Having emerged as the fastest growing telecom market in the world, India has over 500 million telecom subscribers, with more than 120 million subscribers added in the last eight months. The teledensity too has shown significant increase to cross the 40 percent mark this year. The success of the Indian telecommunications sector has become the cynosure of the world and has made the country a truly attractive investment destination.

The success of the sector can be attributed in no small part to the strong regulatory support provided by the Government. The policy initiatives coupled with numerous growth-oriented steps taken by private players and other stakeholders have created a truly stimulating environment.

The growth of the telecommunication sector has also fueled the inclusive growth agenda with the industry seeking to make an active contribution to the development of the less advanced sections of society. Today every fifth person in rural India is connected; from wage earners to shopkeepers, farmers to fishermen; mobile phones are helping in increasing their productivity.

On the occasion of India Telecom 2009, the 4th International Conference and Exhibition, the Department of Telecommunications is pleased to release this report on the Indian telecom success story. Compiled by KPMG and FICCI, it provides an overview of the Indian telecommunications sector and will serve as a useful reference manual for all stakeholders including regulators, policy makers, telecom operators and the general public.

P. J. Thomas
Secretary
Department of Telecommunications & IT
Government of India
New Delhi
The Federation of Indian Chambers of Commerce and Industry (FICCI) and KPMG are proud to present this report on “India Telecom 2009 – Telecom for Inclusive Growth”, in association with the Department of Telecom (DoT).

This is an exciting time for the Indian telecommunications industry. The sector has witnessed tremendous growth over the last few years, having added more than more than 120 million subscribers in eight months alone. While the success so far was driven primarily by urban areas, the next phase of growth is expected to have a strong rural flavor. There will be a strong focus on connecting new markets as well as expanding current markets through non-voice services. This presents attractive opportunities for all stakeholders of the industry, including the Government and private players.

This report provides the reader with an overview of how the industry has developed over the last few years, with a special emphasis on key trends impacting the industry today. This report also discusses the impact that this sector has had in promoting the agenda of inclusive growth.

We are extremely grateful to the Department of Telecommunications (DoT) for providing us with this opportunity to work with them for the India Telecom 2009 event.

Amit Mitra
Secretary General
FICCI, India

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Executive Summary

Over the last few years, India has observed enviable growth in its economy, even in the face of the global slowdown. The strengthening domestic market and the domestic nature of investment financing has helped in minimizing the impact of the global economic crisis. The changing demographics in the country have also contributed in making this an attractive market, thus attracting significant investments from both domestic and international players.

The telecom industry specifically has had a big role to play in the progress that has been made by the country. The Indian telecom sector has been the fastest growing in the world and is now the second largest telecom market globally. The eyes of the world are now on India, and the policy makers and private players are working together to ensure that the telecom success story continues at the same pace.

The success of the sector has largely been driven by wireless services, with operators reporting total (wireline + wireless) additions of approximately 15 million subscribers every month. The overall teledensity has crossed 43.5 percent, with urban areas approaching 100 percent teledensity. Clearly, the focus now is to increase penetration in rural areas to drive the next phase of growth. All stakeholders - including the government, the regulator and the private players have taken significant initiatives to promote rural penetration and contribute to inclusive growth.

Contributing to almost 70 percent of the population and a significant piece of overall demand for goods and services in the country, rural India has now come to the forefront of the industry’s collective focus. The Government has introduced specific measures and policies for rural upliftment, including enhanced provisions under the National Rural Employment Guarantee Scheme and the Bharat Nirman Program. Of particular interest to the telecom industry are the provisions under the Universal Service Obligation Fund which promote the penetration of telecom infrastructure and services in rural areas.

In her address in June 2009, President Pratibha Patil announced that the government’s targets will include a rural teledensity of 40 percent in the next five years and the expansion of broadband coverage to every panchayat in three years. She also mentioned that the scheme for Common Service Centres or e-kiosks will be repositioned so as to be a network of panchayat-level Bharat Nirman Common Service Centres providing government services to rural citizens.2

1 TRAI, November 2009; DoT
2 http://presidentofindia.nic.in/sp040609.html
It has been intriguing to observe the impact that the telecom sector and the rural population have had on each other. While the rural areas benefited the industry by opening up a large market, the industry in turn played a significant role in the social and economic upliftment for the rural public. The sector has contributed in generating employment, improving local businesses and overall standard of living by effectively integrating with the economic lifecycle of the local economy.

Telecom manufacturing is another facet of the sector that has emerged as a hot topic in industry circles. India is fast emerging as a hub for global telecom manufacturing and the production and exports of telecom equipment in the country have been on a steady rise. Leading global players have made significant investments in setting up manufacturing and R&D facilities in India, with many more being planned.

While voice services have historically been the key force behind telecom growth, industry observers have seen a steady rise in the uptake of value added services in recent times. The ABC of VAS - namely Astrology, Bollywood and Cricket – still continues to drive the prime usage of value added services. However, applications like mobile commerce are slowly on the uptake and are expected to grow further in the coming years. The need of the hour is to develop more locally relevant content – like news alerts in local languages, weather updates and others – which will drive up the consumption of VAS even further in the future.

The industry is now eagerly awaiting some key upcoming regulations including the 3G and BWA auctions, scheduled for early next year. These are likely to have a significant positive impact on the sector and its growth in the next few years. Mobile Number Portability is also likely to be rolled out in the next few months which will make the market more competitive and offer tremendous benefits to the consumers.

In the short term, the market will be under severe competitive pressure as revenues are still primarily driven by voice. The long term looks attractive due to anticipated potential of VAS and Data services as key differentiators and revenue generators.

The Indian telecommunications industry is well set to build further on the success of the last few years. The policy makers and the private players have successfully come together with various initiatives to ensure that the industry continues to remain a shining star for India, to the benefit of all.
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01. Macro-Economic View of India
Macro-Economic View of India

Resurgence in the time of global slowdown...

The year gone by, was one packed with significant developments on the world economic front. Despite the effects of the global economic turmoil, the Indian economy has managed to perform relatively better than its contemporaries recording a real GDP growth rate of 6.7 percent in 2008-091.

While agriculture, manufacturing and services have been the fundamental pillars of the Indian economy, the services sector has been the forerunner of continued rapid growth contributing approximately 57 percent of the GDP in 2008-09².

1 RBI
2 CSO Estimates
The country is expected to register a growth rate of 6 percent in 2009-10\(^3\). Even at these rates, India’s growth is estimated to be higher when compared to other regions globally.

Reforms have enabled sustained growth

While liberalization in industry, foreign trade, Foreign Direct Investments (FDI) has led to India becoming well integrated with the global economy; structural strengths like a young population, skilled manpower, large domestic demand and presence of globally competitive firms have attracted significant investor attention in recent years.
Additionally, positive economic data and expectations of the global economic downturn bottoming out soon have also revived the risk appetite. Consequently, the rally in global equity markets that began earlier this year has continued with India outperforming other emerging and developed markets.

By the year 2025, India is expected to emerge as one of the foremost nations in the world politically and economically. India’s resilience is reflected in its strong fundamentals; namely, rising forex reserves, high savings rate, rise in productivity supported by technological up-gradation and greater integration with global flows of trade, finance and technology.
Demographic dividend; encouraging demand driver

Additionally, India’s demographic composition ensures that it continues to remain an attractive market for investments. The high economic growth in the past few years has resulted in a rising number of Indians with a greater propensity to spend. This rise in income levels across urban, semi-urban and rural households has led to changing consumption patterns.

Necessities such as food and apparel are expected to decline in relative importance to categories such as communications, education & recreation and healthcare creating greater opportunities for public private partnerships to drive investments in infrastructure.

![Median Age Population of Major Countries (2008)](image)

Further, India’s demographic composition augurs favorably; with nearly one-half of the 1.1 billion people below the age of 25 years. The size of the working age population exceeds the size of the dependent population and it is estimated that it will remain so until the year 2025 and perhaps, even beyond\(^4\).

These robust macro economic indicators clubbed with socio-economic drivers are likely to help the country sustain its growth trajectory. While India has not been completely insulated form the impact of the global downturn; it has shown sizeable signs of recovery compared to its peers with the help of focused Government intervention. The key drivers of economic growth, namely consumption and investment, are likely to provide further impetus to India’s growth story.

\(^4\) CIA, www.india.gov.in
02. Global Telecommunications Market
Global Telecommunications Market

Telecom remains as a silver lining in the dark clouds of recession hovering above the global economy. The global telecom services market is poised to generate USD1.4 trillion in 2009\(^1\), despite the economic slowdown. Emerging economies will still invest heavily in network infrastructure, while recession-hit economies will delay upgrades. The Asia-Pacific region will experience the highest growth rate in the next five years, at nearly 16 percent, led by China and India\(^2\). The telecom sector in Latin America and the Caribbean will grow by 12 percent, fueled by emerging economies and the expansion of the middle class.

Triple Play to ride on Broadband growth

The growth of broadband access has fueled demand for converged voice, video, and data services—now known as the "triple play". To garner new customers, hold on to current ones, and ensure revenue growth, today’s providers must continue to move toward offering the triple play as a value-added service bundle.

France is one of the top three European countries in fiber deployment. The increased investment in broadband infrastructure along with increased competition and reduced price is driving converged services (Dual and Triple Play) and boosting IPTV subscriber base, making France a leading IPTV market in Europe. Cable TV operators in Brazil & Mexico with the help of dual play and triple play packages are looking forward to drive their ARPUs in the time to come. In Kenya, an ISP has introduced triple play service under the brand ‘Zuku’, offering TV, Internet and VOIP services. In the Middle East, Bahrain’s Batelco has rolled out NGN to drive converged services; while Qatar’s Qtel has launched triple play under the brand ‘MOSAIC’. In Poland, the fixed broadband (ADSL, Cable) operators are increasingly looking to double- and triple-play packages, resulting in a number of IPTV deployments. In Russia also, triple play is to give a new fillip to IPTV deployments.

\(^1\) CPI Financials, “Global telecom services market to generate USD1.4 trillion in 2009”, August 2009

\(^2\) Insight Research, “Global Telecom Services Revenue Forecast: Emerging Market Opportunities”, 2009
Mobile Payment fostering a trend for cashless transactions

M-PESA is an innovative new mobile payment solution that enables customers to make simple financial transactions through the mobile phone. The M-PESA scheme relies on an application in the mobile phone SIM card, which is authorized by a PIN code and does not require any special technology. Currently, the service is mainly aimed at mobile customers who do not have a bank account, typically because they do not have access to a bank or they do not have sufficient income to justify a bank account. The money is held safely in a bank account run by M-PESA on the user’s behalf and the user does not have any contact with the bank nor does the bank have the user’s details. The M-PESA system allows customers to deposit and withdraw cash via local agents and transfer money to other mobile phone users via SMS. In a country like Kenya where 90 percent people do not have a bank account, the M-PESA service has seen a dramatic take-up since its launch. As of March 2009, the service had over 6.5m registered users (vs. 2.1m in March 2008) with 2m daily transactions in Kenya alone. M-PESA is distributed through 8,650 retail outlets countrywide (2,262 outlets in March 2008). This take-up clearly demonstrates the demand for easily accessible, secure cash payment services in emerging markets. More recently, commercial M-PESA services have been introduced by Roshan, the leading mobile operator in Afghanistan, and by Vodacom in Tanzania. Indian operators have launched similar initiatives. Offerings from some operators enable a mobile phone user to send or receive money instantly using their mobile phone to authorize the transfer. According to the GSM Association, mobile money in emerging markets could bring in USD7.9bn of sales for operators by 2012. Money transfer services for handset owners without a bank account may bring in USD5bn of transaction fees and text message-linked revenue by 2012. Indirect revenue, including revenue from greater customer loyalty, will probably amount to USD2.9bn.

Rural Expansion to help offset urban saturation

China, the world’s largest telecom market, attributes its phenomenal growth to rural areas. The country’s largest operator, China Mobile, credits rural areas with contributing around 50 percent of its millions of new subscribers. While going rural, China Mobile managed to avoid an Average Revenue Per User (ARPU) fall by creating a demand for high-margin value added services such as SMS, music downloads and ring tones. However, the road to rural expansion would have several road blocks like land acquisition (Lease/Purchase) for BTS, availability of cheap and fast backhaul connectivity, costs associated with setting up telecom infrastructure, availability of adequate power supply, higher operational & maintenance costs and lower purchasing power of rural population. The Operators are taking adequate steps to counter these challenges:

- **Micro Financing:** Grameen Phone in Bangladesh provides microfinance options to set up Village Phone Operators (VPO). Grameen Bank provides a loan package to select VPOs to purchase a handset and operate their VP business.
- **Developing locally relevant content:** Qualcomm’s Fisher Friend BREW application has been implemented in coastal Tamil Nadu. The application works on 3G CDMA handsets and gives fisherman access to timely weather alerts, real-time data on fish migration, market prices and updates on relevant government schemes and policies in the local language.
- **Setting up viable distribution and collection channels:** Mobitel, Sri Lanka’s National Mobile services provider, expanded its rural penetration with a tie-up with the Sri Lankan Postal Department. As per the deal, post offices and postmen could sell Mobitel prepaid cards to rural customers.
Technology and Content to drive the growth

The effects of the slowing US economy became more predominant with all operators reporting a decline in ARPU in the final quarter of 2008. However the prevalence of more sophisticated high end handsets has helped drive growth. An increased reliance on mobile content will be the defining the trends of the US mobile market in the next one year although the range of services on offer will be operator specific. While the economy is already negatively impacting the infrastructure and handsets segments, consumers have not yet begun cutting their overall mobile data spending. The confluence of 3G, high-end devices and the evolving applications ecosystem were responsible for the strides made by mobile data in 2008.

In Europe, Telefonica, which is O2’s parent company have outperformed, attributable to the continued success of high-end devices such as the iPhone which it carries exclusively.

The main growth engine in Japan, in both the fixed and mobile sectors, is data services. When it comes to Mobile TV, Japan is the largest subscriber base globally. WAP/Internet browsing, ring-tones and music contributes up to two thirds of Japan’s data revenues.

South Africa on the other hand is expected to witness strong private investment in the run-up to the 2010 FIFA World Cup and this will remain a key driver for growth in 2009. With mobile penetration crossing 100 percent, operators are looking at alternate revenue streams: Mobile broadband combined with media content. The launch of 3G/HSPA provides them with an opportunity of service differentiation by providing mobile broadband, combined with media content. In Czech Republic, the mobile operators are looking at content and application through HSDPA based mobile broadband and mobile advertisement as future growth option.

• **Encouraging entrepreneurial spirit:** Pakistan Telecommunications Authority’s Rabta Ghar initiative encourage rural entrepreneurs to set up local telecentres. PTA, with support from telecom operators, provides these local entrepreneurs with free equipment, installation and training.

• **Exploring alternate fuels:** Ericsson and Orange Guinea Conakry recently announced the deployment of over 100 fully solar-powered BTSs to provide connectivity to rural Africa, which is expected to reduce energy bills by 50 percent.

• **Government support:** The Indian government provides a subsidy under USOF for companies developing rural telecom infrastructure. The government and the industry have set up a joint initiative known as Project MOST (Mobile Operators Shared Towers) to identify rural and remote areas not being covered by USOF.
In times of Recession

Most of the telecom companies in the developed and emerging markets have launched a points-based loyalty program; while a small percentage opted for discounting their services, with the rest choosing different promotional and marketing initiatives. With all players facing challenges in terms of increasing their Average Revenue per User (ARPU) and avoiding customer churn, most are forced to implement programs on tight margins.

Asia: The Epicenter of Telecom Growth worldwide

Asia is a booming market with countries like Japan and South Korea implementing advanced technologies while the Chinese market is poised for growth after restructuring and 3G license auctions. India and China contribute 31 percent of world’s subscriber base; yet the mobile penetration rates are not as high compared to US or other developed economies. Needless to mention, further growth is expected to be witnessed in this region.

Japan with over 30 million broadband lines in place, is the third largest country in the world after the US and China in terms of broadband users. Much of the success of broadband in Japan is owed to the stunning growth surge that occurred back in 2003 on the back of DSL broadband technology. The restructuring of the Chinese telecom market has changed the competitive landscape of the country. With the largest mobile and broadband subscriber base, the market has stayed relatively insulated from the global meltdown. Post restructuring and the awarding of 3G licenses in December 2008, the market is poised for yet another boost. The restructuring will provide huge market opportunities to communications equipment manufacturers, thus accelerating the all-round upgrade of telecom operation support systems.

Mobile subscriber base (% share of world)

China, 19%
India, 12%
USA, 7%
Others, 62%

Source: EIU
Mobile Subscriber Data ( Millions )

Source: Pyramid Research, National Bureau of Statistics, CEIC

Fixed Line Data ( Millions )

Source: Pyramid Research, National Bureau of Statistics, CEIC
Indian telecom crossed the target of 500 Million (Wireless & Wire-line) Subscriber in September 2009. Buoyed by the entry of new telecom players the Indian telecom industry clocked the highest subscriber addition of 15.87 million subscribers in March, 2009. India overtook US to become the 2nd largest mobile geography after China.

Fixed Mobile Substitution (FMS), provision of bundled services and increased concentration on wireless broadband is the global trend presently. In Africa, broadband penetration is increasing due to cheaper subscription on account of new submarine cables reaching its shore and rollout of wireless broadband services. In Europe, all operators are trying to increase their share by offering bundled services over the wire-line network. The Middle East region shows a balanced approach towards wireless broadband services. The telecom industry in North America has taken a hit as a result of the economic meltdown and reduced consumer spending while in South America, the operators are constantly looking to innovate by providing video-on-demand and other bundled services in order to increase the number of subscribers. The epicenter of telecom market continues to be Asia where China and India continue to play a key role.

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4 TRAI, November 2009
5 TRAI, April-May 2009
03. Indian Telecommunications Market
India has emerged as one of the largest and fast growing economies of the world. Even in the time of downturn, Indian economy has shown considerable resistance leading to growth across the board when many regions of the world had shown significant decline in growth. The far-reaching measures introduced by the Government of India over the past decade to liberalize the Indian market have helped the business and regulatory environment to successfully move towards greater transparency and efficiency. Services sector has been the primary engine for this growth. Telecom industry is one of the fastest growing sectors of Indian economy with significant contribution from the private sector.

The telecom sector can be divided into basic (fixed), mobile and internet services. There are also some smaller segments such as radio paging services, Very Small Aperture Terminals (VSATs) and Public Mobile Radio Trunked Services (PMRTS). Indian mobile market is currently one of the most attractive telecom market across the world.

Overall teledensity in India has risen to the levels of approximately 43.5 percent\(^1\). With a large population yet to have access to telecommunication market the potential for the sector remains large especially in non-urban areas where wireline and internet services are yet to make significant in-roads. Wireline services in particular are yet to reach the vast majority with a low teledensity of 3.19 percent and 1 percent\(^2\) in urban and rural regions respectively. Even the mobile services space, which has seen exponential growth in urban areas, has not reached the vast majority in rural areas with a total wireless teledensity of approximately 40.31 percent\(^3\) indicating a large untapped potential for the sector.

The number of internet/broadband subscribers have also grown at a fast rate; there were 14.05 million total internet subscribers as of June, 2009 and 6.62 million broadband subscribers. The sector has potential for large growth in the future.\(^4\)

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\(^1\) Telecom Services Performance Indicators April – June 2009; October 2009
\(^2\) TRAI, November 2009
\(^3\) TRAI, “The Indian Telecom Services Performance Indicators April – June 2009”; October 2009, TRAI, November 2009
\(^4\) TRAI Quarterly Reports on Telecom Services Performance Indicators
Mobile Services

The Indian mobility market can be characterized as one with a very large subscriber base (~427 million as of June 2009), high growth (addition of 10 Mn+ subscribers every month), low ARPU (~INR 165 per month) and significant churn rates.5

The Government of India opened up mobile services to private participation in 1994-95 by inviting bids for providing services in the four metropolitan cities and 18 non-metro circles. Services were introduced in 1995 with the high tariffs resulting in poor demand. The National Telecom Policy 1999, moved the industry to a revenue share model from the fixed license fee and the lower tariffs resulted in the addition of ~ 12 million subscribers in the 1999-03 period as compared to less than a million subscribers added in the 1995-99 period. The period was characterized by setting up of Telecom Regulatory Authority of India (TRAI) in 1997.

5 TRAI, November 2009
“Telecom Dispute Settlement and Appellate Tribunal (TDSAT)” was set up in 2000 in order to adjudicate disputes arising between licensor and licensee; and to hear appeals against any decision or order of TRAI. The Calling Party Pays regime was introduced in 2003-04 which made incoming calls free.

Telecom circles in India have been classified into 4 categories viz. Metros, Category A, B and C. With penetration rates in metros approaching 100 percent the market here is nearly saturated. However, there is still immense potential in other circle categories particularly B and C.

### Subscriber Base and Teledensity across Telecom Circles

**Source:** TRAI, "The Indian Telecom Services Performance Indicators April – June 2009," October 2009, KPMG Analysis
The subscriber base of 494.06 Million (as of August, 2009) is comprised of 343.24 Million urban subscribers (teledensity of 98.70 percent) and 150.82 Million rural subscribers (teledensity of ~18.37 percent). The market is highly competitive with each telecom circle having 7-8 operators. In addition, there are several new licensees which are in the process of rolling out services. Competitive intensity in the market contributed to reduction in tariffs and launch of innovative schemes like lifetime prepaid and low cost handset bundling which reduced the entry cost for a new subscriber. With reducing ARPU, changing economic profile of subscribers and the need to meet the aggressive roll-out targets, the operators have been under tremendous pressure to bring in operational efficiencies. Operators have been realizing efficiencies through extensive outsourcing across the telecom value chain. This has resulted in large scale opportunity for players belonging to all the categories within the telecom ecosystem. Some of the prominent categories include network equipment vendors, tower infrastructure companies, telecom implementation vendors, IT vendors.

It has been observed that the past subscriber growth has been skewed in favor of urban. The large rural population base and low teledensity indicates that there is still large untapped opportunity in the Indian market. With urban markets nearing saturation, operators have been actively seeking growth in rural India.

**Wireline Services**

The total number of fixed services connections in India increased from 5.81 Million in 1991-92 to 40.8 Million in 2006-07. During 1999-2000 to 2001-02, approximately 5-6 Million customers were added to fixed-line services each year. However, with the drop in mobile tariffs and increase in coverage of mobile services, net additions in fixed-line subscribers started slowing down from 2.5 Million in 2002-03 going down to 0.5 Million in 2004-05. Due to mobile substitution and lower tariffs from the years from 2006-07 to 2008-09 have seen a decrease in 3.5 Million fixed connections. However, the potential for wireline services remains large due to very low penetration in the wireline industry. New players in the telecom space had hitherto concentrated on wireless space leading to low competition and promotion of wireline services. Greater pan-India expansion by private players can significantly lead to growth of wireline services. In addition, with combined offering of internet/ broadband and allied services showing promising potential, the sector can bounce back in the future.

**Wireline Subscriber Base**

![Image](https://example.com/wireline-subscriber-base.png)

Source: TRAI Annual Report and Quarterly Reports on Telecom Services Performance Indicators, Crisil Research

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6 Department of Telecommunications, TRAI, “The Indian Telecom Services Performance Indicators April – June 2009,” October 2009

Internet Services

Internet subscriber base in India (dial up and broadband), though currently at a low level is experiencing significant growth for the last 2-3 years. This growth is being driven by growing popularity of broadband, increasing user comfort with usage of internet applications, continuous fall in PC prices, cheaper access plans. This growth has been accompanied by an associated increase in the number of internet users which can be attributed to growth of public internet cafes and multiple members of a household accessing internet.

The government of India has set targets of 20 Million for broadband for 2010, from the current figures of 7.22 Million (September, 2009), which requires relook at technologies used in for broadband access. While there a number of technologies being used by service providers to provide broadband services, DSL continues to be the most preferred technology and constitutes nearly 87 percent of total broadband subscribers. Cable modem technology follows with 7.4 percent connections. Focus on increasing wireline access as well greater focus on technologies which can be rolled out faster (e.g 3G and BWA) or have significant penetration (cable TV and DTH) can significantly enhance the adoption of broadband in India.

Source: TRAI Annual Report and Quarterly Reports on Telecom Services Performance Indicators
Value Added Services

Currently, VAS market is worth INR 91 Billion which translates into approximately 8 percent of wireless industry revenues. The share of VAS in wireless revenue is likely to increase to 11 percent by 2011. This growth would be driven by increased operator focus on VAS due to continuous fall in voice tariffs, feature rich handsets, vernacular content and also with increased user adoption of VAS applications.

Prior to 2008, majority of VAS revenues were attributable to SMS and that too Person-to-Person. It is interesting to note that over the last 1-2 years, non-SMS VAS has been gaining importance and is likely to become a dominant contributor to VAS revenue over the next few years. In 2009, non-P2P SMS VAS accounted for between 5 and 6 percent of operator revenues. Industry protagonists envisage this share to increase to around 8 per cent over the next two years. The addressable market for non-P2P SMS VAS has historically been dominated by ringtones and caller ring back tones (CRBT) which account for around 45 per cent of revenues.

Source: Industry consensus estimates, KPMG analysis

Market Split for VAS

Source: Industry Estimates, Information Interviews
New Frontiers for Growth

3G Technology

While the last 5 years have been transformational for Indian telecom industry, the next few years look even more exciting. One of the key frontiers which would make journey in coming years exciting is the launch of 3G technology.

In the near future, Indian government will be auctioning spectrum for third generation wireless services for which a number of incumbents and new entrants are expected to be in the race. Each telecom circle has a designated number of spectrum blocks out of which 1 block is reserved for the state run operators.

With the launch of 3G services the operators would be able to provide rich data services to HNI's, working professionals, enterprise customers and youth. They would be specifically targeting current users of 2.5G and / or owners of 3G enabled handsets. At the same time operators would be actively looking at providing 3G services to other income groups as this will help spreading investment in technology / license over a wider subscriber base.

Telecom Infrastructure Services

Infrastructure sharing has been a relatively new segment, which witnessed significant investment and interest from the investor community in the past two years.

The key trigger for infrastructure sharing has been the Mobile Operator Shared Tower (MoST) initiative implemented by the Department of Telecom, under which pilot shared towers were rolled out at different locations in New Delhi in 2006. Through this initiative, the business case for tower sharing was laid out clearly, and this resulted in significant interest in adoption of the tower company business model.
The business case for the tower company was quickly established around the following benefits, which made strong economic sense for Operator Companies (Op Cos) to hive off tower assets into tower companies.

- Build and lease passive infrastructure
- Lower capital and operating expenses for carriers through asset sharing
- Access to low-profitability rural areas without Capex
- Monetising tower assets as an easier route of raising capital to fund core operations.

The tower and telecom infrastructure ecosystem is further evolving with the DOT’s assent to recommendations on active infrastructure sharing in March 2008. Under these recommendations, sharing of infrastructure amongst service providers based on the mutual agreements has been initiated. Infrastructure sharing is now also allowed for antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission systems. This has already led to tower companies offering end-to-end tower infrastructure to the new telecom operators inclusive of backhaul services, which hitherto had been a significant challenge due to inadequate fibre and microwave backhaul capacity existing at tower locations. We expect significant further action and innovation in this space with the tower companies looking to offer enhanced portfolio of services to telecom operators.

Strong regulatory support, domestic demand and enterprise of private sector telecom providers have been the key drivers for the growth of the Indian telecom industry
04. Connecting Rural India
Connecting Rural India

While markets all across the globe witnessed a significant reduction in consumer spending, the rural Indian consumer managed to remain an attractive proposition, especially in the demand for consumer goods and telecom services. Leading companies across industry sectors, appreciating the enormous potential of this market, have developed a focused strategy to target rural India.

Rural India is believed to contribute almost 45 percent of the country’s GDP\(^1\). The segment reportedly also accounts for a significant chunk of demand for many consumer goods and services companies. While the per capita rural consumption spend remains at nearly half of the urban counterpart\(^2\), it is believed to be growing at a faster rate. Rural areas house nearly 71 percent\(^3\) of the country’s population and thus represent an enormous consumer base. Perhaps even more importantly, rural India contributes to roughly 56 percent of income and 64 percent of the country’s expenditure\(^4\). Clearly, the rural market cannot be ignored any longer and now figures as a non-negotiable success factor in many corporate strategies.

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\(^1\) Credit Suisse, ‘India Market Strategy’, June 17, 2009
\(^2\) Credit Suisse, ‘India Telecoms Sector’, February 23, 2009
\(^3\) CIA – The World Factbook, 2008

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In the last three years, due to a number of regulatory and non-regulatory factors, rural India has experienced high income growth of approximately 12 percent per annum.

The appeal of the rural segment has increased with more companies looking at rural expansion as a viable means to overcome the impact of the slowdown.

Key Government Initiatives for Rural Development

A significant portion of the rural population is engaged in agriculture and agriculture-related employment activities. The impact of any applicable regulatory initiatives or any natural phenomenon like the delayed monsoon is thus felt by a large section of the population.

The Government has taken a strong interest in the growth and development of rural areas. The 2009-10 budget, announced in the backdrop of the economic slowdown, included specific measures for the social and economic upliftment of this segment, clearly highlighting the intent of the government to work for the betterment of the common man.

Credit Suisse, 'India Market Strategy', June 17, 2009
The government’s National Rural Employment Guarantee Scheme (NREGS), for instance, provides a job guarantee for adult workers. This initiative has helped over 3 crore household improve their standard of living and have more money at their disposal.

The government had also initiated the Bharat Nirman Program in 2005 as a time-bound program to upgrade rural infrastructure. This included, among other things, provisions to improve rural water supply, electrification and telecom connectivity. For the telecom sector, this program has provided an impetus to setup more telecom towers and improve rural penetration.

Initiated in 2003, the Universal Service Obligation Fund (USOF) was established to fulfill the Universal Service Obligation by promoting the setting up of infrastructure to promote rural connectivity. The fund, managed by the USOF Administrator, provides subsidies to private players establishing rural telecom infrastructure.

### Telecommunications and Rural India

The tremendous growth witnessed by the Indian telecom sector has been driven in a large part by the immense demand originating from urban areas. Urban sectors alone have contributed to over 17 million subscribers being added every quarter. Despite housing only 30 percent of the country’s population, urban areas account for nearly 69 percent of telecom subscribers. With a large number of players in every circle and the teledensity approaching 100 percent, the urban market is close to saturation.

<table>
<thead>
<tr>
<th>Key Statistics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Telecom Subscribers</td>
<td>494.07 million</td>
</tr>
<tr>
<td>Urban Subscribers</td>
<td>343.24 million</td>
</tr>
<tr>
<td>Rural Subscribers</td>
<td>150.83 million</td>
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<tr>
<td>Overall Teledensity</td>
<td>42.27 percent</td>
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<tr>
<td>Urban Teledensity</td>
<td>98.70 percent</td>
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<tr>
<td>Rural Teledensity</td>
<td>18.37 percent</td>
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<tr>
<td>Rural Wireline Subscribers</td>
<td>10.20 million</td>
</tr>
<tr>
<td>Rural Wireless Subscribers</td>
<td>140.63 million</td>
</tr>
</tbody>
</table>

Note: As of August, 2009
Source: Department of telecommunications

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6 Enam Securities, ‘Budget Strategy 2009-10’, July 06, 2009; Press Search; NREGA website
7 TRAI, “Measures to improve telecom penetration in rural India-The next 100 million subscribers,” December 16, 2008
The telecom sector has also observed a widening rural-urban divide. Urban telecom adoption has far outpaced its rural counterpart. This has lead to an increasing awareness among all stakeholders about the immense growth potential that rural markets can offer.

Telecom adoption, historically, had implied the adoption of wireline services. This trend, however, has moved towards an ever-growing adoption of wireless services over the last few years. An increasing number of private operators are also making a concentrated effort to drive up wireless adoption.
Rural Telecommunications and the Inclusive Growth Agenda

Urban development alone cannot help a country progress at a quick pace. The rural agenda thus becomes increasingly important to achieve a well-rounded, sustainable growth. The Indian government has been fully appreciative of this and has established a strong agenda for inclusivity.

With a view to bridging the urban-rural divide and improving the economic strength of rural India, the government has brought inclusive growth for all sections of society onto the main platform. Telecommunications is a critical lynchpin in this endeavor and is likely to be a successful part of this agenda. The government is strongly promoting this effort through various large-sized budgetary allocations and the telecommunications industry also has a clear agenda of rural expansion.

Mobile Banking and Mobile Commerce

India has one of the most expansive banking systems in the world. A combination of scheduled commercial banks, regional rural banks and specialized financial institutions cover a large section of society in India. Despite these focused efforts, it is estimated that close to 65 percent of the country’s population still falls in the “unbanked” category due to various reasons, including geographical isolation and lack of basic infrastructure.

Public sector banks, private banks and other financial institutions have constantly pushed the limits of technology to reach out to every part of society as well as making their business systems and processes more efficient from a cost and transaction processing perspective. However, despite nearly 76,518 branches of scheduled commercial banks, there is still a long way to go. Core banking systems have helped banks to computerize their records as well as provide seamless services such as internet banking. Mobile banking represents the next level of technological evolution in the banking industry. This evolution makes banking ‘any place any time’ service and relieves the existing pressures on the branch expansion.

In recognition of its many benefits, the Reserve Bank of India issued an operating guideline on mobile banking transactions in October 2008. This guideline primarily addresses security over mobile banking transfers; however, RBI believes that this could be a feasible and alternate channel for delivery of banking services. This served as an indicator that mobile banking has an important part to play in expanding banking services to all.

The success of rural mobile banking initiatives in other countries bodes well for India’s aspirations to make it a success in the country’s rural areas. M-Pesa and G-Cash are two universally known mobile banking initiatives undertaken in Kenya and Philippines respectively. Both these nations have infrastructure, banking and technology constraints due to which large sections of the country were ‘unbanked’ and basic but safe means to transfer money between individuals was absent. Using simple mobile phone technology and SMS, individuals could transfer money instantaneously and at fraction of standard money transfer costs. Money transfers can be made across the country instantaneously at less than 1 percent of the transaction value. In 2008, 1.6 million Kenyans had transacted over USD 145 million using the M-Pesa system using 1,500 intermediaries who are typically corner shops. Such a banking system is likely to work in India as well given the current telecommunication network and availability of neighborhood shopkeeper or ‘local agents’.

It is imperative that mobile banking standards are carrier agnostic and inter operability is maintained, to ensure the lowest possible cost of transactions. The cost of transactions can have a large impact of the effectiveness of various development projects. Media reports have suggested that a mobile payment mechanism for NREGA is due to start in various states. This could be an effective proving ground for mobile banking and aid social infrastructure development.
Mobile Governance

Being the world’s largest democracy means that the people, the executive branch and the legislative branch of the government need to work closely to ensure that the people’s mandate is effectively carried out consistently and within the framework of our constitution. This leads to a strong requirement for an effective and safe means of exchanging information, especially over the large geographic spread of the country. Mobile governance can play a critical part in maintaining constant dialogue between the people and the government.

Today, various government agencies such as the passport issuing authority enable applicants to check the progress of their application using a simple SMS code. This has significantly increased the level of transparency in the time taken for such processes, which was considered to be tedious previously. Such mechanisms combined with the greater use of the internet will enable companies, organizations and the common citizen to perform other routine tasks such as filing various direct and indirect tax returns with greater efficiency and transparency. Government institutions are constantly trying to increase their coverage and reach of their mandated services, and with the use of telecommunications these can solve their deficiencies around ‘last mile’ connectivity with citizens. Various state governments have initiated pilot e-governance projects. Some of these include the Bhoomi project and the eSeva project. In the Bhoomi project, 20 million land records of 6.7 million land owners were made into electronic information.

Another significant area of governance that can go hand in hand with telecommunications is the Right to Information Act (RTI) of 2005. This act provides the right to citizens to query central and state governments. Further, the act requires the government to computerize significant amount of information making it accessible to the common man. Ability to access this information through the internet gives India the ability to track and review various aspects of government or institutional development work, from remote locations without the hurdles of bureaucratic processes. This Act and the ability to pursue it effectively will give a significant boost to our rural development efforts.

Telecommunications for Rural Employment

The telecommunications industry, due to very nature, requires participation from a large number of people to ensure smooth operation. From the actual setting up of physical infrastructure, to the service being provided to the end consumer, the telecom sector in its entirety is a big employer of people resources:

- Infrastructure Setup: The task of identifying appropriate sites, obtaining requisite permissions, laying the foundation, setting up telecom towers, and other such activities have large manpower requirements
- Sales and Distribution: This includes activities for the sale of telecom handsets as well as connections. This would also include bill distribution and rent collection
- Other Associated Services: This includes support activities ranging from transportation of telecom equipment, security for physical infrastructure, maintenance services and others. Telecom call centres also generate additional employment opportunities

For the dual purpose of increasing rural penetration as well as to achieve cost effectiveness, many companies are looking to expand their rural setups.

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15 http://www.bhoomi.kar.nic.in/Bhoomi/Home.htm
This presents a good prospect for the rural population in terms of the employment opportunities generated. Another advantage is that these opportunities can benefit the educated as well as the uneducated people due to the range of skill requirements. Telecom companies also offer different internal training programs to ensure that a rural employee’s skills are at par with his urban counterpart.

India has also seen telecom manufacturing coming up in a big way. Many international players are setting up their manufacturing as well as R&D facilities in the country. Significant investments have been earmarked for these initiatives and companies are looking to hire local talent to bring these plans to a successful conclusion.

Another initiative that has been immensely successful in generating employment, specially for rural women, is that of the Village Public Telephones (VPT). In many villages, rural women have taken on the entrepreneurial responsibility and operate local VPTs. Not only does this benefit the locality, it also brings in additional income for the VPT operator’s household.

Telecom in Education

Urban India has already witnessed the benefits of telecom connectivity in promoting education. Large universities offer distance learning courses to students, especially for higher education courses like MBAs.

The aspiration would be to replicate the success of large universities in urban areas, to the remote areas in rural India. The first priority would remain the provision of primary education to all children in the country, irrespective of geographical remoteness.

The Indira Gandhi National Open University (IGNOU) has forayed into this by working towards developing relevant distance learning programs for students and providing assistance in financial support and grants.

Key Challenges in Going Rural

Despite the inherent attractiveness of the rural market, many operators have faced significant challenges in penetrating the market.

Acquisition of Customers

Due to the many differences existing between the urban and rural markets, it is impossible to apply urban learnings and business models in a rural setup. Rural areas come with a completely different set of constraints and issues which the operators need to address in order to attract this fresh pool of customers. Operators face a number of challenges when it comes to the acquisition of rural customers.

Affordability of telecom services continues to be a key concern in rural markets. Although the cost of owning and using telecom equipment and services has come down considerably in the last few years, the typical rural consumer finds it hard to put aside money for what is still believed to be a discretionary spend. Microfinancing could provide a possible solution for this problem. Tie-ups with state-owned banks could enable the rural consumers to purchase telecom equipment and services at affordable rates.

Operators have also found that among the rural customers who are able to afford telecom services, the Average Revenue Per User (ARPU) remains quite low, especially when compared to the urban counterparts. Thus, the low-subscriber, low-volume market does not provide enough incentives for the players to venture into the regions with the revenues not justifying the costs. The rural ARPU are not expected to be driven up solely through voice services. It is believed that the availability of data services will have a positive impact on the rural ARPUs.

The largely untapped rural market will drive the next phase of telecom growth in the country, supported by an enabling environment and focused initiatives by telecom players.
Currently, the lack of locally relevant content is another challenge that restricts telecom penetration. To increase adoption, it is essential to develop services like news in local languages, weather alerts for fishermen, comparative mandi rates for farmers, and such others.

Another factor that impacts the adoption of telecom services (especially broadband), is the prevalent literacy levels. To derive maximum benefits from these services, it is essential for the consumers to have basic reading and writing skills in place.

**Infrastructure-Related Challenges**

In addition to acquisition of customers, telecom players also face some infrastructure-related roadblocks while setting up their rural infrastructure. These lead to a steep escalation in costs thereby reducing the financial attractiveness of the rural market.

The telecom setup requires large amounts of land for setting up infrastructure elements like the Base Transceiver Stations (BTS). In many cases, the land is owned by Government bodies or Gram Panchayats, and the process of leasing or purchasing the land is arduous and expensive. Similar problems arise due to ‘Right of Way’ issues. Laying of cable or fibre in rural areas often goes across multiple jurisdictions. This involves obtaining the requisite approvals and permissions from multiple authorities which could become laborious.

Once setup, the telecom infrastructure involves immense operating and maintenance expenditures, considerably higher as compared to urban areas. A number of factors contribute to this including the limited availability of skilled workforce as well as poor road connectivity, among others. The issue of irregular power supply also remains a key concern. Currently, a number of villages in India either do not have an electricity connection, or face limited power availability. A battery backup is not a sustainable solution since the battery needs to be charged regularly. As a result, other backups in the form of diesel-powered generators need to be maintained to power the Base Transceiver Stations. It is estimated that over 35 percent of a rural cell site’s network operating expenses are due to the costs associated with electricity and diesel. The provisions under the Bharat Nirman Program are expected to address this concern by providing a regular supply of electricity across the country. One alternative way to address the concern of power supply could be to explore the viability of alternate sources of fuel, including solar energy, wind power and biofuels. These provide a clean and effective way of harnessing natural energy, while keeping the equipment maintenance cost at significantly lower levels.

The concern of high costs associated with setting up of rural infrastructure can be well addressed through infrastructure sharing between the telecom players. This model has been fairly successful in urban areas, but is yet to pick up traction in rural areas.

The lack of efficient and low-cost backhaul connectivity continues to have a limiting effect on telecom penetration. The option of deployment of optical fibre is being explored and is likely to be able to resolve this issue.

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17 “What Works: Grameen Telecom’s Village Phones”, June 2001; KPMG
05. Broadband Connectivity
Broadband Connectivity

Broadband is defined as an “always on” data connection that is able to support interactive services, including internet access and has the capability of minimum download speed of 256 kilo bits per second (kbps) to an individual subscriber.

Various studies have indicated that broadband connectivity has significant economic impact. This is primarily due to improved growth in literacy and vocational skills due to e-initiatives, increased employment of rural youth due to accessibility and teleworking, higher labor productivity, real-time healthcare, speedy government clearances and such. Realizing these benefits, Department of Telecom issued Broadband Policy 2004, on 29th April 2004, in a bid to encourage high speed internet growth in the country and address the demand of applications enabling economic growth. The policy also set an ambitious growth path for broadband growth in India by fixing stiff targets to be achieved till 2010.

Targets for broadband subscribers as set by the Broadband Policy, 2004

Source: TRAI, Broadband Subscribers, 2009
Actual broadband subscriber base has fallen short of set targets with August 2009 subscriber base at 7.0 million as against an envisaged 9 million by 2007! In 2007, India had one of the lowest broadband penetration in the world of ~0.3 percent. Whilst the penetration has doubled since, India continues to be one of the least penetrated regions with current penetration of ~0.6 percent. PC penetration continues to be very low, and limited wireline infrastructure including RoW challenges, high tariffs and lack of quality web content in local language, have further constrained the growth of broadband.

**Challenges in adoption of broadband**

Poor wireline infrastructure: In contrast to developed world, India has favored wireless telephony over wireline telephony. In CY08, wireline subscribers declined to ~38.0 million and wireline teledensity reduced to ~3.4 percent. This lack of and decline of wireline poses a ‘last mile’ access challenge for broadband, which is presently provided mainly by DSL technology which in turn relies on the availability of copper loop in local network (ie wireline network). To compound matters further, majority of available copper local loops are not suitable to support broadband connections due to long length of cable local loop, quality of cable and maintenance constraints.

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1 TRAI, Broadband Subscribers, 2009
In addition, the fact that India is a vast country implies that it is not possible to rollout wireline access network to support broadband in a cost effective and affordable manner. Whilst some private players have been rolling out wireline networks to provide broadband connectivity, such initiatives are largely restricted to urban areas. The government realizing these realities is supporting increased penetration of wireline and broadband connectivity in rural and remote areas through its Universal Service Obligation Fund (USOF) activities. In January, 2009, it signed an agreement with BSNL to provide 8,61,459 wireline broadband connections to individual users and government institutions over a period of next 5-years.

**Right of Way (RoW) procedures:** RoW is one of the major impediments in laying wireline infrastructure. Before laying the cables operators have to approach municipalities / local authorities for obtaining RoW, which not only delays the rollout plans of the service providers but also increases their cost. Moreover the charges that municipalities / local authorities levy for granting RoW are not uniform across the country.

**Low PC penetration, increased regulation of internet cafes:** Whilst PC penetration in India is increasing, only 3 percent households in India have a PC. This poses a major challenge to uptake of internet / broadband. To overcome this challenge, the key lies in mass marketing of a product that is cost effective, power efficient and resilient to the harsh realities of the Indian environment (high temperature, dust). Various initiatives have been launched in this respect (e.g. Simputer with an estimated cost of INR 9,000 after it has achieved sales of more than 100,000 units\(^2\), Microsoft’s IQ PC that was launched in 2007 with an estimated price of INR 20,000\(^3\)), however these have not been successful in creating a mass market. Further, due to tightened security measures and thin margins\(^4\) the growth of cyber cafes (the most popular access medium) has come down from c.60 percent in 2004, 2005 to c.20 percent in 2008 and it is estimated that there are around 180,000 cafes in India\(^5\).

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\(^2\) Simputer.org  
\(^3\) Zdnet.com  
\(^4\) Media reports  
\(^5\) Siliconindia.com
Affordability: While broadband tariffs have been decreasing over the past few months as private operators expand their services, the tariffs continue to remain high when compared to tariffs for mobile services. This is partly reflective of low volumes and high cost of provisioning of broadband services. This seems to be a big challenge and there is a need for cost efficient means of broadband access. Government agencies such as TRAI have taken several steps to ensure lower internet and broadband prices (e.g. cut in International Private Leased Circuit prices). The Government, under USOF, is also considering a proposal to provide subsidy support for broadband connectivity in rural and remote areas of the country by utilizing existing passive and core infrastructure available with both wireline and wireless service providers.

Lack of quality web content in local languages: While business users seem to be the immediate beneficiaries of broadband, stakes for rural India are even higher given the unparalleled benefits that broadband enabled applications such as telemedicine, e-commerce, e-education and e-governance can unleash. For this to happen, the availability of content that caters to the needs of the rural population is critical. The current lack of local language content could prove to be a major stumbling block in the uptake of internet amongst the rural masses.

Benefit of quality content in local language

People from remote areas seem to be increasingly using the internet, lured by its ability to provide information crucial to their lives, in a language they understand. For example, women of Kangra Mahila Sabha (KMS), a self-help group for women in mountain communities of Himachal Pradesh, make a living exporting pine needle hats, coasters and baskets, when they discovered on the internet that people in Mexico and Canada make handicraft items with pine needle. This was enabled through content that was available in local language. Likewise, in Gujarat’s Anand district, Yashoda Ben, an English illiterate mother of two daughters, frequents a local internet kiosk to access information, in Gujarati, on different colleges and courses, download application forms and find out about education loans for her teenager kids.

Enablers of broadband growth

Broadband subscribers in India are expected to grow to ~46 million by 2013 at a compounded annual growth rate of ~70 percent. The Government has identified availability of 3G and broadband wireless access services (BWA) and streamlining Right of Way (RoW) procedures as key enablers to boost deployment of broadband. These enablers would address concerns of wireline access, PC penetration and affordability.

**3G and BWA services:** The Government is expected to auction 3G and broadband wireless access (BWA) licenses in the near future. With the opening of access network to these wireless technologies, it is anticipated that wireless broadband will, in a short timeframe, provide a wider coverage and overcome constraints of wireline.

Given the low level of PC penetration in the consumer segment in India, 3G and BWA definitely holds the promise to provide the first experience of broadband to millions of users in India. This could be through a wide array of devices including connected computing devices, low cost portable internet devices, affordable mini notebooks, and cheap mobile handsets. As 3G subscriber base expands further, handset prices are expected to decline overcoming the constraints of affordability of broadband access devices.

**Right of Way (RoW):** In order to encourage service providers for rolling out new infrastructure and providing advanced broadband services in a timely manner TRAI has recommended that a committee be formed at district level to study RoW requirement, and it should evolve a duct-sharing mechanism among service providers. The Central Government should also consider mandating the state governments to adopt uniform RoW procedures and streamline/ rationalize RoW cost, which may primarily be limited to cost of re-instatement. However, implementing a uniform RoW framework may require a consensual approach, which could be a long drawn process.

Applications of broadband

There are various applications that would be supported by broadband and could drive inclusive growth:

**Mobile banking:** Broadband access through wireless would enable mobile banking, for which the greatest opportunity lies in serving the needs of the unbanked, which is more than 65 percent of the population (vis-à-vis mobile density of 42 percent and rising each year). There are several initiatives being taken by the government, service providers, and the like, to enhance the offering and extend its reach. According to a global consultancy firm, mobile banking in India has witnessed 94 per cent growth since 2002 and India is becoming a promising nation for such services. The firm expects the penetration of India’s mobile banking active user base to reach 2 per cent (2.5 crore) by 2012, up from the current 0.2 percent.

**Tele-education:** In India, schools and libraries in rural or remote areas without wired infrastructure or broadband services can be cost effectively connected to broadband using wireless access. Extensive and reliable broadband internet can help internet-based quality distance education reach more people across the nation. The Indira Gandhi National Open University (IGNOU) is already encouraging state governments and conventional universities to establish distance learning programs, providing financial support and grants for programs and facilitating development of multimedia materials for delivery through distance learning programs.

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7 TRAI, “Recommendations on Growth of Broadband”; January 2008  
8 TRAI, “Recommendations on Growth of Broadband”; January 2008  
9 Media reports, KPMG analysis  
10 Media reports
**E-governance**: India is already running e-Governance pilot programs aimed at bringing local government services to people through internet access. E-seva is one such initiative, created by the Andhra Pradesh government to provide its citizens with online services such as obtaining birth certificates and various licenses, payment of utility bills and taxes, ticket reservations for transportation services, and listings of government orders and policies. Similar initiatives have been taken by other state governments. The Central Government is also creating an environment for establishment of Common Service Centres (CSCs) that would provide high quality and cost-effective video, voice and data content and services in the areas of e-governance, education, health, telemedicine, entertainment as well as other private services.

**Telemedicine**: In India, around 1 million people die each year because of a lack of basic healthcare. Doctors can use real-time video conferencing to discuss patient symptoms with faraway experts, thus providing faster and better care to the patients. One of the leading hospitals in the country have set up around 45 Rural Telemedicine Centres across different locations in the country, working with different kinds of entities in the healthcare industry to provide healthcare to rural masses.

**Others**: Broadband access has other inclusive growth benefits. For example, high-resolution pictures or real-time images of crop diseases can be transmitted to agricultural experts in a different geographic location for immediate expert advice, thus containing the crop diseases faster. There are many social advantages of broadband such as telecasting of entertainment programs and infotainment service. Such entertainment delivered via broadband could be an event for social gatherings in isolated villages.

To conclude, broadband can support various applications that could drive economic growth in rural and remote areas. While these applications seem to hold huge potential, and have been successfully piloted in some cases, greater access to broadband services would provide the necessary trigger to achieve wider coverage and achieve inclusive growth.
06. Telecom Manufacturing
Telecom Manufacturing

Despite the economic slowdown the global telecommunications equipment market grew nearly 5 percent in 2008. This moderate rate of growth was largely due to contributions made by the handset components and infrastructure hardware verticals. This paved the way for rise of Asian manufacturers who accounted for two-thirds of this increase.

While Asia represented slightly over 40 percent share of the total market, a significant portion of the Asian growth could be attributed to China and India which together accounted for nearly 20 percent of this global pie.

From a broader perspective, Asia-Pacific region’s contribution to global spending on telecom networks increased by four percentage points during that time, while that of Western Europe and North America lost six and five percentage points, respectively.

India is adding around 14 million new wireless subscriptions month on month, with September 2009 alone seeing an addition of ~15 million subscribers. As of September 2009, total subscriber base catapulted to 509.03 million with a tele-density of 43.5 percent. Given this growth, Government’s target of over 1.1 billion subscriptions by 2015 seems more than achievable.

This boom in the telecom sector has slowly and steadily paved the way for another industry; the telecom equipment manufacturing industry.

The telecom manufacturing sector is poised for growth due to the impetus provided by telecom services, with India having the potential to emerge as a global hub for telecom manufacturing.

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3. TRAI, November 2009
4. TEPC, Policy recommendations to increase domestic telecom growth in exports of telecom equipment and services
In 2003-04, the telecom equipment manufacturing industry posted a negative growth rate of 3 percent (YoY) whereas by 2008-09, the industry had grown to boast a positive growth rate of 26 percent (YoY). In value terms the production of telecom equipments manufactured increased from INR 144,000 million in 2002-03 to INR 518,000 million in 2008-09.

This growth in the telecom equipment manufacturing industry is largely attributable to the rapidly growing telecom sector. Other favorable factors such as policy moves taken by the Indian government, incentives offered, large talent pool in the research and development (R&D) space and low labor costs are further providing an impetus to this industry.

Key milestones in the sector

The foundations of developing the telecom equipment manufacturing industry in India were laid in 1999.

- **1999:** Opening up of the industry to private sector participation

- **2005:**
  - FDI ceiling in telecom services was raised from the existing 49 percent to 74 percent
  - The Union Ministry of Communications and Information Technology began to promote India as a viable option for setting up manufacturing plants. This was strongly supported by its fast growing telecom market, its talent pool and the success of the Business Process Outsourcing (BPO) industry.
- **2006**: Policy reforms and government initiatives such as 100 percent Foreign Direct Investment (FDI) in the sector through the automatic route
- **2008**: Allowing service providers to share active infrastructure

Such government initiatives, coupled with the growth prospects offered by a surging domestic telecom sector have attracted global telecom equipment vendors to set up their manufacturing base in India.

In 2003-04, exports of telecom equipments manufactured in India reported a negative growth of 38 percent (YoY). By 2008-09, the exports market reported a positive growth of 35 percent (YoY). In value terms, exports increased from INR 4,020 million in 2002-03 to INR 110,000 million in 2008-09 accounting for 21 percent of the total equipment produced in that year.

Realizing this opportunity a commitment to the tune of INR 75,000 million (USD 1.5 billion) in the past two and a half years has been made. India is expecting fresh commitments to the tune of INR 100,000 million (USD 2 billion) in the next one year.5

The Department of Telecommunications has set a target of 1.1 billion subscribers by 2015. To meet this target by 2015 and to meet the demand created by the telecom services sector, it is said telecom equipment worth INR 3,500,000 million – 5,000,000 million will be required by 2015.

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5 ELCINA-AVISTA, Envisaging the Next Wave of ICTE Manufacturing in India, February 2009
How can India inch towards doing so?

India has all the makings of a globally competitive telecom manufacturing and R&D destination. This is evident from:

- A large and booming domestic market with Indian operators reaching out to the global market providing wider access to Indian telecom companies.
- Strong management experience in critical functions such as SCM, high tech manufacturing systems, working capital management, value chain with EMS companies, captive facilities of MNCs (willing to invest further in India), auxiliary component manufacturing base (e.g., for cables, cabinets, shelves, power electronics, tooling, bare PCBs, etc.).
- Strong technical and R&D workforce having experience in R&D centers of MNC companies, IT service companies doing telecom projects, strong academic and research labs and an increasing number of Indians who are returning back from USA/Europe.
- Skilled & trained shop floor workforce for electronics circuit assembly, testing and integration from widely available resources from Industrial Training Institutes and Polytechnics.
- Cost advantage arising from lower manufacturing plant establishment cost and competitive labor costs.
- Availability of capital from a well established financing industry as well as private equity network.

The Telecom Equipment and Services Export Promotion Council (TEPC) has set its sights on certain milestones to be achieved by the year 2014:

- Exports growth at 25 percent CAGR over next 5 years, reaching over USD 10 Billion.
- Domestic telecom products growth of 18 percent CAGR over next 5 years.
- Employment generation (direct and in-direct) of 20 million.
- At least 70 percent of Indian domestic telecom needs are met by products manufactured in India.
- At least a few IPR-driven, Indian product companies should succeed globally and become billion dollar companies.

These targets though ambitious are a step in the right direction. The aim is not only to be a global telecom manufacturing hub but also ensure inclusive growth for the country as such by focusing on areas like employment generation.

Favorable government initiatives and timely policy changes has ensured that India has transformed itself into a telecom services giant. The same needs to be done to speed India's transformation towards becoming a global manufacturing hub that can cater to the domestic and global telecom equipment demand.

A Case-in-Point

Seamless efforts taken by the government have certainly initialized India's transformation to becoming a global manufacturing hub.

Sriperumbudur in Tamil Nadu is leading India's transformation into a global telecom manufacturing hub. Due to the progressive policy initiative of the Government, Sriperumbudur is today churning more mobile phones than Shenzhen in southern China. This is not a small achievement, considering Shenzhen makes one out of eight handsets sold anywhere in the world. The cluster of SEZ units emerging in Sriperumbudur need to be supported with suitable tax breaks, world-class public infrastructure such as expressways, railway links and an airport, and private amenities, including hotels, apartments, shopping malls and entertainment sites. Already many component manufacturers have begun work in Sriperumbudur to make parts and components for the cell phone industry. Approximately 20,000 people are estimated to be working in the area.

Large international players have made significant investments in the country, including the following investments in Chennai alone:

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6 TEPC, Policy recommendations to increase domestic telecom growth in exports of telecom equipment and services
## Company Description Estimated Investment

<table>
<thead>
<tr>
<th>Company</th>
<th>Description</th>
<th>Estimated Investment</th>
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<td>R&amp;D facility and global service delivery centre</td>
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<td>Telecom Equipment</td>
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<td>Salcomp</td>
<td>Mobile Handset chargers</td>
<td>INR 400 million</td>
</tr>
<tr>
<td>Telecordia Technologies</td>
<td>Software and services for IP wireline and cable</td>
<td>INR 1,500 million</td>
</tr>
<tr>
<td>XL Telecom</td>
<td>Capacity to make 10,000 handsets in SKD facility</td>
<td>INR 2,500 million</td>
</tr>
</tbody>
</table>

Note: The above figures have been calculated using exchange rate as INR/USD - 50

Globally, there have been instances wherein a well developed SEZ model has supported the manufacturing industry. The governments have encouraged a strong R&D infrastructure to facilitate the growth in the sector. Fiscal measures and incentives such as subsidies, easy credit / lines of credit and the use of bi-lateral trade are some of the measures that have been implemented to attract foreign investment and provide boost to the domestic manufacturing industry.

Given the geographical spread of our country, it might be a good strategy for India to go for a phased and planned expansion. Planning private SEZs in strategic locations will foster an enabling environment for global and domestic manufacturing majors to set up plants. High quality infrastructure at SEZs will further provide the necessary push which the telecom equipment manufacturing majors require.

How can India benefit from becoming a global manufacturing hub?

India has witnessed faster growth in urban areas, as compared to rural areas. The government has framed inclusive growth as one of the aspects of their policy this term. This orientation is most visibly manifested in the theme of the Eleventh Five-Year Plan, which runs from 2007 to 2012. The theme is ‘towards faster and more inclusive growth,’ which clearly reflects the need to find a sustainable balance between growth and inclusion.

Inclusive growth is understood by different people in different ways. For growth to be inclusive it should involve key attributes like

- Creating new and varied opportunities to earn a livelihood
- Provide ways to enhance capabilities to exploit varied opportunities
- Providing security against a permanent loss of livelihood
Telecom manufacturing is one such industry that is likely to provide this inclusive growth that India has been looking for.

There have been instances where deployment of technology in related industries have led to creation of newer employment and income generation opportunities for people in the rural areas. For instance, setting up of India’s first rural BPO in Krishnagiri by the government in 2007 under the FoSTERA (Fostering Technologies in Rural India) initiative led to its transformation. The government played a key role in providing the employees with the basic computing, communication and other soft skills. Similar benefits can also be replicated by a manufacturing unit in rural areas to provide employment and income generation opportunities thereby aiding in reducing the dependence of people on agriculture.

Additional income generating opportunities for people in rural areas will most likely lead to their children having a better access to the education which in turn can improve our country’s literacy rates and employability.

Access to better technology and its innovative application can play a very critical role in improving the healthcare facilities in rural India. For instance, a hospital can leverage telecom connectivity to provide healthcare services to rural areas through tele-medicine. A doctor in the rural area can remain in contact via a voice and data connection with the doctor at the hospital. The hospital can employ tele-medicine to assist doctors in rural areas as they analyse and treat patients.

Other than benefiting the rural areas, telecom manufacturing can also bring a lot of positives for the country as a whole.

**Employment Opportunities** – A strong telecom manufacturing industry will aid the ancillary and components industries and thereby generate employment opportunities. The telecom sector employs over 1 Million directly and is estimated to employ another 4 Million indirectly.

**Large export potential** – Telecom equipment industry offers a tremendous potential for increasing India’s exports especially since the traditional sectors have suffered on account of the current global crisis

**Creation of Intellectual property (IP)** – There is an opportunity for creation of Indian IP rights through telecom equipment industry which can in turn lead to value additions and innovations in other related industries such as components and semi-conductors.

**Self-reliance in Strategic sectors** – Telecom being a sensitive sector from the security point of view, capabilities in R&D as well manufacturing will help us in becoming self-reliant in strategic sectors such as defense and internal security, e-governance, education and research, and others.

**Increased competitiveness** – Emergence of globally competitive manufacturing and R&D from India will not only make telecom services more affordable in India, but will also make Indian companies more competitive globally, and will benefit our economy in the long-run.

The telecom equipment manufacturing industry can thus play a significant role in a country’s socio-economic growth (especially, development of India’s rural areas). It not only provides new avenues for employability but also ensures development of skills and secures against loss of livelihood experienced by the agricultural sector.

India is buoyed by a robust domestic telecom demand, low cost manufacturing capabilities, and a large talent pool. With an additional push from the government in the form of necessary policy initiatives, India can catapult itself into a global telecom equipment manufacturing hub.

Possessing the capability to grow as large as the automobile, IT / ITeS industry, or the telecom services industry and contribute to India’s GDP in a significant way, the industry can position India on the global map but yet needs to be nurtured to fulfill its latent potential.
07. Telecom Research & Development
In order to build capacity to strengthen the capability for telecom technology enhancement, the Government of India initiated the concept of Telecom Centres of Excellence (TCoE), established in a Public Private Partnership (PPP) mode involving leading telecom companies in India and leading educational and research institutions in the country. Apart from application oriented research, the centres are designed to assist and offer training to corporate managers for the management of networks and services as well as decision-makers of telecommunication entities to manage sector reforms.

There are seven TCoE's established in the country at leading academic and research institutions with the support of seven major telecom operators. Each centre has a focused area of excellence, thus the seven centres cover all aspects of telecom from technology to disaster management of telecom infrastructure to customer care & business model innovation. During this year, around 78 R&D projects were undertaken by the TCoE's. These included energy efficient devices for rural applications, use of non-conventional sources of energy and energy efficient power conversion, applications related to promoting broadband wireless access, rural educational and rural livelihood related applications, value added services such as mobile based video conferencing, development work on next generation networks etc. In addition, the TCOE at IIT Chennai has been accepted by ITU-R as an evaluator for International Mobile Telecommunication- Advance (IMT-A) proposal for 4G networks.

Contract R&D: Laying the foundation

The advent of a significant proportion of the R&D revenue coming India’s way in the technology arena in the past few years has been in the form of contract research.

The Economist Intelligence Unit (EIU) has defined India as an R&D hotspot: a place where companies can tap into existing networks of scientific and technical expertise; which has good links to academic research facilities; and provides an environment where innovation is supported and easy to commercialize.1
The EIU further notes, "India became a software hub in the 1990s. As a large Asian country where English is spoken, wages are modest and Western education is available, India has quickly grown as an R&D powerhouse. The cost advantage of having a large pool of inexpensive, English-speaking workers is a big part of India’s attractiveness. The possible cost savings figures have made the business case quite evident. The availability of good quality talent, is bolstered by the presence of good quality higher educational technological institutes and a large network of government research labs.

The best results for outsourced R&D have been most evident in the technology sector. India’s leading technology companies are beginning to build sustainable contract R&D businesses.

Within the technology sector, semiconductor design or design of chips is an area where multinationals came to India a long time ago, and it remains a growth area for R&D outsourcing. India has about a hundred VLSI companies, with more than 5,000 engineers providing semiconductor design services. Many large semiconductor companies, including Texas Instruments, National Semiconductors, Intel, Analog Devices, ST Microelectronics, Cadence, and Motorola have established research facilities in India.

Indian IT companies have considerable numbers of engineers working in the areas of VLSI design and embedded systems as well. While VLSI involves the design of chips, the scope of embedded systems would be much broader, involving chip design, software, signal processing and operating systems, and is expected to be a significant opportunity for contract R&D providers.

Designed for India

India’s telecommunications infrastructure continues to develop rapidly trying to meet local needs, and to overcome a wide variety of challenging regional characteristics, local customer requirements and conditions. This helps vendors understand the growing needs of the global market with regard to issues such as scalability, density and environmental ruggedness.

The unparalleled growth of the Indian market, innovative telecom business models, and challenging environmental conditions, make it ideal for innovation and a focus area for global telecom OEM R&D. The knowledge that can be gained in the Indian market is invaluable, and gives companies a significant edge, improving their product offering for Indian customers and others around the world.

Telecom vendors doing significant business in India are designing products to address this demand, allowing increased scalability and the addition of new functionalities on existing platforms without the need to replace existing legacy equipment. For example, products developed with the Indian market in mind are capable of expanding their capacity fourfold simply by swapping the platform’s line cards.

India’s climate is notable for its extreme temperatures and moisture-laden summers. This, coupled with its harsh environmental conditions and high levels of air pollution, requires additional qualification procedures for telecom equipment, in addition to those specified in existing international standards. In response to these conditions and the resulting local and international standards, vendors have begun applying anti-sulphur coating to cards deployed in India to protect them from chemicals in the country’s ambient polluted air. In addition, the chip packaging for critical components is upgraded to industrial-grade to sustain a wider range of temperature levels ranging from -5 C to 80 C degrees.

The adjustments required by the challenging conditions in India have also been contributing to improve reliability elsewhere; flexibility and scalability they bring will help increase a vendor’s success around the globe offering operators the same benefits of scale and adaptability dictated by the India market.

India is without question one of the most compelling emerging telecom markets in the world. Due to its low-cost, high-quality networks and innovative marketing, the country is a model of efficiency in global telecom. Vendors working in India believe that their presence there and relationship with Indian companies will eventually benefit all of their customers globally. Multinationals are increasingly taking notice of India beyond just its talent pool and viewing it as a key proving and development ground for their R&D efforts.

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2 VLSI Society of India
3 India R&D 2005 organized by FICCI: Background Paper prepared by Evalueserve
08. Value Added Services
Value Added Services

Mobile Value Added Services in India

Born out of vanilla voice operations, Mobile Value Added Services encompass services that are not part of the basic voice offer and are availed separately by the end user. They are used as a tool for differentiation and allow mobile operators to develop another stream of sustainable revenue.

The overall MVAS market can be segmented either on the basis of consumption patterns or on the basis of the mode of delivery. Furthermore, the market may also be segmented on the basis of the consumer type i.e. individual or enterprise.
**Modes of Delivery**

As outlined previously, the primary modes of delivery for VAS services include, Text or SMS, Interactive Voice Responses (IVR Voice Portals), GPRS/EDGE and Unstructured Supplementary Service Data (USSD).

**Text/SMS**

Widely used because its handset agnostic; however, still dependant on literacy of subscribers.

**Interactive voice response system**

IVRS is a key delivery medium in India. Although it is almost non-existent in most other developed wireless markets, IVR may continue to exist in India. IVR allows users to surf (menu based) for services and is available in almost all major regional languages.

**GPRS/EDGE**

All operators are looking to drive adoption rates for their data services. Key products such as videos, streaming, mobile TV, sophisticated m-commerce applications, etc can be delivered only through GPRS/EDGE.

**Retail channel**

Popularized by operators though their existing retail channel whereby a subscriber can just walk in for a particular service.

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**The Ecosystem and Value Chain**

Thus far industry protagonists focused on defining a Telecom ecosystem with MVAS being an integral part of it. However, in recent times, the high growth prospects of MVAS in India are giving rise to an entire ecosystem\(^1\) of its own.
The central point of the MVAS ecosystem remains that of the mobile operators. Although the VAS model, incubated by the operators, has transcended from a “walled garden” to a slightly less controlled version, mobile operators continue to retain an overwhelming majority of the revenue from VAS related services.

Given the importance this market has gained over the last few years, operators have started to extend themselves again by exploring margin generating sources including venturing into in-house content aggregation wings etc. This has created some pressure on various businesses in the MVAS ecosystem as it has begun to drive revenue shares lower.

Furthermore, large Internet portals already have major resources committed for the processing and aggregation of news and other content, thus also making them a part of the overall MVAS pie.

Market Size and Growth

Estimated at around INR 90 billion in 2009, the MVAS industry in India has witnessed strong growth over the last few years. Thus far the contribution of VAS revenue to total operator revenues has ranged between 8 and 9 percent on average. However, with voice ARPU's steadily declining and MOU’s panning out over the last couple of years, the importance of VAS has increased significantly as it is fast becoming an important tool for ARPU stability.

Prior to 2008, a majority of VAS revenues were attributable to SMS's. However, recent trends indicate that this mix is evolving, with greater penetration of new services, availability of relatively in-expensive feature rich handsets and consumer education, VAS other than SMS is gaining importance. It is further expected that over the next few years, non-SMS VAS would become a dominant contributor to VAS revenue.

Addressable Market

Although, the overall VAS pie was estimated at around INR 90 billion in 2009, this pie is more relevant for the operators as it constitutes their revenue. For other players in the VAS ecosystem the pie is a lot smaller as result of

- P2P SMS’s continue to be controlled by the operator as they are viewed as a substitute to voice
- Since the operator provides the connectivity as well as the support for delivery of the services to the end user, a significant portion of revenue is retained by the operators and a certain revenue share is passed on to the VAS providers along the value chain.

Source: Industry consensus estimates, KPMG analysis

1 Thomas Weisel, Enam Securities and Interviews with Industry Sources
Further to the above, the addressable market for VAS service providers was estimated at around INR 16 billion in 2009 and is expected to grow at a CAGR of between 25 and 30 percent over the next couple of years.

**Share of Non-P2P SMS**

As has been enumerated earlier, the share of non-P2P SMS VAS is expected to increase in the coming years. In 2009, non-P2P SMS VAS accounted for between 5 and 6 percent of operator revenues. Industry protagonists envisage this share to increase to around 8 percent over the next two years.

**Revenue Share**

The other primary revenue driver for independent VAS companies is the revenue share on the service passed on to them by the operators.

Historically, this share has been pegged at around 30 percent of operator revenues for a service. However, in recent times the average revenue share has witnessed a decline and according to industry experts, it is expected to continue to decline marginally over the next couple of years. The reasons for this decline have been attributed to:

- Competitive pressures in the market
- Low entry barriers
- Low IPR around technology and service offerings

### Key Highlights

- The share of non-P2P sms VAS is expected to increase over the next two years to around 8 percent of operator revenues.
- Revenue share across services is expected to stabilize at around 25 percent on average for independent VAS companies.
Market Segmentation

The addressable market for non-P2P SMS VAS has historically been dominated by ringtones and caller ring back tones (CRBT) which account for around 45 percent of revenues. Voice portal based service offerings are the second largest contributor to revenue, accounting for around 20 percent of the non-P2P SMS VAS market. Enterprise solutions and Alerts contribute around 18 percent to revenue whereas the gaming and data driven services segment is presently at a relatively nascent stage in India. This is manifested in a relatively low penetration of GPRS/WAP based products and services across the VAS spectrum.

Key Highlights

- CRBT’s and Voice Portals continue to be the driving force behind non-P2P SMS VAS in India.
- Other services, including gaming and data driven services are gaining prominence, however, they remain nascent in comparison with ringtones.
Growth Drivers

As has been enumerated earlier, MVAS revenues are expected to grow at a significant pace over the next three years. The primary factors expected to fuel the aforesaid growth include:

1. Subscriber additions
2. Increasing consumer demand for VAS
3. Declining ARPU’s and mobile tariffs
4. Reduction in handset costs
5. Growing rural market
6. Mobile phone being considered a “new-medium” for advertising
7. Introduction of 3G based networks

Subscriber additions

India is the second largest mobile market in the world and is also among the fastest growing globally. The total number of mobile subscribers in India increased from around 1 million in March 1998 to 392 million in March 2009, at a CAGR of 74 percent. As the end-user base for MVAS companies continues to expand over the next few years, the addressable population and thus product penetrations for MVAS service providers are expected to benefit.

Increasing consumer demand for MVAS

There is a growing preference among consumers for mobility. Thus consumers are increasingly using their mobile phones for music, entertainment, games and information.

This has led to growth in acceptability of MVAS among consumers as their willingness to pay for different types of services has increased significantly. On a scale of 0 to 6, it has been estimated that mobile subscribers are the most willing to pay for ringtones, MMS’s as well; as music downloads at present. However, other services, such as banking related products, video on demand etc. may gain prominence in the years ahead.

Declining ARPU’s and Mobile Tariffs

Mobile voice tariffs in India are one of the lowest globally. In order to increase revenues, telecom operators are targeting customers by reducing tariffs and offering voice services at very attractive price.

The aforesaid low tariffs have led to a significant decline in ARPU’s over the years. As of December 2008, GSM ARPU’s were estimated at around INR 220 per subscriber per month as against INR 316 per subscriber per month in December 2006, representing a decline of over 30 percent in a short span of 2 years. CDMA ARPUs on the other hand have been estimated to have declined by over 43 per cent in the same period to around INR 111 per subscriber per month.
In order to sustain profitability, it is essential for operators to try and stem this declining ARPU. However, with the entry of a number of new telecom service providers, offering even lower tariffs in order to gain market share, the importance of MVAS as a tool to stabilize ARPU’s is likely to increase significantly over the next couple of years.

**Reduction in handset cost**

Majority of Indian mobile subscribers use Ultra Low Cost Handsets (ULCH) and as the rural penetration of mobile telecom increases the demand for these ultra low cost handsets shall continue to grow. Several players have launched low cost models with India specific features to effectively tap the growing bottom of the pyramid subscribers. It is also important to point out that features on phones are continually being updated i.e. the ULHC’s are continually being enhanced in feature sets at the same or perhaps relatively lower price points in order to fuel sales. The decline in handset costs coupled with the augmentation of features therein is likely to give a fillip to the MVAS industry from a bottom-of-the-pyramid subscribers’ perspective.
Growing rural market

A majority of India’s population, around 70 percent, resides outside of the developed cities and towns whereas the wireless subscriber base attributable to rural areas is only around 27 percent. Thus at present wireless penetration in rural areas is estimated to be only around 9 percent as against 72 percent in urban areas. Given the low wireless penetration in rural areas, these regions are expected to contribute significantly to growth in wireless subscribers in the near future. MVAS as a result of the above, shall not only get a fillip from the perspective of a larger customer base, more importantly innovative services targeted towards the rural market may create sustainable relevance for service providers.

Medium of advertising

Another emerging driver for the increased use MVAS services is that of advertising driven on mobile devices. Given the reach and penetration of mobile devices today, Companies are increasingly adopting mobile advertising as a viable option to market brands and products.

Introduction of 3G based applications

The introduction of 3G is also expected to boost mobile broadband penetration as it will allow for high speed data transfer. This is expected to usher in a wide spectrum of services such as mobile TV, movie on demand, live streaming of music/videos and others. Results from the US as well as the UK show that 3G is able to substantially impact data and VAS revenue. The introduction of 3G has two important and relevant impacts on the MVAS industry:

1. The launch of 3G networks would create additional capacity whereby over 50 percent of the total cell site capacity could potentially be dedicated to data and VAS products and services.
2. The network would enable higher data transfer rates and an enhanced consumer experience in terms of download, interaction and quality of content on existing data services and applications, which may drive the usage of new as well as existing VAS services.

Services and Applications Outlook

Although entertainment continues to be a dominant MVAS category in end user preferences, the introduction of 3G technology as well as the growth in demand for M-commerce will boost demand for information / commerce based applications. The top 10 applications for 2010 are expected to revolve around Music, games, UGC and social networking, IVR based services, Mcommerce and location based services.

Value Added Services (VAS) will play an important role in improving the Average Revenue Per User (ARPU) which is decreasing and affecting operators’ margins.
09. Regulatory and Policy Environment
Regulatory and Policy Environment

The Indian telecommunications industry is supported by a strong regulatory framework, which ensures efficient policy development and execution. The government has made considerable efforts to ensure that regulation takes care of the interests of the industry, as well as the country at large.

The telecom regulatory framework in India consists of, among others, the following key bodies:

- The Department of Telecommunication (DoT) is the licensor and the central governing body for the telecommunication industry. It formulates the policies for the development of the sector, awards telecom licenses and is also responsible for frequency management.

- The Telecom Regulatory Authority of India (TRAI) regulates tariffs, advises the government about introducing new technologies and tracks the service providers to ensure that they adhere to the guidelines and meet the quality of service benchmarks.

- The Telecom Disputes Settlement and Appellate Tribunal (TDSAT) was setup to resolve all disputes between a licensor and a licensee; two or more service providers; between a service provider and a group of consumers.

Regulatory Evolution

The government has made significant contributions to the telecom sector by developing a regulatory environment that promotes the growth of the sector. Several telecom regulations have been introduced over the past few decades to ensure the development of the telecom industry.

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1 IBEF, December 2008
National Telecom Policy

The National Telecom Policy was announced in the year 1994. The primary objective behind this policy was to ensure rapid growth of the telecommunication sector such that every Indian has access to a telephone on demand. Rural expansion was and is still one of the key objectives of this policy. World class service quality and special redressal of customer complaints are some of the other imperative objectives of this policy.2

A fresh round of reforms was introduced in the form of the New Telecom Policy in 1999. This policy essentially attempted to establish a clear roadmap for telecom reforms and explored the option of opening up all segments of the sector to private sector participation.3 The key features of this policy included the strengthening of the regulator and opening up NLD and ILD to private participants, among other features.

The NTP-99 was amended in 2003 to permit a licensee to provide wireline and wireless services using any technology in a predetermined license area after conversion to a Universal Access Service License (UASL).

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2 DoT website
Telecom Regulatory Authority of India

The Telecom Regulatory Authority of India was established under the TRAI Act of 1997, as an independent authority. This act was further amended in 2000. TRAI was established to provide a “fair and transparent” environment of policy-making which would ensure fair competition among all telecom players. TRAI looks to protect the interest of the consumers, ensuring compliance with the service quality benchmarks, fixing of tariffs for players, advising the government on matters relating to telecommunication development and tracking the performance and working of all players within the industry.

Current FDI policy for the Telecom Sector:

- For Basic and cellular, Unified Access Services, National/International Long Distance, V-Sat, Public Mobile Radio Trunked Services (PMRTS), Global Mobile Personal Communications Services (GMPCS) and other value added telecom services, equity investment up to 74 percent is permitted with a limit of 49 percent under the automatic route.

- For ISP with gateways, radio-paging, end-to-end bandwidth, equity investment up to 74 percent is permitted with a limit of 49 percent under automatic route.

- For (a) ISP without gateway, (b) infrastructure provider providing dark fibre, right of way, duct space, tower ;(c) electronic mail and voice mail, equity investment up to 74 percent is permitted with a limit of 49 percent under automatic route. The same is subject to a condition that such companies shall divest 26 percent of their equity in favour of Indian public in 5 years, if these companies are listed in other parts of the world.

- For manufacture of telecom equipments, 100 percent equity investment is permissible under automatic route.

- Further, recently specific norms have been laid down for computing aforesaid limits in case of downstream investments for all sectors (including telecom sector).

Panoramic view on limits under FDI regime:

- Up to 74 percent (49 percent under automatic route) for Basic and cellular, UAS, NLD/ILD, V-Sat, PMRTS, GMPCS and other value added services;

- Up to 74 percent (49 percent under automatic route) for ISP with gateways, radio-paging, end-to-end bandwidth;

- Up to 100 percent (49 percent under automatic route) for ISP without gateways; electronic and voice mail; IP category 1;

- Up to 100 percent for manufacture of telecom equipments

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4 TRAI website
5 A telecom venture in any case needs to comply with DoT regulations (licensing and other requirements)
6 This includes investments by way of FDI, FI, NRI, FCCBs, ADRs, GDRs, convertible Preference shares, and proportionate foreign equity in Indian promoters/ Investing Company
The regulatory and policy environment has played a key role in the development of the Indian telecom sector and, with initiatives like the 3G spectrum auctions, will be an important contributor to future growth.

Upcoming Regulatory Events

A snapshot

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Regulation</th>
<th>Status</th>
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<tbody>
<tr>
<td>1</td>
<td>Mobile Number Portability</td>
<td>MNP is expected to be rolled out in metros by early 2010. The second phase will be implemented by end of 2010</td>
</tr>
<tr>
<td>2</td>
<td>Next Generation Networks</td>
<td>DoT will create awareness on NGN; TEC will study global examples of NGN deployment</td>
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<tr>
<td>3</td>
<td>3G and BWA Spectrum</td>
<td>3G and BWA auction is likely to take place in early 2010</td>
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<tr>
<td>4</td>
<td>Growth of Broadband</td>
<td>High speed broadband to be made available at all 25 lac gram panchayats in 3 years</td>
</tr>
<tr>
<td>5</td>
<td>Mobile Virtual Network Operators and Voice Over Internet Protocol</td>
<td>Policies likely to be announced soon</td>
</tr>
</tbody>
</table>

Source: 'Connecting Rural India: The Untapped Growth Opportunity', December 2008, Media reports, DoT

3G Telecom Services

The explosive growth of the telecom industry in India is being followed by the urge to move towards better technology and the next level of service delivery. The industry, the regulator and the government have indulged in significant amount of dialogue in the last few years to establish a proper mechanism to usher in the 3G era.

The government has recently announced that the 3G auctions will be taking place in January, 2010. All existing operators will be eligible to participate, as well as foreign operators with experience of providing 3G services. This will provide a good opportunity for foreign players to make an entry into the Indian market and bring in new technology and innovations.

3G auctions is a pioneering activity that will, for the first time in India, provide a market-determined price of spectrum and also bring in revenues for the government.

Broadband/Broadband Wireless Access (BWA)

The introduction of the iPhone and Blackberry has opened up a whole new avenue of data services to mobile phones. The popularity of these devices and the services that could be loaded on to them ended up clogging up numerous cell phone networks. These devices and numerous other applications have highlighted the popularity of the internet as well as broadband wireless access across the world.

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7 DoT, “Auction of 3G and BWA Spectrum-Revised Information Memorandum,” October 23, 2009, Media reports
The level of internet and broadband access in India is lower as compared to global standards. While the mobile subscriber base is approaching 500 million, the broadband user base is only seven million with an additional 13 million internet subscribers. Not only has the subscriber base in mobile phones zoomed past broadband numbers, the quality of broadband access remains at relatively low levels as compared to certain countries in East Asia, Europe and Americas.

To address this concern, the government has initiated changes with regard to internet access and broadband programs and made broadband infrastructure and service provision in rural and remote areas eligible for subsidy from the Universal Service Obligation Fund (USOF).

2010 could be the breakout year for broadband access in India. The government has initiated auctions for broadband wireless access spectrum, to be held soon after the 3G auctions in January, 2010. Broadband wireless access provides a convenient way to access the internet and removes the problem of last mile physical connectivity that plagued ISP and fixed line telecom operators. With the increasing use of personal computers, laptops and other mobile computing devices, the ability to use broadband access at home and on the move, makes this an exciting period for the industry.

**Mobile Number Portability (MNP)**

Government has announced that mobile number portability will be implemented in metros and Category A circles, and in the rest of the country in a phased manner over 2010. In many ways, this can be seen as maturing element of the Indian telecom industry and a natural step for the industry to go towards.

Broadly, MNP allows any subscriber to change his service provider without changing his mobile phone number. At present, if a subscriber wishes to change service providers, the subscriber would lose the benefit of having a known mobile phone number. This formed a deterrent for the subscriber to move between service providers irrespective of the quality of service and competitive pricing. MNP brings out a whole new facet to this highly competitive industry and will force telecom service providers to improve the quality of their service to avoid losing subscribers.

Indian mobility market can be characterized as one with a very large subscriber base, high growth rates and low ARPUs. The market is highly competitive with 10-12 players operating in each telecom circle, and the entry of new licensees is expected to further intensify the competition. All this makes for a very potent combination which will likely drive up the churn rates once MNP is introduced.

The real impact of MNP will take time to realize and it will be another 18 to 24 months before any quantified analysis can be released. Among the various segments of society, price sensitive segments such as students, small businessmen and shop keepers are most likely to benefit from MNP.

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Mobile Virtual Network Operator (MVNO)

The TRAI issued its recommendations on various regulatory and operational aspects on August 6, 2008 and these recommendations were accepted by the Department of Telecommunications on February 25, 2009, subject to responses on certain issues. In these two steps, the MVNO aspect of the telecom industry has taken an important step in segregating infrastructure from the service aspect, which is the essence of telecom industry across the world. With rapid changes in technology and constant customization in service requirements, the telecom industry is evolving in to two co-existing parts – one which develops, deploys and manages technology, the other uses technology to acquire and service customers.

As per the TRAI, there are approximately 360 planned or operational MVNOs\(^9\) across the world. This is a significant number considering that this aspect of the industry is less than a decade old. The MVNO business model has evolved to address various market or operator deficiencies regarding:

- Extending mobile services to market segments with which MNOs have not had much success previously
- Market expansion by reaching entirely new or previously un-served market segment or geographical area
- Better network utilization and realization of economies of scale
- Lower operational cost
- Effective product bundling and cross selling
- Utilise low operational cost of MVNO to expand into low margin/niche areas
- Deepening of the market by way of offering more innovative value added services to consumers whose needs are constantly changing given the technological progress and fast moving content space

Though the regulator and the government have tried to envisage as many aspects as possible in the recommendation document, the actual operating issues will emerge when many MVNOs actually start operating on a larger scale once this policy comes into effect.

Voice over Internet Protocol (VoIP)\(^10\)

The rapid growth of the telecommunication industry has created a demand for low cost domestic and international calls. This is where Voice over Internet Protocol (VoIP) comes in; a technology that allows the exchange of voice over internet protocol packed switches. This is a low cost option and all it requires is a large bandwidth to ensure service quality. This technology can be effectively utilized between two personal computers, a personal computer and a conventional phone as well as between two conventional phones.

Lower call rates are the key driver for adoption of VoIP. India being among the fastest developing economies across the globe is likely to have unprecedented demand for communication at lower tariffs especially by the large enterprises aspiring to become global business houses. Recent surveys reveal that the internet subscriber base in India has risen from 11.1 million in March 2008 to 13.5 million in March 2009; these figures are indicative of the ability of VoIP to flourish. These factors are likely to contribute to the growth of this segment; however the only deterrent is the cost involved, which may not be justified in terms of the returns realized.

There has been a lot of regulatory action in this field over the past decade. In 2002, as per the recommendation of TRAI the DoT decided to open this sector, but in a restricted manner. Later in 2005 the DoT allowed unlimited internet telephony to all access providers in India. In 2006 limited access was also given to internet service providers, who were also asked to pay 6 percent of their revenues as license fee and they were restricted from termination and carriage in India.

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\(^9\) TRAI Recommendations on Mobile Virtual Network Operators – August 6, 2008
\(^10\) DoT, TRAI, ISPAI; ResearchOnIndia, ‘VoIP Market-India’, August 2009

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Conclusion

The world has been witness to the tremendous success of the Indian telecommunications industry. From the onset, the sector has displayed enormous potential and played an important role in developing the country’s economy. The telecommunications industry has also been highly successful in promoting the public agenda and driving inclusive growth.

The success of the telecommunications sector so far had been limited more or less to the urban areas. Over the last few years, however, the Government as well as private players have been making a concentrated attempt to replicate the successes achieved in urban areas to the newer markets of rural India. While voice services have traditionally been the key driver for the development of the sector, the industry is now at the threshold of the next big shift and is poised to drive growth through other avenues. Broadband connectivity is likely to open up newer markets while at the same time improve the social and economic conditions of the lower penetrated areas. Mobile VAS is expected to benefit all sections of society with relevant content being developed to enhance businesses, provide financial assistance, and promote education and healthcare for the masses. The relatively newer industries of telecom manufacturing and research and development bring with them a plethora of employment opportunities for all.

The Government, recognizing the needs of the industry, has announced many upcoming regulations that are expected to further grow the industry. This proactive regulatory environment has had an extremely positive impact and has heralded the next phase of development for the telecommunications sector.
About Department of Telecommunications (DoT)

The Department of Telecommunications of the Government of India is responsible for telecom policy formulation, telecom licensing, wireless spectrum management, universal service obligation, promotion of International co-operation in telecommunications, promotion of private investments in telecom sector, standardization and research in the field of telecommunications and administration of:

- Indian Telegraph Act, 1885
- Indian Wireless Telegraphy Act, 1933
- Telecom Regulatory Authority of India Act, 1997

About Federation of Indian Chambers of Commerce and Industry (FICCI)

FICCI, set up in 1927 is the largest and oldest apex business organization of Indian business. With a nationwide membership of over 1500 corporates and over 500 chambers of commerce, FICCI espouses Indian businesses and speaks directly and indirectly for over 2,50,000 business units. FICCI maintains the lead as the proactive business solutions provider through research, interactions at the highest political level and global networking.

FICCI organizes a large number of exhibitions, conferences, seminars and business meets for promoting business.
About KPMG in India

KPMG is a global network of professional firms providing Audit, Tax and Advisory services. We operate in 140 countries and have 135,000 people working in member firms around the world. The independent member firms of the KPMG network are affiliated with KPMG International, a Swiss cooperative. Each KPMG firm is a legally distinct and separate entity and describes itself as such.

The Indian member firms affiliated with KPMG International were established in September 1993. As members of a cohesive business unit they respond to a Client service environment by leveraging the resources of a global network of firms, providing detailed knowledge of local laws, regulations, markets and competition. We provide services to over 2,000 international and national clients, in India. KPMG has offices in India in Mumbai, Delhi, Bangalore, Chennai, Hyderabad, Kolkata, Pune and Kochi. The firms in India have access to more than 2000 Indian and expatriate professionals, many of whom are internationally trained. We strive to provide rapid, performance-based, industry-focused and technology-enabled services, which reflect a shared knowledge of global and local industries and our experience of the Indian business environment.
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