CHAPTER III
RESEARCH METHODOLOGY

Introduction
This chapter includes the research methodology used to develop the answers to the research questions including: research design, research model, hypotheses development, the sample, sample size determination, research instrument, and data collection procedures.

Research Design
To create a research design for the study, appropriate measures and models are considered as per requirement of the research work. The focus of present research work is the investigation of relationships among attributes of service quality, customer value, customer satisfaction, and customer loyalty in Indian mobile telecommunication services sector. Since present research work is based on primary data, which is collected from Indian mobile telecommunication services users with the help of structured questionnaire, a field based survey design is used as data collection method.

The Research Model
The research model to be tested in this study is shown in the figure 7 below. This figure shows the hypothesized relationships among all the constructs included in the present study, such as; service quality attributes, customer value, customer satisfaction, and customer loyalty.
Figure 7

The Current Research Model of Service Quality Attributes, Customer Value, Customer Satisfaction, and Customer Loyalty

Service Quality Attributes:

EP: Employee Performance
CM: Competitiveness
RE: Reliability
OE: Operational Efficiency
CV: Customer Value
CL: Customer Loyalty

TQ: Transmission Quality
CR: Credibility
SA: Support Attributes
CN: Convenience
CS: Customer Satisfaction
Hypotheses Development

Service Quality Attributes – Customer Value

Goods and services possess features, which are referred to as attributes, and are imperative to the consumers’ appraisal of goods / services offerings (Crane and Clark, 1988). Attributes of the service delivery process play a vital role in persuading perception of performance level of each attribute and/or dimension. In addition, (Bolton and Drew, 1991b) argued that customer perceived performance levels have an important direct effect on quality and value assessments of goods and services.

Zeithaml (1988) concluded that irrespective of many attributes / dimensions of service, customers usually use only a few of these attributes / dimensions to deduce the quality. Parasuraman, Berry, and Zeithaml (1990) and Zeithaml, Berry, and Parasuraman (1991) suggested that these dimensions of service, even though unequal, all have a positive impact on overall service quality perceptions. Based on the findings of their study, they concluded that in case of different industries, respondents over and over again rated reliability as the most important dimension of service quality.

Later, Cronin, Brady, and Hult (2000) found empirically that service quality has a positive impact on customer value. Because the first order indicators of service quality may consist of several dimensions, so it can be envisaged that service quality dimensions also serve as antecedents of customer value. Furthermore, Caruana (2002) conducted study in retail banking industry in Malta in the context of service quality, and found that service dimensions
which reflected employee performance i.e. responsiveness, assurance, empathy were found loading in one factor. The other two dimensions / attributes namely reliability and tangibles as forwarded by Parasuraman, Zeithaml, and Berry, (1988) emerged. Therefore the dimensions of service quality can be predicted to function as antecedents of customer value.

Hence, the null hypotheses to be tested in this study are:

H1a0 : There is no relationship between Employee Performance and Customer Value
H1b0 : There is no relationship between Transmission quality and Customer Value
H1c0 : There is no relationship between Competitiveness and Customer Value
H1d0 : There is no relationship between Credibility and Customer Value
H1e0 : There is no relationship between Reliability and Customer Value
H1f0 : There is no relationship between Support Attributes and Customer Value
H1g0 : There is no relationship between Operational Effectiveness and Customer Value
H1h0 : There is no relationship between Convenience and Customer Value
Service Quality Attributes – Customer Satisfaction

Various researchers across the globe have portrayed service quality and satisfaction as two different, but related constructs (Caruana, 2002; Parasuraman, Zeithaml, and Berry, 1988; Churchill and Suprenant, 1982). Service quality attributes / dimensions act as antecedents for customer satisfaction (Caruana, 2002; Spreng and Mackoy, 1996; Cronin and Taylor, 1992).

Johnston (1997) concluded in an empirical study conducted in the banking setup that responsiveness acts as an important factor to customer satisfaction. The findings of this study were found consistent with the previous studies like; Berry et al., (1985), Bitner et al., (1990) and Avkiran (1994). Other factors derived in the study were; functionality of machines, reliability of transactions, integrity of staff and confidentiality of service. In addition, this study found that in case of increasing the speed of processing information likely to have an important and advanced effect in delighting their customers. Therefore as described before the attributes / dimensions of service quality can be predicted to function as antecedents of customer satisfaction. Therefore, null hypotheses to be tested in this study are:

\[ H_{2a_0} : \text{There is no relationship between Employee Performance and Customer Satisfaction} \]

\[ H_{2b_0} : \text{There is no relationship between Transmission Quality and Customer Satisfaction} \]

\[ H_{2c_0} : \text{There is no relationship between Competitiveness and Customer Satisfaction} \]
H2d_0 : There is no relationship between Credibility and Customer Satisfaction

H2e_0 : There is no relationship between Reliability and Customer Satisfaction

H2f_0 : There is no relationship between Support Attributes and Customer Satisfaction

H2g_0 : There is no relationship between Operational Effectiveness and Customer Satisfaction

H2h_0 : There is no relationship between Convenience and Customer Satisfaction

Service Quality Attributes – Customer Value – Customer Satisfaction

Service quality attributes may also be related to customer satisfaction, mediated by customer value. Thus the null hypotheses to be tested in this study are:

H3a_0 : There is no relationship between Employee Performance and Customer Satisfaction via Customer Value

H3b_0 : There is no relationship between Transmission Quality and Customer Satisfaction via Customer Value

H3c_0 : There is no relationship between Competitiveness and Customer Satisfaction via Customer Value

H3d_0 : There is no relationship between Credibility and Customer Satisfaction via Customer Value
H3e0 : There is no relationship between Reliability and Customer Satisfaction via Customer Value

H3f0 : There is no relationship between Support Attributes and Customer Satisfaction via Customer Value

H3g0 : There is no relationship between Operational Effectiveness and Customer satisfaction via Customer Value

H3h0 : There is no relationship between Convenience and Customer Satisfaction via Customer Value

**Customer Value – Customer Satisfaction**

Regarding the relationship between customer value and satisfaction, Bojanic (1996) found a strong positive relationship between customer value and satisfaction in four lodging markets. Cronin, Brady, and Hult, (2000), and Fornell et al., (1996) also supported a positive relationship between customer value and satisfaction. Therefore null hypothesis to be tested in this study is:

H40 : There is no relationship between Customer value and Customer Satisfaction

**Relationships among Service Quality Attributes, Customer Value, Satisfaction and Loyalty**

Literature provides enough evidences about the relationship between service quality attributes and customer value. There is a positive relationship between service quality and customer satisfaction (Berry et al., 1985; Bitner et al., 1990; Avkiran 1994 and Johnston 1997). The findings of various
studies were not consistent in the examination of the relationship between customer satisfaction and behavioural intentions. In most of the past studies, it was found that service quality influences behavioural intention only through customer satisfaction (Gotlieb, Grewal, and Brown, 1994 as cited in Lien and Yu, 2001; Anderson and Sullivan, 1993).

These results were supported in the study conducted by Cronin and Taylor (1992), even though they hypothesized in their study that perceived service quality has a direct significant impact on purchase intention. The empirical results of the study demonstrated a significant impact of service quality on customer satisfaction and that is influenced purchase intention indirectly. On the other hand, other researchers found a direct effect of service quality on behaviour intentions (Boulding et al., 1993; Zeithaml 1988).

Later, Cronin, Brady, and Hult (2000) conducted an empirical study to investigate that service quality would directly and indirectly lead to favourable behavioural intentions concurrently. They investigated the impact of service quality, value and customer satisfaction on behavioural intentions, and they found that service quality, service value, and satisfaction might all be directly related to behavioural intentions in an integrated manner. Furthermore in their study, they proposed that indirect effect of service quality and value constructs improved their impact on behavioural intention.

Caruana (2002) proposed important role of customer value and company image / reputation on service quality and customer loyalty relationship. Customer loyalty is a direct result of customer satisfaction, and at the same time, customer satisfaction is largely influenced by the value and the quality of services delivered to customers (Heskett et al., 1997).
Therefore, null hypotheses to be stated in this study are:

H5₀ : There is no relationship between Customer Value and Customer Loyalty

H6₀ : There is no relationship between Customer Value and Customer loyalty via Customer Satisfaction

H7₀ : There is no relationship between Customer Satisfaction and Customer Loyalty

H8a₀ : There is no relationship between Employee Performance and Customer Loyalty

H8b₀ : There is no relationship between Transmission Quality and Customer Loyalty

H8c₀ : There is no relationship between Competitiveness and Customer Loyalty

H8d₀ : There is no relationship between Credibility and Customer Loyalty

H8e₀ : There is no relationship between Reliability and Customer Loyalty

H8f₀ : There is no relationship between Support Attributes and Customer Loyalty

H8g₀ : There is no relationship between Operational Effectiveness and Customer Loyalty

H8h₀ : There is no relationship between Convenience and Customer Loyalty
H9a : There is no relationship between Employee Performance and Customer Loyalty via Customer Value/Customer Satisfaction

H9b : There is no relationship between Transmission Quality and Customer Loyalty via Customer Value/Customer Satisfaction

H9c : There is no relationship between Competitiveness and Customer Loyalty via Customer Value/Customer Satisfaction

H9d : There is no relationship between Credibility and Customer Loyalty via Customer Value/Customer Satisfaction

H9e : There is no relationship between Reliability and Customer Loyalty via Customer Value/Customer Satisfaction

H9f : There is no relationship between Support Attributes and Customer Loyalty via Customer Value/Customer Satisfaction

H9g : There is no relationship between Operational Effectiveness and Customer Loyalty via Customer Value/Customer Satisfaction

H9h : There is no relationship between Convenience and Customer Loyalty via Customer Value/Customer Satisfaction
The Sample

The major focus of this study is on the relationship between service quality attributes and customer loyalty with customer value and customer satisfaction as mediating variables. Therefore, the population for this research consists of subjects, who have experience with mobile telecommunication services in Dehradun.

About Dehradun, the place of study

Dehradun is a State Capital as well as the District Headquarter and is the only corporation city in the state. Nestled in the mountain ranges of the Himalaya, Dehradun is one of the oldest cities of India and is recently declared as the Provisional Capital of newly created Uttaranchal (Now Uttarakhand) State in the month of Nov’2000. As per provisional reports of Census India, population of Dehradun in 2011 is 578,420; of which male and female are 303,411 and 275,009 respectively (Source: Directorate of Census Operations in Uttarakhand).

Dehradun city is governed by Municipal Corporation which comes under Dehradun Urban Agglomeration. The Municipal Corporation has divided the Dehradun city in sixty municipal wards. Dehradun has been home of a great diversity of people, who have developed many magnificent cultures. Population of Dehradun consists of people from almost all parts of country, which makes it a small India.
Sample Size Determination

\[ n = s^2 \times z^2 / \varepsilon^2 \]

Where,

\[ s = \text{sample standard deviation (0.890012 from pilot test)} \]
\[ z = 1.96 \text{ (95\% confidence)} \]
\[ \varepsilon = \text{expressed in terms of units we are estimating (0.1 scaling units)} \]

\[ n = (0.890012)^2 \times (1.96)^2 / (0.1)^2 \]

\[ n = 304.29 = 305 \]

- In case of exploratory factor analysis, more acceptable sample size would have a 10:1 ratio (Hair et al., 2008, P. 136).
- In Structural Equation Modeling as a rule of thumb, any number above 200 (critical sample size) is understood to provide sufficient statistical power for data analysis (Hoelter, 1983; Hoe, 2008).

Research Instrument

Instrumentation

In the context of current study, structured questionnaire with closed-ended questions is used and responses were measured on 5 – point Likert’s scale. The survey instrument is a revised version of that originally developed by Cronin, Brady and Hult, (2000) for customer value, Turkyilmaz and Ozkan, (2007) and Fornell et al., (1996) for customer satisfaction, Caruana (2002) and Gremler and Brown (1996) for customer loyalty.
The survey instrument for service quality attributes was developed based on a thorough literature review. As shown in table below, the variables included in the study have been extensively used in previous studies.

**Table 7**

**Service Quality Attributes Adopted from Literature**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Item of the Scale</th>
<th>Literature</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Employees are efficient and competent [knowledgeable and skilful]</td>
<td>Cronin, Brady and Hult, 2000</td>
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<tr>
<td>2</td>
<td>Employees are easily approachable</td>
<td>Cronin, Brady and Hult, 2000</td>
</tr>
<tr>
<td>3</td>
<td>Employees are courteous, polite and respectful</td>
<td>Cronin, Brady and Hult, 2000</td>
</tr>
<tr>
<td>4</td>
<td>Employees listen to customers and are willing to help</td>
<td>Cronin, Brady and Hult, 2000</td>
</tr>
<tr>
<td>5</td>
<td>Employees are pleasant, friendly and caring</td>
<td>Caruana, 2002</td>
</tr>
<tr>
<td>6</td>
<td>The company makes efforts to understand the specific needs of customers</td>
<td>Caruana, 2002</td>
</tr>
<tr>
<td>7</td>
<td>The company provides individual and personal attention to the customers</td>
<td>Caruana, 2002; Johnson and Sirikit, 2002</td>
</tr>
<tr>
<td>8</td>
<td>The company performs any service right first time</td>
<td>Caruana, 2002</td>
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<tr>
<td>9</td>
<td>All the records are maintained</td>
<td>Wang and Lo 2002; Lai et al.</td>
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<tr>
<td><strong>10</strong></td>
<td>The company provides accurate and timely information</td>
<td>Ndubisi and Wah, 2005</td>
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<tr>
<td><strong>11</strong></td>
<td>The services provided the company is prompt [low waiting time and quick response]</td>
<td>Olorunniwo and Hsu, 2006</td>
</tr>
<tr>
<td><strong>12</strong></td>
<td>When there are problems, the service provider is sympathetic and reassuring</td>
<td>Lai et al. 2007</td>
</tr>
<tr>
<td><strong>13</strong></td>
<td>Complaint resolution or fault repair is fast</td>
<td>Athanassopoulos and Iliakopoulos, 2003</td>
</tr>
<tr>
<td><strong>14</strong></td>
<td>Employees in the offices are neat and clean</td>
<td>Caruana, 2002</td>
</tr>
<tr>
<td><strong>15</strong></td>
<td>Physical facilities of offices are visually appealing</td>
<td>Caruana, 2002</td>
</tr>
<tr>
<td><strong>16</strong></td>
<td>The operating hours are convenient for the customers</td>
<td>Wang and Lo, 2002</td>
</tr>
<tr>
<td><strong>17</strong></td>
<td>The advertisements and promotional campaigns of the company are effective</td>
<td>Aydin and Ozer, 2005</td>
</tr>
<tr>
<td><strong>18</strong></td>
<td>The network is up-to-date and low congestion problem [even in peak traffic hours]</td>
<td>Olorunniwo and Hsu, 2006</td>
</tr>
<tr>
<td><strong>19</strong></td>
<td>The cellular company provides service reliably, consistently and dependably</td>
<td>Caruana, 2002</td>
</tr>
<tr>
<td><strong>20</strong></td>
<td>The cellular company is trustworthy and</td>
<td>Caruana, 2002</td>
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<tr>
<td>21</td>
<td>The company fulfils its promises</td>
<td>Caruana, 2002</td>
</tr>
<tr>
<td>22</td>
<td>The services provided by the company are competitive</td>
<td>Athanassopoulos and Iliakopoulos, 2003</td>
</tr>
<tr>
<td>23</td>
<td>The pricing of the services are reasonable and competitive</td>
<td>Host and Andersen, 2004</td>
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<tr>
<td>24</td>
<td>There is enough variety of pricing plans available</td>
<td>Kim et al., 2004</td>
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<tr>
<td>25</td>
<td>The range and variety of Value Added Services (SMS, Ring tones etc.) provided is comprehensive and competitive</td>
<td>Aydin and Ozer, 2005</td>
</tr>
<tr>
<td>26</td>
<td>The call quality (voice clarity) is good and call drops are minimal</td>
<td>Kim et al., 2004</td>
</tr>
<tr>
<td>27</td>
<td>The coverage area of the company is wide</td>
<td>Aydin and Ozer, 2005</td>
</tr>
<tr>
<td>28</td>
<td>The company has sufficient presence in different geographical areas through own offices or dealers, franchises</td>
<td>Aydin and Ozer, 2005</td>
</tr>
<tr>
<td>29</td>
<td>It is easy and convenient to take up a new cellular connection as well as get recharges and top-ups</td>
<td>Lai et al., 2007</td>
</tr>
<tr>
<td>30</td>
<td>The billing is accurate and easy to understand</td>
<td>Levesque and McDougall, 1996</td>
</tr>
<tr>
<td>31</td>
<td>The cellular company has reputation and</td>
<td>Aydin and Ozer, 2005</td>
</tr>
</tbody>
</table>

its employees are believable and honest
Data Collection Procedures

Data was collected from personal interviews using structured questionnaire with closed-ended questions as a response measurement tool, and it was conducted in Dehradun by researcher himself. The first part of the structured questionnaire focuses on customer perceptions of service quality attributes, which are independent variables of the current research work. The second and third part focus on customer perceived value and customer satisfaction, which are dependent / independent variables of the present research work. The fourth part of the structured questionnaire focuses on the customer loyalty, which is the main dependent variable of the research work. The fifth and the last part of the structured questionnaire collect socio-demographic information of the respondents, such as age, gender, marital status, education, employment status, household income per month etc.

Sampling Technique

The primary data for this study was collected from the customers of mobile telecommunication services in Dehradun, with the help of structured questionnaire. A sample of 350 respondents was collected from Dehradun, in which only the pre-paid subscribers of GSM (Global System for Mobile Communications) services were included. Primary data for this study was collected through a schedule using multistage sampling method. In the first stage, Dehradun was considered as collection of sixty municipal wards
(Dehradun Municipal Corporation divided the city in sixty municipal wards for effective administration). In the second stage, seven municipal wards \{Clock Tower, Vasant Vihar, Patel Nagar (East), Race Course (South), Niranjanpur, Mohit Nagar, Defence Colony\} out of total sixty municipal wards in Dehradun were selected randomly. In the third stage, from these seven selected municipal wards, a total of 350 (50 each) respondents were selected.

A pilot study was conducted to ascertain the suitability of the research instrument \(n=68\) in Indian mobile telecommunication setting, because all the items were taken from literature. Reliability check has been performed to know the suitability of the construct for this industry. After ascertaining the suitability of construct, the questionnaire was administered to the customers’ sample size of 350 respondents. Out of these circulated questionnaires, incomplete questionnaires were kept out of study. Only completely filled questionnaires were considered for the analysis.

A total of 343 questionnaires were found to be suitable for the study. Since pilot study results were in the favour of the construct, those responses were also included in the sample. Therefore total sample size for the study was 411.

**Summary**

This chapter includes research design, the research model, hypotheses development, the sample, sample size determination, research instrument, and data collection procedures. The next chapter will include analysis and presentation of findings.