3.1 Research methodology

The early chapters sections were devoted to a discussion on the background of the present study, review of the earlier literature on Customer satisfaction and also an examination of some of the major research findings.

In this section an attempt is made to present research methods and a sample of the study, including tools of data collection, interpretive guidelines and statistical treatments.

The purpose of this study is threefold. Firstly, it attempts to examine satisfaction and the personal background variables like, “gender, age, Income, educational qualifications, Occupation and brand”. Secondly, it attempts to compare the satisfaction levels of. Lastly, it attempts to propose suggestions to help providers to improve their Customer satisfaction.

3.1.1 Research Design

A research design provides a framework for the collection and analysis of data. A choice of research design reflects decisions about the priority being given to the following; expressing causal connections between variables, generalizing to larger groups of individuals than those actually forming part of the investigation, understanding behavior and meaning of that behavior in its specific social context and having a temporal (i.e. Over time) appreciation of social phenomena and their interconnections (Bryman & Bell, 2007, p.40).

There are five different types of research designs: experimental design; cross-sectional or social survey design; longitudinal design; case study design; and comparative design (Bryman & Bell, 2007). Cross-sectional design which we are using for our study, entails the collection of data on more than one case (usually quite a lot more than one) and at a single point in time in order to collect a body of quantitative or quantifiable data in connection with two or more variables (usually many more than two), which are then examined to detect patterns of association (Bryman & Bell, 2007, p.55). This design considers more than one case because it is interested in the association between cases, at a single point in time meaning data are collected on variables simultaneously. Data must be quantifiable in order to establish the variation between cases. This design also allows examination of the relationship between variables and no causal inference can be established because data is collected simultaneously and the researcher cannot manipulate any variables (Bryman & Bell, 2007, p.55).
As the study attempts to explore the relationships between perceived satisfactions among the Customers, with the personal background variables, it was decided to adopt, descriptive-analytic research design as the most suitable design. This design is most suitable when scores of independent and dependent variables are presented in a descriptive manner. Further, the relationships between independent and dependent variables are analyzed using statistical tools like correlation and regression analysis.

3.1.2 Study Area

The present study is carried out at IDEA, VODAFONE, AIRTEL & BSNL of Hyderabad, India and, The population of these city was 68 lakhs as per the 2011 census. The city also caters to the 2 lakh floating population, recently some surrounding villages have been bought under the Greater Hyderabad Municipal Corporation. Most of the surrounded municipalities’ people are migrants from all corners of the Andhra Pradesh.

3.1.3 Participants

All respondents were customers of telephone service providers situated in around in Hyderabad.

3.1.4 Sample Design

The present research work is taken up to understand and analyze customer satisfaction pertaining to the select telephone services. A descriptive Research Design is adopted to meet the said objectives. The opinions, perception and attitudes of customers towards brands are being collected. The study represents a customer’s point of view pertaining to the customer satisfaction.

It was decided to select the sample which represents the customers who are holding telephone services. Therefore, four brands of Hyderabad were identified. Further, the customers who use these brands for other brands are excluded from the study. All the respondents were administered with the questionnaires. It was hoped that at least ten percent of the customers from each branch would respond to the survey instrument.

The sample size estimated is 369 to whom the structured questionnaires were administered.

Estimated sample size is nearly 60% of the total customers.
Sample Size Determination

A pilot study was carried out on a random basis for 30 respondents and the characteristic taken in the Pilot study was whether the respondents used telephone service or no.

**Table 3.1 Pilot Study**

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Used telephone service</th>
<th>Never not used</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>18</td>
<td>12</td>
<td>30</td>
</tr>
</tbody>
</table>

P = Percentage of population who have used one of telephone services as one of their choices

\[ P = \frac{\text{Visited at least once}}{\text{Total pilot study respondents}} = \frac{18}{30} = 0.60 = 60\% \]

**Sample size determination (For Infinite Population):**

\[ n = \frac{Z^2 * (P) * (1-P)}{C^2} \]

\[ Z = 1.96 \text{ (For 95\% confidence level)} \]

\[ P = \text{Percentage of population with a particular choice} \]

\[ C = \text{Confidence levels expressed as a decimal} \]

Taking 95\% confidence level and \( P = 0.6 \) (based on the pilot study)

\[ n = \frac{1.96^2 * 0.6 * (1-0.6)}{0.05^2} \]

\[ = \frac{3.8416 * 0.6 * 0.4}{0.0025} \]

\[ = 0.921984 / 0.0025 \]

\[ = 368.79 \]

\[ N \approx 369 \]

P = Percentage of population who have visited Pantaloons’ outlets as one of their choices

\[ P = \frac{\text{Visited at least once}}{\text{Total pilot study respondents}} = \frac{18}{30} = 0.60 = 60\% \]

As telephone services in Hyderabad are 2 types of private or public, it has divided the sample as indicated below:

**Table 3.2 telephone services**

<table>
<thead>
<tr>
<th>Name of service</th>
<th>Geographical location</th>
<th>No of respondents</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Idea</td>
<td>a. Hyderabad</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td>b. Bsnl</td>
<td>b. Hyderabad</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td>c. Vodaphon</td>
<td>c. Hyderabad</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td>d. Airtel</td>
<td>d. Hyderabad</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>369</strong></td>
<td></td>
</tr>
</tbody>
</table>
3.1.5 Variables in the Study (Independent variable)

The variables in this study are as follows

**Tangibility (Independent variable)** The physical facilities and equipment and the appearance of the personnel rendering service

**Reliability (Independent variable)** The ability to provide what was promised, dependably and accurately

**Responsiveness (Independent variable)** The willingness to help customers and provide prompt service

**Assurance (Independent variable)** The knowledge and courtesy of employees and their ability to convey trust and confidence

**Empathy (Independent variable)** The degree of caring and individual attention provided to

**CSI (CUSTOMER SATISFACTION INDEX)**

**Customer Perceived value:** Considering the relationship between service quality and price, how do you feel the charge of telecommunications?

**Customer complaint:** Have you made a complaint to a company’s service this year? Are you satisfied with the result of handling complaints?

**Customer loyalty:** Buy new telephone card, what possibility do you choose the same telephone service

**IPV (IMPORTANT PERFORMANCE ANALYSIS)**

QUADRANT A: LOYALTY DISTRICT: quality of service level should be “continue to maintain” due to direct impact on consumer behavior,

QUADRANT B: HEALTH DISTRICT: quality of service level should be “more input” due to achieving an acceptable level,

QUADRANT C: NEGLECTED DISTRICT: quality of service level should be, “maintained” due to compliance level,
QUADRANT D: OPPORTUNITY DISTRICT: quality of service level should be “improved” due to create a unique value, thus pleasing customers.

3.1.6 Customer Satisfaction (Dependent variable)

Customer Satisfaction is the degree of satisfaction provided by the goods or services of a company as measured by the number of repeat customers. It may also be defined as a person’s feeling of pleasure or disappointment resulting from comparing a product’s perceived performance (or outcome) in relation to his/her expectations.

3.1.7 Survey Instrument

The survey tool used in the present study is the modified SERVQUAL instrument. The SERVQUAL is one of the tools used in measuring the quality of services. According to Buttle (1996), SERVQUAL is for measuring and managing the quality of service. Asubonteng et al. (1996) also intimate that the model is used to measuring the quality of services from the customers’ point of view. The originators of the model are Parasuraman, Zeithamel and Berry. It was developed 1985 but was polished in their subsequent articles (Parasuraman et al. 1988). The main aim of SERVQUAL is to have a standard and a reliable tool that can be used to measure the quality of services in different service sectors, (Curry and Sinclaire, 2002).

SERVQUAL was modified to suit the mobile service providers with 29 questions. This scale consists of 29 items which were statements rather questions pertaining to the Customer Satisfaction of telephone service providers. They were measured with 5-point (Likert),
(where very dissatisfied=1, somewhat dissatisfied=2, neither satisfied nor dissatisfied=3, somewhat satisfied=4, Very satisfied=5).

3.1.7 Reliability

The alpha coefficients presented in the table indicate that the scale meant for assessing satisfaction is internally consistent and highly reliable. Details of the scale items, reliability coefficients are presented in the following table

<table>
<thead>
<tr>
<th>No</th>
<th>Dimension of Satisfaction</th>
<th>No. of Items</th>
<th>Alpha Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tangibility</td>
<td>2</td>
<td>.74</td>
</tr>
<tr>
<td>2</td>
<td>Reliability</td>
<td>4</td>
<td>.77</td>
</tr>
<tr>
<td>3</td>
<td>Responsiveness</td>
<td>1</td>
<td>.89</td>
</tr>
<tr>
<td>4</td>
<td>Assurance</td>
<td>3</td>
<td>.78</td>
</tr>
<tr>
<td>5</td>
<td>Empathy</td>
<td>1</td>
<td>.70</td>
</tr>
<tr>
<td>6</td>
<td>CSI</td>
<td>4</td>
<td>.80</td>
</tr>
<tr>
<td>7</td>
<td>IPV</td>
<td>14</td>
<td>.90</td>
</tr>
<tr>
<td>*</td>
<td>QUESTIONNAIRE</td>
<td>29</td>
<td>.92</td>
</tr>
</tbody>
</table>

Since the scores show these questions can measure the customer satisfaction in mobile service providers, since all of then are above 70%.

Items that constitute the five dimensions of the satisfaction scale:

3.1.8 Questionnaire (Question Number)

**PART A: SERVQUAL MODEL**

If you are asked to rate the following attributes of your current service provider, How would You rate them? (Tick in the space provided)
<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>COMPOSITION</th>
<th>QUESTION</th>
<th>EXCELLENT</th>
<th>GOOD</th>
<th>AVERAGE</th>
<th>BAD</th>
<th>WORST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TANGIBLES</strong>: physical facilities, equipment, staff appearance</td>
<td>FUNCTIONAL QUALITY</td>
<td>Q1. COVERAGE RATE OF BUSINESS HALL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TANGIBLES</strong>: physical facilities, equipment, staff appearance</td>
<td>FUNCTIONAL QUALITY</td>
<td>Q2. WEBSITE AND HOT LINE FOR CUSTOMER SERVICE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliability: ability to perform service dependably and accurately</td>
<td>Technical quality</td>
<td>Q3. NETWORK SIGNAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliability: <strong>&quot;</strong></td>
<td>TECHNICAL QUALITY</td>
<td>Q4. QUALITY OF TELECOMUNICATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliability: <strong>&quot;</strong></td>
<td>FUNCTIONAL QUALITY</td>
<td>Q5. BUSINESS HANDLING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliability: <strong>&quot;</strong></td>
<td>IMAGE QUALITY</td>
<td>Q6. COMPANY'S REPUTATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responsiveness: willingness to help and respond to customer need</td>
<td>FUNCTIONAL QUALITY</td>
<td>Q7. ACCOMPLISH THEIR SERVICES AT THE SPECIFIC TIME THEY PROMISE TO DO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assurance: ability of staff to inspire confidence and trust</td>
<td>FUNCTIONAL QUALITY</td>
<td>Q8. THE ATTITUDE OF STAFF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assurance: <strong>&quot;</strong></td>
<td>FUNCTIONAL QUALITY</td>
<td>Q9. POSSESSION OF REQUIRED SKILL AND KNOWLEDGE OF BUSINESS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assurance: <strong>&quot;</strong></td>
<td>FUNCTIONAL QUALITY</td>
<td>Q10. REGULARIZING EXTENT OF SERVICE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empathy: the extent to which caring individualized service is given</td>
<td>FUNCTIONAL QUALITY</td>
<td>Q11. FLEXIBLE OF BUSINESS PORTFOLIO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
“Response to servqual is calculated by taking the average of the above five dimensions responses”

PART B: CSI MODEL

If you are asked to FEEL the following attributes of your current service provider, How would You FEEL WITH? (Tick in the space provided)

Table 3.5 csi questions

<table>
<thead>
<tr>
<th>Element</th>
<th>Question</th>
<th>SCALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer perceived value</td>
<td>Q1. CONSIDERING THE RELATIONSHIP BETWEEN SERVICE QUALITY AND PRICE, HOW DO YOU FEEL THE CHARGE OF TELECOMMUNICATIONS?</td>
<td>STRONGLY UNSATISFIED</td>
</tr>
<tr>
<td>Customer complaint</td>
<td>Q2. HAVE YOU MADE COMPLAINT TO COMPANY’S SERVICE THIS YEAR?</td>
<td>YES</td>
</tr>
<tr>
<td>Customer complaint</td>
<td>Q3. ARE YOU SATISFIED WITH THE RESULT OF HANDLING COMPLAINT?</td>
<td>NO</td>
</tr>
<tr>
<td>Customer loyalty</td>
<td>Q4. IF YOU WILL BUY A NEW TELEPHONE CARD, WHAT POSSIBILITY DO YOU CHOOSE THE SAME TELECOMMUNICATIONS VENDORS AGAIN?</td>
<td>STRONGLY LOW</td>
</tr>
</tbody>
</table>

“Response to CSI is calculated by taking the average of the above five dimensions responses”.

PART C: IPA

If you are asked to rate the following attributes of your current service provider, how would you rate them? (Tick in the space provided)

Table 3.5 IPV questions

<table>
<thead>
<tr>
<th>IPA ELEMENTS</th>
<th>QUESTIONS</th>
<th>Low(1)</th>
<th>SCALE</th>
<th>high (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loyalty district</td>
<td>Q1. Network signal</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Loyalty district</td>
<td>Q2. Degree of standardization of services</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Health District</td>
<td>Q3. Service attitude</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Health District</td>
<td>Q4. Degree of understanding of services</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Neglected district</td>
<td>Q5. Flexible portfolio</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Neglected district</td>
<td>Q6. Coverage of business hall</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Neglected district</td>
<td>Q7. Hot line and website for customer service</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Neglected district</td>
<td>Q8. Convenience of handling business</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Neglected district</td>
<td>Q9. Record and improvement of complaint</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Opportunity district</td>
<td>Q10. Phone call quality</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Opportunity district</td>
<td>Q11. Charging level</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Opportunity district</td>
<td>Q12. Accurate and transparent billing</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Opportunity district</td>
<td>Q13. The specific time they promise to accomplish their services</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Opportunity district</td>
<td>Q14. Enterprise’s reputation</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

### 3.1.9 Data Collection

A pilot study was carried out taking 30 respondents. The purpose of this study was to check the consistency of the scales incorporated in this study. Further, to check for the item analyses of the scales included. Having ensured the reliabilities of the scales used in the pilot study, the questionnaire was slightly modified to suit to the main study.

The primary data were collected from the customers of telephone services. All categories of customers were taken from Hyderabad. The secondary data has been collected from Journals,
Articles, Books, Doctoral Thesis, Magazines of Indian and Foreign origin, from the last ten years.

As the data are required for all categories of customers from the select providers, it was estimated an approximate time of three months. Thus, data collected were collected during a three month period from October to November, 2014.

3.1.10 Data Processing and Analysis

The questionnaires collected from the respondents were examined for the completeness in all manners. Later a code book was prepared in order to enter the data in the statistical package for social sciences (SPSS v17). The data were processed using the same statistical package. Firstly, frequency tables were prepared for the personal background variables, which include gender, age, Income, educational qualifications, Occupation. Secondly, means and standard deviations were computed for the independent and dependent variables in order to present the results pertaining to the perceived Customer Satisfaction.

3.1.11 Statistical Treatment

To analyze the collected data both descriptive and inferential statistics was used. In descriptive statistic means, standard deviations, frequencies, correlation coefficients and regression analysis were computed. Inferential statistics are used in Analysis of Variance (ANOVA) i.e. F-values were computed and analysis was made based on the f-value.

Details are as follows.

F – Values

It is the measurement of distance between individual distributions of the given variables. A F value goes up, P goes down (i.e., more confidence in there being a difference between two means). To calculate the F value, the formula \( \frac{\text{Mean Square of } X}{\text{Mean Square of Error}} \) has been used. Thus, using this value, the mean difference in giving study variables can be examined for significant variations.

Correlation Analysis

Correlation is a technique for investigating the relationship between two quantitative, continuous variables. Correlation is the degree or extent of the relationship between two variables. If the value of one variable increases when the value of the other increases, they are
said to be positively correlated. If the value of one variable decreases when the value other
variable is increasing, it is said to be negatively correlated. If one variable does not affect the
other they are considered to not be correlated. Using the formula as mentioned below, the
correlation coefficients were computer between independent and dependent variables.

The correlation coefficient quantifies the degree of linear association between two variables.
It is typically denoted by r and will have a value ranging between negative 1 and positive 1.
Thus, the correlation between independent and dependent variables have been computed
using the stated formula.

**Regression Analysis**

It is the relationship between the mean value of a random variable and the corresponding
values of one or more independent variables. Regression is a model for predicting one
variable from another and a statistical analysis assessing the association between two
variables.

Regression analysis is a method of analysis that enables you to quantify the relationship
between two or more variables (X) and (Y) by fitting a line or plane through all the points
such that they are evenly distributed about the line or plane. The formula for computing
regression is

\[ Y = a + bX \]

Using this formula, the predictive relationships between independent variables and the
dependent variable have been examined in this study. The regression equation expected is

\[ Y = a + b1X1 - b2X2 \]
3.2. Industry Profile

The Global Telecommunication Industry [1]:

Telecom services will continue to be one of the key growth sectors having generated revenues of roughly INR 67 trillion in 2009. Global wireless subscribers reached 4.6 billion in 2009 with a CAGR of 22 percent over 2004-2009. This occurred despite some carriers experiencing marginal declines or flat trends in revenues with enterprises and consumers exercising, cut backs on telecom spending during the global economic slowdown. The continuing rise in affluence levels in emerging markets and the resultant increase in the standard of living is expected to have an increasing impact on the revenue per subscriber.

**Telecom market revenue by sector**

![Chart showing telecom market revenue by sector for 2009 and 2014](chart.png)
Falling voice ARPs (Average Revenue Per User) in most countries [1]

Wireless ARPU ranges from USD 54 per month in Japan to under USD 5 per month in the Philippines, Indonesia and India, evidently demonstrating the lower ARPU realization in emerging countries2. The blended wireless ARPU is roughly USD 18 globally, declining at 10 percent per year (on a local currency basis).

Asia to continue to lead growth in wireless services [1]

The Asia Pacific region, driven by growth in India and China will continue to be the key growth market for global telecom over the next few years. Developed markets such as Japan and Korea, are witnessing the benefits of significant technology investments and innovation. Meanwhile, India and China, which constitute 28 percent of the global wireless subscriber base today, are witnessing the benefits of significant growth in income levels due to sustained economic growth. Penetration figures in both countries continue to remain significantly lower than developed economy levels, auguring Ill for continued growth and development of the telecom market in the region.
3.2.1 HISTORY OF INDIAN TELECOM INDUSTRY: [1]

India is the world’s fastest growing industry in the world in terms of the number of wireless connections after China, with 811.59 million mobile phone subscribers. According to the world telecommunications industry, India will have 1.200 billion mobile subscribers by 2013. Furthermore, projections by several leading global consultancies indicate that the total number of subscribers in India will exceed the total subscriber count in the China by 2013. Indian telecom sector is more than 165 years old. Telecommunications was first introduced in India in 1851 when the first operational land lines were laid by the government near Kolkata (then Calcutta), although telephone services were formally introduced in India much later in 1881. Further, in 1883, telephone services were merged with the postal system. In 1947, after India attained independence, all foreign telecommunication companies were nationalized to form the Posts, Telephone and Telegraph (PTT), a body that was governed by the Ministry of Communication. The Indian telecom sector was entirely under government ownership until 1984, when the private sector was allowed in telecommunication equipment manufacturing only. The government concretised its earlier efforts towards developing R&D in the sector by setting up an autonomous body – Centre for Development of Telematics (C-DOT) in 1984 to develop state-of-the-art telecommunication technology to meet the growing needs of the Indian telecommunication network. The actual evolution of the industry started after the Government separated the Department of Post and Telegraph in 1985 by setting up the Department of Posts and the Department of Telecommunications (DoT).

Telecommunication in India

Well Postal means of communication was the only mean communication until the year 1850. In 1850 experimental electric telegraph started for the first time in India between Calcutta (Kolkata) and Diamond Harbor (southern suburbs of Kolkata, on the banks of the Hooghly River). In 1851, it was opened for the use of the British East India Company. Subsequent construction of telegraph started throughout India.

A separate department was opened to the public in 1854. Dr. William O’Shaughnessy, who pioneered the telegraph and telephone in India, belonged to the Public Works Department, and worked towards the development of telecom. Calcutta or the-then Kolkata was chosen as it was the capital of British India. In early 1881, Oriental Telephone Company Limited of England opened telephone exchanges in Calcutta (Kolkata), Bombay (Mumbai), Madras (Chennai) and Ahmedabad. On the 28th January 1882 the first formal telephone service was established with a total of 93 subscribers From the year 1902 India drastically changes from
cable telegraph to the wireless telegraph, radio telegraph, radio telephone, trunk dialing. Trunk dialing used in India for more than a decade, were system allowed subscribers to dial calls with operator assistance. Later moved to digital microwave, optical fiber, satellite earth station. During British period all major cities and towns in India were linked with telephones.

looking after Telecom[2]

In the year 1975 Department of Telecom (DoT) was responsible for telecom services in the entire country after separation from Indian Post & Telecommunication. A decade later Mahanagar Telephone Nigam Limited (MTNL) was chipped out of DoT to run the telecom services of Delhi and Mumbai. In 1990s the telecom sector was opened up by the Government for private investment. In1995 TRAI (Telecom Regulatory Authority of India) was setup. This reduced the interference of Government in deciding tariffs and policy making. The Government of India corporatized the operations wing of DoT in 2000 and renamed Department of Telecom as Bharat Sanchar Nigam Limited (BSNL). In last 10 years many private operator's especially foreign investors successfully entered the high potential Indian telecom market. Globally acclaimed operators like Telenor, NTT Docomo, Vodafone, Sistema, SingTel, Maxis, Etisalat invested in India mobile operators.

Wireless Communication, Pager Services[2]

Pager communication successful launched in India in the year 1995. Pagers were looked upon as devices that offered the much needed mobility in communication, especially for businesses. Motorola was a major player with nearly 80 per cent of the market share. The other companies included Mobilink, Page link, BPL, Usha Martin Telecom and Easy call. Pagers were generally worn on the belt or carried in the pocket. The business peaked in 1998 with the subscriber base reaching nearly 2 million. However, the number dropped to less than 500,000 in 2002. The pager companies in India were soon struggling to maintain their business. While 2-way pagers could have buffered the fall, the pager companies were not in a position to upgrade their infrastructure to improve the ailing market. The Indian Paging Services Association was unable to support the industry. Pager companies in India also offered their services in regional languages also. However, the end had begun already. By 2002, Motorola stops making or servicing pagers. When mobile phones were commercially launched in India, the pager had many advantages to boast. Pagers were smaller, had a longer battery life and were considerably cheaper. However, the mobile phones got better with time and continuously upgraded themselves.
Wire-line services[2]

While wireless has seen consistent growth over the years, wire-line over the last few years has actually seen a decline in the subscriber base. The total number of fixed line connections in India increased from 5.81 million in 1991-92 to 40.8 million in 2006-07. During 1999-2000 to 2001-02, approximately 5-6 million customers were added to fixed-line services each year. However, with the drop in mobile tariffs and increase in coverage of mobile services, net additions in fixed-line subscribers started slowing down from 2.5 million in 2002-03 going down to 0.5 million in 2004-05. Due to mobile substitution and lower tariffs, the fixed line subscriber base actually decreased by 3.5 million between 2006-07 and 2008-09. This decline was aggravated by the slow rollout of fixed line services by Telco’s due to the significantly higher total cost of service provision for fixed line services compared to mobile wireless services, in February 2011 only 34 Million wire-line subscribers are reported. It also comes with the observation that rural subscriber is more interested in wireless in compression of wire-line... However, the potential for wire-line services remains large due to very low penetration in the wire-line industry and the ability of wire-line to deliver broadband at lower operating costs than wireless broadband. New players in the telecom space had hitherto concentrated on the wireless space leading to low competition and promotion of wire-line services. Greater pan-India expansion by private players can significantly lead to growth of wire-line services. In addition, with a combined offering of internet/ broadband and allied services like IPTV, the sector can bounce back in the future. But, the aggressiveness of mobile operators in rural areas due to easier and cheaper rollout and newer offerings on the BWA spectrum can further slow down the wire-line penetration.

![Wireline subscriber base](image-url)
Mobile Communication[2]
First mobile telephone service on non-commercial basis started in India on 48th Independence Day at country’s capital Delhi. The first cellular call was made in India on July 31st, 1995 over Modi Telstra’s Mobile Net GSM network of Kolkata. Later mobile telephone services are divided into multiple zones known as circles. Competition has caused prices to drop and calls across India are one of the cheapest in the world. Most of operator follows a GSM mobile system operate under 900MHz bandwidth few recent players started operating under 1800MHz bandwidth. CDMA operators operate under the 800Mhz band, they are first to introduce EVDO based high speed wireless data services via USB dongle. In spite of this huge growth Indian telecom sector is hit by severe spectrum crunch, corruption by India Govt. Officials and financial troubles. In 2008, India entered the 3G arena with the launch of 3G enabled Mobile and Data services by Government owned MTNL and BSNL. Later from November 2010 private operator’s started to launch their services.

Mobile services[2]:
The Indian mobility market can be characterized as one with a very large subscriber base (~671 million as of August 2010), high growth (edition of 16-18 million subscribers every month in the last six months), low ARPs (~INR 122 per month in June, 2010) and significant churn rates. In the prepaid segment, ARPU declined by 6.2 percent from INR 113 in March, 2010 to INR 106 in June, 2010. The Government of India opened up mobile services to private participation in 1994-95 by inviting bids for providing services in the four metropolitan cities and 18 non-metro circles. Services Ire introduced in 1995 with the high tariffs resulting in poor demand. The National Telecom Policy 1999 moved the industry to a revenue share model from the fixed license fee and the lower tariffs resulted in the addition of 12 million subscribers during the 1999-03 period as compared To less than a million subscribers added during the 1995-99 period During this period the government also set-up the Telecom Regulatory Authority of India (TRAI) in 1997 and ‘Telecom Dispute Settlement and Appellate Tribunal (TDSAT)’ in 2000.
The Calling Party Pays regime was introduced in 2003-04 which allowed free incoming calls for the subscribers. This revolutionary change can be designated as one of the watershed milestones in the growth of the Indian telecom sector. The 22 telecom circles in India have been classified into 4 categories viz. Metros, Category A, B and C. With penetration rates in metros touching more than 100 percent, the market in Metros is nearly saturated. However, there is still immense potential in other circle categories, particularly B and C.

The current subscriber base of 707 million (August 2010) comprises 476 million urban subscribers (teledensity of ~134 percent) and 230 million rural subscribers (teledensity of ~28 percent) & 791 million (February 2011) comprises 525.17 million urban subscribers (teledensity of ~146.72 percent) and 266.21 million rural subscribers (teledensity of ~31.90 percent) million overall teledensity is 66.36 percent. The market is highly competitive with some of the telecom circles having more than 14 operators. Competitive intensity in the market has contributed to reduction in tariffs and launch of innovative schemes like lifetime prepaid and low cost handset bundling which further reduced the entry.

**Mobile subscriber base and mobile teledensity across telecom circles**

![Map of India showing teledensity across telecom circles](image)
**Broadband communication** [2]

After US, Japan, India stands in third largest Internet users, of which 40% of Internet used via mobile phones. India ranks one of the lowest provider of broadband speed as compared to countries such as Japan, India and Norway. Minimum broadband speed of 256kbit/s but speed above 2Mbits is still in a nascent stage. Year 2007 had been declared as “Year of Broadband” in India. Telco’s based on ADSL/VDSL in India generally have speeds up to 24Mbit max while those based on newer Optical Fiber technology offer up to 100Mbits in some plans Fiber-optic communication (FTTx). Broadband growth has been plagued by many problems. Complicated tariff structure, metered billing, High charges for the right of way, Lack of domestic content, non implementation of Local-loop unbundling have all resulted in hindrance to the growth of broadband. Many experts think the future of broadband is in the hands of wireless factor. BWA auction winners are expected to roll out LTE and WiMAX in India in 2012.

**Broadband and internet services** [2]

Internet subscriber base in India, though currently at a low level, has been experiencing significant growth over the last 2-3 years. This growth is being driven by the growing popularity of broadband, increasing user comfort with the usage of internet applications, continuous fall in PC prices and decreasing costs of internet broadband access plans. This growth has been accompanied by an associated increase in the number of internet users which have attributed to the growth of public internet cafes and multiple members of a household accessing internet. Access technologies play a crucial role in broadband penetration. Right of Way (Row) issues and costs of the existing broadband technologies has been a constraint for the growth of internet. While there a number of technologies being used by service providers to provide broadband services, DSL continues to be the most preferred technology and constitutes nearly 86.6 percent of total broadband subscribers7. Cable modem technology follows with 6.9 percent connection. On an overall basis for accessing internet, DSL leads with 51 percent, while dialup stands second at 33.3 percent7. Wireless technologies have carved a unique niche in terms of connectivity to the internet with a share of nearly 7.6 percent, which is a significant shift in the last two years. Newer access technologies like BWA and 3G can completely transform the character of Internet/ broadband scenario in India. The BWA will overcome the key hindrance of Row in India, while 3G has the potential to make the mobile phone, a ubiquitous device for accessing the internet.
Next Generation Network (NGN)

In the Next Generation Networks, multiple access networks can connect customers to a core network based on IP technology. These access networks include fiber optics or coaxial cable networks connected to fixed locations or customers connected through Wi-Fi as well as to 3G networks connected to mobile users. As a result, in the future, it would be impossible to identify whether the next generation network is a fixed or mobile network and the wireless access broadband would be used both for fixed and mobile services. It would then be futile to differentiate between fixed and mobile networks, both fixed and mobile users will access services through a single core network. Cloud based data services are expected to come.
Indian telecom networks are not as intensive as developed country’s telecom networks and India’s teledensity is lower only in rural areas. 670,000 route Kilometers (419,000 miles) of optical fibers have been laid in India by the major operators, even in remote areas and the process continues. BSNL alone has laid optical fiber to 30,000 Telephone Exchanges out of their 36 Exchanges. Keeping in mind the viability of providing services in rural areas, an attractive solution appears to be one which offers multiple service facility at low costs. A rural network based on the extensive optical fiber network, using the Internet Protocol and offering a variety of services and the availability of open platforms for service development, viz. The Next Generation Network, appears to be an attractive proposition. Fiber network can be easily converted to Next Generation network and then used for delivering multiple services at cheap cost...

4G: [3]

4G or BWA (Broadband Wireless Access) helps to give very high speed data connectivity on mobile in 8 telecom circles.

In telecommunications, 4G is the fourth generation of cellular wireless standards. It is a successor to the 3G and 2G families of standards. In 2008, the ITU-R organization specified the IMT-Advanced (International Mobile Telecommunications Advanced) requirements for 4G standards, setting peak speed requirements for 4G service at 100 Mbit/s for high mobility, communication (such as from trains and cars) and 1 Gbit/s for low mobility communication (such as pedestrians and stationary users).

A 4G system is expected to provide a comprehensive and secure all-IP based mobile broadband solution to laptop computer wireless modems, smart phones, and other mobile devices. Facilities such as ultra-broadband Internet access, IP telephony, gaming services, and streamed multimedia may be provided to users.

This book is your ultimate resource for the 4G Standard. Here you will find the most up-to-date information, analysis, background and everything you need to know.

In easy to read chapters, with extensive references and links to get you to know all there is to know about the 4G Standard right away, covering: 4G, Telecommunication, Wireless, 3G, 2G, ITU-R, Data rate units, Internet Protocol, Mobile broadband, Wireless modem, Smartphone, Facility (telecommunications), Ultra Mobile Broadband, Voice over IP, WiMAX, 3GPP Long Term Evolution, LTE Advanced, IEEE 802.16, Code division multiple access, Spread spectrum, IS-95, Orthogonal frequency-division multiple access, Single-

This book explains in-depth the real drivers and workings of the 4G Standard. It reduces the risk of your technology, time and resources investment decisions by enabling you to compare your understanding of the 4G Standard with the objectivity of experienced professionals.

**BWA- 3G & Broadband Wireless Services (BWA)[4]**

The government has in a pioneering decision, decided to auction 3G & BWA spectrum. The broad policy guidelines for 3G & BWA have already been issued on 1st August 2008 and allotment of spectrum has been planned through simultaneously ascending e-auction process by a specialized agency. New players would also be able to bid thus leading to technology innovation, more competition, faster roll out and ultimately greater choice for customers at competitive tariffs. The 3G will allow telecom companies to offer additional value added services such as high resolution video and multimedia services in addition to voice, fax and conventional data services with high data rate transmission capabilities. The BWA will become a predominant platform for broadband roll out services. It is also an effective tool for undertaking social initiatives of the Government such as e-education, telemedicine, health and e-Governance. Providing affordable broadband, especially in the suburban and rural communities is the next focus area of the Department.

BSNL & MTNL have already been allotted 3G & BWA spectrum with a view to ensuring the early roll out of 3G & WiMax services in the country. They will pay the same price for the spectrum as discovered through the auction. While, Honbl’e Prime Minister launched the
MTNL’s 3G mobile services for the inaugural function of ‘India Telecom 2008’ held on 11th December 2008, BSNL launched its countrywide 3G services from Chennai, in the southern Tamil Nadu state on 22nd February 2009.

The last 5 years have been transformational for the Indian telecom industry and the next few years are expected to bring about more stimulating and aggressive changes. One of the key frontiers which would make the journey in coming years even more exciting is the launch of 3G and BWA technologies. The auction of 3G spectrum was concluded on May 19, 2010. While commercial usage is started from September 2010 onwards, the auction laid the groundwork for faster internet connectivity and data transfer on mobile phones, boosting usage of data services in the cellular market. This was closely followed by auctioning of BWA spectrum, which also exceeded revenue expectations of the government. The highly successful auctioning of 3G and BWA spectrums and entry of new telecom players in BWA auction has ensured that telecom market will see more exciting times going forward. Total revenues which the government earned from these two auctions stood at, approximately, INR 1,063 billion the market is likely to witness a wide variety of value added services being offered, which is not possible over the current 2G/2.5G network. The ARPU is expected to get a boost given the increased revenue contribution from data and value added services. Potential challenges that 3G players could face would span across the value chain covering innovative Product development, Network deployment and management, Sales and Marketing etc. In the first wave, operators would be able to provide rich data services to HNI’s, working professionals, enterprise customers and youth. They would be specifically targeting current users of 2.5G and/or owners of 3G enabled handsets. At the same time operators would be actively looking at providing 3G services to other income groups, as this will help spread the investment in technology/license over a wider subscriber base. The Ministry of Communications had specified that BWA spectrum allocation would be technology neutral. High speed broadband on the BWA spectrum also has the potential to provide connectivity for the growing small and medium enterprises (‘SME’) segment; and be utilized for the return path bundled with the DTH platform

**Indian Satellites**

India has launched more than 50 satellites of various types, since its first attempt in 1975. The organization responsible for Indian satellites is the Indian Space Research Organization (ISRO). Most Satellites have been launched from various vehicles, including American, Russian, European satellite-launch rockets, and the U.S. Space Shuttle. First Indian satellite
The Indian Telecommunication Industry

Snapshot comparison of various players in the Indian telecom industry

<table>
<thead>
<tr>
<th>Service provider</th>
<th>Subscribers (mn) Apr-12</th>
<th>Subscriber market share Apr-12</th>
<th>Net Additions (mn) Apr-12</th>
<th>Share of net additions Apr-12</th>
<th>Change in Market share (M-o-M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bharti</td>
<td>183.29</td>
<td>27.33%</td>
<td>2.01</td>
<td>30.98%</td>
<td>0.04%</td>
</tr>
<tr>
<td>Vodafone</td>
<td>151.28</td>
<td>22.56%</td>
<td>0.82</td>
<td>12.62%</td>
<td>-0.10%</td>
</tr>
<tr>
<td>Rcom</td>
<td>0.00</td>
<td>0.00%</td>
<td>0.00</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Idea</td>
<td>114.21</td>
<td>17.03%</td>
<td>1.49</td>
<td>22.91%</td>
<td>0.06%</td>
</tr>
<tr>
<td>Tata</td>
<td>0.00</td>
<td>0.00%</td>
<td>0.00</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>BSNL</td>
<td>94.68</td>
<td>14.12%</td>
<td>0.00</td>
<td>0.00%</td>
<td>-0.14%</td>
</tr>
<tr>
<td>Aircel</td>
<td>63.59</td>
<td>9.48%</td>
<td>1.01</td>
<td>15.62%</td>
<td>0.06%</td>
</tr>
<tr>
<td>Loop</td>
<td>3.26</td>
<td>0.49%</td>
<td>-0.01</td>
<td>-0.13%</td>
<td>-0.01%</td>
</tr>
<tr>
<td>Etisalat</td>
<td>1.69</td>
<td>0.25%</td>
<td>0.00</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>HFCL</td>
<td>0.00</td>
<td>0.00%</td>
<td>0.00</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>MTNL</td>
<td>5.49</td>
<td>0.82%</td>
<td>-0.11</td>
<td>-1.67%</td>
<td>-0.02%</td>
</tr>
<tr>
<td>Sistema</td>
<td>0.00</td>
<td>0.00%</td>
<td>0.00</td>
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<td>0.00%</td>
</tr>
<tr>
<td>Stel</td>
<td>3.43</td>
<td>0.51%</td>
<td>0.00</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Unitech</td>
<td>43.55</td>
<td>6.49%</td>
<td>1.12</td>
<td>17.25%</td>
<td>0.11%</td>
</tr>
<tr>
<td>Videocon</td>
<td>6.11</td>
<td>0.91%</td>
<td>0.16</td>
<td>2.41%</td>
<td>0.01%</td>
</tr>
<tr>
<td>Total</td>
<td>670.57</td>
<td>100.00%</td>
<td>6.49</td>
<td>100.00%</td>
<td></td>
</tr>
</tbody>
</table>

SOURCE: [http://www.slideshare.net/cmvicky/aircel-project-16601684?related=7](http://www.slideshare.net/cmvicky/aircel-project-16601684?related=7)

The Indian telecommunications market has continued to show consistent growth during the last one year, with exciting developments such as rollout of newer circles by operators, successful auction of 3G and BWA spectrum, growing push by telecom operators to rollout network in semi-rural areas and increased focus on the value added services market. Telecom continues to be one of the fastest growing sectors of the Indian economy, becoming a strong contributor to India’s overall GDP and is expected to grow further [3].
Overall teledensity in India has risen to the levels of 59.6 percent (as of August’10) to 69.29 percent (as of February 2011) comprises 551.27 million urban subscribers (teledensity of 154.01 percent) and 274.98 million rural subscribers (teledensity of 32.95 percent) With a large part of the population yet to obtain access to the telecommunication market, there is immense potential for the sector to grow, especially in non-urban areas, where wireline and internet services are yet to make significant in-roads. Wireline services have shown relatively negative growth -5.66 percent (Feb 2010 to Feb 2011). Even the mobile services space which has seen exponential growth in urban areas, has not yet reached the vast majority in rural areas with rural teledensity of approximately 40.31 percent (Feb 2010 to Feb 2011), indicating huge untapped potential for the sector. Broadband is yet to reach a critical mass despite rapid growth; the numbers have risen from 6.98 million in August 2009 to 10.08 million by August 2010, registering a growth of 55 percent on an annual basis. With subscriber penetration under 2 percent, the sector has potential for aggressive growth in the future [3].

**Regulatory and Policy environment In India** [6]:

Over the years, the Indian Telecommunication Policy and Regulatory framework has evolved into an ill developed framework that facilitates effective policy formation and execution. The government has been making constant efforts to ensure that the regulatory framework is beneficial for the consumers as ill as the licensed operators. The policy and regulatory framework for telecommunications in India consists of, among others, the following key bodies:

- The Department of Telecommunication (DoT)
- The Telecom Regulatory Authority of India (TRAI)
- The Telecom Disputes Settlement and Appellate Tribunal (TDSAT)
- Wireless Planning Commission (WPC)
- Group on Telecom and IT (GoT – IT)

**TRAI:** [6]

Telecom Regulatory Authority of India was established as an independent body under the TRAI Act of 1997. The act was later amended in 2000. The entry of private players into the industry prompted the establishment of the act to effectively regulate the telecom players. TRAI safeguards the interests of the consumers through transparency, ensuring conformity with service quality benchmarks, enforcing measures to safeguard national security, fixing tariffs for players, counselling the government on matters relating to telecommunication development and tracking performance a efforts of all players within the industry.
DoT:[6]

DoT is accountable for policy formulation, monitoring performance reviews, ensuring international cooperation, overlooking research and development and granting licenses to operators, allowing them to provide basic and value added services in various cities and telecom circles as per the approved government policies. The Department also allocates spectrum and manages radio communications in close coordination with the International bodies. It is also responsible for enforcing wireless regulatory measures and monitoring the wireless transmission of all users in the country.

Regulatory evolution

Source: Press Search, KPMG Analysis

As per TRAI total active Mobile Subscriber in November 2010

Mobile Number Portability (MNP)[9]

Number portability: TRAI announced the rules and regulations to be followed for the Mobile Number Portability in their draft release on 23 September 2009. Mobile Number Portability (MNP) allows users to retain their numbers, while shifting to a different service provider provided they follow the guidelines set by TRAI. Users are expected to hold the mobile number with a given provider for at least 90 days, before they decide to move to the other provider. As per news reports, Government of India decided to implement MNP from December 31, 2009 in Metros & category ‘A’ service areas and by March 20, 2010 in the rest of the country.

<table>
<thead>
<tr>
<th>Number</th>
<th>Operator</th>
<th>Total Sub Figures</th>
<th>% Market Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Airtel</td>
<td>15,89,98,869</td>
<td>20.09%</td>
</tr>
<tr>
<td>2</td>
<td>Reliance Comm. Ltd. (CDMA+ GSM)</td>
<td>13,21,76,914</td>
<td>16.70%</td>
</tr>
<tr>
<td>3</td>
<td>Vodafone</td>
<td>13,09,20,732</td>
<td>16.54%</td>
</tr>
<tr>
<td>4</td>
<td>BSNL (GSM + CDMA)</td>
<td>9,03,09,414</td>
<td>11.41%</td>
</tr>
<tr>
<td>5</td>
<td>Tata Teleservices Ltd. (CDMA + GSM)</td>
<td>8,76,54,472</td>
<td>11.08%</td>
</tr>
<tr>
<td>6</td>
<td>Idea</td>
<td>8,68,00,809</td>
<td>10.97%</td>
</tr>
<tr>
<td>7</td>
<td>Aircel</td>
<td>5,35,00,469</td>
<td>6.76%</td>
</tr>
<tr>
<td>8</td>
<td>Uninor</td>
<td>2,15,77,497</td>
<td>2.73%</td>
</tr>
<tr>
<td>9</td>
<td>MTS</td>
<td>96,12,738</td>
<td>1.21%</td>
</tr>
<tr>
<td>10</td>
<td>Videocon</td>
<td>65,64,083</td>
<td>0.83%</td>
</tr>
<tr>
<td>11</td>
<td>MTNL</td>
<td>54,54,846</td>
<td>0.69%</td>
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<td>12</td>
<td>Loop Telecom Private Ltd.</td>
<td>30,79,281</td>
<td>0.39%</td>
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<tr>
<td>13</td>
<td>S-Tel LTD (GSM)</td>
<td>26,92,462</td>
<td>0.34%</td>
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<tr>
<td>14</td>
<td>HFCL (CDMA)</td>
<td>13,86,618</td>
<td>0.18%</td>
</tr>
<tr>
<td>15</td>
<td>Emtel tat</td>
<td>6,52,370</td>
<td>0.08%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>79,13,81,574</td>
<td></td>
</tr>
</tbody>
</table>

[7]: http://www.slideshare.net/PraveenSidola/indian-telecom-service-providers
Liberalization[8]

The process of liberalization in the country began in the right earnest with the announcement of the New Economic Policy in July 1991. Telecom equipment manufacturing was de-licensed in 1991 and value added services were declared open to the private sector in 1992, following which radio paging, cellular mobile and other value added services were opened gradually to the private sector. This has resulted in a large number of manufacturing units being set up in the country. As a result, most of the equipment used in telecom area is being manufactured within the country. A major breakthrough was the clear enunciation of the government’s intention of liberalizing the telecom sector in the National Telecom Policy resolution of 13th May 1994.

National Telecom Policy 1994 [10]

In 1994, the Government announced the National Telecom Policy which defined certain important objectives, including availability of telephone on demand, provision of world class services at reasonable prices, improving India’s competitiveness in the global market and promoting exports, attractive FDI and stimulating domestic investment, ensuring India’s emergence as major manufacturing / export base of telecom equipment and universal availability of basic telecom services to all villages. It also announced a series of specific targets to be achieved by 1997.

Telecom Regulatory Authority of India (TRAI)[10]

The entry of private service providers brought with it the inevitable need for independent regulation. The Telecom Regulatory Authority of India (TRAI) was, thus, established with effect from 20th February 1997 by an Act of Parliament, called the Telecom Regulatory Authority of India Act, 1997, to regulate telecom services, including fixation/revision of tariffs for telecom services which were earlier vested in the Central Government. TRAI’s mission is to create and nurture conditions for growth of telecommunications in the country in a manner and at a pace, which will enable India to play a leading role in emerging global information society. One of the main objectives of TRAI is to provide a fair and transparent policy environment, which promotes a level playing field and facilitates fair competition. In pursuance of above objective TRAI has issued from time to time a large number of regulations, orders and directives to deal with issues coming before it and provided the required direction to the evolution of Indian telecom market from a Governmentm owned
monopoly to a multi operator multi service open competitive market. The directions, orders
and regulations issued cover a wide range of subjects including tariff, interconnection and
quality of service as well as governance of the Authority. The TRAI Act was amended by an
ordinance, effective from 24 January 2000, establishing a Telecommunications Dispute
Settlement and Appellate Tribunal (TDSAT) to take over the adjudicatory and disputes
functions from TRAI. TDSAT was set up to adjudicate any dispute between a licensor and a
licensee, between two or more service providers, between a service provider and a group of
consumers, and to hear and dispose of appeals against any direction, decision or order of
TRAI.


The most important milestone and instrument of telecom reforms in India is the New
Telecom Policy 1999 (NTP 99). The New Telecom Policy, 1999 (NTP-99) was approved on
26th March 1999, to become effective from 1st April 1999. NTP-99 laid down a clear
roadmap for future reforms, contemplating the opening up of all the segments of the telecom
sector for private sector participation. It clearly recognized the need for strengthening the
regulatory regime as well as restructuring the departmental telecom services to that of a
public sector corporation so as to separate the licensing and policy functions of the
Government from that of being an operator. It also recognized the need for resolving the
prevailing problems faced by the operators so as to restore their confidence and improve the
investment climate.

Key features of the NTP 99 include: [12]

Strengthening of the Regulator.
National long distance services opened to private operators.
International Long Distance Services opened to private sectors.
Private telecom operators licensed on a revenue sharing basis, plus a one-time entry fee.
Resolution of problems of existing operators envisaged.
Direct interconnectivity and sharing of network with other telecom operators within the
service area was permitted.
Department of Telecommunication Services (DTS) corporatised in 2000.
Spectrum Management made transparent and more efficient.
All the commitments made under NTP 99 have been fulfilled; each one of them, in letter and
spirit, some even ahead of schedule, and the reform process is now complete with all the
sectors in telecommunications opened for private competition. Internet Service Providers
(ISPs) Internet service was opened for private participation in 1998 with a view to encourage growth of the Internet and increase its penetration. The sector has seen tremendous technological advancement for a period of time and has necessitated taking steps to facilitate technological ingenuity and provision of various services. The Government in the public interest in general, and consumer interest, in particular, and for the proper conduct of the telegraph and telecom services has decided to issue the new guidelines (Details) for grant of license of Internet services on non-exclusive basis. Any Indian company with a maximum foreign equity of 74% is eligible for grant of license.

**Broadband Policy 2004[12]**

Recognizing the potential of ubiquitous Broadband service in growth of GDP and enhancement in quality of life through societal applications including tele-education, telemedicine, e-governance, entertainment as well as employment generation by way of high speed access to information and web based communication; the government has announced Broadband Policy in October 2004. The main emphasis is on the creation of infrastructure through various technologies that can contribute to the growth of broadband services. These technologies include optical fibre, Asymmetric Digital Subscriber Lines (ADSL), cable TV network; DTH etc. Broadband connectivity has been defined as “Always On” with the minimum speed of 256 kbps. It is estimated that the number of broadband subscribers would be 20 million by 2010. With a view to encourage Broadband Connectivity, both outdoor and indoor usage of low power Wi-Fi and WI-Max systems in 2.4 GHz:2.4835 GHz band has been delicensed. The use of low power indoor systems in 5.15-5.35 GHz and 5.725-5.875 GHz bands have also been delicensed in January 05. The SACFA/WPC clearance has been simplified. The setting up of National Internet Exchange of India (NIXI) would enable bringing down the international bandwidth cost substantially, thus making the broadband connectivity more affordable. The prime consideration guiding the Policy includes affordability and reliability of Broadband services, incentives for creation of additional infrastructure, employment opportunities, induction of latest technologies, national security and brings in competitive environment so as to reduce regulatory interventions. By this new policy, the Government intends to make available transponder capacity for VSAT services at competitive rates after taking into consideration the security requirements. The service providers permitted to enter into a franchise agreement with cable TV network operators. However, the Licensee shall be responsible for compliance of the terms and conditions of the license. Further in the case of DTH services, the service providers permitted to provide
Receive-Only-Internet Service. The role of other facilitators such as electricity authorities, Departments of ITs of various State Governments, Departments of Local Self Governments, Panchayats, Departments of Health and Family Welfare, Departments of Education is very important to carry the advantage of broadband services to the users particularly in rural areas.

Target has been set for 20 million broadband connections by 2010 and providing Broadband connectivity to all secondary and higher secondary schools, public health institutions and panchayats by 2010. In rural areas, connectivity of 512 KBPS with ADSL 2 plus technology (on wire) will be provided from about 20,000 existing exchanges in rural areas having optical fibre connectivity. Community Service Centres, secondary schools, banks, health centres, Panchayats, police stations etc. can be provided with this connectivity in the vicinity of above-mentioned 20,000 exchanges in rural areas. DOT will be subsidizing the infrastructure cost of Broadband network through support from USO Fund to ensure that Broadband services are available to users at affordable tariffs.

**Tariff Changes [12]**

The Indian Telecom Sector has witnessed major changes in the tariff structure. The Telecommunication Tariff Order (TTO) 1999, issued by the regulator (TRAI), had begun the process of tariff balancing with a view to bring them closer to the costs. This supplemented by Calling Party Pay (CPP), reduction in ADC and the increased competition, has resulted in a dramatic fall in the tariffs. ADC has been abolished for all calls w.e.f. 1st October 2008.

The peak National Long Distance tariff for above 1000 Kms. In 2000 has come down from US$ 0.67 per minute to US$ 0.02 per minute in 2009 The International Long Distance tariff from US$ 1.36 per minute in 2000 to US$ 0.16 per minute in 2009 for USA, Canada & UK.

The mobile tariff for local calls has reduced from US$0.36 per minute in 1999 to US$ 0.009 - US$ 0.04 per minute in 2009.

The Average Revenue per User of mobile is between US$ 5.06 - US$ 7.82 per month Foreign Direct Investment (FDI)

In Basic, Cellular, Mobile, Paging and Value Added Services, and Global Mobile Personal Communications by Satellite, Composite FDI permitted is 74% (49% under automatic route) subject to grant of license from the department of Telecommunications subject to security and license conditions.

**FDI up to 74% (49% under automatic route) is also permitted for the following:[13]**

Radio Paging Service

Internet Service Providers (ISP's)

FDI up to 100% permitted in respect of the following telecom services: -
Infrastructure Providers providing dark fibre (IP Category I);
Electronic Mail; and

**Voice Mail[13]**
Subject to the conditions that such companies would divest 26% of their equity in favor of Indian public in 5 years, if these companies were listed in other parts of the world.
In telecom, manufacturing, sector, 100% FDI is permitted under automatic route.
The Government has modified method of calculation of Direct and Indirect Foreign Investment in sector with caps and have also issued guidelines on downstream investment by Indian Companies.
Guidelines for transfer of ownership or control of Indian companies in sectors with caps from resident Indian citizens to non-resident entities have been issued Investment Opportunities and Incentives An attractive trade and investment policy and lucrative incentives for foreign collaborations have made India one of the world’s most attractive markets for the telecom equipment suppliers and service providers.
No industrial license required for setting up manufacturing units for telecom equipment.Automatic approval of 100 percent foreign equity, technology fee up to US $ 2 million, royalty up to 5 percent of domestic sales and 8 percent for exports in telecom manufacturing projects. Foreign equity of 74% (49 % under automatic route) permitted for telecom services - basic, cellular mobile, paging, value added services, NLD, ILD, ISPs - and global mobile personal communications by satellite. The full reputability of dividend income and capital invested in the telecom sector.

**Opportunities[14]**
India offers an unprecedented opportunity for telecom service operators, infrastructure vendors, manufacturers and associated services to companies. A host of factors is contributing to enlarged opportunities for growth and investment in the telecom sector:
An expanding Indian economy with increased focus on the services sector
Population mix moving favorably towards a younger age profile
Urbanization with increasing incomes Investors can look to capture the gains of the Indian telecom boom and diversify their operations outside developed economies that are marked by saturating telecom markets and lower GDP growth rates. Inflow of FDI into India’s telecom sector during April 2000 to March 2009 was about Rs 275,444 million. Also, more than 8 percent of the approved FDI in the country is related to the telecom sector.
3.2.2 Organizations secured in this report include:

*Bharti Airtel, Idea/Spice, Vodafone, Bharat Sanchar Nigam Ltd (BSNL).*

VARIOUS TELECOM SERVICE PROVIDORS AND THEIR FUNCTIONS

Bharti Airtel Limited, commonly known as Airtel, is an Indian multinational telecommunications Services Company headquartered at New Delhi, India. It operates in 20 countries across South Asia, Africa and the Channel Islands. Airtel has GSM network in all countries in which it operates, providing 2G, 3G and 4G services depending upon the country of operation. Airtel is the world's third largest mobile telecommunications company with over 261 million subscribers across 20 countries as of August 2012. It is the largest cellular service provider in India, with 183.61 million subscribers as of November 2012. Airtel is the third largest in-country mobile operator by subscriber base, behind China Mobile and China Unicom.

Airtel is the largest provider of mobile telephony and second largest provider of fixed telephony in India, and is also a provider of broadband and subscription television services. It offers its telecom services under the Airtel brand, and is headed by Sunil Bharti Mittal. Bharti Airtel is the first Indian telecom service provider to achieve Cisco Gold Certification. It also acts as a carrier for national and international long distance communication services. The company has a submarine cable landing station at Chennai, which connects the submarine cable connecting Chennai and Singapore [16].

On 26 February 2013, Airtel announced that it had deployed Ericsson’s Mobile Broadband Charging (MBC) solution and completely modernized its prepaid services for its subscribers in India. As a part of the deal, Ericsson’s multi service MBC suite allows prepaid customers to have personalized profile based data charging plans. Prepaid customers will be able to customize their data plans across mobility, fixed line and broadband by cross bundling across multiple domains (2G, 3G, 4G/LTE & Wi-Fi). It will also offer flexible multi service charging in geographical redundant mode, making Airtel the first operator to implement geographical redundancy at such a large scale.

**Corporate Structure**

Airtel's initial corporate structure concentrated on the hierarchy of the operations inside the company as a whole. The structure depicted the corresponding operation/region of different in-charges and it didn't hold anyone responsible for each of its services. So, the
company found it better to restructure its corporate hierarchy. The transformed organisational structure has two distinct Customer Business Units (CBU) with clear focus on B2C (Business to Customer) and B2B (Business to Business) segments. Bharti Airtel’s B2C business unit will comprehensively service the retail consumers, homes and small offices, by combining the erstwhile business units - Mobile, Telemedia, Digital TV, and other emerging businesses (like M-commerce, M-health, M-advertising etc.). The B2C organization will consist of Consumer Business and Market Operations. The organisation have changed the style of the company as the company do not have any brand logo till the time.

**MOBILE SERVICES:**

Airtel operates in all telecom circles of India. Its network is present in 5,121 census towns and 457,053 non-census towns and villages, covering approximately 86.6% of the country’s population as of September 2012.

Airtel is the 6th most valued brand according to an annual survey conducted by Brand Finance and The Economic Times in 2010.

**3G**

On 18 May 2010, the 3G spectrum auction was completed and Airtel paid the Indian government 122.95 billion (US$2.3 billion) for spectrum in 13 circles, the most amount spent by an operator in that auction. Airtel won 3G licences in 13 telecom circles of India: Delhi, Mumbai, Andhra Pradesh, Karnataka, Tamil Nadu, Uttar Pradesh (East), Rajasthan, West Bengal, Himachal Pradesh, Bihar, Assam, North East, and Jammu & Kashmir. Airtel also operates 3G services in Maharashra & Goa and Kolkata circles through an agreement with Vodafone and in Gujarat through an agreement with Idea. This gives Airtel a 3G presence in 15 out of 22 circles in India.

On 20 September 2010, Bharti Airtel said that it had given contracts to Ericsson India, Nokia Siemens Networks (NSN) and Huawei Technologies to set up infrastructure for providing 3G services in the country. These vendors would plan, design, deploy and maintain 3G-HSPA (third generation, high speed packet access) networks in 13 telecom circles where the company had won 3G licenses. While Airtel awarded network contracts for seven 3G circles to Ericsson India, NSN would manage networks in three circles. Chinese telecom equipment vendor Huawei Technologies were introduced as the third partner for three circles.

On 24 January 2011, Airtel launched 3G services in Bangalore, Karnataka — its largest circle by revenue. With this launch, Airtel became the third private operator (fifth overall) to launch its 3G services in the country following Tata Docomo and Reliance Communications. On 27 January 2011, Airtel launched 3G in Chennai and Coimbatore in Tamil Nadu. On 27 July
2011, 3G services were launched in Kerala's 3 largest cities - Kochi, Kozhikode and Thiruvananthapuram.

Airtel 3G services are available in 200 cities through its network and in 500 cities through intra-circle roaming arrangements with other operators. Airtel had about 5.4 million 3G customers of which 4 million are 3G data customers as of September 2012.

4G

4G or BWA (Broadband Wireless Access) helps to give very high speed data connectivity on mobile in 8 telecom circles.

On 19 May 2010, the broadband wireless access (BWA) or 4G spectrum auction in India ended. Airtel paid 33.1436 billion (US$610 million) for spectrum in 4 circles: Maharashtra, Karnataka, Punjab and Kolkata. The company was allocated 20 MHz of BWA spectrum in 2.3 GHz frequency band. Airtel's TD-LTE network is built and operated by ZTE in Kolkata, Huawei in Karnataka, ZTE in Punjab and Nokia Siemens Networks in Maharashtra. On 10 April 2012, Airtel launched 4G services using TD-LTE technology in Kolkata, becoming the first company in India to offer 4G services. The Kolkata launch was followed by launches in Bangalore (7 May 2012), Pune (18 October 2012) and Chandigarh (25 March 2013).

Airtel plans to provide voice services for its TD-LTE subscribers through its existing GSM network, which would make it the only operator in India to combine voice with TD-LTE services through GSM network. Airtel selected Nokia Siemens Networks to deploy its Circuit Switched Fall Back (CSFB) voice solution in Airtel’s TD-LTE network in Pune. With CSFB, the network can transfer customers to the GSM platform to make and receive voice calls while retaining the TD-LTE network for data services.

On 24 May 2012, Airtel announced an agreement to acquire a 49% stake in the Qualcomm Asia Pacific (India). Qualcomm holds 4G spectrum and licenses in Delhi, Haryana, Kerala and Mumbai. As per the agreement, by the end of 2014, Airtel will assume full ownership and financial responsibility for 4G operations in these 4 circles.

Airtel had 3180 4G subscribers as of May 2012.

WiFi

Airtel has plans to launch WiFi services in India. It intends to start offering WiFi services in Delhi NCR, Mumbai and Bangalore in the initial phase. All plans will be on secure wireless broadband internet with unlimited usage and will be session or time based. Users can use the
service by finding a hot spot, selecting 'Airtel WiFi Zone', activating the voucher and then login to start browsing.

Airtel intends to partner with establishments to set up hotspots which will be termed WiFi Hangout for an establishment owned and WiFi Partner for the cafe and restaurant owners. Airtel WiFi Partners can offer services at zero investments and can earn commission on every WiFi session sold.

**Airtel Money**

Airtel has started a new Commerce platform called Airtel Money in collaboration with Infosys and SmartTrust (now Giesecke & Devrient). The platform was launched on April 5, 2012, at Infosys' headquarters in Bangalore. Using Airtel Money, users can transfer money, pay bills and perform other financial transactions directly on the mobile phone.

**Smart Drive**

Smart Drive is navigation app exclusively to Airtel customers. The app features voice-based turn by turn navigation, real time information update on traffic, approximate time of the travel on the basis of the traffic situation on the various routes and also lets users see their location on the map and plan the journey accordingly. It also suggests the subscriber an alternate route in case of traffic congestion on the normal route. According to Airtel, SmartDrive calculates the traffic on the basis of the number of GPS devices used on a particular road, their average speed, as well as historical trends of traffic on that route. Smart Drive also allows users to search for points of interest like restaurants, theatres and shopping malls. The app also allows users to keep a record of all trips they make when using voice navigation for later reference through the 'Trip Recorder' feature, Wikipedia information of places for which information is available and the ability to add frequently visited locations to favorites, in addition to weather information about the place.

Airtel will offer navigation at 10 per day or 99 per month. Live traffic will be cost 3 per day or 49 per month. Search and map viewer are available for free. The costs do not include data charges. Airtel states in SmartDrive's FAQ that data is only used when the user performs searches or calculates routes.

The app is developed by Wisepilot, a mobile navigation solutions provider and uses Navteq Maps for location and traffic info. It was launched on 12 September 2012. At the time of launch, it was available only in Bangalore, Mumbai and NCR. Services are currently available in Chennai. Service will be expanded to Pune and Hyderabad by December 2012.
Network Experience Centre
Airtel has a Network Experience Centre (NEC) which observes end to end customer experience, in near real time, along with the standard network elements on Airtel's operations. The NEC is located in Manesar, Haryana and went live on 31 October 2012. It is the first such facility in India and will be able to monitor Airtel's network performance across mobile, fixed line, broadband, DTH, M-Commerce, enterprise services, International Cable Systems and internet peering points from a single location. It will monitor all Airtel and partner NOCs. In case of an emergency, the NEC will enable the operator to prioritize actions to restore normalcy and reduce resolution time.

The NEC houses a video wall with 3600 square feet of solid state LED screen to monitor Airtel's telecom network. This is the world's biggest video wall for a telecom operator. Each cube in this wall is 1.6mx1.2 m and there are 175 cubes arranged in a 25x7 matrix. The clear span of the roof is 49 m x 18 m and the beams, which are fireproof and about 8 feet deep, have been specially designed to hold the structure without columns. The NEC was designed specifically to be used as a command center in case of national emergencies and natural catastrophes. The facility is earthquake proof and also provides for a single control of command and a fully redundant technology layout.

IPhone
The iPhone 3G was rolled out in India in 2008 by Airtel. However, high prices and contract bonds discouraged consumers and it was not as successful as the iPhone is in other markets of the world. Airtel introduced the iPhone 4 on 27 May 2011 and the iPhone 5 on 2 November 2012.

OUR VISION
“To provide global telecom services and delight customers.”

OUR MISSION
We will meet the mobile communication needs of our customers through:
• Error-free service delivery
• Innovative products and services
• Cost efficiency
• Unified messaging solutions
Vodafone Group Plc is a British multinational telecommunications company headquartered in London and with its registered office in Newbury, Berkshire. It is the world's second-largest mobile telecommunications company measured by both subscribers and 2011 revenues (in each case behind China Mobile), and had 439 million subscribers as of December 2011. Vodafone owns and operates networks in over 30 countries and has partner networks in over 40 additional countries. Its Vodafone Global Enterprise division provides telecommunications and IT services to corporate clients in over 65 countries. Vodafone also owns 45% of Verizon Wireless, the largest mobile telecommunications company in the United States measured by subscribers.

Vodafone has a primary listing on the London Stock Exchange and is a constituent of the FTSE 100 Index. It had a market capitalization of approximately £89.1 billion as of 6 July 2012, the third-largest of any company listed on the London Stock Exchange. It has a secondary listing on NASDAQ. The name Vodafone comes from Voice data fone, chosen by the company to "reflect the provision of voice and data services over mobile phones". Vodafone is a national cellular in India. It covers most of India. Now orange has been renamed as Vodafone with a red background instead of the previous orange color. It offers both prepaid and postpaid GSM cellular phone coverage throughout India and is especially strong in the major metros. It is often praised for its award winning advertisements which follow a non cluttered approach.

**KEY INVESTMENT HIGHLIGHTS**

- Unique spread of telecom operations in dynamic markets
- Consistent track record of creating value
- Management strength and depth
- Leading market positions
- Strong growth momentum

**STRATEGY**

Invest in emerging markets with;

- Low mobile penetration
- Sizeable population base
- Stable political and regulatory environment
Economic development
Build superior mobile operations
Product innovation
Branding
Customer service
Leverage the group resources
Maximize return

OUR VISION:[19]
To become a global mobile leader in terms of profit, customers and value, making mobile networks the "nervous system" of the networked economy spanning three major developed markets (Europe, US and Japan)

OUR MISSION
We will be the communications leader in an increasingly connected world. We value our customers above everything else and aspire to make their lives richer, more fulfilled and more connected. We must always listen and respond to each of our customers. We will strive to delight our customers, anticipating their needs and delivering.

IDEA Cellular is a publicly listed company, having listed on BSE & NSE in March 2007. It is the 3rd largest mobile services operator in India with wireless revenue market share at 15% in Q1 FY 2013, and subscriber base of over 117 million. Idea has consistently stayed ahead of the industry in VLR reporting, and has the 3rd highest base of active subscribers. The Idea is a pan-India integrated GSM operator and has its own NLD and ILD operations, and ISP license.

With traffic in excess of a billion minutes a day, Idea ranks among the Top 10 country operators in the world. Idea operates across all 22 service areas with 2G services and 3G services spread in over 3,000 towns and 10,000 villages.

The Idea has a network of over 97,000 2G and 3G cell sites covering the entire length and breadth of the country. The Idea has nearly 4,000 Service Centers are servicing Idea subscribers across the country, including over 650 special Experience Zones for 3G promotion. Idea’s service delivery platform is ISO 9001:2008 certified, making it the only
operator in the country to have this standard certification for all 22 service areas and the corporate office.

Idea’s thought leadership on Mobile Number Portability (MNP) has enabled it to stay as the top gainer with highest net gain, with over 3.7 million mobile users preferring Idea network. Idea’s strong growth in the Indian telephony market comes from its deep penetration in non-urban & rural markets. It has the highest share of rural subscribers as a percentage of total subscribers, amongst other GSM players. In fact, 2 out of every 3 new Idea subscribers come from rural/semi-urban India.[21]

Idea won the ‘Best Brand Campaign’ at the esteemed World Communication Awards 2011. It also recently won 3 Awards at the ET Telecom Awards 2012, in the following categories Customer Experience Enhancement, Excellence in Marketing and Innovative products, respectively.

It is also the winner of ‘The Emerging Company of the Year Award’ at The Economic Times Corporate Excellence Awards 2009. IDEA Cellular also received the prestigious Avaya GlobalConnect Award for being the ‘Most Customer Responsive Company’ in the Telecom sector in the year 2010. The company has received several other national and international recognitions for its path-breaking innovations in mobile telephony products & services. It won the GSM Association Award for ‘Best Billing and Customer Care Solution’ for 2 consecutive years. It was awarded ‘Mobile Operator of the Year Award – India’ for 2007 and 2008 at the Annual Asian Mobile News Awards.[22]

IDEA Cellular is an Aditya Birla Group Company, India’s first truly multinational corporation. The group operates in 33 countries, and is anchored by more than 132,000 employees belonging to 42 nationalities.

**IDEA BRAND MISSION**

The India footprint Idea
Anywhere connectivity-bringing India closer.

The Technology Advantage Idea
Tomorrow’s technology to enrich today.

The customer Focus Idea
Make a single interactive a lasting relationship.

The Employee Focus Idea
Nurture the roots that nurture our ideas.
IDEA SERVICES

3G

On 19 May 2010, the 3G spectrum auction in India ended. Idea paid 5768.59 crores for spectrum in 11 circles. The circles, it will provide 3G in are Andhra Pradesh, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Kerala, Madhya Pradesh, Maharashtra & Goa, Punjab, Uttar Pradesh (East) and Uttar Pradesh (West). [23]

On 28 March 2011, Idea launched 3G services in Gujarat, Himachal Pradesh and Madhya Pradesh. The launch sites were Ahmedabad, Shimla and Indore. This makes Idea the sixth private operator (eighth overall) to launch its 3G services in the country following Tata Docomo, Reliance Communications, Airtel, Aircel and Vodafone.[24]

An Idea currently supports up to 21.1 Mbit/s over 2G speeds of 256 kbits. However, different handsets support different speeds, from 384 kbit/s, 3.6 Mbit/s, 7.2 Mbit/s or 21.1 Mbit/s. Speeds also depend on the 3G plan/recharge that users opt for. The operator announced that IDEA 3G services will be available in 200 towns of 11 3G circles by mid-April 2011, progressively growing at the rate of ten tons per day to cover 750 towns by mid-2011 and 4000 tons by the end of 2012.[25]

Idea cellular has announced a cut of 70% in the tariff of its 3G services. On 23 November 2011 Idea Cellular launched two affordable 3G handsets in India: Idea 3G Smartphone Blade priced at 7,992 and Idea 3G Smartphone priced at 5,850. Both handsets are based on Android 2.2 Froyo. The Idea has also launched a Dual-SIM Android smartphone in India on June 15, 2012 named as Idea ID-918 at a price point of Rs.5,994 ($108 approx.) It features Android v2.3 OS, 3.2-inch capacitive touchscreen, 3G, Wi-Fi and 3.2 MP rear facing camera.

On 5 March 2013 Idea launched another 3G smartphone called Idea Zeal 3G, which is a Dual SIM phone with 3 Megapixel camera. [25]

Pan India 3G Coverage

Airtel, Vodafone and Idea have begun collaborating to provide 3G coverage to their customers pan India. The agreement aims to provide for these companies to offer 3G services to their customers in circles where they have not won any spectrum. It is expected that the 3 companies will be able to provide 3G services in all circles in India except Orissa where the three have not won any spectrum.[26]
3G Coverage[27]

The Idea’s 3G service is currently available in the following cities in 14 telecom circles.
1. Andhra Pradesh
2. Gujarat
3. Haryana
4. Himachal Pradesh
5. Madhya Pradesh
6. Chhattisgarh
7. Maharashtra
8. Goa
9. Kerala
10. Delhi
11. Kolkata
12. Kanpur
13. Uttar Pradesh (East)
14. Uttar Pradesh (West)

Customer service

The company has its retail outlets under the "My Idea" banner. The company has also been the first to offer flexible tariff plans for prepaid customers. It also offers GPRS services in urban areas. Idea Cellular won the GSM Association Award for “Best Billing and Customer Care Solution” for 2 consecutive years.

IDEA Cellular has been recognized as the 'Most Customer Responsive Company' in the Telecom sector, at the prestigious Avaya GlobalConnect Customer Responsiveness Awards 2010.

Competitors

Idea competes with 14 other mobile operators throughout India. They are Aircel, Airtel, BSNL, Loop Mobile, MTNL, MTS, Ping Mobile, Reliance Communications, S Tel, Tata DoCoMo, Tata Indicom, Uninor, Videocon, Virgin Mobile and Vodafone.[28]
Bharat Sanchar Nigam Limited (abbreviated BSNL) is an Indian state-owned telecommunications company headquartered in New Delhi, India. It is the largest provider of fixed telephony and fourth largest mobile telephony provider in India, and is also a provider of broadband services. However, in recent years the company's revenue and market share plunged into heavy losses due to intense competition in the Indian telecommunications sector.

BSNL is India's oldest and largest communication service provider (CSP). It had a customer base of 95 million as of June 2011. It has footprints throughout India except for the metropolitan cities of Mumbai and New Delhi, which are managed by Mahanagar Telephone Nigam (MTNL).

SERVICES

BSNL provides almost every telecom service in India. Following are the main telecom services provided by BSNL:

- **Universal Telecom Services**: Fixed wire line services and landline in local loop (WLL) using CDMA Technology called bone and Tarang respectively. As of 30 June 2010, BSNL had a 75% market share of fixed lines.
- **Cellular, Mobile Telephone Services**: BSNL is a major provider of Cellular Mobile Telephone services using GSM platform under the brand name CellOne & Excel (BSNL Mobile). As of 30 June 2010 BSNL has 13.50% share of mobile telephony in the country.
- **WLL-CDMA Telephone Services**: BSNL’s WLL (Wireless in Local Loop)service is a service giving both fixed line telephony & Mobile telephony.
- **Internet**: BSNL provides Internet access services through dial-up connection (as Sancharnet through 2009) as Prepaid, NetOne as Postpaid and ADSL broadband as BSNL Broadband BSNL held 55.76% of the market share with reported subscriber base of 9.19 million Internet subscribers with 7.79% of growth at the end of March 2010. Top 12 Dial-up Service providers, based on the subscriber base, It Also Provides Online Games via its Games on Demand (GOD)
Intelligent Network (IN): BSNL offers value-added services, such as Free Phone Service (FPH), India Telephone Card (Prepaid card), Account Card Calling (ACC), Virtual Private Network (VPN), Tele-voting, Premium Rae Service (PRM), Universal Access Number (UAN).

3G: BSNL offers the '3G' or the '3rd Generation' services which includes facilities like video calling, mobile broadband, live TV, 3G Video portal, streaming services like online full length movies and video on demand etc.

IPTV: BSNL also offers the 'Internet Protocol Television' facility which enables watch television through internet.

FTTH: Fibre To The Home facility that offers a higher bandwidth for data transfer. This idea was proposed on post-December 2009

Helpdesk: BSNL's Helpdesk (Helpdesk) provides help desk support to their customers for their services.

VVoIP: BSNL, along with Sai Infosystem - an Information and Communication Technologies (ICTs) provider - has launched Voice and Video Over Internet Protocol (VVoIP). This will allow to make audio as well as video calls to any landline, mobile, or IP phone anywhere in the world, provided that the requisite video phone equipment is available at both ends.

WiMax: BSNL has introduced India's first 4th Generation High-Speed Wireless Broadband Access Technology with the minimum speed of 256kbit/s. The focus of this service is mainly rural customer where the wired broadband facility is not available.

BSNL - MTNL MERGER PLANS [30]

On 23 February 2011, The Department of Telecommunications (DoT) said it wanted to revive a proposal for the merger of state-owned operators BSNL and MTNL. In its draft plan, the department while showing concern over the deteriorating performance of BSNL and MTNL said that BSNL and MTNL should be merged as they have complimentary operations and can combine their strengths for synergies. DOT said the government should set up a multi-stakeholder committee to develop a restructuring plan for both firms. The committee should have members from public enterprises, the DoT, department of IT and ministry of finance. However, the BSNL's staff unions are opposing this merger tooth and nail realising that MTNL is in a dire state and need help of its big brother, BSNL, to alleviate itself from getting into red balance sheet. MTNL in spite of having its operations in two big metro cities viz. New Delhi & Mumbai is realizing cascading fall in revenue and profits for the past 10 successive years. The telecommunication operators should focus on enterprise business,
services to government and the public sector, value-added services and technologies like 3G, the department recommends.

3G [31]
While it did not participate in the 3G auction, BSNL paid the Indian government Rs. 101.87 billion for 3G spectrum in all 20 circles, it operates in. State-owned MTNL provides 3G services in the other 2 circles - Delhi and Mumbai. Both these state-owned operators were given a head start by the government in the 3G space by allotting the required 3G spectrum, on the condition that each will have to pay an amount which will be equivalent to the highest bid in the respective service areas as and when the 3G auctions take place. BSNL recently launched a 3G wireless pocket router named Winknet Mf50 for 5800/- Indian rupees. It was released in collaboration with other telecom service provider Shyam networks. Winknet Mf50 enables you to connect multiple devices to the internet using a single SIM card.

COMPETITORS
BSNL competes with 14 other mobile operators throughout India. They are Aircel, Airtel, Idea, Loop Mobile, MTNL, MTS, Reliance Communications, Tata DoCoMo, Uninor, Videocon, Virgin Mobile and Vodafone.

QUALITY OF SERVICE [32]
BSNL goes by the motto "Connecting India, faster" and displays the same as their home page. The service quality of BSNL Customer service has been severely criticized as very poor. The mobile services provided by BSNL in almost every part of the country were and still are criticized for network outages and frequent call drops. Despite the criticism there is very negligible or no amount of work being carried out by the authorities to improve the performance and quality of the network. BSNL claims to offer seamless coverage in almost all forests of India in collaboration with the state forest department.

OUR VISION
To become the largest telecom Service Provider in South east Asia.

OUR MISSION
I. To provide world class State-of-art technology, telecom services on demand at an affordable price.
II. To provide world class telecom infrastructure to develop the country’s economy.
Table 3.8

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<td>80.46</td>
</tr>
<tr>
<td>Assam</td>
<td>0.20</td>
<td>14.6</td>
<td>47.7</td>
</tr>
<tr>
<td>Bihar &amp; Jharkhand</td>
<td>0.56</td>
<td>62.97</td>
<td>48.37</td>
</tr>
<tr>
<td>Delhi</td>
<td>2.9</td>
<td>42.95</td>
<td>239.91</td>
</tr>
<tr>
<td>Gujarat &amp; Daman &amp; Diu</td>
<td>1.82</td>
<td>54.32</td>
<td>92.56</td>
</tr>
<tr>
<td>Haryana</td>
<td>0.59</td>
<td>23.00</td>
<td>90.86</td>
</tr>
<tr>
<td>Himachal Pradesh</td>
<td>0.30</td>
<td>7.41</td>
<td>112.29</td>
</tr>
<tr>
<td>Jammu and Kashmir</td>
<td>0.20</td>
<td>6.57</td>
<td>56.92</td>
</tr>
<tr>
<td>Karnataka</td>
<td>2.48</td>
<td>56.63</td>
<td>98.22</td>
</tr>
<tr>
<td>Kerala &amp; Lakshadweep</td>
<td>3.18</td>
<td>34.51</td>
<td>107.85</td>
</tr>
<tr>
<td>Kolkata</td>
<td>1.18</td>
<td>25.25</td>
<td>Not available*</td>
</tr>
<tr>
<td>Madhya Pradesh &amp; Chhattisgarh</td>
<td>1.13</td>
<td>53.30</td>
<td>55.38</td>
</tr>
<tr>
<td>Maharashtra &amp; Goa (excluding Mumbai)</td>
<td>2.64</td>
<td>71.00</td>
<td>96.71</td>
</tr>
<tr>
<td>Mumbai*</td>
<td>3.0</td>
<td>35.93</td>
<td>Not available*</td>
</tr>
<tr>
<td>North East</td>
<td>0.25</td>
<td>8.76</td>
<td>64.74</td>
</tr>
<tr>
<td>Orissa</td>
<td>0.40</td>
<td>26.27</td>
<td>64.73</td>
</tr>
<tr>
<td>Punjab</td>
<td>1.44</td>
<td>31.17</td>
<td>110.22</td>
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<tr>
<td>Rajasthan</td>
<td>1.14</td>
<td>49.52</td>
<td>73.26</td>
</tr>
<tr>
<td>Tamil Nadu (including Chennai since 2005)</td>
<td>3.16</td>
<td>78.96</td>
<td>118.29</td>
</tr>
<tr>
<td>Uttar Pradesh (East)</td>
<td>1.20</td>
<td>77.74</td>
<td>62.65 (Combined)</td>
</tr>
<tr>
<td>Uttar Pradesh (West) &amp; Uttarakhand</td>
<td>0.79</td>
<td>55.12</td>
<td>62.65 (Combined)</td>
</tr>
<tr>
<td>West Bengal (excluding Kolkata) ***</td>
<td>0.62</td>
<td>46.79</td>
<td>80.56</td>
</tr>
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</table>

Population statistics are available state-wise only. North east circle includes Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, & Tripura. West Bengal circle includes Andaman-Nicobar and Sik
Summary

The objective of this research is to examine the Customer satisfaction and to further understand the relationships between satisfaction and the customer personal background variables like, “gender, age, Income, educational qualifications, Occupation” of the customers belonging to telephone service providers.

It was decided to adopt, descriptive-analytic research design as the most suitable design. A questionnaire was administered to account holders of telephone services customers in Hyderabad.

The data were processed using the SPSS statistical package and analysis were made using various statistical techniques including computation of means, frequencies, standard deviations, correlation coefficients, regression analysis, factor analysis and F-values using ANOVA.

The next chapter discusses in detail the analysis of the data collected using a research design presented in this chapter.