Indian Telecom Sector: The Path toward Growth

Authors

Sunil Kumar
Designation: Sr. Lecturer

Official Address: Amity Business School
Amity University Haryana
Amity Education Valley
Panchgaon, Manesar (Gurgaon)
122 413

Email: sunilkumar.auh@gmail.com

Mobile: 08130929232

Ms. Bhawna Mishra
Designation: Assistant Professor

R B Institute of Technology, Agra

Email: bhawnamishraibm@gmail.com

Indian Telecom Sector: The Path toward Growth

Abstract

The Indian telecom sector sector has witnessed tremendous growth over the last decade. Today, the indian telecom sector is one of the largest communication network in the world after China, which conainues to grow at blisteing pace. A liberal policy regime and involvement of the private sector have played an important role in transforming this sector. The total number of telephone has increased from 429.73 million on 31st march 2009 to 926.55 million on 31st December 2011.

This work is dsigned to analyse the growth of telecom sector in India. This paper is divided into different sections including introdution to telecom in India, methodology, survey of literature, India as a major player, modern growth story of Indian Telecom sector, teledensity, mobile technology growth, present scanario, internet usage and concluding obsevations.

Keywords Indian telecom industry, telecom sector, growth of Indian telecom

Introduction

If we go back to 1880, there were only two telecom companies namely the Oriental Telephone Ltd. and the Anglo-Indian Telephone Company Ltd. approached the Government of India to setup telephone exchanges in India. But the proposal was rejected by the government on the grounds that the establishment of telephones was a government monopoly and that the government itself would undertake the work. The government was changed in 1881 and it changes its earlier decision and a license was granted to the Oriental Telephone Company Ltd. of England for setting up telephone exchange at Calcutta, Bombay, Madras and Ahmadabad. January 28, 1982, is a Red Letter Day in the history of telephone in India. On this day Major E. Baring, Member of the Governor General of India's Council declared open the Telephone Exchange in Calcutta, Bombay and Madras.

Central Exchange was opened in Calcutta at third floor of the building in Council House Street. This telephone exchange had 93 numbers of subscribers. For the past decade or so, telecommunication activities have gained momentum in India. Efforts have been made from both governmental and non-governmental platforms to enhance the infrastructure. The idea is to help modern telecommunication technology penetrate India’s socio-culturally diverse society, and to transform it into a nation of technology aware people.

Methodology and Data Source

This paper is based on the study of existing works on telecom sector and analysis of secondary data. The secondary data were collected from different Govt. reports. Time series data is analyzed to see the levels of growth of telecom sector in different time periods. This paper is basically investigative in nature. Different literatures available on telecom (these reports are published mainly by Department of Telecommunications, Govt. of India) are surveyed to analyze the growth of telecom in India. The secondary data were collected from

different sources as mentioned in the paper. Tabular analysis of data is made to study the telecom sector in India and its growth.

Literature Review

Manas Bhattacharya

The purpose of this paper is to construct a vision of Indian telecom sector for the year 2020, i.e., about two decades from now. Development being a continuous process, the choice of the year 2020 is just an arbitrary division of time, a pre-defined time horizon to take stock of what is likely to be achieved. The present paper isolates the agents of change based on international experiences and situates India in this development continuum. The agents of change, as observed from international perspective, have been broadly categorized into economic structure, competition policy and technology. Economic reforms and liberalization have driven telecom sector through several transmission channels of which these three categories are of major significance.

The paper, as it unfolds, is divided into six sections. Section 1 gives a brief account of the era of competition that was heralded in Indian telecom sector and the results achieved. Analysis of the results, particularly comparison with other major countries intrigued further discussions on economic structure, synergy between telecom and IT, competition policy and technology in sections 2,3.4 and 5 respectively. Logical extension of the arguments, as they developed, extended to a vision for 2020 in each of these sections. The paper concludes in section 6.

Rekha Jain (1999)

Tariff rebalancing and interconnection regulation plays a critical role in reforming the telecom sector, characterized by rapid technological changes and monopoly service provision by the incumbent. Due to rapid advances in technology, the prices of long distance communication have fallen more dramatically and incomparably more than that of the wire

line local access. Further, competition in the long distance segment has resulted in a sharp decline in prices, almost bringing them near costs. However, the decline One of the most crucial and debated issues in interconnection regulation is interconnection charging as it forms a major part of both the expenses as well as the revenues for a telecom operator. Therefore, the charging regime has to be efficient, fair and unambiguous to protect the interests of all the players. TRAI began tariff balancing as early as in 1999, and the exercise has gone through TRAI would need to ensure that its decisions reflect technology neutrality. Otherwise the sector could see distorted growth due to regulatory interventions.

National Telecom Policy (NTP) in 1994 and (NTP) 1999

Indian telecom sector has undergone a major process of transformation through significant policy reforms. The reforms began in 1980s with telecom equipment manufacturing being opened for private sector. Historically, the telecom network in India was owned and managed by the Government considering it to be a natural monopoly and strategic service, best under state's control. However, in 1990's, examples of telecom revolution in many other countries, which resulted in better quality of service and lower tariffs, led Indian policy makers to initiate a change process finally resulting in opening up of telecom services sector for the private sector.

Annual Report (2006-07)

Todays, India’s Telephone network is one of the largest communication networks in the world which continues to grow at a blistering pace. The Indian Telecommunications network with over 621.28 million connections is the third largest in the world and third largest among the emerging economies of Asia. Today, it is the fastest growing market in the world. The telecommunication sector continued to register significant success during the year and has emerged as one of the key sectors responsible for India’s Resurgent Economic Growth. The sector which was growing in the range of 20 to 20 percent up to the year 2002-03, has moved

to a higher growth path of an average rate of more than 40 percent. This rapid growth has been possible due to various proactive and positive decision of the Govt. and contribution of both private and public sector.

Broad band Policy (2004)

Recognising the potential of ubiquitous Broadband service in growth of GDP and enhancement in quality of life through societal applications including tele-education, tele-medicine, e-governance, entertainment as well as employment generation by way of high speed access to information and web-based communication, Government have finalised a policy to accelerate the growth of Broadband services.

Demand for Broadband is primarily conditioned and driven by Internet and PC penetration. It is recognised that the current level of Internet and Broadband access in the country is low as compared to many Asian countries. Penetration of Broadband, Internet and Personal Computer (PC) in the country was 0.02%, 0.4% and 0.8% respectively at the end of December, 2003. Currently, high speed Internet access is available at various speeds from 64 kilobits per second (kbps) onwards and presently an always-on high speed Internet access at 128 kbps is considered as 'Broadband'. There are no uniform standards for Broadband connectivity and various countries follow various standards.

New Telecom Policy (1999)

The Government of India recognises that provision of world class telecommunications infrastructure and information is the key to rapid economic and social development of the country. It is critical not only for the development of the Information Technology industry, but also has widespread ramifications on the entire economy of the country. It is also anticipated that going forward, a major part of the GDP of the country would be contributed by this sector. Accordingly, it is of vital importance to the country that there be a

comprehensive and forward looking telecommunications policy which creates an enabling framework for development of this industry.

Annual Report (2008-09)

This is the 12th Annual Report of TRAI. Till date TRAI is regulating telecom sector in India and it took number of initiative for the development of initiatives for the development this sector in terms of growth of subscriber's base, growth of telecom network, emphasis on protecting the interest of the consumer's and monitoring quality of telecom services are being highlighted in this report. This report consists of three parts relating to these above three aspects.

India, Emerging as a Major Player

The Department of Telecom (DoT) was separated from P&T in 1975. DoT was responsible for telecom services in India until 1985 when Mahanagar Telephone Nigam Limited (MTNL) was carved out of DoT to run the telecom services of Delhi and Mumbai. Government opened investment for private investment as a part of Liberalisation-Privatisation-Globalisation policy in 1990s. Therefore, it was necessary to separate the Government's policy wing from its operations wing. Indian government corporatised the operations wing of DoT on October 01, 2000 and named it Bharat Sanchar Nigam Limited (BSNL). Many private operators, such as Reliance India Mobile, Tata Telecom, Essar, BPL, Bharti Airtel, Idea etc. successfully entered the high potential Indian telecom market during 2006-07.

The government of India was composed of many parties which had different ideologies. Few of them were in favour of open the market to foreign players and other wanted the government to regulate infrastructure and restrict the entry of foreign players. Due to this political background it was very difficult to bring about liberalization in telecommunications. When a bill was in parliament a majority vote had to be passed, and

such a majority was difficult to obtain, given to the number of parties having different ideologies.

In 1981, liberalization was stared when Prime Minister Indira Gandhi signed contracts with Alcatel CIT of France to merge with the state owned Telecom Company (ITI), in an effort to set up 5 million lines per year. But because of opposition from the leaders of opposite political party, this policy was let down. That time, she invited Sam Pitroda a US based NRI to set up a Center for Development of Telematics (C-DOT), but this plan was failed due to political reasons. During this period, after the assassination of Indira Gandhi, under the leadership of Rajiv Gandhi, many public sector organizations were set up like the Department of Telecommunications (DoT) , VSNL and MTNL. Many technological developments took place in this regime but still foreign players were not allowed to participate in the telecommunications business.

The demand for telephones was continuously increasing. During this period P.N. Rao led government introduced the National Telecommunication Policy (NTP) in 1994 which brought changes in the following areas like ownership, service and regulation of telecommunication infrastructure. Even, they were also successful in establishing joint ventures between state owned telecom companies and international players. But the ownership of facilities was restricted only to the government owned organisations. Only 49% of the total stake was given to foreign firms. The multi-nationals were just involved in technology transfer, and not policy making.

The world bank and ITU advised the Indian Government to liberalize the service of long distance in order to release the monopoly of the state owned DoT and VSNL; and to enable competition in the long distance carrier business which would help reduce tariffs and better economy of the country. The Rao run government instead liberalized the local services, taking the opposite political parties into confidence and assuring foreign involvement in the

long distance business after 5 years. The country was divided into 20 telecommunication circles for basic telephony and 18 circles for mobile services. These circles were divided into category A, B and C depending on the value of the revenue in each circle. The government threw open the bids to one private company per circle along with government owned DoT per circle. For cellular service, two service providers were allowed per circle and a 15 years license was given to each provider. During all these improvements, the government did face oppositions from ITI, DoT, MTNL, VSNL and other labor unions, but they managed to keep away from all the hurdles.

Telecom Regulatory Authority of India (TRAI) was set up by the government after 1995, which reduced the interference of government in deciding tariffs and policy making. The DoT opposed this. In 1999 the political power was changed and the new government under the leadership of A.B. Vajpayee was more pro-reforms and introduced better liberalization policies. They split DoT in two- one policy maker and the other service provider (DTS) which was later renamed as BSNL. The proposal of raising the stake of foreign investors from 49% to 74% was rejected by the opposite political party and leftist thinkers. Domestic business groups wanted the government to privatize VSNL. Finally in April 2002, the government decided to cut its stake of 53% to 26% in VSNL and to throw it open for sale to private enterprises. TATA finally took 25% stake in VSNL.

It was a gateway for many foreign investors to enter into the Indian Telecom markets. After March 2000, the government became more liberal in making policies and issuing licenses to private operators. The government further reduced license fees for cellular service providers and increased the allowable stake to 74% for foreign companies. Because of all these factors, the service fees finally reduced and the call costs were cut greatly enabling every common middle class family in India to afford a cell

Modern Growth

India has a large population, low telephony penetration levels, and rise in consumer income and spend owing to strong economic growth have contributed to make India the fastest growing telecom market in the world. BSNL is the first and largest operator is the state owned incumbent which is also the 7th largest telecom company in the world in terms of number of subscribers. BSNL was built by corporatization of the erstwhile Department of Telecommunication Services (DTS), a government undertaking responsible for provision of telephony services. After the revision in telecommunication policy, private operators were allowed such as Bharti Telecom, Tata Indicom, Vodafone, MTNL and BSNL have entered as major operators in India. However, rural India still lacks strong infrastructure. Today, india's telephone network is one of the largest communication network in the world which containues to grow at blisteing pace. The indian Telecommunications network with over 621.28 million connections is the third largest in the world and the second largest among the emerging econimics of Asia (TRAI).

Today, telecommunication sector is the fastest growing market in the world. It continued to register significant success during the year and has emerging as one of the key sectors responsible for India's resurgent economic growth. The sector, was growing in the range of 20 to 25 percent upto the year 2002-2003, has moved to a higher growth path of an average rate of more than 40 percent. This rapid growth has been possible due to various proactive and positive decisions of the government and contribution of both the public and private sector. The total number of telephones in the country crossed the 926.55 million mark at the end of December, 2011. The overall tele-density has increased to 76.86% in December 2011. In the wireless segment, there were 893.86 million subscribers in December, 2011 while three were 391.76 million subscribers in March 2009. The wire line segment subscriber base stood at 32.69 million in December, 2011.

The table below shows the growth process in telecom coverage over the last two decades.

Table 1.1: Direct Exchange Lines and Tele-density

Year	Direct exchange Lines	Year over Year	Tele-density
1987-88	3800.80		0.48
1988-89	4166.50	9.62	0.51
1989-90	4589.50	10.15	0.55
1990-91	5074.50	10.57	0.60
1991-92	5809.90	14.49	0.67
1992-93	6796.70	16.98	0.77
1993-94	8025.60	18.08	0.89
1994-95	9795.30	22.05	1.07
1995-96	11978.40	22.29	1.28
1996-97	14542.60	21.41	1.53
1997-98	17801.70	22.41	1.85
1998-99	21601.50	21.35	2.20
1999-00	26,652.50	23.38	2.69
2000-01	32,695.50	22.67	3.18
2001-02	38433.50	17.55	3.67
2003-04	41,492.30	7.96	3.88
2004-05	42,820.20	3.20	3.93
2005-06	NA	NA	NA
2006-07	NA	NA	NA
2008-09	42, 900.72	-2.64	4.78

Source-TRAI consultation papers, NA- Not available.

Effective Teledensity estimated on the basis of service area as on 31-03-2010*

From the above table we can see that there has been a decline in the growth rate of fixed service which to a large extent has been due to the remarkable growth in the mobile

service growth. This growth to a certain extent is phenomenal as the service introduced since 1996. Since March 2003 the growth rate in mobile service has been a robust 160%.

Table 1.2: State wise Teledensity

Service Area	**Rural**	**Urban**	**Total Density**
Andhra Pradesh	24.33	143.18	57.23
Assam	18.47	96.54	29.99
Bihar	14.65	127.96	30.07
Delhi			127.49
Gujarat	33.52	95.82	58.46
Haryana	39.37	100.63	59.7
Himachal Pradesh	52.53	298.15	79.35
J&K	26.93	113.19	49.91
Karnataka	24.08	142.62	67.81
Kerala	44.65	84.18	80.36
Madhya Pradesh	15.41	90.76	35.28
Maharashtra	32.41	108.00	67.24
North East	25.36	100.11	43.22
Orissa	20.61	133.25	39.3
Punjab	42.20	124.01	75.44
Rajasthan	31.42	120.89	52.76
T. N.	38.44	122.65	83.73
U.P. (East)	18.24	104.68	37.37
W.B.	24.29	119.73	52.74

Source-TRAI consultation papers

* Population data/projections are available state-wise only

Thus from the given statistical data we can come to a conclusion that there has been robust growth in the telecom network both for fixed and cellular which is one of the positive indicators towards economic development.

Tele-density Growth –Pre-reform Post Performance and Targets

In the year 1948, the telesdensity is 0.02. Later 1998, the telesdensity is 1.94. It shows the performance of Pre and Post privatization in India.

·In the pre-reform the growth was generally driven by the public sector monopoly showing nothing but a marginal growth.

·Reform process started in NTP 1994

·TRAI was formed in 1997

·First tariff order issued in 1998 and hence policy was effective from 1998

Tele-density growth in post reform period

Table 1.3: Tele-density

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Tele-density	1.94	2.33	2.86	3.58	4.28	5.11	7.02	9.11	13.5	18.5	22.5	47.88	52.74	76.86

Source-TRAI consultation papers and Economic Survey 2011-12

·NTP 99 pushed the reforms further

The growth rate of 2005-10 and growth rate of 2004-05 is greater than growth rate of 50 years that is 1948-1950. The growth started in 1998-2003 period. It further intensified during 2003-05. Growth was mobile driven and privatization played a key role in it.

Growth of Mobile Technology

The growth of wireless connections has been phenomenal, reaching 893.86 million connections at the end of December 2011. As a result, the share of wireless telephones has increased from 80.3 percent in March 2007 to 96.4 percent in December 2011. Improved affordability of wireless phones has made the universal access objective more feasible. The liberalization efforts of the government are evident in the growing share of the private sector in the total wireless connections. As against a meagre 5 percent in 1999, the share of private operators has increased to 86 percent in December 2011.

Mobile Tele-density

Table 1.4: Mobile Tele-density

Year	All India	Mobile Tele-density	Year over year growth
1996-97	339.03	0.04	
1997-98	882.32	0.09	160.25
1998-99	1195.45	0.12	35.49
1999-00	1884.31	0.19	57.62
2000-01	3583.70	0.35	90.19
2001-02	6577.36	0.62	81.86
2002-03	12981.88	1.21	99.19
2003-04	33200.60	3.09	159.60
2004-05	42970.00	3.94	NA
2005-06	NA	NA	NA
2006-07	NA	NA	NA
2008-09	52500.16	44.72	42.27
2009-10	54800.28	49.60	58.17

Source –TRAI consultation papers, NA- Not available.

The high rate of growth combined with slow down of the fixed services has meant in the increase in the proportion of fixed to cellular services. From the low of 2.33% in 1997 the growth has increased to 98% in September 2004. The number of mobile phones surpassed the number of fixed subscribers at the end of 2005. The rising trend of mobile is well continued during 2011-12.

Present Scenario

In the fixed line arena, BSNL and MTNL are the incumbents in their respective areas of operation and continue to enjoy the dominant service provider status in the domain of

Table 1.5: Wireline and Wireless

fixed line services. For example BSNL controls 27.83% of fixed line share in the country. On the other hand, in the mobile telephony space, Airtel controls 35.88% subscriber base followed by Reliance with 40.94%, BSNL with 33.17%, Vodafone with 46.66% subscriber base (as per June 2005 data). Telephone Exchanges out of their 35,000 Exchanges. Keeping in mind the viability of providing services in rural areas, an attractive solution appears to be one which offers multiple service facility at low costs. A rural network based on the extensive optical fiber network, using Internet Protocol and offering a variety of services and the availability of open platforms for service development, viz. the Next Generation Network, appears to be an attractive. (DoT 2006-07).

Table showing Position of Telecom in India till the end of March, 2010

	Dec-09	Mar-10	% Change over Mar 2009
Subscriber's base (in millions)			
i) Wireline	37.06	36.96	-2.64
ii) Wireless	525.09	584.32	49.15
Total	562.19	621.28	44.58
Rural	174.53	200.81	64.13
Urban	387.63	420.47	36.73
Traffic (Minutes use/ Sub/Month)			
Wireless full mobility			
i) GSM	411	410	-15.20%
ii) CDMA	318	307	-14.00%
Teledensity			
i) Wireline teledensity	3.16	3.14	-4.06%
ii) Wirless Teledensity	44.72	49.6	47.14%
Total Teledensity	47.88	52.74	42.61%
Rural Teledensity	21.16	24.29	62.61%
Urban Teledensity	110.96	119.73	33.87%

TRAI Performance Report, March 2010

Fibre network can be easily converted to Next Generation network and then used for delivering multiple services at cheap cost.The total revenue in the telecom service sector is Rs. 40265.12 crores in 2010 as against Rs. 39,756.64 crore in 2009, registering a growth of 1.28%. The total investment in the telecom services sector reached Rs. 200,660 crore in the financial year 2010. Telecommunication is the lifeline of the rapidly growing Information Technology industry. Internet subscriber base has risen to 6.94 million in 2005- 2006 and 81,000,000 in the year 2010.

Internet Usage and Population Statistics

Table 1.6: Internet Usage and Population

Year	User	Population	% Pen	Usage Source
1998	1,400,000	1,094,870.677	0.1	ITU
1999	2,800,000	1,094,870.677	0.3	ITU
2000	5,500,000	1,094,870.677	0.5	ITU
2001	7,000,000	1,094,870.677	0.7	ITU
2002	16,500,000	1,094,870.677	1.6	ITU
2003	22,500,000	1,094,870.677	2.1	ITU
2004	39,200,000	1,094,870.677	3.6	C.I.Almanac
2005	50,600,000	1,112,225,812	4.5	C.I.Almanac
2006	40,000,000	1,112,225,812	3.6	IAMAI
2007	42,000,000	1,29,667,528	3.7	IWS
2009	81,000,000	1,156,897,766	7.0%	ITU
2010	81,000,000	1,173,108,018	6.9%	ITU

Source: www.InternetWorldStats.com

The Government of India will ensure that there will be 66,822 revenue villages under the Bharat Nirman Programme in the country, which have not yet been provided with a Village Public Telephone (VPT), will be connected. However, doubts have been raised about what it would mean for the poor in the country.

The potential of the telecom sector to achieve full employment in this sector is not possible but the enormity of the opportunities can be gauged form the fact that there were 4.9 million Public Call Officer in March, 2010 up from 2.3 million in December 2004.

If we discuss about the value added services (VAS) market in the wireless industry specially in mobile industry in India has the potential to grow from $500 million in 2006 to $10 billion by 2009.

The revealed preference of the subscribers in favour of wireless telephone is continuing unabated. The mobile server which was popularly associated with tycoons has been transformed into mass consumption services. This is confirmed from the rising share of mobile phones(CMPsand WLL) whice has increased from 71.69 percent as on March 31, 2006 to meore than 79 percent (1054.25 lakh CMPsand 441.73 lakhWLL), as on December31, 2006. The share of mobile phones has thus surpassed the share of landlines and this trend is likely to continue. Though the Public Sector Units entered late in the mobile sector, BSNL has provided an impressive 69.45 million phones as on March, 2010.

The private sector has continued its dynamism and enterpreneurial spirit to play a significant role in the growth of telecom sector. The share of private sector in the total telephones has increased from 57 percent as on March 31, 2006 to 87.24% as on March, 2010. Of the 584.32 million phones provided during 2009-10, major share i.e. 509.78million (above 87 percent) was provided by the private sector.

Conclusion

BSNL and MTNL are the only two public sector undertaking, which were allowed to provide basic phone service through copper wires in India. In Delhi and Mumbai, MTNL is having its operations and BSNL in other parts on the country. Now, private operators have also entered in the market, although their main focus is to provide cellular services in the country.

The boost in Indian Telecom market has also given rise to illegal setups and practices. Following the directives issued by the Minister of Communications & IT, Govt. of India, the Department of Telecom has set up Vigilance Telecom Monitoring (VTM) Cells at Delhi, Mumbai, Chennai, Hyderabad and other important locations to vigorously detect the illegal Telecom setups in the country. VTM cells continuously monitor the operators to check the grey market calls and also ensure that the license conditions are fully complied

References

Books

- Borko Furht, Mohammad Ilyas (2003), Wireless Internet Handbook, CRC Press: USA.
- Malhotra K, Gardner S, Rees D.(2005), Evaluation of GPRS Enabled Secure Remote Patient Monitoring System, , ASMTA , Riga, Latvia.
- Hovenga E, Kidd M, Cesnik B.(1996), Healthcare Informatics: An Overview. Churchill Livingstone, New York
- Harnett B. (2006), Telemedicine Systems and Ttelecommunications. J Telemed Telecare.
- Darkens AW, Cary MA.(2000.), Telemedicine and Telehealth: Principles, Policies, Performance, and Pitfalls, Free Association Books, London
- Benson T, Neame R (1994.), Healthcare Computing: A Guide to Health Information Management and Systems Longman, Harlow.
- Norris AC.(2002), Essentials of Telemedicine and Telecare, John Wiley, UK
- Gold WR, Manning T, Street Jr R (1997), Health Promotion and Interactive Technology: Theoretical Applications and Future Directions. Lawrence Erlbaum Associates,
- Heuser S.(2006), `Telehealth Ssystems SlowlyGaining: Devices helpCcurbVisits to Hospital, The Boston Globe.
- Malhotra K, Gardner S.(2006), Evaluating Security Issues in Mobile Internet Healthcare Systems, PGNET2006, Liverpool John Moores University, Liverpool.
- Wootton R, Craig J.(1999), Introduction to Telemedicine, Royal Society of Medicine Press, London.

Reports

- Annual Report (2006-07), Department of Telecommunications, Minisrtry of Comunication and IT, Government of India,
- Annual Report (2008-09), Department of Telecommunications, Minisrtry of Comunication and IT, Government of India,
- Choudhury, Ashish (2005), Growth of Telecom in India, Nokia, India.
- TRAI, Consultation Papers.
- National Telecom Policy, Department of Tele Communication.
- Govt of India, (2004), Broadband Policy, Department of Telecommunications.
- Economic Research Unit (2002), Indian Telecommunication Statistics, Department of Telecommunications, Government of India. New Delhi
- Broad Band Policy (2004), Department of Telecommunications, Minisrtry of Comunication and IT, Government of India,
- New Telecom Policy (1999), Department of Telecommunications, Minisrtry of Comunication and IT, Government of India
- Manas Bhattacharya (Vision 2020), Department of Telecommunications, Minisrtry of Comunication and IT, Government of India

Journals

- Win KT, Susilo W.(2006, Information Security and Privacy of Health Data, International Journal of Healthcare Technology and Management, 7: 492-505
- Seaton B, Tsoukatos T.(2004), A new Way of Aaccessin Clinical Information on the Move, . The British Journal of Healthcare Computing & Information Management, 21: 27-28.

- Pederson CD.(2002), Electronic Communications & Internet Opportunities in the Danish Health Services, The British Journal of Healthcare Computing & Information Management, 19, 22-25
- Lauter K. (2004), The Advantages of Elliptic Curve Cryptography for Wireless Security, IEEE Wireless Communications, 62-67
- Malhotra K, Gardner S, Patz R (2007), Implementation of Elliptic-Curve Cryptography on Mobile Healthcare Devices, IEEE International Conference on Networking, Sensing and Control, London, United Kingdom. April 15-17.
- Subramanian, Dilip (2004), 'Impact of deregulation on a public sector firm, Case study of ITI' Economic and Political Weekly, Vol. XXXIX, No: 49, pp. 5233-5245.
- Herscovici & Christodoulou,(2002), Wireless Telemedicine Systems Overview Telemedicine, IEEE Antenna's and Propagation Magazine, 44
- Jain, Rekha and Trilochan Sastry (1999) 'Assessment of Socioeconomic Impact of Rural Telecom Services: Implications for Policy', Workshop on Telecom Policy Initiatives: The Road Ahead.

Websites

- www.dot.gov.in Aug, 2012
- http://www.trai.gov.in/trai/upload/PressReleases/404/pr13dec06no123.pdf, Aug, 12
- http://www.dot.gov.in/annualreport/2011/English%20AR%202010-11.pdf Aug, 12
- http://www.dot.gov.in/Parliamnet/Lok%20Sabha/2012/Loksabha140312.pdf Aug, 12
- http://www.kpmg.com/IN/en/IssuesAndInsights/ThoughtLeadership/India_Telecom_2010 pdf Aug, 12
- http://www.telenow.net/data Aug, 12
- http://www.telenow.net/sites/default/files/PressRelease23july.pdf Aug, 12

Indian Telecom Sector Growth: an International Success Story 870 Million Connections Added Against Target of 600 Million. During 11th Plan Overall Teledensity Exceeds 76 Per Cent Over 97 Per Cent Villages Connected Through VPTs Customers Get Options For Mobile Number Portability and Commercial Communications Preferences Draft National Telecom Policy- 2011 Announced. Year End Review Deptt. of Telecommunications. The Indian Telecom sector has proved to be an international success story. The sector has witnessed a commendable growth over the past two years. With an overall subscriber base of 914. Telecom: Enabling growth and serving the masses. TeleTech 2014 www.deloitte.com/in.Â Indian banking sector has intense competition between domestic and foreign players, which compels them to adopt innovative strategies towards customer loyalty. However, it is only an urban phenomenon.Â India, the second largest telecom market by subscriber base after China, witnessed phenomenal growth in last decade. The 2G scam leading to cancellation of a spate of licenses, high competition, heavy debt and flip-flops on regulatory and other policy issues in recent years, have taken a heavy toll on the sector, hurting the profitability of companies. PDF | The Indian Telecommunication industry is the fastest growing in the world. Telecom sector has been considered as an important tool for the | Find, read and cite all the research you need on ResearchGate.Â policies and reforms on the growth of Indian Telecom Sector. Keywords- telecom industry , reforms, national telecom policy. Telecommunication has been considered as an important tool for the socio- economic.