobile service providers (1 for Bharti Airtel, 2 for BSNL, 3 for Reliance Communications, 4 for Vodafone Essar, 5 for Idea Cellular Services and 6 for Tata Teleservices) and 1 to 2 for type of mobile connection (1 for pre-paid and 2 for post-paid).

A 5-point likert scale is being used to measure the customers’ responses regarding the factors that influence their purchase decision where 1 denotes “Least Important” and 5 denotes “Very Important”. The usage pattern of various mobile services offered by the service providers was measured with the help of a scale ranging from 1 for “Never” to 5 for “Very Often”. A statement exhibiting the overall service quality was measured with a scale ranging from 1 for “Very Poor” to 5 for “Very Good”. Further, the statements relating to the customers’ perceptions towards service quality in mobile telephony were measured through a 5 point scale where 1 denotes “Strongly Disagree” and 5 denotes “Strongly Agree”. The last section measured the statements on Customers’ intentions to avail mobile number portability (MNP) facility on a scale ranging from 1 for “Strongly Disagree” to 5 for “Strongly Agree”. After this the raw data for analysis was exported to SPSS, a statistical package for social sciences.
Various statistical tool and techniques viz – descriptive analysis, factor analysis, multiple regression, ANOVA and t-test were used to analyze the data.

The measures of central tendency such as mean score and standard deviation of mobile telephony customers on various statements were conducted. Further, the factor analysis was worked out for measuring customers’ decision to subscribe a particular mobile service provider, usage pattern of various mobile services, perceptions regarding service quality and intention to switch from one service provider to another. The factor analysis technique can be applied to a set of variables to discover which variables, form coherent clusters, are relatively independent to one another (Tabachnick and Fidell, 1989). The variables which are correlated with one another but largely independent of other clusters of variables are combined into factors. In factor analysis, a factor is considered to be a linear combination of interrelated variables (Nunnally, 1978). Factor analysis can be used to analyze interrelationships among a large number of variables and to explain these variables in terms of their underlying dimensions called factors. It is a way of condensing the information contained in number of original variables into a smaller set of dimensions but there was a need to explore the main factors concerning customers’ decision to subscribe, usage pattern, service quality and switching behaviour.

The multiple regression analysis was performed to determine the relative contribution of service quality dimensions in measuring overall service quality. Analysis of Variance (ANOVA) has been conducted to study the difference across various demographic variables namely – age, occupation and monthly income of the customers and further, also across six mobile service providers. Thereafter, the t-test was performed in order to study the difference in mean scores between the two groups of mobile telephony customers on the basis of gender and type of mobile connection.

3.10 Limitations of the Study

Every research has its own limitations and the same is with the present study. The major limitation was occurred while performing the task of primary data collection based on survey wherein there was possibility of respondent’s personal bias. Moreover, in order to have unbiased and fair responses, special care was taken
in this regard. It was being ensured to the respondents that their responses and
details were purely used for the academic purpose. The major objectives of the study
were briefly explained to each of the respondents. But still the inaccuracies due to
the misinterpretation of various statements and responses exist. Moreover, the
sample consist of the mobile customers of three major districts namely –
Chandigarh, Ludhiana and Amritsar, of Punjab State, thus the perceptions of the
respondents understudy may vary from those of the other States of India. Therefore,
the generalization of the findings of this research should be considered carefully.

3.11 Chapter Scheme

The whole research work is distributed in seven chapters which are described as
follows:

Chapter 1  It includes the introductory part and emerging trends in mobile
            telephony sector covering the proposed topic for the study;

Chapter 2  It consists of review of literature covering various research
            objectives;

Chapter 3  It presents the research methodology including the formulation and
            identification of research problem, objectives, sampling design and size, statistical tools and techniques used for analysis as well as the limitations of the study;

Chapter 4  It encompasses the conceptual framework concerning the customers’
            perception regarding service quality in mobile telephony;

Chapter 5  It includes the analysis and interpretation of customers’ decision to
            purchase a particular mobile connection and usage pattern of various
            mobile services;

Chapter 6  It contains the results and interpretation of customers’ perception
            regarding service quality and customers’ intention to avail mobile
            number portability facility, and

Chapter 7  It presents the major findings and managerial Implications of the
            study including the areas for future research.
References


13. Telecom Authority of India mission retrieved on 28 October, 2010 from home page of www.trai.org.in
