

Telecommunication

MARKET & OPPORTUNITIES



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Executive Summary

The fast track growth of the Indian telecom industry has made it a key contributor to India's progress.

India adopted a phased approach for reforming the telecom sector right from the beginning. Privatisation was gradually introduced, first in value-added services, followed by cellular and basic services. An independent regulatory body, Telecom Regulatory Authority of India (TRAI), was established to deal with competition in a balanced manner. This gradual and thoughtful reform process in India has favoured industry growth.

Today, there are more than 225 million telecom subscribers in India. Every month, 6-7 million new subscribers are added. Upcoming services such as 3G and WiMax will help to further augment the growth rate.

Furthermore, the Indian economy is slated to sustain its 7-9 per cent growth rate in the near future. This is supported by the political stability that the country is experiencing currently. India's demographic outlook makes it one of the largest markets in the world. A conducive business environment is also created by a favourable regulatory regime.

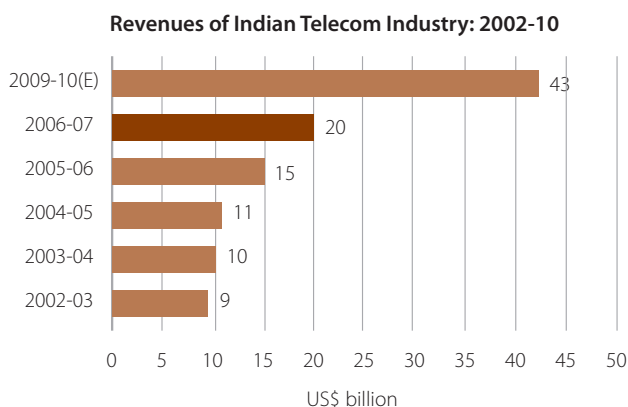
There exists enormous business potential for telecom companies on account of the country's low teledensity, which is close to 19 per cent presently. The Indian telecom industry is growing at the fastest pace in the world and India is projected to be the second largest telecom market globally by 2010.

Telecom Industry – A Benchmark for Others

INDIAN TELECOM INDUSTRY FACT BOOK

- Total telecom subscribers : 225.21 million (June 2007)
- Teledensity : 19.86 per cent (June 2007)
- Addition of new mobile subscribers per month (June 2007) : 7.34 million
- Annual growth rate of telecom subscribers (2006-07) : 46.82 per cent
- One of the fastest growing cellular telephony markets in the world
- Average Revenue Per User (ARPU) for GSM : ~ US\$ 6.6 per month
- More GSM subscribers than fixed line subscribers
- Telecom equipment market (2006-07) : US\$ 17,100 million
- Handset market (2006-07) : US\$ 4,750 million
- Expected to reach a mobile subscriber base of about 500 million by 2010 (i.e., more than one phone for every household)

The Indian telecom industry witnessed a CAGR of approximately 22 per cent from 2002-03 to 2006-07. The CAGR from 2006-07 to 2009-10 is expected to stabilise at 21 per cent.



Source: TRAI Annual Report

Telecom Services in India

Internet
PMRTS
VSATs
Radio Paging
GMPCS
Basic Services
Mobile Services

The Indian telecom market generated revenues of approximately US\$ 20 billion in 2006-07. The market witnessed a growth rate of 33 per cent over the last year and recorded a CAGR of 22 per cent for the period 2002-03 to 2006-07. This growth has resulted in doubling the revenues of the telecom segment in the past three years. Further, it is expected that the industry will generate revenues worth US\$ 43 billion by 2009-10.

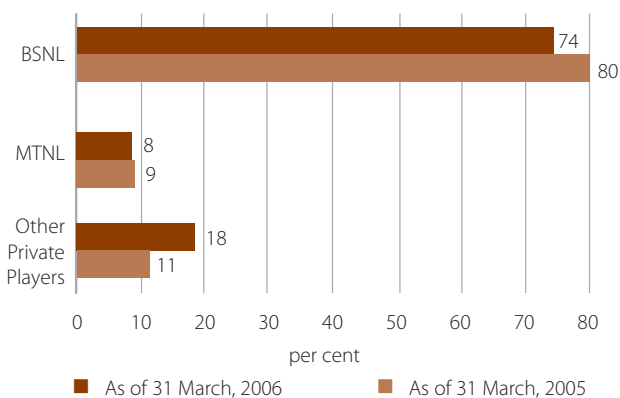
The Indian telecom industry can be divided into basic, mobile and Internet services. There are also some smaller segments such as radio paging services, Very Small Aperture Terminals (VSATs), Public Mobile Radio Trunked Services (PMRTS) and Global Mobile Personal Communications by Satellite (GMPCS).

TELECOM SERVICES

Basic Services

Basic services encompass fixed wire line and Wireless in Local Loop (WLL-fixed) services. BSNL and MTNL are the two largest operators in this segment. MTNL is present in Delhi and Mumbai, whereas BSNL covers the rest of the country. Though private players, such as Bharti and Reliance, have registered notable growth, the Government-owned BSNL dominates the segment in terms of subscriber base.

Share of Basic Service Operators in India

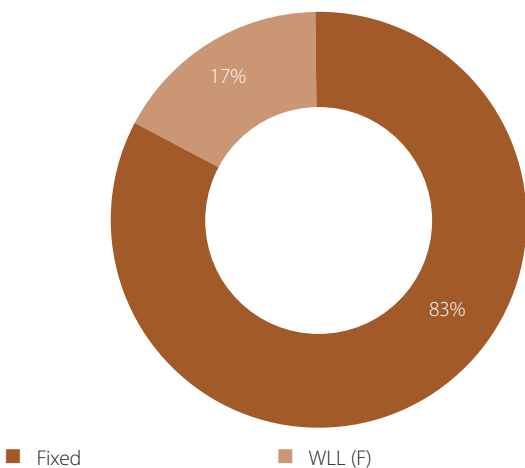


Source: TRAI Annual Report

Indian majors such as Bharti, Reliance and the Tata group have forayed into basic telecom services.

In 2006, the total number of basic service subscribers exceeded 50 million. Fixed wire line users made up a large share of this, with a contribution of 83 per cent.

Basic Services in India : 2005-06

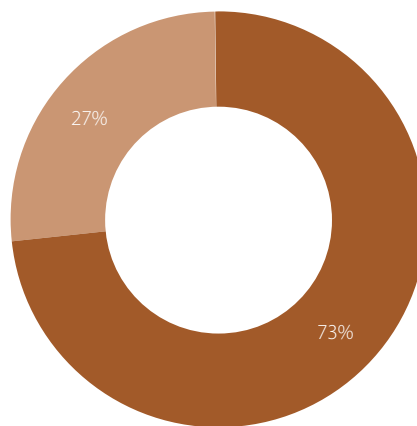


Source: TRAI Annual Report

Mobile Services – Stay Connected

Mobile services have led the spectacular growth of the Indian telecom industry. Currently, 12 players are active in this segment. The total number of wireless subscribers escalated to 185.13 million by the end of June 2007, with the monthly addition of more than 6 million wireless subscribers. GSM continues to dominate this segment by a large margin as compared to CDMA, which has a share of only 23 per cent.

Indian Mobile Services Market Share (Till Quarter Ending March 2007)



■ GSM ■ CDMA

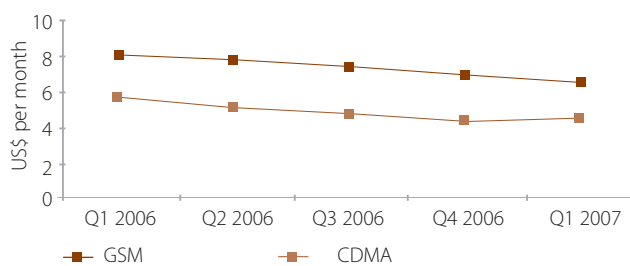
Source: TRAI

India is one of the few countries in the world to have more GSM subscribers than fixed line subscribers.

All the operators predominantly provide voice services, value added and data services such as SMS, mobile internet service, email, chatting, conferencing, GPRS service, etc. Services such as video conferencing and Closed User Group (CUG) facility are also gaining momentum.

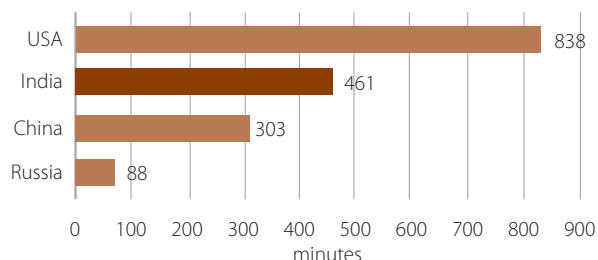
The commoditisation of voice services has been a major magnet for service providers, compelling them to intensify

Average Revenue Per User in India



Source: TRAI Website

Minutes of Usage per Month



Source: TRAI Website

their focus on data services. Revenues from value added services are growing at 30-40 per cent annually. These trends have paved the way for 3G services in India.

Indian players have constantly reduced tariffs, which in turn has led to a constant reduction in the Average Revenue Per User (ARPU). However, though the ARPU is declining gradually, it remains well supported by the increase in subscriber base. The ARPU for GSM service in India is much higher than that for CDMA service.

Notwithstanding a low ARPU, mobile usage is on the increase. India currently stands at number two in the world in terms of the Minutes of Usage (MoU).

The declining ARPU implies that India Inc. is tapping the huge market at the bottom of the pyramid by reducing tariffs, thereby enhancing affordability.

Radio Paging Services

Radio paging services have been registering negative growth since FY 2000.

Radio paging services took off to a promising start in India in 1995. The segment, however, could not compete well with cellular services in general and SMS technology in particular and is shrinking continuously. At present, all but four radio paging service providers have been marginalised in the Indian market.

Very Small Aperture Terminals (VSATs)

The market for VSAT services surged by 5.73 per cent during the quarter ending in December 2006 and the segment had a total subscriber base of 55,070. HCL Comnet is the largest of the eight players functioning in the market.

Public Mobile Radio Trunked Services (PMRTS)

A majority of the PMRTS subscribers (72.05 %) are based in metropolitan cities – Delhi, Mumbai, Chennai and Bangalore.

The PMRTS industry has not grown to its envisaged potential in India. High licence fee for this service leaves very thin margin for services providers, thereby inhibiting its growth. Around 31,000 subscribers are availing this service in India from 12 different operators.

Global Mobile Personal Communications by Satellite (GMPCS)

GMPCS services were launched in India in 1999. These services allow a subscriber to communicate from any point on earth through a hand-held terminal. Moreover, the telephone number remains unchanged, irrespective of the subscriber's location.

Iridium India Telecom Limited pioneered GMPCS services in India. The Government has restricted foreign equity participation in this segment to 49 per cent.

Internet Service – Road to a Hi-tech India

Approximately 400 Internet Service Providers (ISPs) are offering Internet services in India.

Despite a slow penetration rate, this segment embodies huge growth potential in India. In June 2007, there were 2.52 million broadband connections in India. BSNL is the largest player by market share in this segment. With the implementation of Broadband Policy in 2004, the Government has sent out signals of its positive intent to boost internet penetration in the country. Earlier in 2002, the Government opened internet telephony and issued licenses in this domain.

HANDETS MARKET

India is evolving from merely being a handset market to repositioning itself as a manufacturing destination as well. With the subscriber base surpassing all estimates, handset manufacturers are presented with a great opportunity to maximise returns from the market. In addition, the increasing replacement rate (current replacement time is around 18 months) translates into a significant potential for the development and sale of increasing number of handsets.

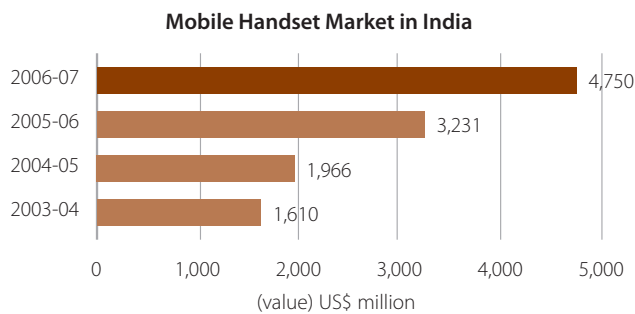
Competitive pricing has triggered the growth of coloured handsets and they command 65 per cent of the market today, whereas the share of monochrome handsets has shrunk to 35 per cent. These phones are available at prices as low as US\$ 45. Further, camera phones currently occupy 15 per cent of the sales volume.

In the wake of the growing need for localising products and keeping pace with the market, many international companies have established their manufacturing facilities

in India. This has also helped them in reducing costs and widening the market presence.

The CDMA category is growing faster than GSM. It captured 25 per cent of the market volume in 2005-06 as against 20.5 per cent in the previous year.

The Indian handset market grew at the rate of 50 per cent in 2006-07, propelled by the sale of approximately 44 million handsets. GSM handsets accounted for approximately three-fourth of the sales volume. This growth can be attributed to both new handset sales and replacement sales.



Source: Voice & Data

The top three GSM mobile vendors are Nokia, Samsung and Sony Ericsson. LG, ZTE and Samsung lead the race in the CDMA category.

In the GSM category, Nokia dominates the market with 72.5 per cent market share in terms of volume. LG is the market leader in the CDMA space, commanding 60 per cent share.

TELECOM SUBSCRIBER BASE AND TELEDENSITY

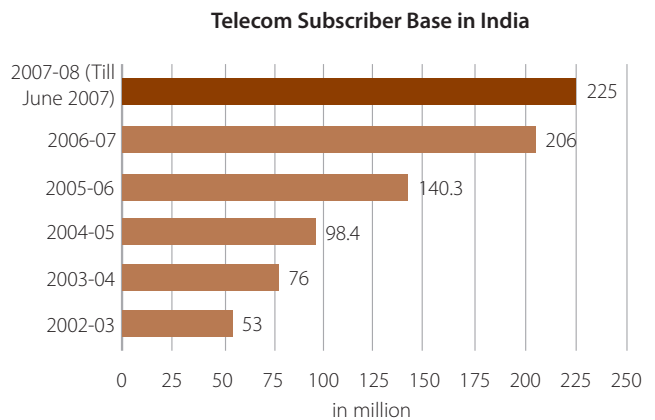
Market Share of Handset Manufacturers GSM and CDMA (2006-07)	
Nokia	53.6%
Motorola	11.1%
LG	11.0%
Sony Ericsson	6.5%
Samsung	5.6%
ZTE	3.7%
Haier	1.4%
Huawei	0.6%
Others	6.6%

Source: Voice & Data

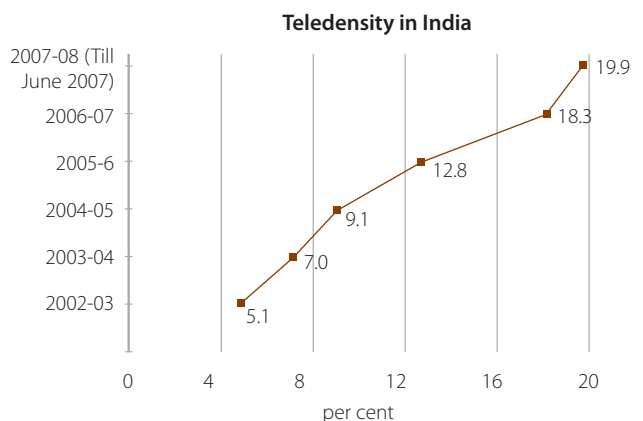
The mobile subscriber base in India is likely to reach 500 million by 2010.

The Indian telecom sector is witnessing an impressive growth rate that will enable it to scale the second position in the global telecommunication market by 2010. In tandem with this, the growing market is creating ample opportunities for every player in the market. The telecom subscriber base is expanding dramatically and the soaring industry revenues are a clear proof of this. The additions in subscriber base in 2007 registered a growth of approximately 47 per cent over the previous year. The CAGR witnessed by the subscriber base for the period 2002-03 to 2006-07 stood at 40.4 per cent. The burgeoning subscriber base has also played its part in increasing the teledensity in the country. Teledensity in India is still low as compared to some other markets, which is an indication of the extensive scope of business opportunity and growth. In 2006-07, India had a teledensity of 18.31 per cent, as compared to the previous year's figure of 12.80 per cent, signifying a growth of 43 per cent.

From 2002-03 to 2006-07, the telecom subscriber base and teledensity in India registered a CAGR at 40.4 per cent and 37.6 per cent, respectively.



Source: TRAI Website



Source: TRAI Website

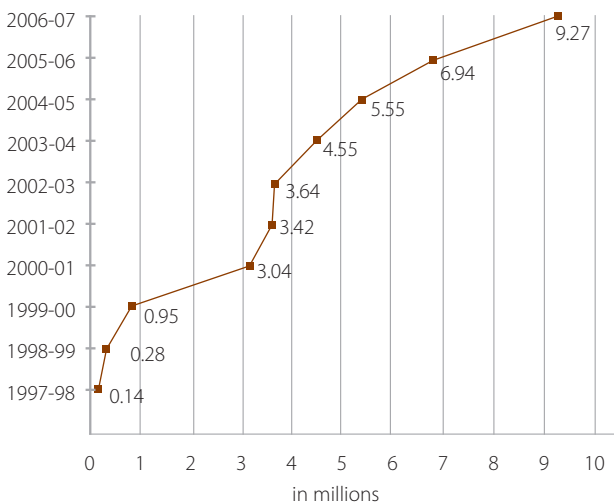
Internet Subscribers

The total number of Internet subscribers increased at a CAGR of approximately 60 per cent from 1997-98 to 2006-07.

Internet and broadband services have also shown impressive growth. The emergence of private players and advent of new technologies have provided a strong impetus to the industry. With significant improvements in the telecom infrastructure under process, the quality and penetration of internet and broadband services have undergone significant improvements.

TELECOM SERVICE PROVIDERS

Internet Subscribers : 1998-2007



Source: TRAI Website

Bharti Televenture leads the Indian telecom market. The company had more than 40 million cellular subscribers in May 2007. Despite stiff competition, Bharti has been successful in retaining its position of leadership. It has the

Market Share of Wireless Operators
(Till Quarter Ending March 2007)

Bharti	23%
BSNL	19%
Reliance	17%
Hutch	16%
TTSL	10%
Idea	9.6%
Others	5.4%

Source: TRAI Website

largest market share in the GSM segment.

The private players occupy 75 per cent of the subscriber base, whereas, the public sector operators (BSNL and MTNL) share the remaining pie. CDMA services were introduced in India in 2002. Reliance Communications dominates the Indian CDMA mobile services segment.

INTERNET SERVICE PROVIDERS

Market Share of GSM Service Providers
(Till Quarter Ending March 2007)

Bharti	30.83%
BSNL	22.77%
Hutch	21.95%
Idea	11.63%
Aircel	4.57%
Reliance	2.81%
MTNL	2.28%
Spice	2.27%
BPL	0.89%

Source: TRAI Website

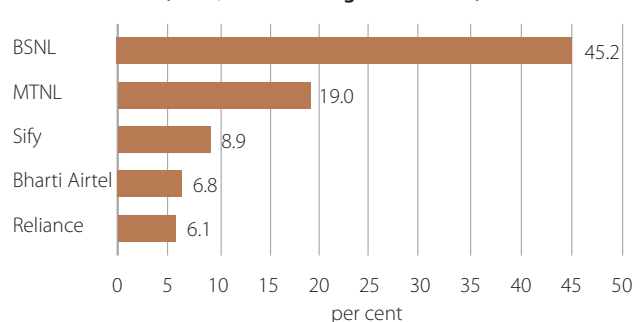
Market Share of CDMA Service Providers
(Till Quarter Ending March 2007)

Reliance	55.15%
Tata Teleservice	35.89%
BSNL	7.95%
MTNL	0.45%
HFCL	0.34%
Shyam Telilink	0.22%

Source: TRAI Website

The Government-owned service providers, BSNL and MTNL, together hold close to two-thirds of the internet services market in India. However, the private operators are also catching up fast.

Top Five Internet Service Providers by Market Share
(Till Quarter Ending March 2007)



Source: TRAI Website

Invest in India

INDIA – AN IDEAL INVESTMENT DESTINATION

- World's largest democracy
- Independent judiciary
- Skilled and competitive labour force
- Fifth-largest telecom network in the world; second largest among the emerging economies after China
- On an average, around 6 million new users added per month, making India the world's fastest growing wireless services market
- Liberal Foreign Investment Regime : FDI limit increased from 49 per cent to 74 per cent; the rural telecom equipment market also open to large investments
- Among the countries offering the highest rates of return on investment
- The large untapped potential in India's rural markets revealed by the 1.9 per cent teledensity in rural markets as compared to the national level of 19.9 per cent
- Expected to become the second-largest telecom market by 2010
- The Government is promoting telecom manufacturing by providing tax sops and establishing telecom-specific Special Economic Zones
- Fully repatriable dividend income and capital invested in telecom equipment manufacturing

Since India's telecom sector trails that of other Asian economies by around 10 years, growth is a certainty.

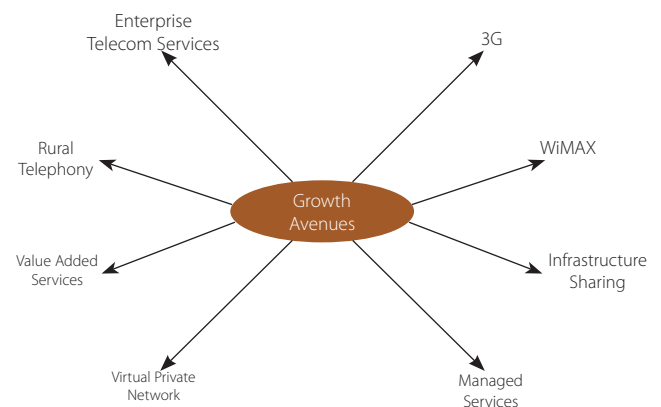
India is currently the third-largest mobile market in the world in terms of mobile subscribers. The Indian telecom market generated revenues of approximately US\$ 20 billion in 2006-07. Further, the industry is expected to register a CAGR of approximately 21 per cent from 2006-07 to 2009-10 and scale US\$ 43 billion by 2010. It is thus not surprising that several foreign companies are making large investments in India. Not to be left behind, Indian cellular operators have also proposed investments worth US\$ 14.78 billion in 2007-

08 to fuel their massive investment plans.

Even though the Indian telecom industry has crossed a subscriber base of 225 million, its teledensity is a mere 19.9 per cent. Thus, the Indian market provides telecom service providers with a large untapped potential, given the country's increasing population and its low teledensity. The Government has plans to raise teledensity to 40-45 per cent by 2010, thereby offering greater growth opportunities for service providers. The fact that the Indian telecom market witnesses an addition of approximately 6 million subscribers every month is proof of the country's immense growth potential.

GROWTH AVENUES

The Indian telecom sector offers unprecedented opportunities for foreign companies in various areas, such as 3G, virtual private network, international long distance calls, value added services, etc.



3G Services – The New Buzz Word

In the conducive business environment, India Inc. awaits the rollout of 3G services.

The Indian government plans to auction the spectrum for 3G services by inviting bids from domestic, as well as foreign players and creating a competitive environment that offers better services to consumers. Therefore, the 3G spectrum is among the major investment opportunities and growth drivers of the telecom industry.

- The immense potential for 3G is reflected by the 30-40 per cent annual growth in value added services
- The global revenue for 3G is 60 per cent higher than that of other services
- Cellphone manufacturers are striving to develop US\$ 100-priced 3G handsets for the Indian market
- India expects to replicate its 2G growth in 3G services

The Indian market is well poised to leverage the 3G service offerings in content categories such as sports, games and music.

In the present context, 3G technology is extremely relevant for India.

- It offers voice capacity that is four to five times higher than that of 2G services. Therefore, it is an ideal platform for low-cost cellular services
- It can fulfil the need of fast developing mobile penetration in rural areas
- It can meet the demand for high-speed data and content-rich services in the urban landscape
- It can play a vital role in augmenting the competitiveness of the country's large BPO segment
- It can be a way forward to achieve the Government's broadband objectives. In addition, it will be a good solution for education, telemedicine, etc.

Even if 2 per cent of the 180 million cellular subscribers adopt 3G technology as soon as it is launched, it is likely to create an initial subscriber base of 3.6 million. The market is slated to capture more than 11.3 per cent of all mobile subscribers by 2010, i.e., 21.3 million people. Therefore, it would not be incorrect to assume that 3G is poised to create the next mobile revolution in India.

In the race towards lowering the entry barrier for 3G services, companies plan to offer bundled service packages with subsidised handsets.

With regard to its business potential, many national players have already completed 3G trials. BSNL has charted out a plan for launching 3G services in 250 cities. Private

players, such as Bharti, Reliance and Idea, are also ready to offer this service in 10-20 major Indian cities. However, Airtel and MTNL are very keen on leveraging their first mover advantage in this field.

Worldwide Interoperability for Microwave Access (WiMAX) – Bridge the Digital Divide

WiMax has been one of the most significant developments in wireless communication in the recent past. Since this mode of communication provides network access in inaccessible terrains at a speed of more than 4 Mbps, it is expected to be a major factor in driving telecom services in India, especially the wireless services. Thus, it will lead to the increased use of telecom services, internet, value added services and enterprise services.

More than 600,000 villages in India do not have access to basic communication services.

- There were more than 9.27 million internet users in India at the end of March 2007
- There is a requirement for broadband data connectivity, especially to the business class
- Cellular technology is unable to fulfil this need due to cost and complexity
- WiMax will accelerate economic growth and assist in providing better education, healthcare and entertainment services

The use of WiMax will be advantageous for India, given its vast geographical size. India is the seventh-largest country in the world with a land area of 1.27 million square miles. Therefore, providing complete broadband connectivity to this vast land mass seems a unrealistic task. Since it involves laying wires and cables under the ground for thousands of miles, it is a task that is enormous with regard to both cost and complexity. Further, this exercise is not to be limited to a one time effort, but necessarily requires future maintenance and upgradation.

A major hurdle for last-mile access through the existing infrastructure is its quality, reliability and suitability for higher speed, combined with the cost of upgrading and maintaining it.

Therefore, India needs an easier mechanism to provide internet connectivity to its masses. WiMax seems an economically feasible option in this scenario since it does not require significant resource requirement. Installing WiMax will facilitate broadband accessibility within a radius of 25 kilometres.

WiMax has several potential areas of growth:

- The IT industry can expand to other cities as well
- It can support the nation-wide literacy programme with videoconferencing playing a vital role in the education of rural students
- Voice over Internet Protocol (VoIP) will make it possible to telecast entertainment programmes in remote areas
- Improved communication could integrate remote villages with the world economy
- It can enhance labour productivity through rapid communication, e.g. easy and frequent interactions between producers and suppliers could increase the demand for Indian products

It is estimated that India will have 13 million WiMax subscribers by 2012. Aircel is the pioneer in WiMax technology in India. The state-owned player, BSNL, aims to connect 74,000 villages through WiMax. Unwilling to be left behind, Bharti, Reliance, and VSNL have already acquired licenses in the 3.3GHz range.

Infrastructure Sharing – Optimising Costs

In the midst of the telecom boom, common infrastructure will improve coverage and quality of calls and reduce costs.

In order to curtail their network deployment costs, many service providers are considering infrastructure sharing. It is a giant leap towards India's ambitious target of 500 million subscribers by 2010. Infrastructure sharing promises several advantages:

- Significant reduction in initial set up costs
 - Increased environmental aesthetics
 - Lower operating costs for service providers
 - Improved service quality
 - Increased affordability for customers
 - Faster roll out of services in rural and remote areas
- Since one tower costs around US\$ 77,500, the industry can register considerable savings by sharing infrastructure.

Passive Infrastructure (for sharing)

- Physical sites and buildings
- Shelters
- Towers
- Power supply and battery back-up

Active Infrastructure (for sharing)

- Antenna systems
- Cables and transmission systems
- Backhaul (core infrastructure with switches and networking)

A step forward in infrastructure sharing is TRAI's proposal to include those rural and remote areas in its purview that are not covered by wireless signals with assistance from the Universal Service Obligation Fund (USOF). The regulator has also recommended sharing both passive and active infrastructure though the current licensing agreement does not allow sharing of active infrastructure.

Managed Service – Outsourcing in Telecom

Nokia offers different services such as remote care, remote integration, consulting, planning and optimisation through its managed service division.

Managed service is another segment that is attracting telecom companies. On account of the rapidly growing subscriber base, service providers find it difficult to manage their infrastructure and network. In such cases, they completely or partially outsource their infrastructure or network management operations.

A case in point is Nokia which is managing the network for Hutchison Essar Limited in 19 circles in India. Having successfully capitalised on the business potential of managed service, Nokia is already earning 30 per cent of its total revenue from this segment. The company has also shifted its first Global Network Solutions Centre (GNSC) to India. The company manages 39 cellular networks in 30 countries. Its Indian centre will act as a global hub for other Nokia operation centres.

Advantages of Managed Service

- Smooth management of technological complexity
- Opportunity to strengthen core competency
- Reduction in financial outlay
- Touching base with new processes and technologies

Another dimension of managed service is telecom, communication and network management solutions for enterprises. Bharti Televentures and IBM, together offer telecom and IT solutions in India. The solutions and services portfolio comprises of the remote monitoring of servers, security operations and network operations, providing data centre services (including server hosting, server management and storage management), IT help

desk services and end-to-end connectivity and fulfilling all telecom and communication requirements.

Virtual Private Network (VPN) – Create Your Community

Virtual Private Network is a private data network that provides connectivity within closed user groups via public telecommunication infrastructure. It is similar to leasing/owning lines and yet getting exclusive access. Sharing of public infrastructure makes it a less expensive option and it is also known as Closed User Group (CUG).

Competition is likely to heat up in the VPN segment as the Department of Telecommunications has relaxed the norms for private players.

This service was first availed in India by corporate units that required VPN services to connect to their branch offices. The service providers in this case are BSOs, ILDOs, VSAT operators, ISPs, etc.

In the light of the developing telecom market, various CUG tariff plans have been launched in the voice telephony segment, which primarily target groups comprising of a large family, friends or colleagues. However, this differs slightly from the original CUG concept as it does not have restrictive connectivity within the group. The decision about whether or not to include restrictive connectivity within the purview of CUG benefits is currently under consideration.

Earlier, BSNL and MTNL customers were required to take DoT's permission for accessing lease lines from private operators. However, this restriction has now been lifted.

Value Added Service (VAS) – Higher Value for Buyers and Sellers

The commoditisation of value added services is paving the way for the exponential growth of value added services in India. The major part of the VAS revenue, 60 per cent, goes into the service provider's account. The aggregate developer and copyright owner only receive 25 and 15 per cent, respectively. Therefore, service providers are very keen on building this segment as it offers opportunities to increase the ARPU. With mobile subscribers also increasingly availing these services, operators in turn are encouraged to deliver quality services.

The VAS industry was worth US\$ 632 million in 2006. The industry was estimated to swell by 60 per cent in 2007

and become an US\$ 1,011 million opportunity.

Though value added services are currently focussing more on the entertainment sector, such as the Mumbai film industry and cricket, there is scope for growth in other avenues as well. Therefore, there is a possibility of the spotlight shifting to utility-based services such as location information and mobile transactions.

The main user of VAS is young India.

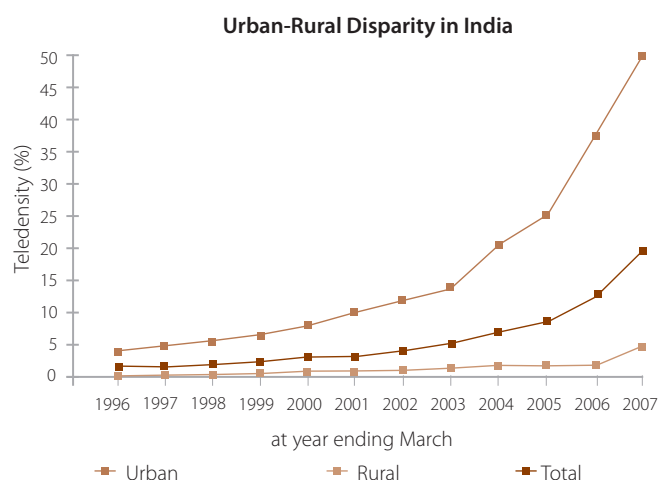
Value Added Services in India: 2006	
Person to Person SMS	40%
Ringtone Download	35%
Person to Application & Application to Person SMS	15%
Games & Data	7%
Others (MMS, etc.)	3%

Source: IMRB Report

Rural Telephony – Reaching Out to the Real India

The rural market holds great potential for telecom companies. Rural telephony will require major investments in the near future as the Government is planning to increase rural teledensity from the current level of 4-6 per cent. This segment will boost the demand for telecom services, equipment, internet services and other value added services, thereby offering a great market opportunity for telecom players.

A surge is expected in rural teledensity with regard to infrastructure sharing, USO and ADC.



Source: TRAI

Telecom policies have reiterated the need for expanding telecom coverage to include even inaccessible and as yet unconnected rural areas. Further, the Government's special mechanisms, such as Universal Services Obligation (USO) fund and Access Deficit Charges (ADC), are making a serious effort to empower rural India with mobile telephony. Sharing of infrastructure is a crucial initiative towards accomplishing this goal.

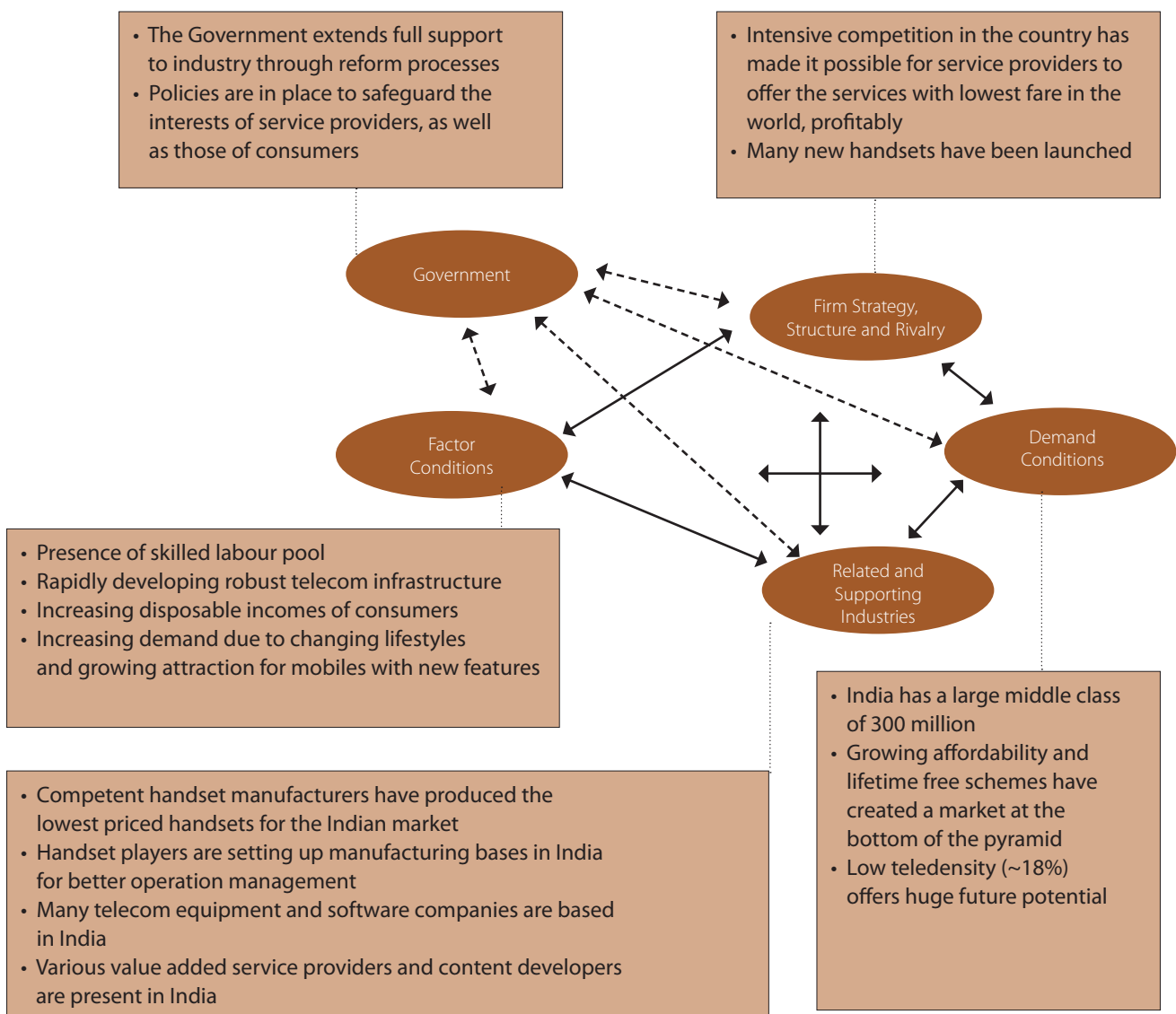
Enterprise Telecom Services

Telecom service providers are increasingly targeting enterprises by providing them with dedicated services. Some of the key services include voice over internet protocol, dedicated telecom communication systems, IT infrastructure enabled unified communication services, etc. This segment is expected to witness major developments as the demand for enhanced telecom infrastructure is increasing along with the growth in the Information and Communication Technologies (ICT) industry.

India's Competitive Advantage – Racing Ahead

An analysis of the Indian telecom industry under the Porter's Diamond Model reveals that India offers a competitive advantage for firms operating in the country.

Porter's Diamond Model for India's Competitive Advantage



India is the fastest growing free market democracy in the world. It has a mature and dynamic private sector, which accounts for 75 per cent of India's GDP, and a market with enormous potential due to its large size and diversity. It is also expected to achieve the highest growth rate among the BRIC countries (Brazil, Russia, India and China). India offers significant business opportunities to the services, as well as the manufacturing sectors. This is because India offers benefits such as cost advantage in product development and back-office processing and the large-scale availability of skilled English-speaking professionals. The middle class population is also a significant market for any business entity.

AT Kearney ranked India as the second-most attractive democracy in its FDI confidence index in 2006. The success of MNCs is a proof that India is an attractive investment destination. India's huge domestic market and buoyant economic growth have always attracted foreign investors. Some of the key advantages of investing in India are outlined below.

STABLE ECONOMIC OUTLOOK

A decade of reforms has opened the country to greater competition and spurred industries to become more efficient.

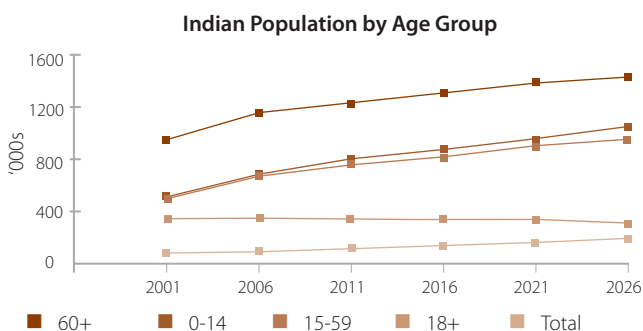
India is currently the fourth-largest economy on PPP basis and is well positioned on a continuously increasing growth curve. India's emergence as a leading destination for foreign investment is a result of positive indicators such as a stable 8 per cent annual growth, rising foreign exchange reserves of over US\$ 212 billion, a booming capital market with the popular BSE sensex topping the majestic 15,000 mark, and Foreign Direct Investment (FDI) of US\$ 15 billion.

Goldman Sachs had earlier predicted that India will become the third-largest economy in the world. However, it has now revised its previous estimates and claims that by 2050, India will even surpass the US and become the second-largest economy after China. The country's economic growth has become more attractive due to the rising share of the services sector in the GDP.

LARGE MARKET POTENTIAL

Around 30-40 million people in India join the middle class every year. The country's upper middle class spends 6 per cent of its earnings on telecom services.

India is one of the largest consumer markets in the world. Due to rapid economic growth and rise in disposable income, the spending power of consumers is increasing rapidly. It has been forecasted that 15 years down the line, Indians will be approximately four times richer than they are today. As per this forecast, Indians will purchase five times more cars and consume three times more crude oil than they do today.



Source: Census of India

According to the 2001 census, about 54 per cent of the country's total population was below 25 years of age. By 2013, another 200 million people will be joining the league, representing an exponential growth in the 'consuming class'. India will become a large consumer of world resources - be it natural or man-made, thereby offering numerous opportunities to marketers around the globe.

Approximately 33 per cent of India's population will be residing in urban areas by 2026, as against 28 per cent in 2001.

LARGE TALENT POOL

The working age population is expected to rise by 83 per cent by 2026.

India has over 380 universities and about 1,500 research institutes, which churn out approximately 200,000 engineers, 300,000 post graduates, 2,100,000 other graduates and around 9,000 PhDs. This large base of skilled manpower offers unparalleled advantages to the companies operating in India. As a result, many multinational companies

have either established operation hubs in India to leverage this sizeable talent pool, or they have outsourced their work to a third party in India. The numerous BPOs and KPOs flourishing in India are a direct consequence of companies choosing the latter option.

LOW LABOUR COST

CII estimates that manufactured product outsourcing accounted for US\$ 10 billion in 2007. The value will escalate to US\$ 50 billion by 2015.

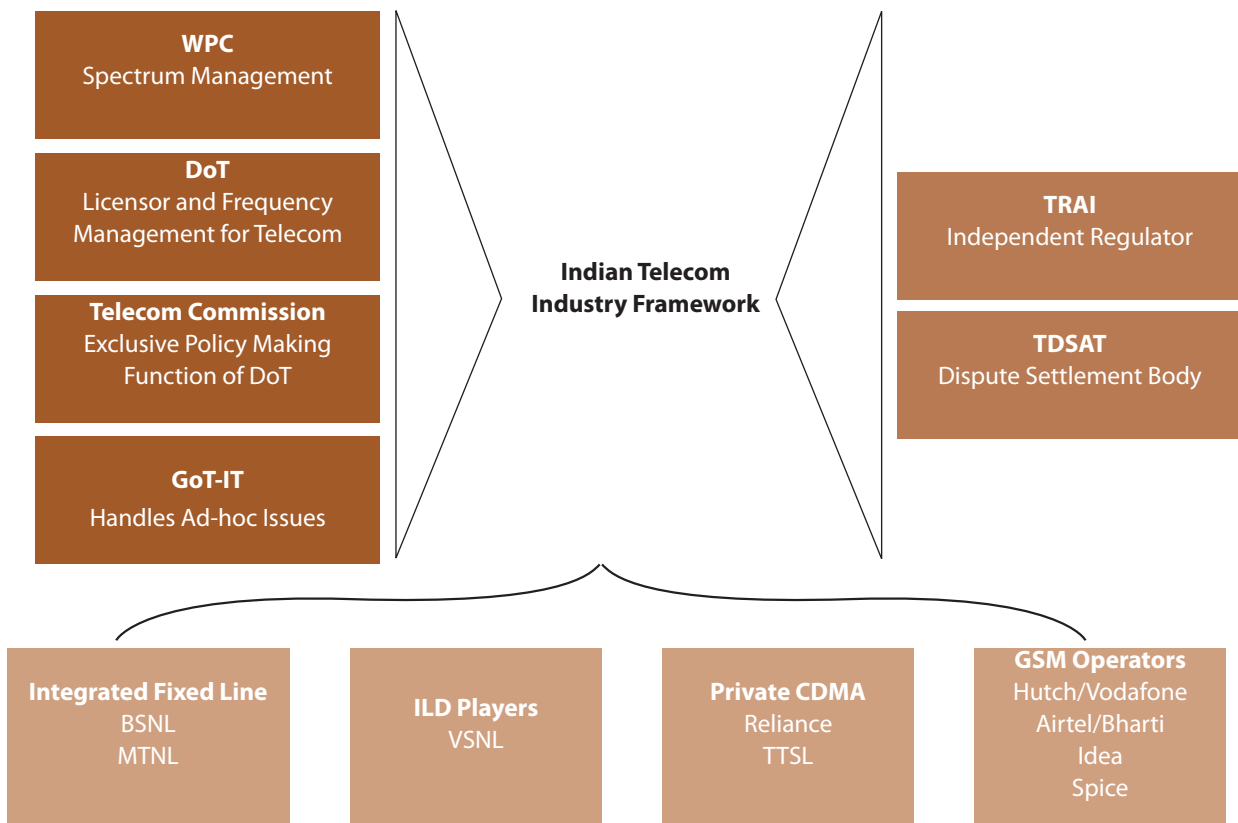
India has one of the lowest labour costs among the developing countries, which is the foremost factor for attracting multinational giants in every sector. The Ministry of Commerce, Government of India, has estimated that off shoring operations to India can provide a cost benefit of up to 40 to 60 per cent, as compared to developed countries. The country has also emerged as a major R&D hub with more than hundred Fortune 500 companies based in India.

An apt example is Nokia, which has set up its manufacturing operations in India considering the long-term sustainable demand for mobile telephony. The company believes that this initiative will help the company in reducing time to market and respond better to customer requirements. It has pumped in US\$ 150 million into its Chennai facility.

Government Policies– Facilitating Industry Growth

The Indian telecommunication system is governed by the Indian Telegraph Act, 1885 (ITA 1885) and the Indian Wireless Act, 1933. The Department of Telecommunications (DoT) governs the Indian telecom industry. DoT, in coordination with its arm, Telecom Commission, looks after licencing, policy making, and frequency management. A prime ministerial council, the Group on Telecom and IT (GoT-IT), handles important ad-hoc issues if any.

To streamline policy reforms and safeguard consumer interests, DoT established the Telecom Regulatory Authority of India (TRAI) in 1997. The Telecom Disputes Settlement and Appellate Tribunal (TDSAT) was also established at the same time. Another regulatory body is the Wireless Planning Commission (WPC) under the aegis of the Ministry of Communications.

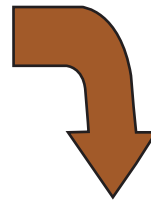


POLICY ENVIRONMENT

The unprecedented growth of the Indian telecom industry has been well supported by the policy reforms in the post liberalisation era.

Telecom sector reforms can be traced to the 1980s, when the Department of Posts and Telegraph was disintegrated to form Department of Telecommunications. Further, DoT was split into Mahanagar Telephone Nigam Limited (MTNL) and Videsh Sanchar Nigam Limited (VSNL). However, the real thrust began with the National Telecom policy in 1994, which aimed at creating the right platform for the industry in India.

- The manufacturing sector opened in 1984
- Private players allowed to enter value added services in 1992
- National Telecom Policy 1994 was formulated
- The industry witnessed a movement from monopoly to duopoly, as the Government mandated two fixed and two mobile operators in each circle (1995)
- Bidding started as per fixed licence fee
- Independent regulator, TRAI, established (1997)
- NTP 1999 signalled the migration from high-cost fixed licence fee to a low-cost revenue sharing regime
- DoT was transformed into a state-owned company, Bharat Sanchar Nigam Limited (BSNL) in 2000
- TRAI amendment act was unleashed to streamline its intervention



2001

- Additional licences in basic and cellular services
- Reduction of licence fee
- Limited launch of CDMA WLL (M)
- Reduction of GSM cellular tariff
- Widening of service coverage by the then players
- Initiation of 3rd and 4th GSM operator networks

2002

- ILD services unlocked to competition
- Go-ahead to CDMA technology
- Initiation of internet telephony in India
- Reduction of licence fees

2003

- Calling Party Pays (CPP) implemented
- Unified Access Licensing (UAL) regime established
- Reference interconnect order issued

2004

- Intra-circle merger guidelines were established
- Broadband Policy 2004 was formulated to target 20 million internet users by 2010

2005

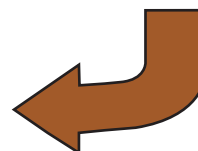
- An attempt to boost rural telephony was made
- FDI limit was raised from 49 to 74 per cent

2006

- Number portability proposed (still pending)

2007

- Decision on 3G services is awaited



INDEPENDENT REGULATIONS

Time and again, the Indian government has devised various regulations aimed at augmenting the industry competitiveness. While some of these regulations have been instrumental in ending the licence regime, others have paved the way for industry growth.

Unified Access Licencing Regime (UALR)

Unified licencing marked the end of the licence regime in Indian telecom industry. It helped in aligning convergent technologies and services.

The establishment of the UALR (2003) eliminated the need for separate licences for different services. Players are now allowed to offer both mobile and fixed-line services under a single licence after paying an additional entry fee. This does not take into account the national and international long-distance services and internet access services.

The UALR signalled the beginning of TRAI's efforts to move towards a 'service and technology neutral' convergence licence. In the future, it is expected to spur competition, as service providers are free to use the technology of their choice to provide access. It is also slated to trigger further growth and increase the accessibility of services.

Service providers also have the choice to switch to unified licencing. In this case, WLL (M) players, not adopting full mobility, need to pay only the fee for WLL (M) with mobility strictly within the Short Distance Charging Area (SDCA), as per the guideline of TDSAT.

Access Deficit Charge (ADC) – Subsidising the Infrastructure Cost

ADC makes it essential for the service provider at the caller's end to share a certain percentage of the revenue earned with the service provider at the receiver's end in long distance telephony. This actually subsidises the infrastructure costs of a service provider enabling access at receiver's end, especially because rental for fixed-line services is low.

Revision in the ADC regime is expected to be followed by further tariff reduction in telecom services.

As the Indian telecom sector is witnessing exponential growth in a highly competitive atmosphere, the sustainability of fixed lines assumes critical importance. ADC supports incumbent operators in rebalancing the

tariff during a transition period by providing buffer time. However, many private players believe that ADC is a burden, as India already has a USO fund in place.

ADC is charged from all service providers as a certain per cent of their adjusted Gross Revenue (AGR). More than 95 per cent of the ADC fund is dedicated to developing the rural infrastructure and services of BSNL. For 2007-08, ADC is estimated to amount to US\$ 444 million.

On the other hand, it was felt that continuous reduction in tariff is also essential to sustain high growth in the number of subscribers. In keeping with this, TRAI has revised the ADC regime, so that the benefit can be passed on to the consumers.

ADC has now been reduced to 0.75 per cent from 1.50 per cent of AGR for all service providers. Per minute ADC on incoming international calls has also been reduced.

Universal Service Obligation (USO) – Building Rural Network

In order to widen the reach of telephony services in rural India, the USO policy was laid along with NTP '99. All telecom operators are bound to contribute 5 per cent of their revenues to this fund.

Initially, only basic service providers were under the purview of USO. Later, its scope was expanded to include mobile services as well.

This system was put in place to bridge the wide gap between urban and rural teledensities, bringing it down to 2 per cent as against the current 31 per cent. In the pre-reforms era, a monopolistic DoT was solely responsible to USO. In the revised context of open competition, the obligation lies with every stakeholder. The Government enforced USO contribution on all operators – except value added service providers – from 1 April 2002. This is a non lapsable fund and also absorbs any grants and loans from the central government.

Although it increases the cost burden for the telecom companies, USO helps in building telecommunication infrastructure in the rural areas.

POLICY IMPACT

At present, India is the third largest deregulated telecom market in the world.

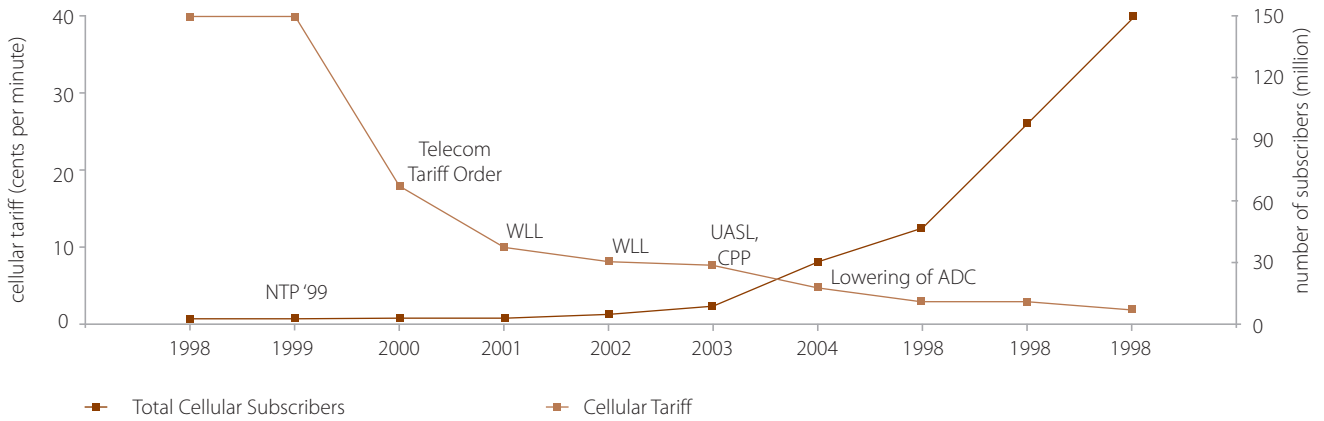
The Indian government has continuously laid strong focus on the development of world-class telecom

infrastructure and the industry has witnessed synchronous policy changes 1999 onwards.

Buoyed by this, the entry of numerous private players has triggered an improvement in the quality of services; a reduction in the tariff level across all segments and

the development of infrastructure. Currently, private participation is permitted in all segments of the telecom industry, including international long distance, domestic long distance, basic cellular, internet, radio paging, etc.

Impact of Policy Change on Indian Telecom Industry



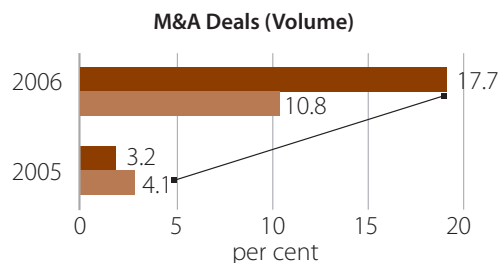
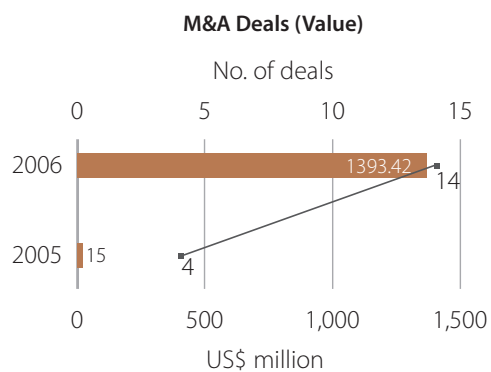
Source: TRAI

Key Trends in the Industry - A Dynamic Market

MERGERS AND ACQUISITIONS (M&A)

The market is witnessing M&A activities that are leading to consolidations in the industry. This trend has assisted companies in expanding their reach in the Indian telecom market to offer better services to customers.

M&A and PE Transactions



- Telecom M&A transactions as a percentage of the total value of all the M&A transaction deals
- Telecom PE transactions as a percentage of the total value of all the PE transaction deals

- As depicted in the graph, there was an increase in both, the number of PE transactions and their values
- Similarly, there was a growth in the telecom M&A transactions as a percentage of the total value of all the M&A transaction deals and the telecom PE transactions as a percentage of the total value of all the PE transaction deals
- For 2006, the average deal value stood at US\$ 183 million and US\$ 99.5 million for M&A transactions and PE transactions, respectively

Recent Mergers & Acquisitions in the Indian Telecom Industry

Maxis Communications – Aircel	Hutch – BPL Mobile	Vodafone – Hutchison Telecom International	Telekom Malaysia – Spice Communications
Maxis Communications acquired a 74-per cent stake in Aircel for US\$ 1.08 billion	Hutch acquired BPL Telecom for approximately US\$ 1 billion	Vodafone purchased a stake from Hong Kong's Hutchison Telecom International for US\$ 11.08 billion	Telekom Malaysia acquired a 49-per cent stake in Spice Communications for US\$ 179 million

FDI INVESTMENT

The Indian telecom industry has always allured foreign investors. In fact, the cumulative FDI inflow, from August 1991 to March 2007, in the telecommunication sector amounted to US\$ 3,892.19 million. This makes telecommunication the third-largest sector to attract FDI in India in the post liberalisation era.



Source: Ministry of Commerce & Industry

MANUFACTURING SETUP – STAY CLOSER TO THE MARKET

With stable macroeconomic impetus and numerous other advantages, India has the potential to become the electronics manufacturing hub of the world. Excited by the record-breaking industry growth, investors have outlaid US\$ 1.5 billion in the past two and a half years in the Indian telecom sector. India will receive an additional US\$ 2 billion investment in the next one year. With the world now recognising India's manufacturing potential, the Indian telecom handset manufacturing market is likely touch US\$ 7 billion by 2010.

Advantage of Manufacturing Base in India

- Caters better to the growing demand for handsets
- Provides better customisation of products to suit Indian needs
- Helps in frequent launch of new products
- Enables low-cost manufacturing

- Access to large number of highly skilled engineers
- Supports wider market coverage
- Increases export opportunities – India as a manufacturing hub for the Asia Pacific

An apt example is Nokia. The company has already produced 25 million handsets in its Chennai facility. It will pump in an additional US\$ 150 million to this set up. The company exports around 20 per cent of its volume to South-east Asia, the Middle East and Africa. Local manufacturing allows companies to avoid 4 per cent countervailing duties on imported handsets, thereby further reducing the cost. Detailed information regarding all manufacturing investments is given in the table above.

EXPECTED EVOLUTIONS

Mobile Number Portability

A study by IDC reveals that 30 per cent of the subscribers will change their service providers if a better option is available.

Mobile number portability allows subscribers to change their service providers without changing their mobile numbers. This would be another benefit that Indian subscribers will receive due to the tough competition in the telecom industry.

It involves significant implementation costs for service providers. It will also increase the subscriber churn rate. Nevertheless, it will also be advantageous for those service providers who offer better network coverage, service quality and customer services.

The Indian telecom regulator, TRAI, has already recommended the implementation of number portability. It suggested a one-time payment of approximately US\$ 4.5 by subscribers to reduce the cost burden of number portability on operators. This will recover operators investment costs in three to five years. However, DoT has not yet approved this request.

Mobile Virtual Network Operators (MVNOs)

Key Manufacturing Investments in the Indian Telecommunication Industry

COMPANY	LOCATION	DESCRIPTION	ESTIMATED INVESTMENT (US\$ MILLION)
Aspocomp	Chennai	PCB manufacturing	200
BPL	Bangalore	Handset manufacturing	2.2
Elcoteq	Bangalore	Telecom manufacturing	100
Ericsson	Chennai	R&D facility and global service delivery centre	50
Flextronics	Chennai	Telecom hardware manufacturing	100
Hon Hai (Foxconn)	Chennai	Mobile handsets and components and electronic hardware and related services	110
ITI	Mankapur	Base stations and plant in Rae Bareli factory	7.5
Laird Technologies	Chennai	Mobile phone accessories	25
LG	Pune	Handset manufacturing	60
Motorola	Chennai	Handset manufacturing	100
Nokia	Chennai	Handset manufacturing	200
Perlos	Chennai	Mobile handset mechanics	12
Salcomp	Chennai	Mobile phone chargers	8
Samsung	Manesar	Handset manufacturing	15
Sem India	Hyderabad/Chennai/Kolkata	A fab facility with strategic investing from AMD, Flextronics, Govt of AP and others	3.2
Siemens	Hyderabad/Chennai/Kolkata	Telecom equipment	100
Spice	Baddi, HP	Low-cost handsets	23
TAPP Semiconductor	Chennai	Production and packaging of chips	200
Telcordia Technologies	Chennai	Software and services for IP wireline and cable	30
XL Telecom	Hyderabad/Chennai/Kolkata	Capacity to make 10,000 CDMA handsets in SKD facility	50
ZTE	Manesar	CDMA equipment supplier	N A

Source: Voice & Data

MVNOs allow a company to offer cellular services with its own brand name without owning any spectrum or network infrastructure. In such cases, the required network capacity is procured on lease from an existing mobile network operator.

With mobile penetration on the rise, there is an increased likelihood of the emergence of successful MVNOs. Many subscribers may switch to MVNOs, especially in the three metros – Delhi, Mumbai and Chennai.

However, India is still considering the MVNO option

and policies are yet to be formed. Therefore, there certainly exists great potential in the Indian market for MVNOs in the near future.

Competitive Landscape – Success Stories

MOBILE SERVICES PROVIDERS

BHARTI AIRTEL

Bharti Airtel, a part of Bharti Enterprise, is India's first and largest private service provider with a nation-wide operational presence. While it was founded in 1995 as Bharti Televenture Ltd. (BTVL), in April 2006, the company changed its name to Bharti Airtel.

Today, it is one of the fastest growing telecom companies in the world with more than 40 million subscribers. The company has structured its business in three segments – mobile services, broadband and telephone services, and enterprise services.

Business Strategies

Business Alliances

In order to improve cost and quality, the company outsources non-core activities through business alliances. These alliances provide access to new technologies and allow the company to adopt the best practices of enhancing customer experience. In fact, Airtel has established alliances with SingTel, Ericsson, Nokia, Siemens, Nortel, Corning, IBM, Hinduja TMT, TeleTech and Mphasis.

Unified Brand Strategy

Bharti has decided to use Airtel as the single brand name across all its categories such as cellular, fixed and internet services. The company believes that an integrated approach such as One Airtel will help it in better addressing customer needs through bundled service offerings. This initiative is slated to increase Airtel's ROI.

BHARAT SANCHAR NIGAM LTD.

BSNL, a state-owned service provider in India, is the seventh-largest telecommunication company in the world. It offers a wide range of services in India, such as wireline, CDMA mobile, GSM mobile, internet, broadband, carrier, MPLS-VPN, VSAT, VoIP, IN, etc.

BSNL is the largest operator in basic services in India with its cellular services helping it to establish its presence as the largest operator in rural areas.

Business Strategies

Rural Penetration

BSNL is playing a leadership role in developing the telecom infrastructure in rural areas. It has been successful in increasing its cellular subscriber base by pioneering its services in the rural terrain. Its services cover the whole of India, except Delhi and Mumbai, which are covered by MTNL, the other state-owned player.

Low Cost Strategy

BSNL is a low-cost service provider of many services. This strategy has helped BSNL in penetrating the market.

RELIANCE COMMUNICATIONS

Reliance Communications, previously known as Reliance Infocom, brought about a digital revolution in the Indian telecom industry by providing India's vast population with affordable means of information and communication. Reliance Infocom, with the aim of making mobile calls

cheaper than postcards, built a 60,000-kilometre-long fibre optic backbone, crisscrossing the entire country.

Reliance currently offers its services in 340 towns with its eight circle footprints; it also initiated mobile data services through its R-world mobile portal. This portal leverages the data capability of the CDMA 1X network.

Business Strategies

Integrated Service

From the beginning, Reliance believed in providing integrated communication services to its customers. The company claims that it sells a greater number of handsets compared to those sold by the market leader, Nokia.

Large Distribution Network

Reliance has created the largest chain of digital entertainment and communication stores – Reliance Web World. The company is also expanding its reach aggressively through retail outlets, sales agents and electronic recharge outlets.

HANDSET MANUFACTURERS

NOKIA

As in the rest of the world, handset major Nokia is also the market leader in the Indian mobile handset segment. Despite tough competition, Nokia has been successful in retaining its market leadership with more than 50 per cent share. The company has also figured in the top-five Indian brands in the Brand Equity survey this year. Nokia's manufacturing hub in Chennai, India, produces handsets.

Business Strategies

Rapid Innovation

The company frequently launches new handsets in the market. Its focus on developing new and exciting features through continuous innovation is primarily driven by its goal to achieve market share supremacy. Nokia has introduced phones at all price points, which include entry level phones for the masses, mid-market colour and camera

phones, high-end phones, etc.

Mass Customisation – Made for Indian Models

Nokia often customises its handsets according to Indian requirements. It has developed various sturdy and affordable handsets such as Nokia 1100 and Nokia 1108 for the sub continental terrain. Nokia 1100 became the largest-selling model in the Indian GSM handset market, attracting tech savvy young urbanites and the corporate class.

MOTOROLA

Motorola is among the leading handset brands of India. The company functions in three business segments – mobile devices, networks and enterprise, and connected home solutions. It has also established six research and development centres in India. Approximately, 40 per cent of the software used in Motorola phones worldwide is designed in India.

Business Strategies

Competitive Pricing

Motorola aims at 'Connecting the Unconnected'. The company, on account of its market penetration plan, has adopted penetration pricing strategies. Motorola has concentrated more on the lower-tier products with its entry-level phones priced as low as US\$ 40. This segment actually accounts for most of the company's market growth.

Attractive Designing

Motorola places significant emphasis on the attractiveness of a handset. As a result, Motorola handsets have established a distinct identity for themselves in the market. This strategy has been adopted because of Indian consumers' preference for appealing handsets.

LG MOBILE

LG forayed into the Indian handset market by partnering with Reliance Infocom in the CDMA segment. LG is the biggest producer of CDMA handsets in the world. Later,

the Korean major, LG, , also launched GSM handsets in the Indian market.

Business Strategies

Market Penetration

The company wants to become the market leader in the GSM handset segment in India. Therefore, it is focussing on the entry- and mid-level market segments. LG is offering handsets at 30-50 per cent lower prices than those of Samsung and Nokia.

Rapid Innovation

The company is planning frequent handset launches in India. In 2007, it will offer 21 new handsets of which 7 will be 3G technology-enabled ones.

Exchange Rate Used

Year	Exchange Rate (INR/US\$)
2000-01	45.75
2001-02	47.73
2002-03	48.42
2003-04	45.95
2004-05	44.87
2005-06	44.09
2006-07	45.11

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