Chapter 1 – Introduction

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1.1 Introduction

In the twenty first century it is recognized all over the world that the telecom services are one of the most important tools for socio-economic development for a nation. Rapid growth and modernization of various sectors of the economy is possible only through the best communication facilities in the country. In the last decade it is evident that India is emerging as youngest and rapidly growing economies. Indian telecommunication industry has shown has the signs of profitability and it contributed a lot in significant growth in the country's economy. The ITI (ITI) is gaining recognition as one of the most lucrative markets in the world. In India there is a vast rural market which holds a enormous potential to drive the future growth of the telecom companies in India. Further, the government of India is taking initiatives for upgrading the telecom connectivity in rural India. Telecom service providers are taking efforts to enhance their services in the unconnected rural India.

Today Indian telecomm industry is using most sophisticated technology in the world. The use of the state of the art technology can be the foundation for further development of a modern telecomm network throughout the country. Indian telecommunication sector is growing at a speed of 45 percent during the recent years. This is possible due to contribution of both by the private and the public sectors telecommunication industry. The rapid pace in the telecom sector is especially due to liberal policies of the Government. Government policies provide easy market access for telecom equipment. It also provides a fair regulatory framework for offering affordable telecom services to the Indian consumers.

New Economic Policy in July 1991 has started the process of liberalization in India. Manufacturing of Telecom equipment was delicensed in India in 1991. In 1992 the government opened the value added services to the private sector. This government decision opened market gradually for radio paging, cellular mobile and other value added services to the private sector. It gave opportunity to several manufacturers to set up large number of manufacturing units in the country. As a result most of the equipment used in telecom area is being manufactured within the country. National Telecom Policy resolution of 13th May 1994 gave a major breakthrough in liberalization of telecommunication sector in the India.
1.2 History of Telecommunication

In ancient times, light and sound are the most common way of communication used by the people. These kinds of communications were apprehensive and dense. It indeed left room to enhancement in the kinds of communication as light and sound messages did not permit message. This is not the end of experiments. There were many scientists who were working on the project. The next step was taken in the year 1843 by Samuel Morse. During this year Samuel suggested a new way.

In 1879 there were several efforts which were made by Hughes, Baudot, and Gray. They developed the system to develop other codes. The code developed by Grey is still applications today in the Information and Communication Technology industry and in bar codes technology.

There is very limited application of the telegraph. To operate telegraph there is a need of trained professionals. There is limited use of telegraph especially in offices. Hence it is not useful for general public and its use is restricted to official use only. It leads to further research in the technology of communication. Efforts were made by the researchers to produce a machine which can transmit sounds rather than signals. The researcher achieved one major break through with the invention of transducers in the year 1850.

With the invention of telegraphs and telephones the problem of long distance communication was solved up to some extent. Still there was a lacuna in this system. This system neither guarantees the privacy nor the secrecy of communication.

Guglielmo Marconi invented the ‘wireless telegraph’ in 1885. In 1899, device simply known as ‘selector’ was invented by Almon Strowger. The machine was an electro-mechanic device. The invention never stopped. There was appearance of valve amplifiers in the year 1920 which improves the quality of sound in the devices. There was the invention of Television in the year 1923. There was appearance of transistors during the year 1947 which also helps in the communication system. The most important revolution in computers because of introduction of integrated circuits in the year 1958 also helped in the development of telecommunication system all over the
world. The invention of microprocessor gave real boost to the telecommunication industry in the year 1969.

There was invention of Electronic Numerical Integrator and Computer (ENIAC) in 1946. It was the beginning of the era of informatics. Combination of both Informatics and telecommunications lead to be the revolution in the field of communication. It helps in speedy data processing. It also helps in transferring data to various location with ease.

In 1938 there was introduction of new technology called Pulse Code Modulation (PCM). This technology started coding and decoding of voice signals and the digital transmission of the same. It became more and more popular. It avoids use of the transducers. There was a large scale use of PCM in the united States from the year 1962.

Paul Baran gave a new important concept of ‘packet switching network’ during the mid Sixties. He was an employee of the RAND Corporation. He rejected the conventional idea of circuit commutation network. He rejected the concept of hierarchy in the nodes of a network.

Vincent Cerf and Bob Kahn developed the TCP/IP protocol suite during the seventies. This invention helped in communication of computers through a series of logical layers and physical. The military project ARPANET in United States used the Packet switching network and TCP/IP. In 1983, US government gave ARPANET to universities and research centres which gave the birth of the latest technology called as internet.

There is constant use of internet in the development of telecommunication all over the world. Use of TCP/IP suite and the ISO/OSI gave high rate of flexibility in the development of telecommunication.

Barriers associated with time and distances were reduced due to use of traditional telecommunications networks. On the other hand the new multimedia era is changing the world on the fingertips of the phone. There is revolution in the telecommunication industry which helps in the growth of the industries such as entertainment, health care, education, advertising etc.
The GPRS was introduced in the two phases just like the GSM standard. During the year 2000-2001 Phase 1 was available to the mobile consumer commercially. There was availability of only Point to Point GPRS during this phase. There was no availability of point to multipoint users. In addition there was introduction of Point-to-Multipoint support. GPRS is commonly known as General Packet Radio Service.

2G was a trendsetter network. Because of this there is invention in multimedia mobiles. The mobiles with lower weight, multiple applications and other new features were introduced by the mobile manufacturers. Now the role of mobile is not only limited to communication but also it became hand held computer. It is multi functional device. Mobile became great entertainer as it has games, movies, songs and so on.

On 3rd December 1992, the first machine-generated SMS was sent in the United Kingdom. Later on in the year 1993 in Finland there was introduction of the first person-to-person SMS service. Today SMS is one of the first choices amongst the youngsters. It is one of the most important services of mobile which is used by almost all the mobile users irrespective of their age.

2G helps in the accessing many contents on mobile phone. There are many services available on mobile through 2G networks. There were many contents such as wall papers, ringing tones, web access, emails etc. are possible through use of 2G network.

There is a growing need of data services among the mobile consumers as the use of mobile became widespread and slowly mobile is becoming a part of life of average Indian. Demand for the service of broadband fixed line is also increasing all over the country. There is availability of low price handsets too which increases the demand of data plans. But still the speed of 2G network is not up to the mark. Consumers are not fully satisfied with the price and speed of the network.

The need of the consumers compelled the telecomm industry to introduce more sophisticated and speedy technology of 3G. The 3G revolution allowed mobile consumers to use multimedia applications on mobile. With the 3G data consumers can easily access audio, graphics and video applications. 3G network helped the
consumers to make video calls. But still these facilities are very expensive in India and rarely used by the consumers. These technological developments are happily accepted by the young consumers. The low cost made in China handsets helped the industry in further boost in the 3G data markets.

1.3 History of Mobile in India

Indian telecommunication market is predominant by GSM services. There is rapid and dramatic increase in the GSM subscribers in the last decade. The Indian telecommunication industry get a recognition all over the world for its rapid growth.²

There was a very slow and uneasy start of the Indian postal and telecom sectors in India. There was the first experimental electric telegraph line which was started between Kolkata and Diamond Harbour in the year 1850 by East Indian Company. At the beginning the Posts and Telegraphs department was occupied with a small corner of the Public Works Department in Kolkata.

Dr. O'Shaughnessy was the first Superintendent of Electric Telegraphs in India. He became the first Director General of Indian Telecommunication Department. Overseas Communications was administered by a Director-in-Chief who used to administer the department from London. There was merger of these two departments on 15th February, 1888.

There was beginning of drastic change in Indian Telecommunication since 1902. During the year Indian telecommunication changes from cable telegraph to wireless telegraph, radio telegraph, radio telephone, trunk dialing etc. Trunk dialing was a system where for making a long distance calls the subscriber need to call the operator and book his call.

In the year 1975, Government of India established the Department of Telecom (DoT). The Department of Telecom was responsible for telecom services in India. In the year 1975 the DoT was separated from Indian Post & Telecommunication. Decade later in the year 1986 Mahanagar Telephone Nigam Limited (MTNL) was established
by splitting the Department of Telecom. MTNL was established to provide services to Delhi and Mumbai only.

After liberalization telecom sector was opened by the government to the private sector investment. In 1995 Telecom Regulatory Authority of India (TRAI) was established by the Government of India. Indian telecommunication market shows its strength and high potentiality to the world. Many foreign players were willing to enter Indian telecommunication market because of larger scope for the market. In last 20 years of growth of telecommunication many foreign players successfully entered in the Indian telecommunication market.

Pager was useful to get text message on the device. It was the first wireless text service introduced in Indian telecommunication market. It was a unique way to be in touch with people in those days. Till 1998 the subscriber base for pager reached almost 2 million. But the life of pager starts declining due to introduction of mobile which was more sophisticated device to have voice communication. Initially pager messaging was done in English only. But as the companies get to know that there is a problem of English in Indian people hence they started paging services in regional languages too.

In the year 2002, Motorola stopped its paging services all over India. The paging in India was only limited to few metro cities only. Due to introduction of mobile phones most of the pager subscriber switched to the mobile and it ends the paging service in India. Indian pager operators were technically not updated themselves up to the industrial standard that is also one of the reasons of end of paging service in India.

On 48th Independence Day at country’s capital Delhi first mobile telephone service on non-commercial basis started in India. On 31st July 1995, the first cellular call was made in India. Today it is evident that there is increasing competition in telecommunication companies in India. Indian mobile services are one of the cheapest services in the world.

It is evident since 1981 that there is introduction of new mobile generations almost every ten years. There was 1st Generation introduced in the year 1981 and it was transmitting the data in analog form. There was 2nd Generation introduced in the
year 1992 and it was transmitting the data in digital form. In the year 2001 the 3 Generation was introduced with multimedia support and spectrum spread transmission. In the year 2011 4th Generation network was introduced which incorporates internet protocol packet switched networks operating at very high speeds.

One of the main advantages of the 4G technology is the exchange of data at very high speeds than the 3G. It is expected that 4G will bring the revolution in the way of work, life and play. This is very reliable and very high speed data transmissions service. It is expected that this will facilitate studio quality video and sound transmissions.

There are few countries where 4G network is available and now India is one of these countries. There are many other companies who are trying to introduce 4G in India. It is seen that the Government earned more than Rs 38,000 crores through 4G spectrum.

1.4 History of Air Tel

Bharti Airtel Limited is one of the key mobile operators in India. It is popularly known as Airtel. It is an Indian telecommunications company which is operating in 20 countries in the world. It operates across Africa, Asia and the Channel Islands. It provides a GSM network services in all countries. It provides 2G, 3G and 4G services in all countries where the company is providing mobile operations.

Bharti Tele-Ventures Limited was incorporated on July 7, 1995. It was established for promoting investments in telecommunications services in India and abroad. The company has many innovative operations introduced in India. This is also the first company which started providing services outside India. It is said that Bharati Airtel is first Indian Multinational Telecom Company. It is also known for the first private sector operator who launched National Long Distance Services in India. Airtel’s has bunch of services which include wireless telephone services and fixed line services too. It also provides long distance connectivity nationally and internationally. It also offers services such as Digital TV and Internet Protocol television (IPTV) Services in India as well as outside India too. It established its brand name as “Airtel” which is very famous in India. The company has its own
infrastructure all over the country. It established infrastructure for telecommunication through its subsidiary and joint venture entity. The Bharti Airtel is headed by the renowned businessman Sunil Bharti Mittal. The company is the first Indian company who achieved Cisco Gold Certification.

Bharti Airtel’s subsidiaries are operating all type of telecom services all over India. Bharti Airtel’s operations are broadly handled by two subsidiary companies. These companies are the Mobility Group and other is Infotel Group. Mobility group looks after the mobile services. The other company Infotel group looks after the National Long Distance (NLD), International Long Distance (ILD), fixed line, broadband, data, and satellite-based services. In April 2006 Bharti Tele-Ventures changed its name to Bharti Airtel. The company is based in the capital of India New Delhi. Bharti Airtel is a part of Bharti Enterprises which is one of the famous group of Mittal family in India.

Bharti Airtel runs its business in its unique style. The company outsourced most of its operation to the other companies except operations of marketing, sales and finance. Bharati is the first company in the world which works in this type of unique model of operation. Ericsson, Nokia Siemens Network and Huawei are the companies which run the network base stations, microwave links, etc. of Bharati Airtel. This helps Airtel to reduce the cost as well as to provide low call rates. Alcatel-Lucent manages the network infrastructure for the tele-media business of Bharati Airtel in India. Alcatel-Lucent was also in agreement with Bharati Airtel for setting up an Internet Protocol across the country on 31st May 2012.

Airtel is offering telecommunication services in South East Asia, India, Sri Lanka and Bangladesh. It is serving 188 million customers in these geographies. As on March 31, 2012, Bharti Airtel has 181.3 million mobile customers across India. This makes it the largest wireless operator in India. It is also largest wireless operator in India as per the revenue collection too. It offers almost all type of telecommunication services to the subscribers. The company provides postpaid and prepaid mobile connections to the subscribers.

Airtel is also working in Bangladesh. Airtel has 5.2 million mobile subscribers in Bangladesh. Airtel provides mobile services in 64 districts of Bangladesh. There are around 81,000 retailers across the country who are helping for distribution of
services. The growing economy of Bangladesh gave unique market opportunity for telecom services and Airtel is trying to take advantage of the same.

Airtel provides telecommunication services to 17 countries in Africa. These countries are Chad, Burkina Faso, Nigeria, Niger, Democratic Republic of Congo, Congo B, Gabon, Seychelles, Kenya, Niger, Ghana, Rwanda, Madagascar, Sierra Leone, Tanzania, Zambia Malawi, and Uganda. It introduced Airtel in Africa. Airtel is now the largest telecommunication service providers in the African continent. It is growing network and currently provides telecommunication services to 53.1 million mobile subscribers in the African Continent. It introduces 3G services in 5 more countries in the year 2011-12 namely, Ghana, Sierra Leone, Kenya, Nigeria and Tanzania. Bharati Airtel is offering 3G services in 7 countries of Africa.

Bharati Airtel had a total of 20,479 employees as on March 31, 2012,

1.5 History of MTNL

Mahanagar Telephone Nigam Ltd. (MTNL) was established on 1st April, 1986 by the Government of India. It was incorporated as a Public Limited Company under the Companies Act, 1956. It was set up to upgrade the quality of telecom services in Delhi and Mumbai. It was started to expand the telecom network and to introduce new services in these cities. It also helped in increasing revenue of telecom department by expanding the business in India’s key metros-Delhi and Mumbai.

The incorporation of MTNL is made especially to plan, establish, develop, provide, operate and maintain all types of telecommunication services in Delhi and Mumbai. These telephone services include Telephone, telex, wireless, data communication and other telecommunication services. The company was enjoying status of government monopoly in Mumbai and Delhi until 1992. Thereafter the telecom sector was opened to other private service providers.

The business of MTNL was not only limited to only two metros. MTNL has started Mahanagar Telephone Mauritius Limited (MTML) in Mauritius which was a wholly owned subsidiary of MTNL. This company was established to provide mobile and international long distance services in Mauritius. Mahanagar Telephone Mauritius
Limited is the second largest mobile operator in Mauritius. The company obtained necessary licenses in January 2004 to provide telephone services in Mauritius. Mahanagar Telephone Mauritius Limited has already started telecommunication services such as ILD, CDMA etc. in Mauritius.

The mission of the company is “To remain market leader in providing world class Telecom and IT related services at affordable prices and to become a global player”.

Mahanagar Telephone Limited is following the principle of Corporate Governance. It is assumed that the principles and Corporate Governance look after strict implementation of laws, procedures and practices. It helps in giving information about managerial decisions to its shareholders, creditors, customers, the state and employees.

The major components of Corporate Governance of Mahanagar Telephone Mauritius Limited include:

1. In the constitution of the Board of Directors of Mahanagar Telephone Limited.
2. Report of key information to the Board of Directors.
3. Proper functioning of Audit Committee of MTNL.
4. Transparency and desirable disclosures by MTNL.

MTNL Board comprises of four non-executive Directors. There are three full time Directors which are Director (Technical), Director (Finance) and Director (Human Resource). There are two ex-officio Directors on the Board of . There are two Govt. nominees on the Board. The meetings of the Board are held regularly, as per the agenda served with the notice of the meeting. Besides regular Board Meetings, the company can held emergency Board meetings as and when required.

One of the important objectives of the company is to raise the necessary finance to meet its own developmental needs and also that of the telecommunications board of the Department of Telecommunication. The Main objectives and aims of Nigam are as follows:

1. To expand customer base and services.
2. To provide latest technology and services to the customers, at affordable prices.

3. To achieve the highest level of customer satisfaction and delight.

4. To diversify in other areas for providing telecom services at national and international levels.

5. To provide convergence of Telecom, Information Technology and related services.

6. To improve productivity by training and redeployment of man-power.

7. To work for social benefits.

In the past 26 years, the company has emerged as India’s leading Telecommunication Company. It is also one of the Asia’s leading telecommunication companies. The MTNL has its strong financial base. Mahanagar Telephone Nigam Limited has a subscribers base of 5.47 million. The company is also far ahead on the technological ground as it is using state-of-the-art digital mode network.

The Government of India currently holds 56.25% stake in the Mahanagar Telephone Nigam Limited as on 31st March, 2012. All shares of the Government of India are in the name of President of India. Out of the total shares held by government there are 59,99,984 shares issued without payment in cash.

Since 1997, the Company took various steps to provide various telecommunication services to its subscribers in two metros – Mumbai and Delhi. The company provides various telecommunication services such as Mobile, fixed line, internet, high speed broadband, Voice Mail, Radio Paging and ISDN etc. It also provides various phone plus services such as dynamic locking, call transfer, call waiting, hot line etc. to its subscribers. The company also provides to its subscribers the system called as Interactive Voice Response System which is used especially for local assistance changed number information and fault booking system. MTNL also introduced a CDROM version of the telephone directory. The MTNL provides an online directory enquiry too. The Company also introduced wireless in the local loop (WLL) services in Mumbai and Delhi which is known as Garuda. It also started its GSM Mobile services too. The company is working on the comfort of the subscribers
by providing service of payment of bills through electronic clearing system. It also provides online payment of bills to its subscribers.

In the year 1998, the board of the directors of Mahanagar Telephone Nigam Ltd approved a proposal for joint venture with the Telecom Consultants India Ltd. (TCIL). This joint venture is for operating basic and cellular services in Delhi and Mumbai. Mahanagar Telephone Nigam Ltd developed a software to protect customers from telephone tapping and reading by external sources. In 1998 MTNL took the initiative and launched India’s first toll-free service in Delhi.

In the year 1997, Mahanagar Telephone Nigam Ltd. Listed its GDR in the market. MTNL’s GDR issue was voted amongst the top 10 Best International Equity Issue in 1997 Within a few weeks of listing. The GDR was awarded as fourth best Asian equity issue of 1997 and second best Indian equity issue of 1997.

In the year 2000, MTNL joined its hand with Master Card International. It helps MTNL to accepta payment of telephone and other services bills through credit cards.

Dolphin is one of the much-awaited mobile service of MTNL. This service was launched in Delhi on 6th February 2002. MTNL also launched its pre-paid cellular card called as ‘Trump’ in Delhi and Mumbai. The tariff of ‘Trump’ was 50 per cent lower than the tariff of other private players.

There is a Joint Venture between Software Technology Parks of India and Mahanagar Telephone Nigam Limited with the name MTNL-STPI IT Services Ltd. This joint venture is of 50:50. This joint venture was started in the year 2006. Software Technology Parks of India has a rich experience in Internet Service Providing (ISP). This Joint Venture provides various offers niche portal services to the Indian consumers. The joint venture was helpful to bring an all-round economic development. The joint venture aims to popularize the .in domain across the world.

Mahanagar Telephone Nigam Limited has restructured Millennium Telecom Ltd. (MTL). It is now working as a Joint Venture company of Mahanagar Telephone Nigam Limited and Bharat Sanchar Nigam Limited with equal equity participation respectively. Millennium Telecom Ltd. is expected to enter into new business of
international long distance operations. The company is going to undertake a project of submarine cable system all over India.

There is another joint venture of Mahanagar Telephone Nigam Limited called as United Telecommunications Ltd. (UTL). This joint venture was incorporated in the year 2001. This company is registered under the Companies Act of Nepal. United Telecommunications Ltd. Is a bunch of engineering team which follows the Organisation and Method procedures scrupulously which ensures fault free network round the clock. The company is running its operations from internal source of internal revenue.

Mahanagar Telephone Nigam Limited introduced its 3G services in Mumbai and Delhi with the name ‘MTNL 3G Jadoo’. With the introduction of 3G services the subscribers can enjoy services such as video calling, mobile TV and mobile broadband. This service was started by Mahanagar Telephone Nigam Limited from 11th December, 2008. Mahanagar Telephone Nigam Limited also provides 3G data card which is known as internet dongle for non mobile users to use internet. Mahanagar Telephone Nigam Limited started installing 15 lakh 3G lines at the initial stage.

Mahanagar Telephone Nigam Limited is one of the largest Internet Service Provider (ISP) in two metros of Mumbai and Delhi. Mahanagar Telephone Nigam Limited is also the third largest ISP in India. MTNL provides truly unlimited broadband plans without any “Fair Usage Policy”.

Mahanagar Telephone Nigam Limited launched Fibre-to-the-home (FTTH) on 9 November 2011. This is a triple play high speed broadband service with core network speed up to 10 Gbit/s in Delhi.\textsuperscript{2} FTTH, with core network speed up to 1 Gbit/s, was launched in Mumbai on 1 March 2012.

Mahanagar Telephone Nigam Limited had a total of 41,611 employees as on March 31, 2012.\textsuperscript{3}

\textbf{1.6 Growth of Telecommunication Sector in India}
In 1995, the first mobile telephone service started operating in metro cities of India, after the telecom sector was opened up by the Government for private investment, as a part of Liberalization-Privatization-Globalization policy. A year later, the services spread towards rest of the geographical areas of India. During the initial five to six years, the average growth of mobile phone subscribers was very tardy; probably due to the high price of mobile phone equipment and air time charges of the service providers.\(^4\)

There are several consumer friendly initiatives taken by telecom operators after the New Telecom Policy in 1999. There is continuous growth in the mobile subscriber in India. In September 2004 mobile subscribers crossed the fixed-line connections.

In India, the rapid growth of the sector has already led to significant benefits accruing to the wider society and also the economy on the whole. The mobile services industry also supports a large ecosystem of other industries/sectors such as telecom infrastructure including towers and network equipment, IT /ITES services, logistics, and retail sales (sales and distribution).

For instance, the Indian mobile sector is likely to provide direct employment to 2.8 million people and indirect employment to 7 million people by 2012.\(^5\)

Initiatives taken by Indian mobile operators supported by regulatory policy initiatives have transformed the telecom landscape in the span of just over a decade. The initiatives include widespread network rollout, massive distribution chains, manufacturing and sourcing of low-cost handsets, low call rates, extended pre-paid validity schemes and small-value pre-paid recharges. The Indian mobile industry has been successful in providing affordable telecom services, thereby empowering wider economic growth across the country and contributes to government finances. In little over a decade, India’s mobile connections have grown from 1 million to 752 million. In the year 1998, India had less than 1 million mobile connections, whereas at the end of 2010, India had \(~752\) million connections, 7 representing \(~63\%\) mobile teledensity. The growth of the sector has favourably impacted the lives of ordinary citizens across India by placing in their hands the power of immediate communication, which was earlier denied to them due to abysmally low fixed-line teledensity. Proliferation of mobile services in a country has led to increased economic activity, creation of
employment and rise in income levels of both individuals and companies. As per a World Bank study, for low and middle income economies, 10% increase in mobile penetration can lead to additional GDP growth of 0.81%.  

However, after a phase of robust growth over the recent past, the Indian telecom juggernaut appears to be slowing down. The number of net mobile connection additions in May 2011 was around 35% less as compared with March, 2011. In the last two years the telecommunication sector is showing slowdown in the growth which is a matter of great concern. Still the growth journey is incomplete and a lot to go. Considering that only 70% of the reported connections are active and 15% of subscribers use multiple SIMs, more than half of the people in the country have not yet subscribed to mobile services and 2 most of these reside in rural areas. This is evidenced by rural mobile teledensity of only 35% as compared with urban mobile teledensity of 56% in June 2011.

Table 1.1 shows the Monthly Mobile Subscriber in India in millions since January 2002. It clearly indicates rapid growth in the subscribers in India. Initially growth rate was very slow, but gradually it rises at a very rapid speed. In 2002 average monthly addition was 4.4 million and in 2012 it was 118 million. In the year 2010 there was highest average monthly addition of 189.3 million subscribers. During the 2002 to 2011, in the month of November 2010 there was highest average monthly addition of 228.8 million subscribers. There were lowest monthly subscribers in the month of January 2002, which were 2.8 million subscribers. First time, in March 2008 number of monthly subscribers crossed 100 millions. The monthly subscribers based crossed 200 million subscribers in the month of March 2010. There was continuous growth in the average monthly subscribers from 2002 to 2010, but there was sudden decline in the average monthly subscribers during the year 2011. Mainly since July 2011 there was sudden drop in subscribers.
### Table 1.1 Monthly Mobile Subscriber (in millions) in India since January 2002

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<th>February</th>
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<td>108.1</td>
<td>1132.6</td>
<td>94.4</td>
</tr>
<tr>
<td>2009</td>
<td>154.1</td>
<td>138.2</td>
<td>156.4</td>
<td>119</td>
<td>115.8</td>
<td>120.4</td>
<td>143.8</td>
<td>150.8</td>
<td>149.8</td>
<td>166.7</td>
<td>176.5</td>
<td>191</td>
<td>1782.5</td>
<td>148.5</td>
</tr>
<tr>
<td>2010</td>
<td>199</td>
<td>187.6</td>
<td>205.9</td>
<td>169</td>
<td>163.1</td>
<td>179.8</td>
<td>169.2</td>
<td>181.8</td>
<td>171</td>
<td>189.8</td>
<td>228.8</td>
<td>226.2</td>
<td>2271.2</td>
<td>189.3</td>
</tr>
<tr>
<td>2011</td>
<td>189.9</td>
<td>202</td>
<td>202.1</td>
<td>153.4</td>
<td>133.5</td>
<td>114.1</td>
<td>66.7</td>
<td>73.4</td>
<td>79</td>
<td>77.9</td>
<td>29.7</td>
<td>94.7</td>
<td>1483.2</td>
<td>118</td>
</tr>
</tbody>
</table>

Source: TRAI
Figure 1.1 Monthly Mobile Subscriber (in millions) in India

Figure 1.1 shows the Monthly Mobile Subscriber (in millions) in for the period 2002 to 2011. The Figure clearly shows continuous increasing trend in average monthly subscribers till the year 2010. There is sudden decrease in monthly subscribers in the year 2011 which is shown in the graph.

Table 1.2 Annual Additions to Mobile Subscribers

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual Additions</th>
<th>Percentage Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>52.3</td>
<td>--</td>
</tr>
<tr>
<td>2003</td>
<td>174.9</td>
<td>334.42%</td>
</tr>
<tr>
<td>2004</td>
<td>194.9</td>
<td>111.44%</td>
</tr>
<tr>
<td>2005</td>
<td>278.6</td>
<td>142.95%</td>
</tr>
<tr>
<td>2006</td>
<td>641.4</td>
<td>230.22%</td>
</tr>
<tr>
<td>2007</td>
<td>852.7</td>
<td>132.94%</td>
</tr>
<tr>
<td>2008</td>
<td>1132.6</td>
<td>132.83%</td>
</tr>
<tr>
<td>2009</td>
<td>1782.5</td>
<td>157.38%</td>
</tr>
<tr>
<td>2010</td>
<td>2271.2</td>
<td>127.42%</td>
</tr>
</tbody>
</table>
Table 1.2 shows Annual Additions to Mobile Subscriber in millions in India since January 2002. It clearly indicates rapid annual growth in the subscribers in India. There is fluctuating growth rate during the period. Initially growth rate was very high in the year 2003 where there was growth of 334.42 percent during the year. It was the period when mobile was newly introduced. In the year 2006 there was almost more than double rise in the subscribers. In the year 2011 there is reduction in the subscribers addition and there is almost 34.70 percent fall in the subscribers. It shows rising trend up to year 2010 and thereafter there was a sudden fall in the subscribers. In the year 2002, 52.3 subscribers were added which were lowest annual additions and 2271.2 million subscribers were added in the year 2010 which were highest subscribers. Table 1.3 shows the details of mobile operators in India:

Table 1.3 List of Mobile Operators in India in the Year 2010-11

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Operator’s Name</th>
<th>Subscribers (In Millions)</th>
<th>Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Airtel</td>
<td>162.20</td>
<td>Bharti Enterprises (64.76%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SingTel (32%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Vodafone (4.4%)</td>
</tr>
<tr>
<td>2</td>
<td>Vodafone</td>
<td>134.57</td>
<td>Vodafone India (100%)</td>
</tr>
<tr>
<td>3</td>
<td>Reliance Communication</td>
<td>135.72</td>
<td>Reliance ADAG (67%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Public (33%)</td>
</tr>
<tr>
<td>4</td>
<td>Idea Cellular</td>
<td>89.5</td>
<td>Aditya Birla (80.9%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Axiata Group Berhad (19.1%)</td>
</tr>
<tr>
<td>5</td>
<td>BSNL</td>
<td>91.83</td>
<td>State-owned</td>
</tr>
<tr>
<td>6</td>
<td>Tata</td>
<td>89.14</td>
<td>Tata Teleservices (74%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NTT DoCoMo (26%)</td>
</tr>
<tr>
<td>7</td>
<td>Aircel</td>
<td>54.84</td>
<td>Maxis Communications (74%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Apollo Hospital (26%)</td>
</tr>
<tr>
<td>8</td>
<td>Uninor</td>
<td>22.79</td>
<td>Telenor (67.25%)</td>
</tr>
</tbody>
</table>
The year 1995 was one of the important years in respect of ITI as mobile services were introduced during the year. Today it is evident that various companies have the Licenses in 20 circles which are contiguous to Indian states and four metros. In India government is following a policy of monopolistic competition in telecom market. There are many buyers and sellers in the market but they can be distinguished through their brand names at the initial stage there was a government monopoly in the telecommunication in India. But now there is a very tough and competitive telecom market in India due to entry of private players. There are many operators who have multiple licenses for working in one or more circles. There are many companies who are working in almost all the circles. There are few circles where only 2-3 players are providing services. Licenses were awarded by the bidding process to the companies who pay the highest license fees that were bid by the operators. These fees were for the spectrum. Spectrum is a scarce resource. Government generated large revenues by selling spectrum to the operators. For the first few years the mobile services sector saw a lot of turmoil which ended with the government moving over to a revenue sharing regime in 1999. After that mobile services took off, but not without a few hiccups. In a span of 15 years the number of customers has reached
584.32 million in 2010. At the same time number of operators were also increased which lead to greater competition in the cellular industry.

**Figure 1.2 Operator wise Mobile Subscribers’ in India**

Figure 1.2 is a snapshot of the mobile market in March 2011. There are 7 fairly large operators and 8 very small ones. Among the large ones Bharati predominates while Reliance and Vodafone are neck and neck at second place. BSNL, Tata and Idea are some distance behind with Aircel bringing up the rear. The 8 small operators are mostly ones who have just begun their operations. MTNL is a government operator, initially formed to provide fixed access services only in Delhi and Mumbai.

India was divided into 23 circles when there was introduction of the cell phones in the country. There is a need to take separate licenses for each of the circles in 1994. In India telecom Circles are divided into 4 groups. These groups are ‘metro circles’, ‘A’, ‘B’, and ‘C’ circles. The ‘metro’ circles cover only four important metro cities of India. These cities are Delhi, Mumbai, Chennai and Kolkata. Details of circles are shown in Table 1.4.
Table 1.4 Mobile Circles in India

<table>
<thead>
<tr>
<th>Sr.</th>
<th>Circle</th>
<th>Cities/States Covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Metros</td>
<td>Delhi, Mumbai, Chennai, Kolkata</td>
</tr>
<tr>
<td>2</td>
<td>A Circle</td>
<td>Maharashtra, Gujarat, Andhra Pradesh, Karnataka, Tamil Nadu</td>
</tr>
<tr>
<td>3</td>
<td>B Circle</td>
<td>Kerala, Punjab, Haryana, Uttar Pradesh, Rajasthan, Madhya Pradesh, West Bengal, Andaman &amp; Nicobar</td>
</tr>
<tr>
<td>4</td>
<td>C Circle</td>
<td>Himachal Pradesh, Bihar, Orissa, Assam, North Eastern States, Jammu &amp; Kashmir</td>
</tr>
</tbody>
</table>

Source: TRAI

During the year 1995 when mobile was newly introduced in India the Telecom companies were Charging Rs 32 per minute for outgoing call. During that period incoming call was also chargeable around Rs. 16 per minute. But recently it is seen that there is a cut throat competition in telecommunication market in India. Today India is one of the countries in the world where there are lowest calling rates.
Table 1.5 Average Rate Per Minute

<table>
<thead>
<tr>
<th>Year</th>
<th>Average Rate Per Minute</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>15.50</td>
</tr>
<tr>
<td>1999</td>
<td>15.50</td>
</tr>
<tr>
<td>2000</td>
<td>7.30</td>
</tr>
<tr>
<td>2001</td>
<td>4.30</td>
</tr>
<tr>
<td>2002</td>
<td>3.80</td>
</tr>
<tr>
<td>2003</td>
<td>3.50</td>
</tr>
<tr>
<td>2004</td>
<td>2.00</td>
</tr>
<tr>
<td>2005</td>
<td>1.20</td>
</tr>
<tr>
<td>2006</td>
<td>1.10</td>
</tr>
<tr>
<td>2007</td>
<td>1.00</td>
</tr>
<tr>
<td>2008</td>
<td>0.80</td>
</tr>
<tr>
<td>2009</td>
<td>0.60</td>
</tr>
<tr>
<td>2010</td>
<td>0.50</td>
</tr>
<tr>
<td>2011</td>
<td>0.30</td>
</tr>
</tbody>
</table>

Source: TRAI

Tata Teleservices Limited was the first operator who introduced per second plan in India. Introduction of per second plan is the reason for pulling down the telecom tariffs to a new low. Initially Reliance Communication created a related impact in the market when the Reliance Group entered the telecom industry. During their introduction only, they introduced with 40 paise per call tariff in the year 2004. Due to competition mobile subscribers were benefited in terms of the lowest tariffs in the world. Almost all operators in the market reduced their tariff rates due to competition.iii

According to Macquarie in its research report, “This rapid re-basing in pricing by an incumbent will seriously affect and threaten smaller, regional and startup operators, perhaps shortening the period before which industry consolidation inevitably takes place”
It is really difficult for small telecom player to survive in this cut throat competition. They may be forced to shut down their business as it will be difficult them to compete with bigger players. Many small players sold their businesses to big players due to reduction in the margin of operation in the telecom business. Indian mobile tariffs are amongst the lowest in the world. There is a competitive pressure which is continuing to push tariff lower. Telecom companies need to resort separate tactics to fight with the tariff war. This price war would prove damaging to the industry in the long term.

**Figure 1.3 Average Rate Per Minute**

India telecom industry is one of the fastest growing mobile services industry in the world. There is a continuous subscriber addition in the industry. Still there is an opportunity for further growth in the telecom sector in India. There is a decline in the rates of revenue growth and margins in the telecom industry in India. This is only because cut throat competition in the telecom market in India.
Table 1.6 Minutes of Usage Per Subscriber

<table>
<thead>
<tr>
<th>Year</th>
<th>Minutes of Usage Per Subscriber</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>204</td>
</tr>
<tr>
<td>2003</td>
<td>284</td>
</tr>
<tr>
<td>2004</td>
<td>321</td>
</tr>
<tr>
<td>2005</td>
<td>388</td>
</tr>
<tr>
<td>2006</td>
<td>448</td>
</tr>
<tr>
<td>2007</td>
<td>465</td>
</tr>
<tr>
<td>2008</td>
<td>444</td>
</tr>
<tr>
<td>2009</td>
<td>392</td>
</tr>
<tr>
<td>2010</td>
<td>369</td>
</tr>
<tr>
<td>2011</td>
<td>332</td>
</tr>
</tbody>
</table>

Source: TRAI

There are almost 10 to 12 operators in each circle. This has led to a free-fall in tariffs due to intense competition. There is another matter of concern to the telecom operators in India. There is a fall in Minutes of Use per connection per month. It shows a drastic fall from a peak of 465 minutes in 2007 to 369 minutes at the end of 2010. This is a decline of more than 20%. The decline in the Minutes of Usage even with falling tariffs point to the limitation of the price elasticity of Minutes of Usage. Thus negative influence on revenues due to falling tariffs is not being compensated by increase in the Minutes of Usage. viii

The scenario of cut throat competition and reaching saturation point of subscribers is evident all over the world and India is not the exception for the same. Many mobile operators in India is about to reach saturation points in consumer penetration. Indian telecom companies have a fear of hitting a growth wall. Almost all the telecom companies are facing competition, declining average revenue per user and continuous rising costs. This scenario is hitting the profitability of the telecom companies.
From the year 2002 to the year 2007 there was an increasing trend in the Minutes of Usage Per Subscriber as shown in the Figure 1.4. But from the year 2008 we can see the declining trend in Minutes of Usage Per Subscriber.

**Figure 1.4 Minutes of Usage Per Subscriber**

1.7 Important Regulations in Telecommunication in India

Following are some of the important regulations in telecommunication in India:

1. **The Indian Telegraph Act, 1885**

   The Indian Telegraph Act was introduced in the year 1985 by the British rulers in India. This Act is one of the oldest acts related with telecommunication in India. This legislation is still effective in India with certain modifications. This act to amend the law relating to telegraphs in India.

2. **The Indian Wireless Telegraphy Act, 1933**

   This is also one of the important regulations related with the wireless communication in India. This act was enacted in the year 1933. The objective of the act is to regulate the possession
of wireless telegraphy equipments in India. This act deals with the possession of wireless telegraphy equipments. According to this act no person is allowed to possess any telecommunication equipments without the telecommunication licenses. The Act also levies penalties if any wireless telegraphy apparatus is held without a valid license.

3. The Telecom Regulatory Authority of India Act, 1997

The Telecom Regulatory Authority of India Act was introduced by the Indian parliament in the year 1997. Enactment of the act enabled the establishment of the Telecom Regulatory Authority of India (TRAI). The Telecom Regulatory Authority of India Act empowered the Telecom Regulatory Authority of India with quasi-judicial authority. TRAI helps the telecom companies to adjudicate upon and settlement of telecom disputes. This Act was amended in the year 2000. This act is now replaced by the Telecom Regulatory Authority of India (Amendment) Act, 2000. The amended act is expected to bring better clarity and dimension.

**Recommendatory Functions of TRAI**

- Need and timing for introduction of new service provider
- Terms and conditions of license to a service provider
- Revocation of license for non-compliance of terms and conditions of license
- Measures to facilitate competition and promote efficiency in the operation to facilitate growth in industry
- Technological improvement in services by service providers
- Inspection of type of equipment used by service provider
- Measures for Technological development
- Efficient Management of available spectrum

**Other functions of TRAI**

- Levy fees and other charges as determined by regulations
- Perform administrative functions as entrusted to it by Central government or as per TRAI Act
• Notify in Official Gazette the service rates and message rates within and outside India

4. The Information Technology Act, 2000

In the year 2000, the Information Technology Act, 2000 was passed by the Indian Parliament. This act expected to promote e-commerce in India. The act also gives legal recognition to electronic documents and digital signatures. This act is a mean to authenticate electronic documents in India. The amended act provided additional focus on information security. In the amended act several new sections related to the new threats such as cyber terrorism and data protection were included.

5. Communication Convergence Bill:

Government of India introduced a proposed Communication Convergence Bill in the year 2000. As its name indicates, the objective of the Convergence Bill is to establish a new “converged” regulatory framework to promote and develop the communications sector (including broadcasting, telecommunications and “multimedia”) in an environment of increasing convergence of technologies, services and service providers.

6. National Telecom Policies:

National Telecom Policy, 1994 and National Telecom Policy, 1999 are the major policies which drive Indian telecommunication Industry. There were drastic changes took place in the last15 years of Indian telecommunication Industry. India evidence a rapid growth in the sector of telecommunication mainly because of the above two policies. Rapid changes in the world of telecommunication forced Indian Government to introduce New National Telecom Policy in the year 2012. This policy is expected to ensure that India’s growth doesn’t slow down.
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National and International conferences attended and paper published

1. National Seminar on Managing Changes and Challenges for sustainable Development in post crises era
organized by Marathwada Mitra Mandal’s College and presented the paper on “CRM A TOOL FOR COMPETITIVE ADVANTAGE WITH SPECIAL REFERENCE TO MOBILE PHONE SERVICE PROVIDERS”.


4. International Research Conference on Retail in the Globalized era and contributed paper for “CRM A Tool for Competitive Advantages with Special Reference to a Retail Sector”.

5. Published a Paper on “Need of Marketing For Mobile Phone Operators” in Entire Research.


7. International Conference, Bhavishya 2011 “Insight to India’s Prosperity”.

8. National Seminar on “Research in Humanities: Scope and Strategies”.