CHAPTER 1
INTRODUCTION

Indian prepaid market, developed tremendously in terms of its subscription base irrespective of its competitive warfare. It brims to be at the threshold of saturation due to the dynamic advancement in the mobile technology. Customers have no commitment and are with more choices to select the mobile operators in prepaid segment. The switching rates are very high in prepaid segment when compared with postpaid in India. This ultimately increases the operating cost for addressing several campaigning programs to retain the customer base. It also warrants incurring very high customer acquisition cost. In order to facilitate the customer loyalty and to empower profitability in the business, it is vital to investigate and predict the reasons for the churn. For this, it is necessary to understand the history of Indian telecom industry. Thus this chapter focuses on the history and growth of the telecom industry. It also deals with the importance of this study and researchable problems in this area.

1.1 REVOLUTION IN COMMUNICATION

Sunil Mani (2008) explained that the phenomenal growth of the IT industry in India has brought to the fore the increasing importance of India as a knowledge centre. But this competitiveness is limited to the services sector. In fact it is the sector that is increasingly contributing to the high growth rate recorded in the country. In spite of showing a good growth performance over the last three or four years, the manufacturing sector is still a non-performer although three industries constituting the manufacturing sector, namely auto parts, cotton textiles and pharmaceuticals are showing much dynamism in terms of exports. However India’s exports have now diversified to encompass services. In fact the service sector in general has come to occupy a preeminent position in India’s economy in terms of its contribution to overall GDP, exports and as a destination for Foreign Direct
Investments. But the manufactured exports basket is still dominated by low and medium technology products although, as stated earlier some high tech products such as pharmaceuticals and certain types of machine tools have crept into India’s export basket. But the growth of IT exports and evidences of moving up the value chain in IT, the emergence of other high technology industries such as biotechnology, aerospace etc is enabling India to be in the league of high technology producers from the developing world. The recent growth of R&D outsourcing is yet another illustration of the country’s prowess in high technology activities. An interesting dimension of high technology production in India is that this capability is largely in the realm of services rather than in manufacturing. However there are indications that this capability in high tech services is slowly percolating to high tech manufacturing. And an industry where it is very clearly visible is in the area of telecommunication where a revolution of sorts is taking place. In the context, the purpose of the present section is to understand the technological implications of the phenomenal growth of this industry.

1.1.1 The contribution of telecommunications to the growth performance of India’s economy

Communications is the fastest proliferating sector within India’s economy. The average compound rate of growth of the sector works out to 24.02 per cent per annum since the turn of this millennium. No other sector of the economy has clocked such a high rate of growth. The sector accounts for about 4 per cent of GDP and consequently with this rather high rate of growth contributes about 11 per cent of the growth in overall GDP of the country. Of the Information and Communications Technology (ICT) sector of the economy, it is again the communications sector that is more important. This is evident from a dataset on ICT spending developed by World Information Technology and Services Alliance (2006), of the total spending on ICT by India, about 63 per cent was in communications [1].

1.2 CONTOURS OF MODERN COMMUNICATION

Communication in India has been a primary inevitability, since the formation of the nation. The earliest possible form of communication in the prehistoric times
was the carving done on the walls of the caves with sharp rocks. These inscriptions depicted the thought and language of the prehistoric men. Gradually, the papyrus leaves gave birth to later advanced form of papers that became the prime mode of communication of thoughts and views in India. Even until the British rule, the power of communication was reached through writings in newspapers, pamphlets and so on.

With time, communication in India improved and technologies in India enabled individuals from the farthest boundary of the nation can collect, process, and exchange information. The new communication technologies in India are unlike either interpersonal communication or mass media communication, because they are interactive, defined as the degree to which the participants in a communication process have control over, and can exchange roles in, their mutual communication as well.

New communication technologies in India such as satellites, cable television, wireless telephony, the Internet, and computers have brought about noticeable changes in the society. Such developments in the communication in India have significantly aided individuals collect, process, and exchange information. The new media have certain characteristics that are similar in some respects to those of both interpersonal and mass media communication, but they are different in many other respects as well. Interpersonal communication consists of a face-to-face exchange between two or more individuals. The message flow is from one to a few individuals; feedback is instantaneous and usually plentiful, and the messages are often relatively high in socio-emotional content. In contrary, mass media communication includes all those means of transmitting messages such as radio, television, newspapers, and film that enable a source of one or a few individuals to reach out to a large audience. Some form of hardware equipment is always involved in the arena of mass communication, feedback is limited and usually delayed, and the messages are often relatively low in socio-emotional content. An evening news broadcast on Doordarshan, the Indian national network television, is an instance of mass communication.

Indian press is said to be the largest section of print media in the globe. Indian printing houses publishes more daily newspapers than any other country in
Asia, covering a range of languages and educational diversity that is unmatched in the world. A survey in 2000, said that there were over 27,000 newspapers and periodicals in India that were published in 93 languages. Some 5,000 dailies were read by more than 100 million readers in 14 languages. However in a nation with a high rate of illiteracy, the effects of these newspapers and periodicals in those days were limited to an elite audience. Indian press enjoys great freedom and is therefore flourishing. Whole new segments are opening up eventually. Newspapers till date hold on the traditional roots of communication in India.

The new communication technologies in India integrate the characteristics of both `interpersonal` and `mass communication`. Communication that occurs through these media often connects two individuals or a small number of people. In this sense, the new media or the communication technologies are like interpersonal communication; where the messages are targeted to specific individuals that are called de-massification. But interactive communication via the new media, like email on the Internet, is somewhat like mass media communication in that particular hardware equipment; including computers, satellites, and telephone lines in this case that is necessarily involved. Information exchange through the new media is interactive, indicating that the participants in a communication process have control over, and can also exchange roles in, their mutual discourse. Such interactivity is also particularly characteristic of face-to-face interpersonal communication.

The interactive technologies of communication in India are at the heart of the communication revolution that has been occurring in India. The computer and its various applications in satellite and cable television, telecommunications, and the Internet are bringing about great social changes in India. These technologies after becoming distinctive are converging gradually to deliver data, voice, and video in ways that were not possible before. Here a causative relationship is implied, namely, the new communication technologies are leading to changes in society. By the 1990s, computers were being used for communication purposes (such as email) rather than as number-crunchers, their original use. Therefore, social forces like government policies shared with technological innovations in the form of semiconductor advances, which made the miniaturization of computers possible fostered the
communication revolution in India. Social values, policies, and religion may help to shape the form of technologies. This social construction of technology is the process through which people give meaning to a new technology by discussing it amongst themselves. The decentralized nature of the Internet in contemporary times makes it extremely difficult for governments or other agencies to censor objectionable material, as there is no centralized point through which all electronic messages pass. Gate-keeping is impossible on the Internet. The decentralized nature of the Internet also makes it a potentially powerful tool for connecting citizens with local, regional, and national governmental departments and officials.

For several decades, computer networks were perceived as a useful tool for exchanging personal messages, like sending letters to family members or business contacts. During the 1990s, the Internet also began to be perceived as a means of buying products with a credit card, which were then delivered by an overnight delivery service to the consumer. The social meaning of the Internet changed gradually, thus creating a host of business opportunities in the nation. A cadre of entrepreneurs rushed in to found Internet-related companies, and several dozen became billionaires overnight.

The world today, including India and its achievements is aptly described as a "Global village", in which a web of information networks interconnects individuals as well organizations in nearly instantaneous global communication. The global village is a term that is increasingly inter-related by communication technologies and that is tending toward a global culture. The Internet and the World Wide Web are examples of these interconnections. At a superficial level, large cities across the world today resemble Western cities in the consumer products sold, air conditioning, traffic, and fast food.

The global village along with its communication technologies has many benefits for humankind, although the increasing degree of interconnectivity also causes certain problems. The telephone and Internet access in India is increasingly provided by telephones and computers situated in public places. Presently, India has numerous public call offices (PCOs), thousands of Internet community centers (ICCs), cyber cafes, and tele-centers. Here, for a nominal fee, an individual can surf
the internet, send a fax, or make a long-distance call. Thus, increasing numbers of people are gaining access to new communication technologies in India without having to own them. Nevertheless, a wide "digital divide" presently separates the urban, information-rich elite in India from their rural counterparts who are information-poor.

Indian Television has existed since last four decades and offers the finest medium of communication in India. For the first seventeen years, it spread haltingly and transmission was primarily in black and white. However, television in India has come in the forefront in the past 20 years and today is the most appealing mode to reach out to people through several serials, programs, reality shows, and films and so on. The tradition of newspaper in India began with India’s struggle for independence and today is the most common and cheapest way of communicating through news, columns, advertisements and articles. The national leaders of India published several newspapers and journals and used it as a means for creating consciousness among the Indians, while today newspapers are a vital part and parcel of human existence in India. Indian Radio is presently one of the most lucrative mediums of entertainment and also communication. Indian broadcast media started first with the All India Radio. However, in contemporary India radio is more popular for its FM channels and frequencies heard all across the country. The Indian radio programs are mostly interactive that allows free communication amongst nationwide audiences.

Government policies are highly influential in shaping the developmental agenda of communication technologies in India. Jawaharlal Nehru believed that industrialization and incorporation of communication technologies in India was crucial for the economic development of India, and when he became prime minister at India’s independence in 1947, he instituted several promising industrialization policies. Foreseeing the requirement for vastly increased numbers of Indian engineers, he established the Indian Institutes of Technology (IITs) to prepare technologists, and the Indian Institutes of Management (IIMs) to train the future managers of plants and factories. These Institutes later played an important role in providing the skilled human resources that are leading India toward becoming an information society. The Indian government in the 1950s and 1960s launched a
massive industrialization program of building steel mills, hydroelectric dams, and other heavy industry; all with the close co-operation of communication technologies. In the 1990s, Indian entrepreneurs in India and abroad utilized their business acumen to amass considerable wealth by combining technical expertise with communication technologies of the nation. In the contemporary meritocracy of the global village, Indian brainpower is transformed into wealth creation with much involved of the new communication technologies.

The modern communication technologies in India stand at par with the best in the globe. In contemporary times, one is sure to find state-of-the-art technology in Indian modes of communication. The vast distances of this country have not only been easily overcome with the help of various means of communication; but they have also aided in executing overseas trade and business.

1.3 TELECOM SERVICES DELIVERY

In telecommunications, a service delivery platform (SDP) is usually a set of components that provide services delivery architecture (such as service creation, session control and protocols) for a type of service. Although the TM Forum (TMF) is working on defining specifications in this area, there is no standard definition of SDP in the industry and different players define its components, breadth, and depth in slightly different ways.

SDPs often require integration of telecom and IT capabilities and the creation of services that cross technology and network boundaries. SDPs available today tend to be optimized for the delivery of a service in a given technological or network domain (e.g., web, IMS, IPTV, Mobile TV, etc.). They typically provide environments for service control, creation, and orchestration and execution, as well as abstractions for media control, presence/location, integration, and other low-level communications capabilities. SDPs are applicable to both consumer and business applications.

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1 http://www.indianetzone.com/40/communication_india.htm
The business objective of implementing the SDP is to enable rapid development and deployment of new converged multimedia services, from basic POTS phone services to complex audio/video conferencing for multiplayer games (MPGs).

The emergence of Application Stores, to create, host, and deliver applications for devices such as Apple’s iPhone and Google Android smart phones, has focused on SDPs as a means for Communication Service Providers (CSPs) to generate revenue from data. Using the SDP to expose their network assets to both the internal and external development communities, including web 2.0 developers, CSPs can manage the lifecycles of thousands of applications and their developers.

Telecommunications companies including Telcordia Technologies, Nokia Siemens Networks, Nortel, Avaya, Ericsson and Alcatel-Lucent have provided communications integration interfaces and infrastructure since the early to mid 1990s. The cost-saving success of IP-based VoIP systems as replacements for proprietary private branch exchange (PBX) systems and desktop phones has prompted a shift in industry focus from proprietary systems to open, standard technologies.

This change to open environments has drawn software focused telecommunication companies like Teligent Telecom and HP - Communication & Media Solutions to this segment[4] and has also given systems integrators such as Tieto, Accenture, IBM, TCS, HP, Alcatel-Lucent, Tech Mahindra, Infosys, Wipro, Xavient, 6d technologies and CGI the opportunity to offer integration services. In addition, new consortia of telecommunications software product companies have also emerged that offer pre-integrated software products to create SDPs based on key product elements, such as value added services, convergent billing and content/partner relationship management.

Since SDPs are capable of crossing technology boundaries, a wide range of blended applications become possible, for example:

- Users can see incoming phone calls (Wire line or Wireless), IM buddies (PC) or the locations of friends (GPS Enabled Device) on their television screen
• Users can order VoD (Video on demand) services from their mobile phones or watch streaming video that they have ordered as a video package for both home and mobile phone

• Airline customers receive a text message from an automated system regarding a flight cancellation, and can then opt to use a voice or interactive self-service interface to reschedule.

1.4 INDIAN TELECOM SECTOR

India’s telecommunication network is the second largest in the world based on the total number of telephone users (both fixed and mobile phone). It has one of the lowest call tariffs in the world enabled by the mega telephone networks and hyper-competition among them. It has the world’s third-largest Internet user-base. According to the Internet and Mobile Association of India (IAMAI), the Internet user base in the country stood at 190 million at the end of June, 2013. Major sectors of the Indian telecommunication industry are telephony, internet and television broadcast. Industry in the country which is in an ongoing process of transforming into next generation network, employs an extensive system of modern network elements such as digital telephone exchanges, mobile switching centers, media gateways and signaling gateways at the core, interconnected by a wide variety of transmission systems using fiber-optics or Microwave radio relay networks. The access network, which connects the subscriber to the core, is highly diversified with different copper-pair, optic-fiber and wireless technologies. DTH, a relatively new broadcasting technology has attained significant popularity in the Television segment. The introduction of private FM has given a fillip to the radio broadcasting in India. Telecommunication in India has greatly been supported by the INSAT system of the country, one of the largest domestic satellite systems in the world. India possesses a diversified communications system, which links all parts of the country by telephone, Internet, radio, television and satellite.

Indian telecom industry underwent a high pace of market liberalization and growth since the 1990s and now has become the world’s most competitive and one of

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2 http://en.wikipedia.org/wiki/Service_delivery_platform
the fastest growing telecom markets. The Industry has grown over twenty times in just ten years; from under 37 million subscribers in the year 2001 to over 846 million subscribers in the year 2011. India has the world’s second-largest mobile phone user base with over 929.37 million users as of May 2012. It has the world’s third-largest Internet user-base with over 137 million as of June 2012.

The total revenue of the Indian telecom sector grew by 7% to INR2832 billion (US$46 billion) for 2010–11 financial year, while revenues from telecom equipment segment stood at INR1170 billion (US$19 billion). Telecommunication has supported the socioeconomic development of India and has played a significant role to narrow down the rural-urban digital divide to some extent. It also has helped to increase the transparency of governance with the introduction of e-governance in India. The government has pragmatically used modern telecommunication facilities to deliver mass education programs for the rural folk of India.

1.4.1 Major sectors of telecommunication industry in India are telephony, internet, Data centers and broadcasting.

1. Telephony

The telephony segment is dominated by private-sector and two state-run businesses. Most companies were formed by a recent revolution and restructuring launched within a decade, directed by Ministry of Communications and IT, Department of Telecommunications and Minister of Finance. Since then, most companies gained 2G, 3G and 4G licenses and engaged fixed-line, mobile and internet business in India. On landlines, intra-circle calls are considered local calls while inter-circle are considered long distance calls. Foreign Direct Investment policy which increased the foreign ownership cap from 49% to 74%. Now it is 100%. The Government is working to integrate the whole country in one telecom circle. For long distance calls, the area code prefixed with a zero is dialed first which is then followed by the number (i.e., to call Delhi, 011 would be dialed first followed by the phone number). For international calls, "00" must be dialed first followed by the country code, area code and local phone number. The country code for India is 91. Several international fiber-optic links include those to Japan, South Korea, Hong
Kong, Russia, and Germany. Some major telecom operators in India include Airtel, Vodafone, Idea, Aircel, BSNL, MTNL, Reliance Communications, TATA Teleservices, Infotel, MTS, Uninor, TATA DoCoMo, Videocon, Augere, Tikona Digital.

2. Fixed telephony

Until the New Telecom Policy was announced in 1999, only the Government-owned BSNL and MTNL were allowed to provide land-line phone services through copper wire in India with MTNL operating in Delhi and Mumbai and BSNL servicing all other areas of the country. Due to the rapid growth of the cellular phone industry in India, landlines are facing stiff competition from cellular operators. This has forced land-line service providers to become more efficient and improve their quality of service. Land-line connections are now also available on demand, even in high density urban areas. India has over 31 million main line customers.

3. Mobile telephony

With a subscriber base of more than 929 million, the Mobile telecommunications system in India is the second largest in the world and it was thrown open to private players in the 1990s. GSM was comfortably maintaining its position as the dominant mobile technology with 80% of the mobile subscriber market, but CDMA seemed to have stabilized its market share at 20% for the time being. By May 2012 the country had 929 million mobile subscribers, up from 350 million just 40 months earlier. The mobile market was continuing to expand at an annual rate in excess of 40% coming into 2010.

The country is divided into multiple zones, called circles (roughly along state boundaries). Government and several private players run local and long distance telephone services. Competition has caused prices to drop and calls across India are one of the cheapest in the world. The rates are supposed to go down further with new measures to be taken by the Information Ministry. In September 2004, the number of mobile phone connections crossed the number of fixed-line connections and presently dwarfs the wire line segment by a ratio of around 20:1. The mobile subscriber base has grown by a factor of over a hundred and thirty, from 5 million
subscribers in 2001 to over 929 million subscribers as of May 2012. India primarily follows the GSM mobile system, in the 900 MHz band. Recent operators also operate in the 1800 MHz band. The dominant players are Airtel, Reliance Infocomm, Vodafone, Idea cellular and BSNL/MTNL. There are many smaller players, with operations in only a few states. International roaming agreements exist between most operators and many foreign carriers. The government allowed Mobile number portability (MNP) which enables mobile telephone users to retain their mobile telephone numbers when changing from one mobile network operator to another. India is divided into 22 telecom circles.

1.4.2. The comprehensive details of this segment are as follows:

1. **Wire line**- Fixed Service Provider [FSP] network which comprises landlines. BSNL and MTNL comprise almost 95% of the FSPs in the country. Around 5% are operated by private firms like Bharti Airtel, Reliance communications, MTS India, Tata Indicom, HFCL.

2. **Wireless**- This segment encompasses cellular services or mobile services and fixed wireless phones. There are mainly two sub divisions in cellular services and they are Code Division Multiple Access (CDMA) and Global System for Mobile Communications (GSM) in India.

3. India is second largest in the world, based on the total number of telephone users both fixed (Land Line) and mobile phones⁵.

4. Major segments in the Indian telecommunication industry are telephony, internet and television broadcasting.

5. The Current market share composition is GSM of 80% and CDMA of 20%.

6. Total Telecom circles are 22 as on June 2014⁶.

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7. According to Internet and Mobile Association of India (IAMAI), and it has the world's second-largest Internet user-base in the country with 190 million at the end of June 2014.

8. Totally 55.20 million are using mobile phones for Internet services of December 2013.

1.5 INDIAN MOBILE SERVICES

Telecom services have been acknowledged globally as an essential tool for the socio-economic development of a nation. India is currently the world’s second-largest telecommunications market and has registered exceptional growth in the past few years.

Telecommunications is one of the prime support services needed for rapid growth and modernization of various sectors of the economy. Driven by strong adoption of data consumption on handheld devices, the total mobile services market revenue in India will reach US$29.8 billion in 2014 and is expected to touch US$37 billion in 2017, registering a compound annual growth rate (CAGR) of 5.2 per cent, according to research firm IDC.

The rapid strides in the telecom sector have been facilitated by liberal policies of the Government of India that provides easy market access for telecom equipment and a fair regulatory framework for offering telecom services at affordable prices. The deregulation of foreign direct investment (FDI) norms have made the sector one of the fastest growing and a top five employment opportunity generator in the country.

1.5.1 Market size

The number of telephone subscribers in India increased from 933 million in March 2014 to 935.81 million (Wireless- 907.44 million, Wire line- 28.36 million) in April 2014, as per data released by the Telecom Regulatory Authority of India (TRAI). The country’s GSM operators added 2.10 million rural users in June 2014 taking their total to 302.73 million, according to data released by Cellular Operators’ Association of India (COAI).
Bharti Airtel has the maximum rural users at 96.63 million as of June 2014, whereas Vodafone added the maximum during the month of June to take its rural user base to 90.91 million. Idea Cellular’s rural subscriber base stood at 76.85 million at the end of the month, whereas that of Aircel and Uninor stood at 25.96 million and 12.38 million, respectively. As of May 2014, the top three telcos - Bharti Airtel, Vodafone and Idea Cellular - have garnered market shares of 28.41 per cent, 22.95 per cent and 18.79 per cent, taking their subscribers to over 208 million, 168 million and 137 million, respectively.

1.5.2. Investments

FDI in the telecom sector, which includes radio paging, cellular mobile, and basic telephone services, grew manifold to Rs 13,889 crore (US$ 2.25 billion) during April-July 2014. FDI inflows in the sector during the period April 2000-July 2014 stood at Rs 80,608.47 crore (US$ 13.1 billion), as per data released by Department of Industrial Policy and Promotion (DIPP). The following are some of the major investments and developments in the Indian telecom sector.

Reliance Jio Infocomm has signed an agreement to share 500 towers of Videocon Telecom in UP(W), UP(E), Bihar and Jharkhand, as it aims to roll out its high speed data and voice services faster and at a lower cost across India.

Idea Cellular joined hands with Opera Software and Quikr to offer sponsored mobile data through 'Sponsored Web Passes' to Idea’s 137 million plus customers in India. Under the arrangement, Idea customers will get free 10 MB data usage for an entire day.

Larsen and Toubro (L&T) has won a contract worth Rs 2,442 crore (US$ 396.91 million) from Bharat Sanchar Nigam Ltd (BSNL) to supply, trench, lay, install, test and commission optical fibre cable network which will establish optical national long distance backbone and optical access routes for the defense network.

Aircel has launched 4G services across four circles - Andhra Pradesh, Assam, Bihar and Odisha - making it the second operator to launch the services in the country. With this launch, Aircel now offers services under all the three existing
telecom technologies (2G, 3G and 4G LTE). Further, the company has tied up with Micromax to launch the latter's new 3G smart phone - Canvas Beat.

Bharti Airtel, the country’s largest mobile operators by revenue and subscribers, has launched a 3G Wi-Fi dongle that enables downloads of up to 21.6 mbps. This speed is more than double of the present 9.8 mbps. Nokia Networks has won a dozen deals with major Indian operators during the first half of 2014, as compared to the 16 deals signed last year.

1.5.3. Government Initiatives

The Government of India plans to invest Rs 39,458 crore (US$ 6.41 billion) in BSNL and Mahanagar Telephone Nigam Ltd (MTNL) over the next five years. The Department of Telecom (DoT) plans to set up an application development centre with an outlay of Rs 1,000 crore (US$ 162.92 million) over a three-year period. The move aims to generate income for the Universal Services Obligation (USO) fund in addition to the revenue share received from telecom operators.

The Ministry of Communication and Information Technology is planning to extend basic mobile coverage, including voice calling, in far-flung areas of eight northeastern states, at an estimated cost of over Rs 5,000 crore (US$ 812.63 million). While approximately Rs 2,400 crore (US$ 390.06 million) will be spent as capital expenditure (tower installation and laying cables), the remaining Rs 2,670 crore (US$ 433.94 million) would be for maintenance and operation expenditure (op-ex) over a five-year-period. The government has planned to establish a close to 1,200 km direct subsea optic fiber cable link between the Indian mainland and Andaman and Nicobar Islands to improve telecom connectivity in this strategically located archipelago.

1.5.4. Vision

India will emerge as a leading player in the virtual world by having 700 million internet users of the 4.7 billion global users by 2025, as per a Microsoft report. The National Telecom Policy, 2012, has visualized doubling the current telecom capacity and increasing its reach to over 95 per cent of India while providing broadband level of internet capability. Revenue from the fixed broadband services in
India is expected to grow at 7.8 per cent annually to reach US$ 2.12 billion by 2017, on back of demand for bandwidth driven by cloud and video. This in turn entangled with disloyalty and as the industry saturates, it become imperative for the mobile operators to shift their focus from rapid acquisition strategies to strategies which helps to maintain and enhance margins from existing customer base.

In this highly competitive scenario, almost everybody is switching cellular service providers. While teenagers are attracted by goodies such as free SMS, for executives it could be the free long distance minutes and value-adds. But while gaining new customers is good news for any telecommunications, the flip side is the loss of customers or churn, in industry parlance. So mobile companies are positioning churn management system in place, which can almost accurately predict the behavior of fickle customers. In simple terms churn refers to “customers are cancelling their existing contract only to embark on a relationship with a competing mobile service provider.” Cut-throat competition has ensured that there is not much difference between the tariff plans offered by different mobile operators. This study found out the importance of Internet based customer services and value-added packages in churn Management. If an operator doesn’t anticipate market needs or does not provide value-added services offered by the competitor, then the customer is likely to churn. Therefore it is highly critical for every telecom marketer to reckon customer profile, customer lifecycle and customer values through proper Customer Analytics and to sustain their Data warehouse.

1.6 CHURN A CHALLENGE /OPPORTUNITY

When an industry’s customer market transitions from rapid development to near saturation and intense competition, that industry faces severe churn problems. Examples of this scenario include telecom industries, internet services industries, banking-related industries, and even the cultural and education industries (Ahn et al., 2006; Buckinx et al., 2005; Keaveney, 1995; Kim et al., 2004; Kim et al., 2004)

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5 http://www.ibef.org/industry/telecommunications.aspx
6 Media Reports and Press Releases, Cellular Operators Authority of India (COAI), Telecom Regulatory Authority of India (TRAI), Department of Telecommunication (DoT), Department of Industrial Policy and Promotion (DIPP)
Numerous enterprises have entered the telecom industry to acquire a portion of the emerging telecom market ever since the government fully liberalized the mobile phone industry. Initially, there was a massive demand for emerging telecom services because mobile phone service users were uncommon. As a result, the mobile telecom industry developed rapidly. However, since the demand for mobile telecom services has transitioned from rapid growth to near saturation in recent years, large telecom companies have become intensely competitive. Compounding this situation is the Taiwan government’s introduction of portable mobile numbers, allowing users to switch mobile phone carriers without changing their mobile phone numbers. Users can easily switch their mobile phone service carriers to maximize their benefits, meaning; telecom companies could face serious churn problems (Kim et al., 2004; Kim et al., 2004; Mattersion, 2001)[5-7].

Nowadays, mobile telecom services have become an indispensable communication channel. Since everyone requires mobile telecom services, customers lost by company one company will inevitably become the customers of other company. Previous studies indicate that to gain a new customer, a company must spend five to ten times the amount needed to retain a customer. Therefore, retaining long-term loyal customers is more profitable than gaining new short-term customers. To maintain market share and profitability, telecom companies have used various approaches or management mechanisms to retain customers and prevent serious churn problems. Maintaining existing customers, locating potentially lost customers in advance, and effectively implementing customer retention strategies, are all serious concerns faced by telecom companies (Mattersion, 2001)[7]. A common churn management process involves constructing a churn prediction model using past churn data, and determining key factors affecting churn. This churn model is then used to locate a list of potentially lost customers from existing customer data, to perform retention activities (Berson et al., 2000; Chu et al., 2007; Lariviere et al., 2004; Mozer et al., 2000; Ngai et al., 2009) [8-12]. The success of a company’s churn management is determined by whether it effectively decreases churn rate, and not by whether it can locate a list of potentially lost customers. The critical element of churn management is successful retention of potentially lost customers.
However, most telecom companies underestimate the importance of effective customer retention strategies. Consequently, this study utilizes fuzzy correlation analysis (Chiang et al., 1999; Chiang et al., 2000) to analyze the results of marketing activities to extract the key factors of telecom churn management [13-14].

1.7 TELECOM CHURN MANAGEMENT

When telecom companies face churn problems, they implement feasible churn management procedures and strengthen existing customer relationship management. Previous studies utilized various data mining technologies to assist telecom companies in resolving churn problems (Coussement et al., 2008; Hung et al. 2006; Kim et al., 2004; Mozer et al., 2000; Tsai et al., 2010; Tsai et al., 2009; Wei et al., 2002; Xia et al. 2008)[15-22]. Data mining refers to using automatic or semi-automatic methods to extract latent, unknown, meaningful, and useful information or models from large datasets (Tan et al., 2006) [23].

1.8 CUSTOMER EXPECTATIONS OF SERVICE OFFERS

Consumers expect mobile operators to deliver an experience that can match benchmarks set by other service industries. ‘Transforming Experiences’, Ericsson Consumer Lab’s India study, gives a detailed analysis of Indian consumers’ expectations from their mobile operators. The study ranks 12 different service industries including mobile operators on nine performance attributes, including the ability to quickly solve problems, ease of making payments, and innovation. The study also focuses on touch-points that operators can address to transform consumer satisfaction and loyalty. The survey represents the opinions of 100 million urban Indian mobile consumers.

Resolving problems quickly has the maximum impact on driving consumer satisfaction across all industries. The benchmarking analysis revealed that airlines, online shopping, and fast food industries were ranked high by consumers on overall consumer experience offered due to transparency, punctuality, and innovation. Mobile operators are comparatively behind on such service expectations.

The report highlights areas that operators can focus on to deliver a superior consumer experience. "Findings across four markets (US, India, Brazil and Russia)
highlighted customer service as an important touch point to drive consumer satisfaction." said Ericsson’s Region India Head, Chris Houghton. "For India, initial purchase experience and customer service emerged as priority touch points." One in three urban mobile users claim they do not find mobile plans that best suit their usage patterns, and 85% rate quick activation of services as very important.

The Consumer Lab study found that mobile broadband consumers with a positive service experience are three times more loyal to their operator than a consumer with a dissatisfied customer service experience. "Mobile broadband customer service needs more focus as Smartphone users are twice as likely to face issues such as slow speeds and dropped data connections," said Houghton. Poor customer service, network or mobile internet performance accounts for half of the issues faced by mobile users who are looking to switch operators.

To retain Smartphone users, operators must fulfill basic needs such as high accuracy in billing/charging, high quality network performance and delighters such as assured mobile internet speeds, rewards, and loyalty programs. All of these factors will increase satisfaction proportionately.

Additionally, operators must equip customer care executives with the tools needed to improve service delivery. Highlighting the need for transformation in customer service, the study found that three out of five telecom customer care agents find it difficult to respond to the more complex queries presented by data intensive users. Over 77% indicated a need for a single unified view of the customer’s account. This will help them take decisions in the best interest of consumers while improving consumer experience. The long hold times experienced when calling mobile operators’ customer care centers is often because 40% of agents claim they have to switch between four screens to solve a single query.

A quarter of urban mobile users are currently facing issues with their operator. However, on average, just under half of all problems are relayed back to the operator. The impact of a poor experience has 47% of consumers thinking of switching operators.
India is a nation of the ‘young’. And the young are spending more and more time on the Smartphone. In metros like Mumbai, where slums choke entire localities, the intrepid user is getting on to apps to conduct business, says the Ericsson Consumer Lab Report 2014.

The report, based on a survey carried out in April-June 2014 among 4000 Smartphone users across 18 urban centers, says on an average, Indians spend three hours on their smart phones; around one-third of that time is spent on using apps.

The share of the urban less educated, low income mobile data users has risen, and the older generation is going furiously digital. They have acquired the status of ‘must-have’, with a 63% increase in app-usage in the last two years. New usage patterns are emerging, such as 40% of usage is no longer limited to social media and chat-apps. Mobile video usage is evolving and moving beyond the bedroom, and into the kitchen and the workplace, right on to the road outside with the help of video streaming apps.

One in three Smartphone users watches videos shared by friends. Users now spend 198 minutes on smart phones, compared to 128 minutes watching TV. This is just one of the many ways. Smartphone users are consuming online video. “Flawless mobile video experience will be the key accelerating usage,” says Ajay Gupta, VP-Strategy and Marketing, Ericsson India.

The report says 12% housewives use smart phones as portable video players while somebody else in the family watches TV and 10% of mobile users start the day watching spiritual videos on the smart phone. As smart phone users watch more, tolerance for delays is on a short circuit. Appetite for watching online exists but so do issues with downloading and streaming, with 65% of mobile broadband users preferring to stream rather than download videos. But 4 out of 10 videos played buffer or stall, taking the kick out of the ‘watching’.

Consumer perception of mobile data experience is built on several factors: Internet connection drop rate; webpage load time; app download time; indoor connectivity; video buffering or stalling frequency; picture upload time on social media and transfer time for sharing media on chat apps. “But 40% face issues with
slow webpage download time, 44% of the time smart phone users do not have mobile broadband network coverage, 43% of WebPages take more than 10 seconds to load while 58% of users expect mobile webpage load time to be around 3 seconds,” says Nishant Batra, VP-Engagement Practices, Ericsson India.

The report says there’s a discrepancy between smart phone users’ expectations and their actual experiences. Half of all issues encountered by mobile broadband users today in cities like ‘dense’ Mumbai, Kolkata, Chennai and Delhi are faced indoors. Interestingly, smart phone users prioritized the service provider’s ability to solve mobile data issues as and when they arise over cheap mobile data tariffs or plans.

1.8.1. Key facts on mobile subscribers (2014)

1. Totally 60% of Indians check their smart phones on an average 77 times a day, with 26% of them doing it over 100 times a day.

2. Share of the urban less educated, low income mobile data users has risen from 39% in 2012 to 55% in 2013.

3. Older generation is also going furiously digital: from 4% in 2012 to 13% in 2013.

4. Indians spend 3 hours and 18 minutes (or 198 minutes, in the US it is 132 minutes) on their smart phones, and one-third of this time on apps.

5. It was found that 40% of smart phone usage is no longer limited to social media and chat-apps.

6. It was about 11% of working professionals shop online using smart phones even when at work.

7. Totally 24% smart phone users use apps like whatsapp, wechat for business purposes.

8. Online video watching has outpaced TV watching.

9. Broadband smart phone users spend 61% more time watching online video than non-users.
10. About 12% housewives use smart phones as portable video players.

11. It was found that 40% watch online video on the smart phone late at night in bed.

12. Totally 25% watch online video on the mobile while commuting.

13. About 23% watch online video on smart phones while at dinner.

14. It was inferred that 20% watch while shopping.

15. It was reported that 76% of smart phone users are willing to pay more for a guaranteed better mobile data experience.

Customers are much more likely to be engaged with brands today than ever before. A recent report said that consumers are interested in selecting loyalty programs that provide incentives for actions that are non-transactional in nature, such as sharing on social media, practicing energy conservation etc. Consumer expectations are higher than ever because there is so much information freely available and can be easily researched. So when a consumer enters a store she knows more about the product than the person who is selling it. It is, therefore, a challenge for any business to keep up with consumers’ expectations. To engage this new breed of consumers, companies should first understand who the customer is and segment them and try to know them at the individual level. Then target them in the right way. It is not about loyalty points anymore. It is not necessarily about transactions. It is about allowing interactions to happen between the customer and the brands, and among customers. Loyalty programs are undervalued in India.

Many frequent flier programs are run as separate business because they actually deliver money to the bottom line. A lot of loyalty programs are seen as huge overhead by the finance people. But it is an important part of marketing mix: as it enables you to understand the consumer.\(^7\)

Brands also need to invest in a consistent cross-channel communication strategy. Prices online and offline can vary. However, if a physical retailer has an

attractive loyalty program; consumers may end up buying from there. Online has raised consumer expectations.

1.9 CHURN IN PREPAID

India has 15 mobile operators in a highly competitive, predominantly prepaid market. About 96% of all mobile subscribers are constantly transitioning between mobile service providers to realize incrementally lower prices. Customer churn happens to be the most challenging issue for mobile industry irrespective of their rapid growth. The rate of attrition among the subscribers is also growing vibrantly and the churn rate (i.e. the rate at which a subscriber switches his/her operator) was expected to exceed 59% in 2014 from the existing rate of 53% in 2013. Churn rate increases pungently in parallel to the growth of mobile subscribers. As churn cuts across all areas of an organization, the key to successfully reducing customer churn lies in adopting holistic, modular approach. Customer retention, therefore, is becoming critical to sustain customer base. In this regard it is essential to infiltrate the basis for switching of the mobile users in India. The monthly churn rate in India averages approximately 6%. Reasons for disloyalty vary for different operators as this market is highly competitive. Customer loyalty generally declines and willingness to churn increases as markets tend to adopt technological changes. Recent churners often switch because of promotional offers from competing providers. According to the recent statistics, its churn rate has gone up to 14 per cent per month while incremental net additions are at 8-10³ million. The churn is very high especially in the youth segment. Customer retention is a challenge as churn takes place in the short period of less than 24 months⁹.

Globally, India stands first in youth population. According to the recent telecom statistics of 2014 young adults (According to the Age classification given by WHO and Indian Ministry of Affairs, the age interval of 19-30 years is called as Young Adults¹⁰) tend to churn in a higher rate when compared with other age

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¹⁰ http://www.who.int/healthinfo/survey/ageingdefnolder/en/
category. This is mainly due to their level of expectations and preferences are varying according to the mobile market trend. Hence it is very difficult even to the market giant to cut down churn. The strategy seems clear. India is no longer just a new market for telecom where subscriber acquisition is the key. It is now becoming a matured market, not completely saturated like the US and Europe in terms of growth, but one in which rising revenues from existing customers is becoming increasingly important for profitability\textsuperscript{11}.

Mobile operators are constrained by the customer churn. This is in spite of introducing various new schemes with customer-friendly features which enhances customer benefits. With the cost of operations becoming a challenge, the increasing role of TRAI (Telecom Regulatory Authority of India) enforcing discipline among the operators in terms of rates and regulation on operation adding complexity to this situation, each mobile operator need to evolve strategies to arrest churn rate. To manage this situation, operators have to understand and identify factors which influence the customer churn. As is always said the primary task of every business is not only to find new customers, but most important is to retain the existing customers. Hence, knowledge of churn rate will enable the mobile operators to design and implement strategies to achieve a higher rate of customer retention.

1.10 RESEARCH GAPS

1. There are only limited studies addressing the causes of prepaid mobile churn and controlling the Churn rate in India, which is growing apparently with the subscription rate.

2. In spite of introduction of loyalty program and mobile number portability facility, churn grows in India. Hence it is necessary to undergo in-depth empirical study on this area.

3. Indian studies on churn are mostly based on simple techniques whereas date mining techniques would be the most powerful technique.

\textsuperscript{11}http://www.rediff.com/business/slide-show/slide-show-1-is-the-telecom-tariff-party-over-in-india/20110729.htm#10
1.11 RESEARCH QUESTIONS

1. What are the key reasons for the customers selecting specific service providers?

2. How satisfied are consumers with their current service providers and what influences their satisfaction?

3. How can mobile operators sustain their customer base?

4. What are the compelling reasons for Churn?

1.12 SCOPE

This study is limited to Tamil Nadu state.

Tamil Nadu has been selected for the following reasons:

1. Tamil Nadu has been ranked No. 1 by the Economic Freedom Rankings for the States of India\textsuperscript{12}.

2. It is eleventh largest in India by area and 7th most populous state\textsuperscript{13}.

3. It is the third largest contributor to India's GDP (as of 2010)\textsuperscript{14}.

4. It is second largest in India in terms of prepaid mobile subscription\textsuperscript{15} as of may 2014 and was first largest in wireless subscription as of December 2012.

5. Out of 886.3 million prepaid subscribers in India, 10\% are from Tamil Nadu (as of December 2013).

6. Leading mobile operators are found in Tamil Nadu. They are Vodafone Essar, Aircel limited, BSNL, Bharti Airtel, IDEA, Videocon, Reliance CDMA & GSM, Tata Docomo, CDMA & GSM, Virgin CDMA & GSM, MTS.

7. Compared to the national churn rate of 14 \%, the monthly churn rate in Tamil Nadu averages approximately 6.17\%\textsuperscript{16}.

\textsuperscript{12}http://en.wikipedia.org/wiki/Economy_of_Tamil_Nadu
\textsuperscript{13}http://trace.bharatiyamobile.com/Mobile-Subscriber-Statistical-Data.php
\textsuperscript{14}http://www.slideshare.net/UttamSatapathy/a-study-of-tamilnadas-economy-and-its-contribution-to-indias-gdp
\textsuperscript{15}http://www.gsmamobileeconomy.com/GSMA%20Mobile%20Economy%202013.pdf
\textsuperscript{16}http://trace.bharatiyamobile.com/Mobile-Subscriber-Statistical-Data.php
1.13 JUSTIFICATION FOR STUDY

a) Irrespective of the rapid penetration of mobile services there is an acute increase in churn rate.

b) Even though mobile operators are providing attractive promotional schemes and other functional benefits, they could not retain their mobile users appreciably.

c) Although mobile operators are devoted to improve customer loyalty, their management systems and budgets, are not really effective in arresting the churn rate.

1.14 RESEARCH OBJECTIVES

1. To identify the factors influencing the selection of prepaid mobile service providers.

2. To determine the level of customer satisfaction with regard to their purchasing decision, corporate Image, performance of mobile operator, customer Relationship Management process, Service quality and Price.

3. To identify the factors influencing the customer churn with respect to Indian prepaid mobile services.

4. To develop the conceptual model on customer churn to examine the behavioral constructs about the mobile service provider.

1.15 HYPOTHESIS SET

The following were the list of null hypotheses were taken for the study in order to find the association between the selected variables.
1.15.1. Null hypotheses on the selection of brand of service providers and the factors influencing the same.

**NH-1:** There is no significant association between network coverage and service providers.

**NH-2:** There is no significant association between call charges and service providers.

**NH-3:** There is no significant association between General Packet Radio Service (GPRS) and Service providers.

**NH-4:** There is no significant association between Multimedia Messaging Services (MMS) and Service providers.

**NH-5:** There is no significant association between offers and service providers.

**NH-6:** There is no significant association between accessibility of the mobile services and Service providers.

**NH-7:** There is no significant association between customer care and service providers.

**NH-8:** There is no significant association between technology and service providers.

**NH-9:** There is no significant association between e-recharge vouchers and service providers.

**NH-10:** There is no significant association between internet facility and service providers.

**NH-11:** There is no significant association between conveniences in subscription and service providers.

**NH-12:** There is no significant association between ringtones and service providers.
1.15.2. Null hypotheses on the factors of mobile churn and the service providers

**NH-13:** There is no significant association between mobile number portability and service providers.

**NH-14:** There is no significant association between quality of network coverage and service providers.

**NH-15:** There is no significant association between compatibility to use new handset and accessories and service providers.

**NH-16:** There is no significant association between easiness to search and adopt the facilities involved and service providers.

**NH-17:** There is no significant association between quality of service and service providers.

**NH-18:** There is no significant association between regulatory certainty of operators and service providers.

1.16 BRIEF SAMPLE RELATED

Totally thirteen constructs were taken for the study with 229 items, designed and arranged in the structured pattern. The socio-demographic profile contained totally seventeen items and remaining 212 items were designed under subjective details attending in conjunction with the research objectives of the study.

The first seventeen items were focused on the socio-demographic characteristics of the respondents such as age, gender, income, occupation, education, family status, number of dependents that they have and their employment status. Remaining part of the questionnaire was relating to the customization, measure of level of customer satisfaction on prepaid mobile services and causes for prepaid mobile churn. The classifications of questions are given in Table 1.1 below.
Table 1.1 Distribution of items

<table>
<thead>
<tr>
<th>Construct</th>
<th>No of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>A  Socio - Demographic factors</td>
<td>17</td>
</tr>
<tr>
<td>B1  Mobile Phone usage (MP)</td>
<td>12</td>
</tr>
<tr>
<td>B2  Handset Details (HD)</td>
<td>11</td>
</tr>
<tr>
<td>B3  Purchasing decisions (PD)</td>
<td>33</td>
</tr>
<tr>
<td>B4  Internet Usage (IU)</td>
<td>8</td>
</tr>
<tr>
<td>B5  Data Card (DC)</td>
<td>10</td>
</tr>
<tr>
<td>B6  Satisfactory Level on Corporate Image (SLCI)</td>
<td>17</td>
</tr>
<tr>
<td>B7  Performance (P)</td>
<td>16</td>
</tr>
<tr>
<td>B8  Customer Relationship Management (CRM)</td>
<td>12</td>
</tr>
<tr>
<td>B9  Service Quality (SQ)</td>
<td>47</td>
</tr>
<tr>
<td>B10  PRICE</td>
<td>9</td>
</tr>
<tr>
<td>B11  SWITCH</td>
<td>7</td>
</tr>
<tr>
<td>B12  Churn (CH)</td>
<td>30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>229</strong></td>
</tr>
</tbody>
</table>

1.17 LIMITATIONS

The focus of present study is on isolating psychological factors such as perception, expectation and brand loyalty. However, sociological factors, cultural factors and psychobiological factors which may have impact on the churn behavior of the consumer are not addressed. This is being done to simplify the decision variables. The study is conducted in ten major cities in Tamil Nadu and may not be generalized for India.

1.18 CHAPTER OUTLINE

The first chapter deals with the introduction, rationale of the study, scope of the study, objectives of the study, hypotheses and limitations of the study.

The second chapter covers the literature reviews that are related to the study.

The third chapter contains the conceptual framework of mobile Churn.
The fourth chapter deals with research methodology and statistical techniques.

The fifth chapter contains data analysis and interpretation of the results.

The sixth chapter comprises of summary, discussions, conclusion, and usefulness of study and Indications for future research.