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Chronological Growth in Telecom Sector

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Abstract—The Indian telecommunication industry is one of the fastest growing in the world. The history of the Indian Telecom sector goes way back to 1851, when the first operational landlines were laid by The British Government in Calcutta. With independence, all foreign telecommunication companies were nationalized to form Post, Telephone and Telegraph, Telecommunications technology includes anything used by humans to communicate information over a distance. The concept has been around since the early days of human history, when smoke signals and drums were used to inform a person or groups of people of an event or situation. Major breakthroughs since the late 1800s have brought the field of telecommunications into the modern age, however as early as the telegraph, long distances could be traversed

with information. More recent developments include the telephone, radio, television, fax machine, and computer, each with its own unique properties to benefit the information exchange of mankind. This paper discusses about developments in Telecom sector.

Keywords:—Telecommunication, DoT, Telephone, Telegraph, HTML, Television, Computer, Web, Blog,

1. INTRODUCTION

People needed to invent ways to send messages to each other some, early societies used drum beats and smoke signals to send messages, run many miles to deliver a message in the battle of Mahabharata and Ramayana. In the ancient period so many kings

communicated their messages through relays Pigeons They have been used for thousands of years to carry messages. When people started to talk to each other and write things down, they wanted to share their ideas with others. It was easy to communicate with people who were close, but it was difficult to communicate with people over long distances. People had to invent ways to send their messages to people who were sometimes hundreds or thousands of kilometers away. Imagine how hard this would have been without telephones, postal trucks, or email.

2. HISTORY OF COMMUNICATION FROM CAVE DRAWINGS TO THE WEB

Early Means of Communication

All animal species have perfected a system of communication, but humans are the only species capable of spoken language. Effective communication is essential for a variety of reasons. It serves to inform, motivate, establish authority and control, and allows for emotive expression. In early Communication methods communication has existed in various forms since man appeared on Earth. The methods, however, consisted of a disorganized set of signs that could have different meanings to each human using them. The method involved creating pigments made from the juice of fruits and berries, colored minerals, or animal blood. These pigments were then used to create depictions of primitive life on the cave walls. The purpose of the paintings has been questioned by scholars for years, but the most popular theory states that the depictions were used as a manual for instructing others. Story telling was used to pass on important information in the days before the existence of the written word. However, since man still lived in separate tribes, this information could not be applied outside one's own tribal community. Drums and smoke signals were also used by primitive man, but were not the most practical means of communicating. Both methods could attract unwanted attention from enemy tribes and

predatory animals. These methods were also difficult to standardize. Early Handwritten Documents/Books, those with the proper education to do so were handwriting books and documents for well over 1,000 years before the invention of the printing press. Two important periods stand out when one is investigating early books. The time between the 7th and 13th centuries was considered the age of the religious manuscript. In 1448, a man named Johann Gutenberg revolutionized the way books were made forever. An inventor born in Germany, Gutenberg had a vision of a device that would utilize movable type using blocks with pre-printed text. This method, combined with the use of paper, ink and a printing press allowed for books to be mass-produced, and greatly reduced the price. Gutenberg made his first device by adapting a wine press to remove the water from paper after printing. Letter writing has been a means of communication for centuries. However, it was an inefficient means of communicating as one had to wait until another person was traveling before their letter could be sent. In addition, there was no guarantee when, or if, the letter would ever reach its destination. Evolution of all things, communication included, involves the desire to perform tasks more quickly and efficiently. This desire was realized with the invention of the telegraph. The revolution of the telegraph allowed for instant communication across long distances, Upper class people used the telegraph for personal communications, but those of lower economic status were excluded from the technology due to the cost involved in sending a telegraph.

Modern Means of Communication:

Today we take the ability to use a telephone for granted, but in 1876, Alexander Bell was busy realizing a dream that he hoped would once again revolutionize communication. Like all inventors, Bell was perpetually curious and always on the lookout for empirical evidence of the new and interesting. Bell observed that sound vibrations could be transmitted through the air, and received at the same pitch in another room.

Bell wanted to transfer sound and pitch across a wire, and ascertained that this would be possible by reproducing sound waves in a continuous, undulating current. Once proving this theory, Bell realized the same concept could be applied to human speech as it is composed of many complex sound vibrations. A few trial and errors later, and the modern telephone was born.

During the early 1900's, a new form of communication and entertainment took the world by storm. What began as short-wave communication used during WWI blossomed into the hottest communication technology of the era once the war had ended? Amateur broadcasting began around 1914; commercial broadcasting didn't hit the air waves until 1920. Radio was unregulated until 1925 when the Federal Communications Commission stepped in. At this point, approximately 2 million homes had radios and there were several hundred stations broadcasting thousands of programs. The technology advanced so fast that new radios were obsolete within 3-6 months. The technology really took off in 1933 when Edwin Armstrong, "the father of FM radio", invented frequency-modulated radio. By the 1940's, the number of radios in American homes had doubled, and 800,000 FM receivers were produced in 1947. A picture is worth 1,000 words, or so the saying goes.

Unlike other forms of communication photography is a more subjective form of art. A picture can be interpreted a million different ways by a million different individuals, whereas other forms of communication tend to be intent on conveying one message. Most people love to be photographed and man's vain desire to depict himself has been apparent since the discovery of the first cave paintings. Capturing an image of the self guarantees a place in history for that individual. Television made its official debut at the 1939 New York World's Fair. It was seen as an amusing, but unnecessary, appliance and the radio continued to be the favored form of communication. As the years passed, prices for televisions dropped and now the majority of homes have at least

one television. It is safe to theorize that few forms of communication have had as large an impact on society as television. What was once a luxury item is now an essential? It may be hard to believe but the first cell phone research began in 1843 when Michael Faraday conducted research to see if space could conduct electricity. Fast forward to 1973, and Dr. Martin Cooper is credited with inventing the first portable handset. Landlines are slowly becoming obsolete as everyone from senior citizens to elementary school students acquires their own cell phones. The original Internet was invented in 1967 for military purposes. An Internet in its most basic form is simply a group of computers able to connect to each other and share information. This included electronic mail (email) and the use of sites containing vital information (websites). Once the Internet started to catch on it was used primarily by corporations for collaboration purposes. Today the Internet is available everywhere and to everyone.

It is used for a variety of reasons including socializing, conducting research, and advertising. It has even surpassed the television as a source of communication because you can receive any information you want instantaneously. One click of a button and a website will load with whatever information you have requested. Social media defined is a special class of websites designed to meet three specific criteria. These criteria include-the majority of the content on the site is user generated, there is a high level of interaction between social media website users, and the websites are easily integrated with other websites. One of the most popular social media platforms is blogging. A weblog or "blog" was first developed in 1997. A blog makes it possible for any person with Internet access to create a type of website without having to be familiar with any form of HTML coding that is generally necessary to create a website. Blogs are replacing journals as a form of self expression for many young people today. Yet, having a web presence is vital in today's society and economy. The social lives of many

all owed in these sectors. The policy allowed one private service provider to compete in basic services with the incumbent DoT in each DoT internal circle. It allowed duopoly in cellular mobile services in each circle. As part of the implementation of the NTP 94, licenses were issued against license fees through a bidding process. This policy initiated the setting up of an independent regulator—the Telecom Regulatory Authority of India (TRAI), which was established in 1997. The main objective of TRAI is to provide an effective regulatory framework to ensure fair competition while, at the same time, protect the interest of the consumers.

Liberalization and reforms in Telecom sector started on 24th July 1991, Government announced the New Economic Policy. Telecom Manufacturing Equipment license was de licensed in 1991. Automatic foreign collaboration was permitted with 51 per cent equity by the collaborator. 1992-93: Value added services were opened for private and foreign players on franchise or license basis. These included cellular mobile phones, radio paging, electronic mail, voice mail, audio text services, video text services, data services using VSAT's, and video conferencing. 26 1994-95.

The Government announced a National Telecom Policy 1994 in September 1994. It opened basic telecom services to private participation including foreign investments. Foreign equity participation up to 49 per cent was allowed in basic telecom services, radio paging and cellular mobile. For value added services the foreign equity cap was fixed at 51 percent. Eight cellular licenses for four metros were finalized.

1996-97: TRAI was set up as an autonomous body to separate the regulatory functions from policy formulations and operational functions. Coverage of the term "infrastructure" expanded to include telecom to enable the sector to avail of fiscal incentives such as tax holiday and concessional duties. An agreement between Department of Telecommunication (DoT) and financial

institutions to facilitate funding of cellular and basic telecom projects. External Commercial Borrowing (ECB) limits on telecom projects made flexible with an increased share from 35 per cent to 50 per cent of total project cost.

Internet Policy was finalized.

In 1998-99 FDI up to 49 per cent of total equity, subject to license, permitted in companies providing Global Mobile Personal Communication (GMPC) by satellite services. In year 1999-2000 National Telecom Policy 1999 was announced which allowed multiple 27 fixed Services operators and opened long distance services to private operators. TRAI reconstituted: clear distinction was made between the recommendatory and regulatory functions of the Authority. DOT/MTNL was permitted to start cellular mobile telephone service. To separate service providing functions from policy and licensing functions, Department of Telecom Services was set up. A package for migration from fixed license fee to revenue sharing offered to exist cellular and basic service providers. First phase of re-balancing of tariff structure started. STD and ISD charges were reduced by 23 per cent on an average. Voice and data segment was opened to full competition and foreign ownership increased to 100 per cent from 49 per cent previously.

In year 2000-01 TRAI Act was amended. The Amendment clarified and strengthened the recommendatory power of TRAI, especially with respect to the need and timing of introduction of new services provider, and in terms of licenses to a services provider. Department of Telecom Services and Department of Telecom operations corporatized by creating Bharat Sanchar Nigam Limited. Domestic long distance services opened up without any restriction on the number of operators. Second phase of tariff rationalization started with further reductions in the long distance STD rates by an average of 13 per cent for different distance slabs and ISD rates by 17 per cent. Internet Service Providers were given approval for setting up of International Gateways for Internet using

satellite as a medium in March 28 2000. In August 2000, private players were allowed to set up international gateways via the submarine cable route. The termination of monopoly of VSNL in International Long Distance services was antedated to March 31, 2002 from March 31, 2004. While the former functions as the licensor and policy maker, the latter was entrusted with the responsibility of the operation and maintenance of the system. BSNL provides telecommunication services in the entire country except in Delhi and Mumbai, where the government controlled corporate entity Mahanagar Telephone Nigam Limited (MTNL) continues to be the service provider. Thus, there has been a shift from a static, monopolistic industry that provides a single product, telephone service to a dynamic, multiproduct, multi operator industry. Having said that, it should be noted that this change in market structure has taken place without the privatization of the domestic incumbent service provider BSNL and MTNL. The privatization of the overseas carrier Videsh Sanchar Nigam Limited (VSNL) in April 2002,

India has become one of the fastest growing mobile markets in the world. The mobile services were commercially launched in August 1995 in India. In the initial 5-6 years the average monthly subscribers additions were around 0.05 to 0.1 million only and the total mobile subscribers base in 15 December 2002 stood at 10.5 millions. However, after the number of proactive initiatives taken by regulator and licensor, the monthly mobile subscriber additions increased to around 2 million per month in the year 2003-04 and 2004-05. The total number of telephone subscribers has reached 202.74 million at the end of February 2007. The overall teledensity has increased to 18.26 in February 2007. The total wireless subscriber (GSM, CDMA & WLL (F)) base is 162.53 million. Whereas in the wire line segment with the minor reduction in subscriber base by 0.01 million lines in February 2007, the total wire line subscribers are 40.39 million. In little over a decade, India's mobile connections have grown from 1

million to 752 million. In the year 1998, India had less than 1 million mobile connections, whereas at the end of 2010, India had ~752 million connections, representing ~63% mobile tele density.

In light of increasing dependence on information, our society needs an enormous stock of information, as well as appropriate means for selective access. In other words, the use of a variety of data bases and the development of data base management technology will significantly influence the growth of telecommunication industries. Because the ultimate objective of telecommunication is the promotion of mutual understanding and the enrichment of culture worldwide, technology that reduces language barriers, promotes computer literacy, and enhances computer-oriented music and arts will expand the horizons of telecommunication industries. All of these and other opportunities should be taken into account in assessing future changes in telecommunication industries.

4. CONCLUSION

Communication is necessary for the survival of the human race, but have we taken it too far? Love it or hate it, communication technology is here to stay and will only continue to expand in the future. An important observation on the infrastructure reforms in India is that irrespective of the sector the incumbent has slowed down reform, as reform would lead to an annulment of their arbitrary powers. So much so, the inherited strength of the incumbent coupled with the powers residing with it can impinge on the process of liberalization. Until a clear policy on competition is put in place economic growth and consumer welfare will remain hostage to incumbents' control. Moreover, with the incumbent player trusted with the formulation of reform strategies there is a serious conflict of interest as these reform programmes strike at the roots of their power and privileges, exacerbates the problems of the economic regulator. The Indian mobile industries have

been successful in providing affordable telecom services, thereby empowering wider economic growth across the country and contribute to government finances.

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