Chapter I

Introduction

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1.1 Introduction

Communication is a part and partial of human life. It is a process of sending information and receiving the same among human beings. Communication is as important as breathing. The most important role of communication is to spread information with people. It is a stepping stone to build relations among people. Human relations strengthen with the interaction with each other. It facilitates human beings to understand each other’s needs and feelings through communication.

Communication is far ahead of speaking. Communication is not only interaction by way of speaking but it also includes body language and action. Communication is not only what sender communicated but what the receiver understands is also important to complete the process of communication. Hence the role of interpretation of meaning by the receiver affects a lot in communication.

Humans communicate with others not only by face-to-face communication, but also by giving information via the Internet and printed products such as books and newspapers.

First of all, communication helps to spread knowledge and information among people. For example, authors write books to impart knowledge to the World, and teachers share their experience with their students. Also, friends or co-
workers discuss their ideas with each other, and companies exchange information with their subsidiaries and customers. Besides, the advent of the Internet not only allows people to have better access to knowledge and information in all fields, but also makes it easier and faster to contact with people around the World. Undoubtedly, the sharing knowledge and information process cannot function without communication. As a result, companies cannot operate, and humanity will be drowned in the abyss of ignorance.

Today, a cell phone is not just a rich man’s fashion accessory in India. It is transforming the way millions of people do business in a country where even landlines were considered luxury barely a decade ago. Across the country people with low income group are now adopting cellular phones as tools for enhancing business. Cell phone technology introduces new senses of speed and connectivity to social life.

Nowadays, virtually everyone carries a mobile phone, including the young children. They have become the most important item an individual can own. They serve as a communication tool used to make and receive calls as well as send text messages, listen to music, surf the internet and even play mobile games.

Mobiles are now so common that they hardly attract attention. People have started understanding the value, convenience and ease of owning a mobile phone. In earlier days, very few people could think of buying mobile phone but today
looking at the dropped prices, almost every individual can afford to purchase it. Mobile phones are equipped with every latest feature you desire. Even if you don't need the advanced features, you can get a basic mobile phone to make and receive calls. They can help us in our fast lifestyles when we have no time to meet our friends, relatives and left with the only option of talking over the phone. We can stay in touch whenever and wherever we need to.

According to the liberal governmental policies more and more companies are setting up their businesses in India. Today, there is a cut throat competition in the business. Marketing plays very important role in reaching to the consumers and stimulate them to purchase the product. Marketing helps in creating the need of the product among the consumers.

The need of marketing strategies is not of recent origin. It has a long history, in the olden days king used the announcers for spreading commercial messages and political campaigns, among their citizen. With the passage of time new media of marketing have evolved such as banners, hoardings, newspapers, radio, television, mobile marketing, internet advertising, etc.

As the economy was expanding during the 19th century, the need of marketing grew at the same pace. After globalization new companies entered into the market and to make their image among the consumers these companies started spending huge amount of money on marketing strategies. People are constantly
bombarded with advertisements through various media. In a materialistic society as ours it is impossible to avoid or ignore the power and need of marketing. But at the same time it is necessary to study that whether the marketing done through various medias are really effective or not. It is also necessary to find out it is impact on the consumers.

1.2 Historical Review of Communication

Communication has its historical background since inception of human civilization. There were lots of changes taken place in the form and types of communication during the human civilization. These evolutions were rapid in the era of technological development. Communication ranges from very delicate processes of exchange to full conversations among the communicator and respondent. There is an emerging branch in communication which is also known as mass communication.

It is believed that communication among the human being was started in way back to approximately 500,000 years ago when human being started to talk through speech and language was emerged. Thereafter it was refined through Symbols which were developed around 30 to 40 thousand years ago. The language is developed through imperfect speech and words to refined language and it took a lot of time.
It is believed that cave paintings were the oldest known symbols used for communication among the human beings. The oldest known Cave Painting is that of the Chauvet Cave, dating to around 30,000 BC.

It is said that communication always starts with language. Language is a unique ability among the human being which helped in evolution of human society. Language is the best way to communicate any complex message which can be conveyed between people. At the beginning communication was for very limited distance but because of advent of technology it became very easy to communicate over the long distance.

The way of communication improves as like the human civilization. As time passes by the spoken communication was supported by script to make it more effective through writing the message. At the beginning messages were scripted in pictures on the walls and pillars of caves. In this system it will not possible to spread the message to the long distance. At the same time pictures were not able to convey the correct message to the needy person. To overcome the problem letters and words were introduced.

There was need to spread the distance to long distance. Initially these long distance messages were spread without words and pictures. This was made possible by using smoke signals to communicate the message. These signals have very limited capacity to convey the messages. Generally dangers and victories
were conveyed through these types of smokes. As time progresses whistle was also used as effective form of non-verbal communication among the human beings. Different types of whistles were used to communicate different messages. But still this types have limitations of distance as well as there were problems of effective communication of message.

As there were progress made in written communication it became more effective and also possible to send effective message at long distance. Generally different kingdoms and governments use to have written communication among the nearby kingdoms at the very beginning of human civilization. These rulers also used written communication to give orders to their courtiers at different places. During that time it was believed that rules that can send messages quickly and effectively had advantages over their rival kingdoms. Persians were most effective in sending and receiving long distance messages during the 6th century BC. Hence they were ruling very large kingdom during those days.

Darius took effort to improve road network in the Persian Empire. This helped for faster movement of troops as well as information from one corner of the empire to the other. There are fresh horses and men at each post so that messages are passed around the speed of about 200 miles a day. As Persians empire was spread across the huge distance. There were different languages were spoken in the empire. But the emperors communicate in a single official language to pass message of the king.
Until the technological development in communication better condition of roads and better animals and riders were important factors determining speed of communication. There was competition between Romans and Persians in faster communication of messages.

It is believed that Egypt was the first to use domestic pigeons to communicate messages from one place to another during 1st century. These pigeons were trained to deliver messages effectively. A rapid one-way postal service becomes possible. By selective breeding of suitable birds, the homing pigeon is developed. The swiftest and most wide-ranging conqueror of medieval history, Genghis Khan, sees the obvious potential. Pigeons carry swift news of each new conquest to his homeland in Mongolia.

But the rapid and widespread dissemination of a message must await the development of printing. Scholars in the east have had the benefit of printing for many centuries, enabling holy and learned texts to be more widely possessed. But the very late arrival of printing in the west proves to be of much greater significance. The development by Gutenberg in Germany of movable type happens to coincide with the Renaissance, a time of great vigour in European culture. Due to rapid extension and development in printing technology it found many good and new customers. In 17th century the role of the newspaper was increasing.
Role of communication in the administration of government machinery is important in all ages. Speed and reliability of messages are most important in the administration and hence every attempt is made to do so.

The invention of the telescope in the 17th century makes possible a wide range of optical signalling systems. The earliest to be developed is that of flags at sea. Pioneered in England in 1653, the complexity of the messages which can be sent becomes steadily greater over the years. This system is finalized during the Napoleonic wars as the Signal Book for the Ships of War, issued by the Admiralty in 1799.

Benefits in both communication and travel derive from an initiative of John Palmer in 1782. As owner of a theatre in Bath, he is struck by the fact that letters to and from London often take three days on the journey - because the royal mail employs for the purpose individual postboys on decrepit horses.

Palmer, owner of a theatre in Bath, proposed to the government of England an ambitious scheme, to reduce time for Royal Mail. He gave advice to send mail through coaches with good horses, armed guards, and no outside passengers. He is attracted by the idea of higher postal charges for a better service. This successful mail coach which runs from Bristol to London during the year 1784 motivated him to start new services to sixteen more towns. This mail service was running at 10 miles per hour and helps to send messages in less than one day to many cities.
Photography soon catches up, to establish itself as the medium best equipped to convey the horrors of war. The first war to be fully covered photographically is the American Civil War. Thanks to the enterprise of Mathew Brady, who sends teams of photographers to the various battle fronts, some 10,000 glass negatives survive as a detailed visual record of four years of conflict.

In the year 1790 onwards semaphore systems started emerging in Europe and till 1830 there was the beginning of electrical telecommunication in the world. The history of telecommunication is an important part of the larger history of communication.

1.3 Historical Review of Telecommunication

Telecommunication emerged as one of the most important sector which contributed a lot in the development of the communication world over. It also acts as an important tool in the socio-economic development of the country. In the era of globalization, telecommunication emerged as important prime support services which is necessary in the rapid growth of the economy in general and standard of life in particular. Last two decades evidenced a great transformation in the telecommunication industry in the world and India is not the exception for the same. All over the world telecommunication industry tried to achieve remarkable growth and it tried to change the future of the media of communication.
Since adoption of Liberalisation, Privatisation and Globalisation Policy in 1991, there are drastic changes took place in the Indian economy. The Indian economy had gone out of the Hindu Growth Rate regime. India tried to arise as one of the important and fasted growing economies in the world. There is drastic change economy of India. India economy which was known as agricultural economy is now changed as service sector economy. Telecom sector contributed a lot in the service sector of the Indian economy. Indian Telecom sector has shown a gateway of success in service sector after software industry. It was initially a successful model in profitability as there was very few companies were operating and hence there was less competition. The Indian telecom market has gained recognition as one of the most lucrative markets globally. There was very low penetration of telecommunication in India as Government of India was operating the only telecom unit by Department of Telecommunication. There was government monopoly and hence there were many limitations in the sector. After 1991 there was significant growth recorded in this sector and many competitors entered in Indian telecom market till the year 2003. Rural market was also not concentrated a lot and hence there was huge scope for the development of this sector and hence many foreign companies were also interested in investing in the Indian telecom market with huge investment as they were thinking to get better growth and profitability in this sector. The initiative by Public and Private sector telecom operators helped rural India to get better connectivity and helps to be a part of the changes taken place in the economic reforms by one or other ways.
Telecommunication not only includes telephones and mobiles but also includes diversified communications system such as Internet, telegraph, radio, and television. Currently Indian telecom industry is using the best technology in the world. Recently India became the country which stood second in the number of subscribers in the world. There are lots of improvements which are taking place in the form of network expansion as well as introduction of new technology for the subscribers. India is one of the growing telecom markets in the world. There is a cut throat competition among the operators in India. The telecom sector is growing at a speed of 45% during the recent years. This rapid growth is possible due to various proactive and positive decisions of the Government and contribution of both by the public and the private sectors. The government played a proactive role in the growth and development of telecom market in India. The liberal policies in telecommunication sector played a major role in the rapid progresses in the telecom sector. The government policy is liberal for telecommunication which ultimately helped the industry in easy procurement of necessary equipments from the other countries. There are equal opportunities for public as well as private players in the telecommunication sector in India. Government offered equal playground to all the operators and there is no discrimination among them.

It is worth to note that the real growth of the telecommunication industry began with the policy of liberalisation adopted in the year 1991. After the economic reforms in 1991 the first time Government of India delicensed
manufacturing telecom equipment in India. In 1992, government opened the telecommunication sector to private companies for pager services, cellular mobile and other value added services. This is one of the reasons for growth and development of telecommunication sector in India. It helped to invite many telecom manufacturers to invest in India as well as many mobile operators from India and outside India started to enter in the sector. This also helps in inviting foreign manufacturers in telecom equipments to start manufacturing in India which ultimately helps in employment generation in the country. To make the dream come true, government announced the National Telecom Policy resolution of 13th May 1994 which liberalized the telecommunication sector in India.

The word ‘Telecommunication’ is came from the Greek word which means ‘communication at distance’ through signals of varied nature coming from a transmitter to a receiver. In order to achieve effective communication, the choice of a proper mean of transport for the signal has played fundamental role.

It is observed that in the beginning of the human civilisation long distance signals were sent through light and sound by fires and beating drums. But these types of communication are neither effective nor safe. The interpretation from these messages may be misleading and confusing too. These messages also have limitation of distance it can travel. These types of communication also difficult to maintain individuality.
Invention of electricity played an important role in the improvement of effective communication. It is believed that with the help of electricity it will be possible to invent equipments which can send messages easily and effectively with improvement in speed of message. It also assumed that these efforts would reduce the cost of sending messages. Therefore, we may say that the starting point of all modern telecommunications was the invention of the electric cell by Alessandro Volta in the year 1800.

The first effort to improve telecommunication goes to Thomas S. Sommering, who introduced advanced telecommunication system which is called telegraphic system which was introduced in the year 1809. This system composed of a battery and 35 wires. All these wires are connected with letters and numbers. There were a group of sensors which were made of gold. These sensors were in a water tank. When a signal was passing from one of those wires, electrical current would split water molecules, and small oxygen bubbles would be visible near that sensor. There were many others such as Wheatstone, Weber and Karl Friedrich Gauss who tried to improve Sommering’s equipment so that it help them to get it popular and it helps in mass production and distribution of the same. But it was not possible because of many reasons. In the year 1843, Samuel Morse developed more simple system to send message. He gave each letter and number to a ternary code which is related to point, line, and space. These efforts were much convenient and not much expensive too as compared to Sommering’s idea. It has
also had simple system and circuits. It is found that Morse Codes were used till today all over the world in the form of telegrams. In India Telegrams services were stopped in the year 2015. The use of the telegraph was limited only to the personnel who are trained for the same and for specific purposes especially to the government offices.

There is continuous development in the telecommunication technology all over the world. People were searching for more sophisticated technology for communication. There were efforts which were taken place to find methods to convert signals in the audible form. There were several researchers who were working on the project which help to find machine to transmit voice from one place to other. Antonio Meucci and Graham Bell independently managed to build a prototype of an early telephone machine. Since Meucci didn’t have the money to patent his invention which was too high that time, Bell managed to register it first.

It is found that telegraphs and telephones helped to build reliable communication network for effective communication. Public Switched Telephone Network was introduced to solve routing issues. Still there were problems of privacy and secrecy of communication and many efforts were taken to reduce human interference in the routing work.

In the year 1899, a machine called as ‘selector’ was developed by Almon Strowger. This machine was operating with the electric signals which were taken
instruction from the electrical signals which are taken from calling telephone device. This can be possible by selection based on geographical prefixes.

All these form of communication till the date were connected through wires. In the year 1885, ‘wireless telegraph’ was introduced by Guglielmo Marconi. He introduced the equipment called as radio. In 1920, valve amplifiers made their first appearance. In 1923, the television was invented. In 1947, the invention of transistors gave birth to the field of electronics. In 1958, the first integrated circuit was built. In 1969, the first microprocessor was invented. With the last step, electronics becomes more than ever a fundamental part in the telecommunication world, at first in the transmission, and soon also in the field of circuit commutation.

Moreover, in 1946 the invention of ENIAC (Electronic Numerical Integrator and Computer) starts the era of informatics. Informatics and telecommunications inevitably begun to interact, as it was to be expected: the first made fast data processing possible, while thanks to second the data could then be sent to a distant location.

The development of microelectronics and informatics radically revolutionized techniques both in telecommunication networks and performance requirements for the networks. Starting from 1938, an innovative technology called PCM (Pulse Code Modulation) started to grow more and more popular.
This technology could achieve the digital transmission of a voice signal by digitally encoding and decoding, rather than by means of transducers: however, PCM was first used on a large scale only in 1962 in the United States (the so-called ‘T1’).

Till the mid Sixties there was use of conventional idea of circuit commutation network. Thereafter Paul Baran, an engineer at RAND Corporation invented the ‘packet switching network’ during working at solving communication problem of US Air Force. According to this model, there should be no hierarchy in the nodes of a network, but each node should rather be connected to many others and be able to decide the packet routing. Each packet is a bulk of data which consist of two main parts, a ‘header’ containing routing information and a ‘body’ containing the actual data.

In this context Vincent Cerf, Bob Kahn and others developed, starting from the 70s, the TCP/IP protocol suite, which made possible communication of computers and heterogeneous machines through a series of physical and logical layers. Packet switching network and TCP/IP were later chosen by the military project ARPANET. In 1983, ARPANET became available to universities and research centers, among which NSFNET (National Science Foundation + NET), which finally gave birth to the Internet.
In the latest years, the importance of the Internet has been constantly growing. The high flexibility given by the TCP/IP suite and the ISO/OSI protocols provide a strong foundation on which communication among devices of different kind — be it a laptop or a cell phone, an iPod or a GPS navigator — has finally been made simple and easy to achieve.

While traditional telecommunications networks have allowed us to cross barriers associated with time and distance, the new multimedia realm is allowing us to include vital physical cues in the information stream, introducing a physical reality into the world of electronic communications, goods, and services. Not surprisingly, some of the industries that are being most radically revolutionized are those that deal with the human senses, including entertainment, health care, education, advertising, and, sadly, warfare. Simply put, technology changes your way and pace of life.¹

During the year 1980 GPRS (General Packet Radio Service) was introduced in the phased manner. GPRS is not a voice service. In the Phase 1 Point to Point GPRS was there. It sent information to a single GPRS user but it will not support multipoint connection to several users at a time. But there is a lot of improvement in the 2 where multiple connections were possible. It also supports very high rate of data to transfer to multiple users at a time. In the second phase techniques such as EDGE (Enhanced Data rates for GSM Evolution) were used to make it possible to send data at high rate of speed. GPRS is a technique which is
used in the GSM (Global System for Mobile Communications) networks. It helps to use internet over mobile phones to browse net and check mail.

During 1990s there was an introduction to the new mobile technology which is popularly known as 2G which means second generation mobile phone system. It was introduced by using GSM standard. In the first generation used digital transmission of data but in second generation analog transmission of data was introduced. This system was faster than the first generation. It helps in use of more data my mobile subscriber than the earlier period. It increases data usage by mobile.

In 1991 the first GSM network (Radiolinja) launched in Finland. In general the frequencies used by 2G systems in Europe were higher than those in America, though with some overlap. Coinciding with the introduction of 2G systems was a trend away from the larger “brick” phones toward tiny 100–200g hand-held devices. This is possible because of the weight of batteries were reduced by using more energy-efficient electronics. The latter meant that the average distance transmission from phone to the base station shortened, leading to increased battery life whilst on the move.

The second generation introduced a new variant of communication called SMS or text messaging. It was initially available only on GSM networks but spread eventually on all digital networks. The first machine-generated SMS
message was sent in the UK on 3 December 1992 followed in 1993 by the first person-to-person SMS sent in Finland. The advent of prepaid services in the late 1990s soon made SMS the communication method of choice amongst the young, a trend which spread across all ages.

Mobile became one of the important parts of human life. During the period 2G became very popular among the mobile subscriber as it helps a lot to them. It increases data usage by them. It is also experienced that there was growth in the data usage on fixed land line services too. People are asking for better speed as they need to use multimedia applications on the internet. As time progresses people were experiencing problem of speed and connectivity under 2G services and asking for improvement in the speed of data transmission. It leads to introduction of 3G services in the telecommunication.

3G stands for third generation technology in the telecommunication. The main technological difference that distinguishes 3G technology from 2G technology is the use of packet switching rather than circuit switching for data transmission. In addition, the standardization process focused on requirements more than technology.

With the invention of 3G mobile telephone technology it is possible to share and transmit audio and video with greater speed. It also helps in using graphical contents over the internet. It also increased the data usage among the
mobile subscribers. 3G helped to standardize one single global network protocol all over the world. On the other hand before 3G different standards were used in different countries for mobile data transfer. It is found that on 3G network it is possible to send data around 2 Mbps speed.

The current generation of mobile telephony, 4G has been developed with the aim of providing transmission rates up to 20 Mbps while simultaneously accommodating Quality of Service (QoS) features. QoS will allow you and your telephone carrier to prioritize traffic according to the type of application using your bandwidth and adjust between your different telephone needs at a moment’s notice.

Only now are we beginning to see the potential of 4G applications. They are expected to include high-performance streaming of multimedia content. The deployment of 4G networks will also improve video conferencing functionality. It is also anticipated that 4G networks will deliver wider bandwidth to vehicles and devices moving at high speeds within the network area.

1.4 History of Telecommunication in India

In India Telecommunication sector is one of the fastest-growing service sector. India stands second highest mobile subscriber country in the world. The telecommunication industry is contributing around 400 billion US dollars in terms of gross domestic product (GDP) of the country in 2014. Many experts believe
that the India telecommunication sector has a great potential to generate jobs. It is expected that by the year 2020, Indian telecom sector will generate around 4.1 million additional jobs in India.

Indian telecommunications sector can be broadly divided in two segments which is Fixed Service Provider (FSPs) and Cell Phone Services. Telephone, radio, television and Internet are some of the major forms of Indian telecommunication services. Telecom industry in the country lays a special emphasis on some of the advanced and the latest technical innovations like GSM (Global System for Mobile Communications), CDMA (Code Division Multiple Access), PMRTS (Public Mobile Radio Trunking Services), Fixed Line and WLL (Wireless Local Loop). Especially, India has a flourishing market in GSM mobile service, while the number of subscribers is on rapid and dramatic increase. The Indian telecommunications industry boasts as being one among the most rapidly growing chunks on the globe. Experts around the world estimate that India holds the promise of emerging as the second largest telecom market of the world.²

The beginning of the Indian telecom was its origin in the British era where there was a very slow growth of this sector. First time in India first telegraph line was tested between Calcutta and Diamond Harbour in the year 1850. This line was tested and it was open for use in the year 1851 for East India Company. The Eat India Company was running Telegraph Department under the supervision of Public Works Department.
Subsequently, the construction of 6,400 km of telegraph lines connecting Kolkata and Peshawar in the north along with Agra, Mumbai through Sindwa Ghats, and Chennai in the south, as well as Ootacamund and Bangalore was started in November 1853. 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 throughout this period. A separate department was opened in 1854 when telegraph facilities were opened to the public.

Telecommunication was under government’s monopoly since the British era. The Oriental Telephone Company Ltd. and The Anglo-Indian Telephone Company Ltd. asked East India Company to start telephone services in India during the year 1880. But government did not allow them to start the company and decided to start its own telephone department under the supervision of Public Works Department. But in the year 1881, government decided to allot the work of starting telephone exchange to Oriental Telephone Company Limited of England. The company decided to open telephone exchanges at four major cities named Calcutta, Bombay, Madras and Ahmedabad. It was just formal beginning of telephone services in India.

The history of telephone services in India found its beginning when a 50-line manual telephone exchange was commissioned in Kolkata in the year 1882 in less than five years after Alexander Graham Bell invented the telephone.³
On 28 January 1882, Major E. Baring, Member of the Governor General of India’s Council declared open the Telephone Exchanges in Calcutta, Bombay and Madras. The exchange in Calcutta named the ‘Central Exchange’. There were 93 subscribers for telephones in Calcutta for the first year. In the same year the company opened its second telephone exchange at Bombay.

Dr. O’Shaughnessy was the first Superintendent of Electric Telegraphs in India and later became the first Director General. Indo-European Telegraph Department, later known as the Overseas Communications, was administered by a Director-in-Chief whose headquarters was in London. On 15th February, 1888 it was merged with the Director-General of the Indian Telegraph Department.

From the year 1902 India drastically changes from cable telegraph to 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.

In the Independent India Department of Telecom (DoT) was established in the year 1975. The department was given work of establishment and maintenance of telecommunication in India. Before 1975 Indian Telecommunication was under the Postal Department. In the year 1986, Mahanagar Telephone Nigam Limited
(MTNL) was established and Department of Telecommunication was relieved from providing services to two major cities i.e. Mumbai and Delhi.

After 1991 telecom sector was opened for private sectors in India. It compels government to establish independent regulator who regulate telecom sector in India. The Telecom Regulatory Authority of India (TRAI) was established on 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. This reduced the interference of Government in deciding tariffs and policy making. TRAI was established to create healthy atmosphere for the growth of telecom sector in India. TRAI played pivotal role in making India as a global information society. It also tried to be transparent and fair in policy making to give competitive playground to all the operators in India.

Government of India decided to establish Bharat Sanchar Nigam Ltd. (BSNL) on 15th September, 2000. BSNL took over the business of Department of Telecommunication. BSNL was establish to look over the business of providing telecom and allied services in India with effect from 1st October 2000. BSNL is an public sector unit of Government of India.

In last two decades many Indian and foreign private sector telecom operators entered Indian telecom sector. There is a cutthroat competition and great
potential of growth in Indian telecommunication market. There is huge Foreign Direct Investment (FDI) in Indian telecom industry. During the year 2000 to 2014 there is around 59,796 million US dollar foreign direct investment inflow in the sector. Almost all the leading telecom operators in the world are operating in India.

First wireless communication was started in India in the year 1995 when first Pager service was launched in selected cities. Actually it is too late as till that time most of the leading countries were using mobile phones in their countries. Pager was hand held device which helps in communicating when the subscriber is on the move and it gives better mobility. Pager was useful for businessmen to be in touch with their customers. Motorola was one of the important players in the pager market as it was covering almost 80 percent of pager subscribers in India.

The business of pager was in the boom till the year 1998 when the number of subscribers increased to nearly 2 million. But in the year 2002 this number reduced to less than 500,000 due to beginning of mobile era in India. The important progress in Indian pager services is that most of the player started providing pager services in regional languages too. But still the pager services were not able to sustain in India and were closed down.

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 MobileNet GSM network of Kolkata. Later mobile telephone services are divided into multiple zones known as circles.

Most of operator follows GSM mobile system operate under 900MHz bandwidth few recent players started operating under 1800MHz bandwidth. CDMA operators operate under 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 Government 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.

At the beginning of introduction of mobiles in India, there were 23 circles in the country. In the year 1994, Indian Telecom services were divided into four circles. These circles are names as ‘metro circles’ and then ‘A’, ‘B’, and ‘C’ circles. The ‘metro circles’ covered four major metropolitan cities which are Delhi, Mumbai, Chennai and Kolkata. The ‘A’, ‘B’, and ‘C’ circles cover various geographic territories of varying population sizes. ‘A’ circles are the largest in terms of population coverage. ‘C’ circles contain the smallest population. The
circles listed below are the officially recognized circles as stated by the India Department of Telecommunications. Details of circles are shown in Table 1.1.

**Table 1.1 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><strong>Metros</strong></td>
<td>Delhi, Mumbai, Chennai, Kolkata</td>
</tr>
<tr>
<td>2</td>
<td><strong>A Circle</strong></td>
<td>Maharashtra, Gujarat, Andhra Pradesh, Karnataka, Tamil Nadu</td>
</tr>
<tr>
<td>3</td>
<td><strong>B Circle</strong></td>
<td>Kerala, Punjab, Haryana, Uttar Pradesh, Rajasthan, Madhya Pradesh, West Bengal, Andaman &amp; Nicobar</td>
</tr>
<tr>
<td>4</td>
<td><strong>C Circle</strong></td>
<td>Himachal Pradesh, Bihar, Orissa, Assam, North Eastern States, Jammu &amp; Kashmir</td>
</tr>
</tbody>
</table>

Source: TRAI

Inclusion of private sector in Indian telecommunication was a gradual process. At the initial stage value added services such as pager and Cellular Services were introduced by the Private sector. Thereafter, private sector was allowed to enter in the Fixed Telephony Services (FTS). During 1994, through a competitive bidding process, licenses were granted to 8 Cellular service providers in metros, 14 operators in 18 states and paging services in 27 cities and 18 states.
Table 1.2 List of Cellular Mobile (GSM & CDMA) Service Providers
currently providing service [As on 30th September, 2015]

<table>
<thead>
<tr>
<th>Sr.</th>
<th>Service Provider</th>
<th>Area of Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bharti</td>
<td>All India</td>
</tr>
<tr>
<td>2</td>
<td>Aircel Group</td>
<td>All India</td>
</tr>
<tr>
<td>3</td>
<td>Reliance Communications</td>
<td>All India (except Assam &amp; NE)</td>
</tr>
<tr>
<td>4</td>
<td>Reliance Telecom Ltd</td>
<td>Kolkata, MP, WB, HP, Bihar, Orissa, Assam &amp; NE</td>
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<td>5</td>
<td>Vodafone</td>
<td>All India</td>
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<td>6</td>
<td>Tata Teleservices</td>
<td>All India except Assam, NE &amp; J&amp;K</td>
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<td>7</td>
<td>IDEA</td>
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<td>8</td>
<td>Sistema Shyam Telelink</td>
<td>Delhi, Kolkata, Gujarat, Karnataka, Tamil Nadu (incl. Chennai), Kerala, UP(W), Rajasthan &amp; W.B.</td>
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<td>9</td>
<td>BSNL</td>
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<td>10</td>
<td>MTNL</td>
<td>Delhi &amp; Mumbai</td>
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<td>11</td>
<td>Quadrant</td>
<td>Punjab</td>
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<td>Telenor Communications Services Pvt. Ltd.</td>
<td>MH, Gujarat, AP, UP(W), UP(E), Bihar</td>
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<td>Videocon</td>
<td>Gujarat, Haryana, UP(W), UP(E), MP, Bihar</td>
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Since 1981, almost every ten years, new mobile generations have appeared. In 1981 it was 1G and transmission was by analog. In 1992, 2G appeared and transmission went digital. In 2001 the 3G was introduced with multimedia support, spectrum spread transmission. Now from 2011 onwards we are witnessing 4G, which incorporates internet protocol packet switched networks operating at very high speeds in the gigabit ranges.

The Telecom company Bharti Airtel on 10th April, 2012 launched its broadband wireless access (BWA) services based on 4G technology in Kolkata. With this launch, it has became the first to launch the 4G service in India. The high speed service was inaugurated by the Union Communications Minister Kapil Sibal. 4G is expected to be five times quicker than 3G services. It would offer services such as high-definition mobile TV and video conferencing.

One of the main advantages of the fourth generation technology known as 4G is the exchange of data at very high speeds, say at 100 Mbit/sec compared to 3G speeds of 3.84 Mbit/sec. It is expected that 4G will change the way we work, live and play. Reliable and very high speed data transmissions will facilitate studio quality video and sound transmissions.
India is one of the few countries where 4G has been introduced. Other telecom companies are also gearing up to launch the 4G services in the circles they won in the auction for 4G spectrum in which the Government earned more than Rs 38,000 crores.

1.5 Historical Review of Cell Phones

Alexander Graham Bell is pioneer of modern long distance communication. He invented telephone. In Boston he studied and became a professor at Boston University in the year 1873. In 1874, while visiting his father in Branford, Bell realized that to transmit speech electrically he would need an “induced undulating current”. When he returns to Boston he started working on the same. On March 10, 1876, Alexander Graham Bell succeeded in speaking the first sentence ever transmitted via electricity: “Mr. Watson, come here, I want you.”

He established the Bell Telephone Company on July 9, 1877 which eventually became the first telephone company in the world. There were many changes and transformations were taken place in telephone over the years. By the end of the 19th century, telephone design became less decorative and more practical.

Cell phones are modern version of wireless telephony. This technology is of recent origin. But it became a part of life for many individuals all over the world. Days are gone when the cell phone was only for the rich people, now it is
affordable to almost anyone. Cell phones are interesting, useful and play a major role in our lives by bringing people closer together and keeping in constant touch with one another.

In simple words cell phones are nothing but sophisticated radios. They are a type of wireless communication device that uses many small cells with a base station and a cell phone tower at the center of each cell. These cells have extensive frequencies that allow thousands of people to use cell phones at the same time. In this process, cellular calls are transferred from base station to base station as a user travels from cell to cell.

The roots of wireless and cellular services started to begin around 1940. But it was not able to get popularized due to many limitations in it. The wireless networks tried earlier were too expensive and hence not affordable. The true revolution in wireless network began only because of availability of low cost microprocessors and digital switching. Starting in 1921 in the United States mobile radios began operating at 2 MHz, just above the present A.M. radio broadcast band. These were chiefly experimental police department radios, with practical systems not implemented until the 1940s. Police and emergency services drove mobile radio pioneering, with little thought given to private telephone use. On June 17, 1946 in Saint Louis, Missouri, AT&T and Southwestern Bell introduced the first American commercial mobile radio-telephone service.
It took lot of time to develop systematic cell phone network. There were only 545 subscribers in New York who had mobiles developed through Bell System by the year 1976. In the same year there were 3,700 mobile subscribers who are on the waiting list. There were 44,000 Bell customers for mobile who were using AT&T mobiles and there were more than 20,000 subscribers who were waiting for their term to subscribe the mobile and it was expected that it was expected to take more than five years to complete waiting list. The basic reason behind this waiting list was limited channels made available by the government.

As analogue mobile phones were gaining in popularity, it became clear that the design of the system was going to put a hard limitation on the number of mobiles and the call volume the networks could manage. There were issues with security, celebrities' taped mobile conversations being published, and increasing numbers of mobile phones being illegally "cloned". People wanted to use their mobile phones in other countries, which the analogue system did not really support.

In 1982 the Conference of European Posts and Telecommunications (CEPT) formed a committee called the Group Special Mobile. This committee was to develop a standard for mobile phones that would use radio spectrum efficiently, provide international roaming, give satisfactory voice quality, have low equipment costs, be compatible with other systems such as ISDN (Integrated Services Digital Network) and be ready to support new services as they were developed. This
committee worked together, designing a system which depended on technologies not available at the time, and following 1986 field tests of different radio techniques proposed for the air interface; in 1987 they produced a proposal for a TDMA system which was incorporated in an initial Memorandum of Understanding (MOU), signed by telecommunications operators from twelve countries. In 1989 CEPT's GSM passed the specifications to the European Telecommunications Standards Institute (ETSI). The following year (1990) phase 1 of the GSM specification was published. In 1991 the first commercial GSM mobile telephone system went into service. In 1992 GSM coverage was restricted to large cities, and around airports. The networks rolled out, more countries signed up to the system, and by 1995 rural areas were seeing GSM coverage. In 1995 Phase 2 of the GSM (by now renamed to Global System for Mobiles) was published, adding additional features and services. In retrospect, GSM was a wonderful idea, well defined, and able to incorporate new technologies as they became available. GSM is the dominant digital mobile phone service, but there are other mobile phone systems in use across the world, as well as the Total Access Communication System (TACS) previously used in the UK. A new generation of digital networks is now being brought into service, and no doubt more will follow in time.
1.6 Consumer Behaviour

In the recent years, it is found that consumer became more vigilant and marketing became more dynamic to attract the consumers. It is difficult to understand the mood of young generation consumers. There is change in the buying pattern of the consumers in recent past. There is a geographical and cultural diversification in the Indian consumers and understanding consumers buying pattern is difficult. It is evident that there are almost all brands of mobiles available in India because of great potential in Indian mobile market.

In the era of globalization consumer became the king in the market. It became the necessity to deliver the best potential to the consumers. The responsibility to follow ethical ways in marketing lies with all the organizations. This helps in achieving higher customer satisfaction. The assessment of need of the consumer is necessary to deliver the best to the consumers. Quality product and better after sale service became the need of modern marketing. Now it is the necessity of the organization to maintain good relationship with the customers as well as earn consumer loyalty from them. Consumer behaviour studies play an important role in framing marketing and in deciding marketing strategies.

Consumer behavior has emerged as the epicenter for formulating strategies due to intensified competition and growth pressure caught on the corporate. The study of consumer behavior has considered as one of the most multifaceted topics.
Researchers show different reasons of selecting consumer behavior as the topic of research in recent times. Consumer buying behavior is studied as a part of the formulating marketing strategies and explore the way how the individuals, groups or organizations choose, buy, use and dispose the products. The factors such as their previous experience, taste, price and branding on which the consumers their purchasing decisions are based is also studies vastly. The critical review of literature has conducted on available research studies and relevant book contents to build a platform for research design and to carry the present research study to advanced level. After conducting intensive research, it has observed that consumer behavior study in mobile sector is based on five crucial dimensions.

One of the most important aspects of modern marketing is to understand the behaviour of the consumer. Consumer behavior is nothing but to understand the process of buying decision of a rational consumer. It is to study what consumer use to buy and how they buy. It is a process to understand need of the consumer for a particular product or service. Studying consumer behaviour helps to know the response of the consumer for a particular product and potential of the product to sustain in the market. Study of consumer behaviour also helps to assess customers’ knowledge and expectations about a particular product or service. Consumer behaviour is never constant it changes from time to time. Hence, it is necessary to have constant watch on the changes taken place in consumer
behaviour for a particular product and companies need to take necessary steps to make changes in the product or services to survive in the cutthroat competition. Understanding consumer behavior allowed the pro-active companies to increase their market share by anticipating the shift in consumer wants.

It is difficult to understand behaviour of the consumer. Consumer behaviour always affects marketing strategies of businessmen. There are three major factors which affects consumer behaviour in general. These factors are psychological, personal, and social.

**Psychological Factors**

In daily life, consumers are being affected by many issues that are unique to their thought process. Psychological factors can include perception of a need or situation, the person's ability to learn or understand information, and an individual's attitude. Each person will respond to a marketing message based on their perceptions and attitudes. Therefore, marketers must take these psychological factors into account when creating campaigns, ensuring that their campaign will appeal to their target audience.

**Personal Factors**

Personal factors are characteristics that are specific to a person and may not relate to other people within the same group. These characteristics may include
how a person makes decisions, their unique habits and interests, and opinions. When considering personal factors, decisions are also influenced by age, gender, background, culture, and other personal issues.

Social Factors

The third factor that has a significant impact on consumer behavior is social characteristics. Social influencers are quite diverse and can include a person's family, social interaction, work or school communities, or any group of people a person affiliates with. It can also include a person's social class, which involves income, living conditions, and education level. The social factors are very diverse and can be difficult to analyze when developing marketing plans.

However, it is critical to consider the social factors in consumer behavior, as they greatly influence how people respond to marketing messages and make purchasing decisions.

It is observed that Indian consumers are conservatives. They do not easily leave their habits and dream products. They want to buy their dream product today or tomorrow. Indian consumers won't throw anything just for the sake of change. “The socialistic code of restraint dictated much of independent India's consumer psyche until the late seventies and early eighties. It was a time when the per capita income grew by an imperceptible one percent per annum. A whole generation was
raised on a diet of austerity, where thrift was a great virtue and where anything except basic consumption was frowned upon”\(^5\)

According to Schiffman and Kanuk Consumer behaviour can be defined as “The behavior that consumers display in searching for, purchasing, using, evaluating, and disposing of products and services that they expect will satisfy their needs”\(^6\)

Engel, Blackwell and Kollat defined Consumer behaviour as “the acts of individuals directly involved in obtaining and using economic goods and services including the decision processes that precede and determine these acts”\(^7\)

A study of consumer behaviour is very complex as it embraces “psychological, social and physical behaviours of all potential consumers as they became aware of, evaluate, consumer and tell others about product and services”

The American Marketing Association has defined consumer behaviour as, “The dynamic interaction of affect and cognition, behaviour, and the environment by which human beings conduct the exchange aspects of their lives.”

In the Dictionary of Marketing Terms edited by Peter D. Bennett, “Consumer behaviour refers to the actions and decision processes of people who purchase goods and services for personal consumption.”
1.7 Importance of Study of Consumer Behaviour

Understanding the concept of Consumer behaviour is a part and partial of Modern Days Marketing and without understanding the consumer behaviour it will be difficult to produce what the producer can sell. In the modern day business many decisions are based on the needs of the consumer. Consumer Behaviour gives information to the producer which is vital to design product or services. Consumer behaviour also have positive impact on the structure of marketing mix and necessary changes in it. Marketing goals are only possible to set after knowing consumer behaviour. Consumer behaviour affects the product, price, place and promotion strategies of the business. Hence consumer behaviour plays an important role in the modern business.

Following are some of the important advantages of consumer behaviour:

1. Innovative Modern Concept

Consumer behaviour is concept of recent origin. The concept of consumer behaviour is to understand need of the consumer and take effective steps to overcome the need of the consumer. It forms an important part of modern marketing strategies. As in modern marketing consumer is king and hence modern marketing became much consumer-oriented. The businessman who can understand the need of the consumer better than competitor can win the race of modern business.
2. Useful for Dealers and Salesmen

The study of consumers need and their habits help the companies to decide the product which can be effectively sold in the market. This will help not only the producer but also the others who are the part of selling team such as dealers and salesmen. Middlemen of the company can sale the product effectively as they can convince the consumer as the need of the consumer is already understood through consumer behaviour studies.

3. Helps in Framing Marketing Strategies

There are 4Ps in marketing Product, Price, Place and Promotion. Marketing Mix has a proper mixture of all these factors to tackle to solve the problems of consumers through understanding them properly. This can help in preparing better marketing strategies to achieve desired goal.

4. Prepare Alternative Marketing Programmes

The consumer behaviour is not static thing it changes from time to time. There is need to change the marketing programme as per the need of the current time. There is also need to change promotion programme as per the stage of the product in its life cycle. Consumer responses also changes due to promotion pattern of the competitor. The consumer behaviour study helps to make
businessmen vigilant about the changes taken place in the market and necessary alteration in the market.

5. Predicting Market Trend

Future is uncertain and hence businessmen must be vigilant about the changes taken place in the market. Consumer behaviour helps to understand the future need of the consumers and expectations of the consumers which are not fulfilled by the product. To survive in the cutthroat competition, businessmen need to stay ahead of the competitor by understanding the consumer behaviour through proper study. It also helps in understanding opportunities in the market and understanding the threats too.

6. Consumer Differentiation

Each segment needs different products. For every segment, a separate marketing programme is needed. Knowledge of consumer differentiation is a key to fit marking offers with different groups of buyers. Consumer behaviour study supplies detail about consumer differentiations.

7. Adding New Consumers and Retain Old

Adding a new consumer is a difficult task in the cutthroat competition. Once customer is adding the next step is to gain their loyalty and retaining them for future. There is tough competition in providing products and services in
modern days. Hence, it is necessary to recognize the need of the consumer and every effort need to be taken to satisfy the consumer at their level best. Producer needs to study continuously the consumer behaviour and attempts to meet changing expectations of the buyers, can retain its consumers for long period.

8. Competition

Consumer behaviour study assists in facing competition, too. Based on consumers' expectations, more competitive advantages can be offered. It is useful in improving competitive strengths of the company.

9. Developing New Products

New product is developed in respect of needs and wants of the target market. In order to develop the best-fit product, marketer must know adequately about the market. Thus, the study of consumer behaviour is the base for developing a new product successfully.

10. Dynamic Nature of Market

Consumer behaviour focuses on dynamic nature of the market. It helps the manager to be dynamic, alert and, active in satisfying consumers better and sooner than competitors. Consumer behaviour is indispensable to watch movements of the markets.
11. Effective Use of Productive Resources

The study of consumer behaviour assists the manager to make the organisational efforts consumer-oriented. It ensures an exact use of resources for achieving maximum efficiency.

3 Ibid
5 Dobhal Shailesh (2002), The Decade of spending Recklessly, Business Today 2002