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Confederation of Indian Industry

IT ADVISORY SERVICES

The Indian ICT industry

Enabling Global Competitiveness and Driving Innovation with Equitable Growth

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Foreword from CII

The Indian ICT Industry has witnessed excellent growth in the past two decades. Capitalizing on its advantages of talent pool, lower cost of operation and the innovative remote delivery model, India has established itself as a global leader in the ICT sector. Today, India is clearly acknowledged as the global services hub.

However, the industry today is facing many challenges in terms of rising costs, availability of quality talent pool, security and IP protection and infrastructure concerns. This coupled with changing customer expectations and emergence of other low cost locations is further deepening the threat to the Indian ICT industry.

To sustain the growth and achieve global leadership, the Indian ICT industry needs to move from being a low cost service provider to a high end solution provider. The industry needs to provide innovative solutions of higher value to the global customers. This innovation need not necessarily be in Products but could be in Services, Processes and even Business models. Innovation will lead to exponential growth and help the industry break out of the linear business growth.

The success of such innovation will be far reaching and help us achieve global leadership quickly. For this, we need to create a culture or innovation and an ecosystem to nurture and encourage entrepreneurs. The Government, Industry, Institutes, Investors and other stakeholders need to come together to create such an ecosystem.

While Innovation will lead to global competitiveness, growth and leadership, such growth needs to be equitable and broad-based. The growth should reach the tier 2 and 3 cities and shall not be limited to the major cities. The ICT industry's growth should also touch the society - both rural and urban through technology led transformation solution. The ICT should also benefit the common man through better e-governance initiatives. It is heartening to note that today we have many such initiatives from the Government and Corporate.

By fostering a culture of Innovation and Entrepreneurship, we could enable global competitiveness and equitable growth a reality in the ICT industry and other Industry sectors.

Subu D Subramanian
Chairman, CONNECT 2008

Foreword from KPMG in India

The Information and Communications Technology (ICT) industry is growing rapidly the world over, as businesses and governments have understood that technology delivers greater efficiency and higher productivity. The Indian government and enterprises have rapidly identified opportunity spaces within this global demand for technology related investments, primarily in the services arena, and have created an ecosystem for technology services delivery.

For more than two decades now, the information technology sector has been playing a critical role in the success of economies across the globe. Business strategies and structures of companies and industries are undergoing a transformation as communication within companies and users occurs more rapidly, with customized information, greater security, interactivity and timeliness than before. In addition, there is an awareness of transformation of business models and adoption of e-business based exchanges, auctions, integrated supply chains, etc. What is also important to note that traditional definitions of organization boundaries have disappeared, and new definitions emerge and get dissolved at an equally rapid rate.

The ongoing development of the ICT industry is due to the government and industry's commitment to create and support the policy framework, infrastructure, capital pool, partnerships and skill base. The growth of the industry is also driven by another factor - the convergence of communications and IT where knowledge can be disseminated in real time. With the adoption of a liberalized regulatory framework in the telecom sector, the local operators are well on their way to join global operators.

The next step is to leverage the skills base as a systemic, programmed innovation hub, where new ideas are germinated, sustainable revenue models established, and the reach of such innovation extends to a larger number of people.

This discussion note on global competitiveness and equitable growth driven by innovation, aims to highlight key trends and developments in the ICT industry, especially in India, the challenges faced, and ways to address them.

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Executive Summary

Every major historical transformation needs an enabler. Today, advances in technology have left us in no doubt that Information and Communications Technology is the leading enabler for global competitiveness and driving innovation.

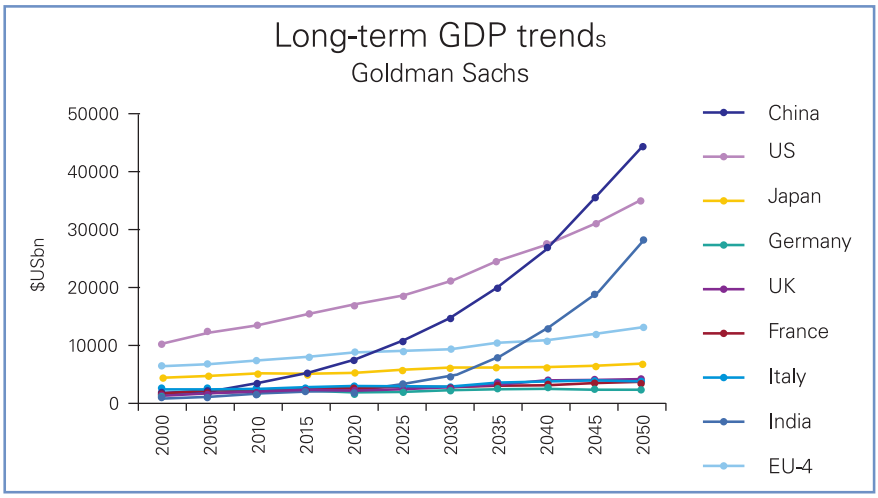
Footprints of ICT can be seen in the massive growth witnessed in the recent years across sectors including Education, Healthcare, Financial Services, Business Process Outsourcing, FMCG etc. In recent times, companies are fast realizing that technology has transformed from being a growth enabler to being a growth driver. Technology is helping companies to offer new and innovative products, drive operational excellence, lower costs and manage compliance and risk management functions. In this environment, successful companies are likely to be those that achieve the right balance between speed in the pursuit of the right strategy and the need for focus on operational execution.

India with its vast ICT skills plays a pivotal role in driving this development. The Indian IT/ITES industry is at an inflection point. Globally, India has garnered the reputation of being a premier offshore location. It has also earned some great customer references from across the world. In the last few years, there has been a paradigm shift in terms of size of deals, competitive landscape and client expectations.

It is very interesting to note that the relationship between technology and the economy have been viewed as a one-way street - technological change driven by innovation has a significant influence on economies of the world. Indeed, some economists are of the opinion that the economy's long-run growth rate is determined exclusively by the rate of technological progress driven largely by innovation.

Growth in Emerging Markets

In the 2008 Emerging Economy Report, the Center for Knowledge Societies defines Emerging Economies as those 'regions of the world that are experiencing rapid informationalization under conditions of limited or partial industrialization.'



"Dreaming with BRICs: The path to 2050", Global economics paper no: 99, Economic Research from the Goldman Sachs Financial Workbench, published on 1st October 2003

Emerging markets require attention as they transform themselves and create new centers of wealth and commerce. These markets provide opportunities in the form of locations for outsourcing services and new markets to sell new products and opportunities for mergers and acquisitions. Emerging markets have also changed the competitive environment of the most mature and reliable domestic markets.

There are immense opportunities in the emerging markets to expand into more mature and stable markets. The following characteristics distinguish emerging markets from other markets. First, they are typically economically strong with a large population, large resource bases and large markets. Their economic successes predominantly trigger development in the countries around them, also in an economic crisis, they can impact the surrounding market. Second, emerging markets are generally societies that are undergoing domestic economic and political reforms. Third, they are usually the fastest growing economies, contributing predominantly to the world economy. Fourth, they are typically critical participants in the world's major political, economic, and social affairs.

Globally, the competitive business environment is making it mandatory for companies to specialize in their core areas to compete effectively. This paves way for Global Sourcing to propel strategic and tactical change and to deliver tangible value through transformation. Some of the forces that drive the need to source those business functions to vendors spread around the globe are myriad:

- Cost reduction by leveraging scale
- Improvement in customer service
- Leveraging technology to improve process quality and efficiency
- Capacity management
- Standardization of processes
- Focusing on core competencies
- Enhance the ability to innovate

Each of the above factors gives potential strategic advantage to emerging market economies to grow exponentially. These coupled with the immense opportunities within emerging markets sets only the sky as the limit for growth.

Another point of view regarding the growth of emerging markets is that it is dependent to a large extent on growth of the world economy. Any slowdown in the world's economic growth, together with increased global competition, is likely to cause elementary changes to how businesses assess opportunities and sources of competition on a global scale. Also there are challenges that come from fundamental problems associated with their traditional economic and political systems. Another issue that needs to be confronted is controlling corruption, which distorts the business environment and impedes the development process. It becomes essential for any emerging economy to over come these issues to sustain itself in the world economy.

Having looked at the factors contributing and challenging the growth in emerging economies, how each country is positioned to take advantage of these factors is something which interests corporates, economists and various other people across the globe. These are revealed by some global factors measured across the world.

Market Potential Index

As per the study conducted by Michigan State University's Center for International Business Education and Research (MSU-CIBER) for the year 2008 to help companies compare various emerging markets based on eight parameters, they have arrived at an Index known as Market Potential Index (MPI). The following are the 8 parameters used to arrive at the index over a scale of 1 to 100:

- Market size
- Market growth rate
- Market intensity
- Market consumption capacity
- Commercial infrastructure
- Economic freedom
- Market receptivity
- Country risk

The following are the top ranking countries based on the MP Index:

Countries	MPI
Hong Kong	100
China	89
Singapore	76
Taiwan	62
South Korea	59
Czech Republic	51
Hungary	48
Mexico	45
Israel	45
Poland	42
India	40

Source: Market Potential Index for Emerging Markets – 2008, Study conducted by MSU- CIBER

India is positioned eleventh with MPI 40. Also, India has moved from the ninth position to the eleventh position compared to 2007. There are certain factors and trends which explain the phenomenon of India's position.

Networked Readiness Index

The 2007 Global Information Technology report released by the World Economic Forum has Networked readiness Index rankings, which benchmarks the country in their capabilities in **ICT**. The Networked Readiness Index (NRI) measures the propensity of countries to leverage the opportunities offered by ICT for development and increased competitiveness.

India is ranked very lowly on this Index and is falling down further. In fact, India and China showed a downward trend, with India falling 4 positions down to 44th and China 9 positions down to 59th, as compared to last year. Notwithstanding some specific clusters of ICT excellence in both countries, their performance overall in leveraging ICT for increased development appears to be particularly hindered by weak infrastructure, with a very low level of individual ICT usage for India and of individual and business readiness and usage for China. As far as the rankings go, Denmark tops the chart, with Sweden and Singapore coming second and third respectively. UK and US are ranked seventh and ninth respectively.

India, the Innovation hub

India is attracting a number of multinational behemoths to set up their research division in India. India has showcased itself as the destination for research in technology and related fields of work, thanks to having a large pool of English speakers and engineers. Companies like General Electric, Microsoft, Oracle and Cisco have sought respite in the silicon valley of India for research operations, next only to their respective R&D centers in the US. The Indian wings of these companies have filed for patents, sometimes exceeding the number of patents filed by their US counterparts. Interestingly, India has also started to attract multi-national startups, led by stalwarts from across the globe, and bringing in people from different cultures.

India: Hardware, Software and Services Share of Domestic IT Market, 2006-2011

	2006	2011	CAGR (%) 2006-2011
Hardware (%)	54.9	50.9	18.5
Software (%)	5.9	5.0	17.8
Services (%)	39.3	44.1	23.2
Total ICT Market ($M)	9,632	24,313	20.4

Source: Gartner (December 2007)

"India's ICT market is estimated to grow at a five-year compound annual growth rate (CAGR) of 20.3% to reach $24.3 billion, or nearly 2% of the country's gross domestic product (GDP), by 2011"

- Gartner India CIO Summit 2008

Key Implications of innovations in ICT for India

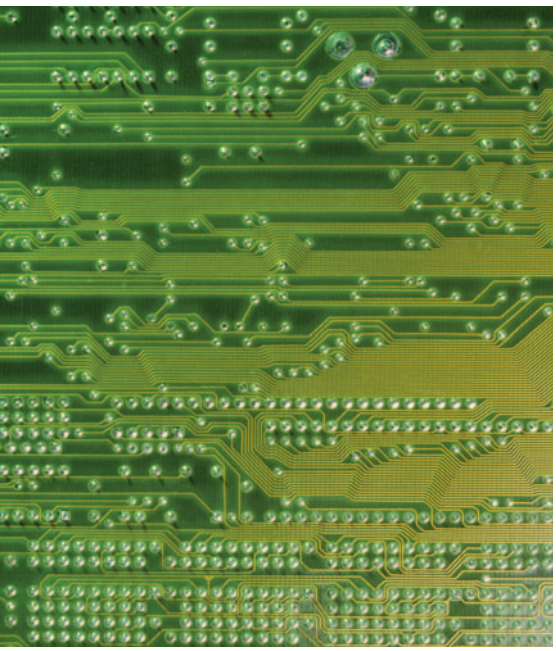
- **Collaboration between Innovation destinations**

  The foremost implication of innovations in the ICT space is the collaboration that it fosters between the new innovation destinations like India, China and Israel. Between countries, there are lots of collaborative efforts towards raising funds to invest in state-of-the-art technology companies that will benefit both the countries. This leads to the development of the entire innovation ecosystem comprising of entrepreneurs, high-tech companies, startups and possible buyers. Organizations such as TiE and Nasscom encourage such collaborations that typically benefits all the players of the ecosystem. There is need for more such collaborations within the companies in ICT industry to achieve 'inclusive growth' and wider economic benefit.

- **Creation and Protection of IP**

  Protection of intellectual property (IP) is a fundamental requirement for achieving technological progress in any country. If patent and copyright laws were so weak that people could copy innovations with little effort or penalty, then no one would have an incentive to innovate. Patent laws are not meant just for protection of production and use of technological knowledge but they should also serve as a guide on how to share the knowledge for mutual growth.

  With innovations happening by the minute in the ICT domain, the significance of Intellectual Property rights and patents have increased manifold. There was a time when corporations spent less than a percent of their profits on research and only a handful of the Indian software companies had their patents filed in the US. However, the sudden growth of investments in R&D led to a splurge in the IPR related activities. As mentioned earlier, innovations in the ICT space have mainly centered around 'software' with special focus on CAD/CAM tools and VLSI design. Owing to the protection offered under the IP regulations, companies have not only been able to find new revenue channels, but also offer better services to their clients. The R&D growth within the ICT industry also has a 'spill-off' effect on the non-ICT domain, where both ICT and non-ICT companies come together to offer next generation products and services.



"Knowledge has already become the key to productivity, competitive strength and economic achievement. Knowledge has become the primary industry, the industry that supplies the economy the essential and central resources of production."
- Peter Drucker, a renowned Management guru, in his book, "The age of discontinuity: Guidelines to our changing society (1969)"

With IP gaining significance, institutions like NASSCOM have undertaken a lot of initiatives to protect IP rights of companies. Steps in this regard include anti-piracy campaigns, aggressive marketing campaigns for IP rights and their awareness and enforcing compliance with NASSCOM's code of conduct by its member companies in the ICT space.

- **Focus on machine intelligence**
  There is a bigger need to explore newer arenas in robotics, sensing systems and other tools of cognitive powers such that the need for ICT systems to be dependent on prior experiences for growth is reduced. The ICT business is growing at the speed of thought and some breakthrough innovations in robotic technology are likely to pave way for further innovations in the ICT field.

Sustaining and encouraging Innovation

Given that innovation is the order of the day in the Indian ICT industry, the biggest challenge remains in sustaining innovation to excel in economic growth.

This requires focus on the following areas:

- **Increase Investment in R&D and human capital**
  This is an era of knowledge sharing where all information is freely available to be exploited by the first-movers. An interesting statistic notes that in few years from now, an average person will handle terabytes of data like documents, movies and music. Knowledge economy, as it is popularly called, focuses on building human capital and encourages free rein of researches. Therefore, there is a need to explore ideas like creation of digital libraries, which will provide a medium for creating, accessing and preserving knowledge.

- **Development of infrastructure to support innovation**
  Any economic and technological development is primarily dependent on the underlying network infrastructure. The current technologies must be built on such a service infrastructure that will be scalable and dependable and follow the required security stipulations. The situation today is such that though the focus is towards convergence, users still function within independent networks and are used to disparate

services. However, going forward, there should be common standards established across the world for getting innumerable devices connected, with inbuilt security features that offer seamless support to growing enterprises.

- **Building Capabilities and Capacity for Growth**
  Capacity building is defined as the "process of developing and strengthening the skills, instincts, abilities, processes and resources that organizations and communities need to survive, adapt, and thrive in the fast-changing world." (Ann Philbin, Capacity Building in Social Justice Organizations Ford Foundation, 1996).

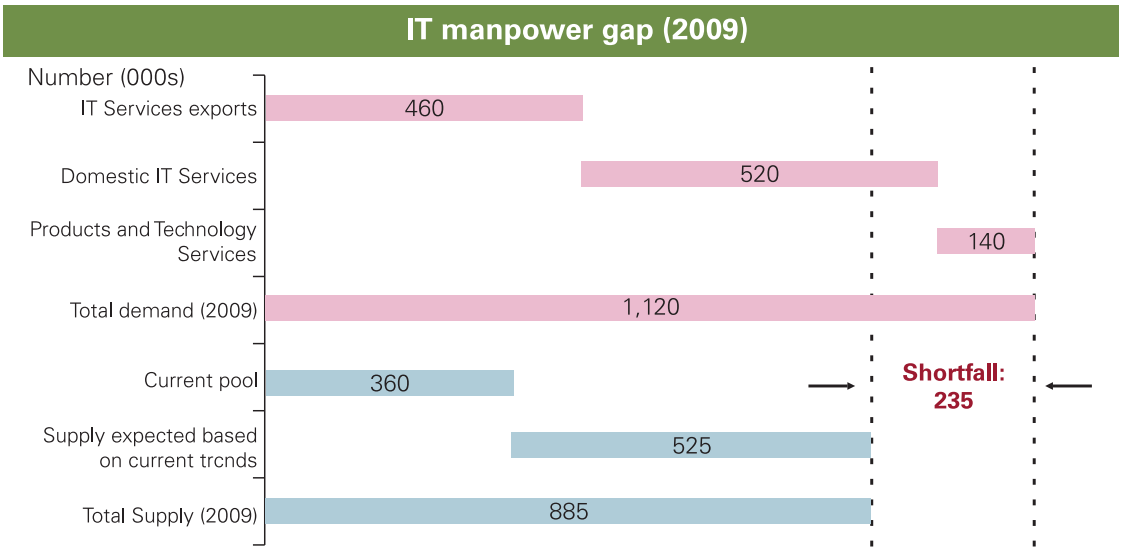
  For organizations, capacity building may relate to almost any aspect of its work: improved governance, leadership, mission and strategy, administration (including human resources, financial management, and legal matters), program development and implementation, fundraising and income generation, diversity, partnerships and collaboration, evaluation, advocacy and policy change, marketing, positioning, planning, etc. (*Evaluation of Capacity Building: Lessons from the Field* by Deborah Linnell, published by the Alliance for Nonprofit Management).

  India is building its image as technology powerhouse and has brought about change in fast way trying to catch up to developed countries. India is looked at in a new light as a source of software and engineering capacity for the world. The policy changes – deregulation, opening up of economy and privatization – has helped foster ICT infrastructure. The policy changes have helped affect a brighter future for ICT in India. Development of highly capable work force continues with high standing of India's education.

- **Lack of skilled manpower**
  This is yet another roadblock on the way to India becoming knowledge powerhouse of the world. With variety of new career options available globally, many industries especially ICT related ones are facing acute shortage of skills. Further, changing job profiles require higher skill levels. The pervasive change in technology is also a major reason for skill shortage, with skills going obsolete in less than the time it takes to learn them. Also another reason is that the educational institutions are not fully equipped to churn out industry-ready candidates.

Identifying ways and means to counter the skills gap challenge starts with careful research and planning for the economy as a whole. To start with, it starts out with identifying skill gaps in core areas and preparing to fill them. Skill upgrading through training is one of the popular options available for any organization. Seminars, classroom trainings, workshops, or on-the-job training can help employees develop technical and soft skills. ICT Industry specific programmes need to be formulated and the capacity of the institutions offering these programmes needs to be significantly increased. The availability of trained teaching professionals should also be ramped up by revising and rationalizing the package and enhancing the overall image of the teaching profession.

Shortages in core skills call for integrated training, talent management and succession planning programmes that go hand in hand with efficient recruiting and retention practices for not only for-profit organizations but also for Government departments.



Managing complex projects

- A remarkably high 59 percent of organizations either have no, or only an informal, benefits management process
- Only 13 percent track benefits until they are realized and formally reported
- Over the last 12 months, 49 percent of survey participants have experienced at least one project failure
- Eighty-six percent of organizations lost up to 25 percent of target benefits across their entire project portfolio

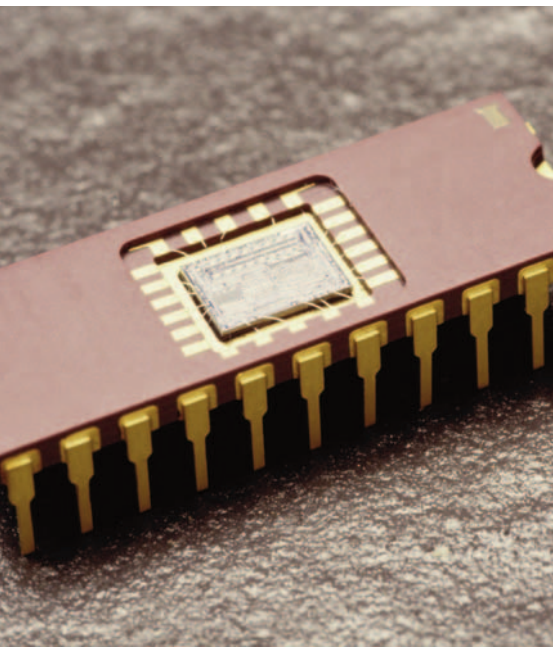
- The KPMG Global IT Project Management Survey 2005 (covering 600 organizations across 22 countries)

Towards building capability to foster growth, project management is a pertinent need, particularly of huge projects in ICT involving significant efforts and time. While many project managers from India working on complex, large scale projects have a very strong technical background, many lack formal training in all the aspects of project management. As India is gearing up to participate in more and more global and larger projects/programs, it is imperative to hire and nurture quality project managers to add up to the value chain. This is especially crucial since the available management talent will also need to compete with the multinationals entering the Indian IT/outsourcing marketplace. It is important to identify and prepare project champions towards effective management of projects. Functionaries attempting to design applications must have adequate experience and training to design, implement and manage ICT applications. Especially for e-Governance projects, it is desirable to organize special training programmes which provide formal inputs on the planning and implementation of ICT systems. It is equally important to ensure appropriate tenures for project champions to facilitate a smooth transition, and internalization of the changed procedures.

We have seen a large diffusion of ICT orientation in India - thanks to the efforts taken by Central Government and various State Governments. The sheer size of the ICT market in India has a lot of upside potential. As India continues to develop its ICT policies and infrastructure, it can become one of the leaders in the global economy in the very near future. India has shown an excellent ability to produce and export ICT products and services. The advantages it has experienced in technology have spilled over into other industries. India has shown an ability to work with the current technology leaders across the globe – crossing borders and breaking barriers of culture and language.

While the future looks bright, the following challenges need to be addressed:

- Corruption is one perennial problem which is fairly difficult to curtail. It has created problems for e-government interaction with citizens
- Political feuds still run their course causing economic development to slow down
- The infrastructure has also caused a divide between the rich and the poor. This is also bolstered by the caste system which is still taken to heart by some in India
- It is also worthwhile to note that piracy is rampant due to improper enforcement of Intellectual Property laws
- Rampant terrorism due to political and religious factor threaten the



very fundamentals of economic development. Money and efforts spent in countering terrorism are enormous; and it can be argued that those could have been used more productively.

Innovation in ICT

The ICT industry has been one of the biggest contributors as well as beneficiaries of the innovation buzz in the emerging markets, particularly in India. Before delving into the innovation era, let's take a close look at the ICT industry, which in essence, has evolved through three phases:

The first phase of the ICT industry evolution revolved around the Information Technology Services sector boom. The second phase was characterized by the growth of BPO companies which contributed to empowering youngsters and increasing the purchasing power in the economy. The third phase of the ICT evolution, the phase that we are currently in, revolves around innovation.

Let's look at what are the key factors that contribute towards innovation in ICT in the Indian economy:

It has been established that 'software' is likely to continue to be the biggest differentiator in introduction of new products and services in the ICT space, broadly comprising Information Technology, Consumer Electronics and Telecom, given that processors and hardware components are standardized.

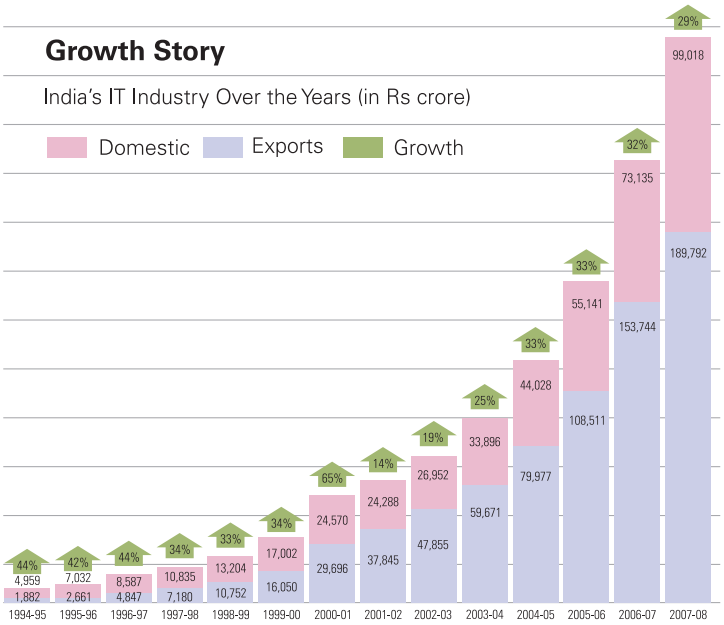
This is manifested in the thrust upon tools on CAD/ CAM design, VLSI design and so on which has opened a plethora of opportunities in the space of engineering and product design. The wireless and mobile

telephony market is also a frontrunner in the innovation race. Convergence, networking and pervasive computing are also the buzzwords.

A glimpse of the role of innovation in the key segments within ICT will provide us with a perspective on how innovation is making a difference:

Information Technology

The Indian Information Technology industry is set to be on a growth trajectory. It is expected that this growth is likely to span across multiple years.



Source: Article "IT happened one year" published by DataQuest (August 2008)

When it all began, the industry focused predominantly on exports which were growing year after year when compared to the domestic IT market. This was the trend till about this year when for the first time in Indian IT history, the domestic growth in IT overtook the IT exports. The difference was not merely marginal, the domestic IT grew by as much as 34 percent as opposed to a 27 percent growth in exports.

Dissecting the Indian IT Industry (growth in USD terms)

	Revenue (in USD bn)		
	FY 08	FY 07	FY 06
Domestic - Hardware	12.3	8.2	6.7
Domestic - Software	3	2.1	1.7
Domestic - Services	9.2	6.1	4.7
Exports - Software & Services	46.6	32.8	25
Exports - Hardware	0.3	0.5	0.6
Total	71.5	49.6	38.7
Growth	44.00%	28.00%	35.00%

The main reason behind this growth have been attributed to the growth in BPO industry, which grew at 65 percent.However, outside of outsourcing, the following were also responsible for the growth of the sector:

- An increasing need for mobility drove sale of laptops by 59 percent
- A high power consumption led to replacing CRT monitors with LCD monitors, leading to non-bundled markets growing by 71percent
- ATMs grew by 150 percent which were the only sub segments within the domestic market to witness a three-digit growth
- Remote infrastructure services that were offered by exporters of IT services also recorded more than a 100 percent growth

One of the crucial reasons for this growth in the Indian IT industry is attributed to innovation, as a result of having young minds in the industry. It is a given that IT has transformed the lives of many in India in ways that one would have never conceived of, a decade ago.

'.com' and '.net' are the other buzzwords in the Indian IT industry. Innovations in this space include birth of domain name registrations due to the undeniable need felt to go 'online'. Statistics reveal that as of April' 08, the number of domain registrations in the .com and .net space totaled upto 85 million allover the world. Indian domain name registrations alone totalled upto over a million, showing nearly a 50 percent[1] growth over the previous year. Interestingly, the awareness of the buzzwords like .com, .net, .in is high among the average Indian user. Whether or not they understand the implications of the services associated with each of these names is yet to be proven. A majority of the registrants represent small and medium businesses, with individuals accounting for less than a percent of the registrants. However, the sudden explosion in the domain registrations itself goes on to show a paradigm shift in the IT landscape where the average Indian is abreast with new developments in the IT space. The need to get the business online is understood as the primary driver for success and platform for showcasing innovations to the world.

1 Source: http://www.verisign.com/static/043939.pdf

Telecom

India is characterized by rapid growth in the telecom sector with a subscriber base increasing at an average of 8 million per month. India is next only to China and the US in the telecom space with over 250 million subscribers. The Indian telecom industry has been the firsts in several fronts –

- First in fastest sale of a million mobile phones
- First in introducing the world's cheapest mobile handset
- First in Mobile monthly Minutes of Usages per subscriber in Asia Pacific Region
- First to introduce value-adds like rural telephony, missed calls and so on

Source: Presentation on "Innovation & technology in telecom" by N K Goyal at TDSAT seminar, Kolkota on 20th January 2008

The future offered by telecom sector in India is also promising in terms of number of telephone subscribers touching the 500 million mark and new internet connections touching 40 million by 2010. In order to achieve and sustain such a rapid growth, the only differentiator is again innovation.

With the convergence of broadcasting and communications, the following is a glimpse of some of the factors that are driving innovations in the telecom space in India by the minute:

- Unending quest for more data at high speeds, like movement from GSM to UMTS, WCDMA and from CDMA to 1X, EVDO and so on
- Introduction of IPTV and Mobile TV raising the bar in digitalization
- Concepts like "RFID" gaining popularity

The shift towards an "innovative mindset" has affected industries outside of the telecom space. For example, automotive companies have leveraged innovations in the telecom space by introducing GPRS and multimedia services in the dashboards of their vehicles.

The innovations in the global arena impact the Indian telecom market as well. With the major giants like Clearwire and Sprint joining hands to launch Wimax in the US and media giants launching content service on customer demand, the Indian telecom industry is quickly catching up with innovative services.

As a growing industry, the telecom industry has its share of challenges such as number portability, which refers to the ability to transfer either an

existing fixed-line or mobile telephone number assigned by a local exchange carrier (LEC) and reassign it to another carrier. In most cases, there are limitations to transferability with regards to geography, service area coverage and technology. In India, the telecommunications regulatory body — Telecom Regulatory Authority of India (TRAI) — has also realized the importance of this feature and has decided to look into the issue of number portability and suggest a viable method of implementation. It is necessary to determine the implications of implementing number portability for the mobile subscribers, the service providers and the regulatory body prior to its implementation. From a service provider's point of view, the Indian mobile industry is still not ready for number portabiity. The service providers are not keen on its introduction as that would require a substantial investment in upgrades to the routing and the billing mechanisms.

Increase in mobile phone usage coupled with multiple players in the telecom services segment pose a challenge to the spectrum of services. Further the delay in the launch of 3G, or third generation wireless technology, is expected to have an adverse impact on the incumbent GSM operators as well as the new Universal Access Service License (UASL) holders.

Business Process Outsourcing

The BPO sector, currently employing over 2,00,000 personnel is on a growth trajectory, targeting to grow on an average of 38 percent till 2010. The growth was initially fuelled by relatively low labor costs. However, with stiff competition from China and Latin America, there had to be something more than mere cost differentiation. This is when all the BPO players dived into the "quality" engine and focused towards complying with international quality standards like TQM, CMMI, Six Sigma and so on.

With the BPO sector scaling higher maturity levels, the focus has now shifted towards innovation which offers huge promises for the growth in the sector. The NASSCOM-McKinsey study, "Extending India's leadership of the global IT and BPO industries" in 2005 has predicted that the Indian IT-BPO sector is likely to generate over USD 10-15 billion of additional revenues by 2010—over and above its USD 60 billion export target—provided the sector shifts from achievement of operational excellence to introduction of innovations in its methodology. Innovations could be introduced in multiple ways in the BPO sector – innovation in business model and processes, innovation in 'go-to-market' strategies, and so on.

There are several companies who have been recognized for their innovative ideas – companies that developed innovative methods to curtail attrition, companies that transformed customers' software to run their processes on the company's platform, and so on. Following are some of the challenges that confront the BPO industry:

Retention of talent pool

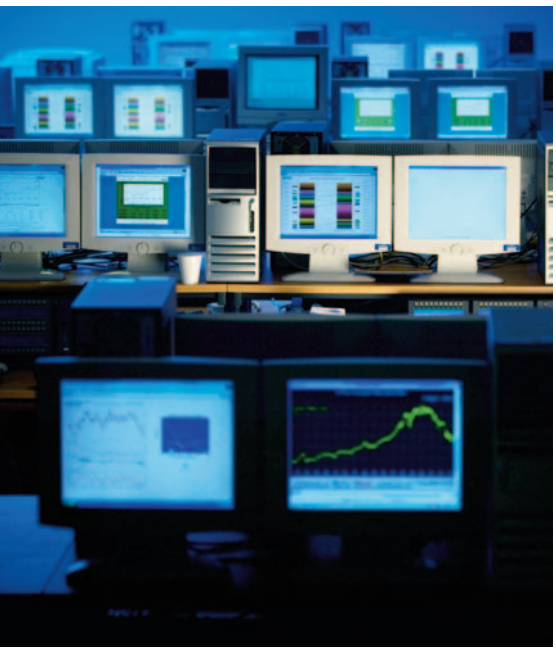
One of the biggest challenges faced by the Indian ICT sector is the retention of middle and top senior level management staff. This is because, in general, having a middle management position in a BPO company amounts to easily obtaining senior management positions in related industries, in the future. Therefore, the gap between demand and supply at senior positions is hard to fill in the BPO sector. Cost of retaining talent is also high in the BPO sector because it has been established that people are motivated more by organizational HR policies than compensation. Therefore, the BPO companies are increasingly looking to invest in training young talents right from their college days and focus towards charting a career path for them.

Currency dynamics

With the currency rate fluctuations between India and the US, there is an impact on the revenues of the BPO companies. The reason being, while the client is billed in dollars, the expenses are incurred by the BPO companies in Indian rupees. This does not however mean a rise in IT expenditure budget of the customer. Therefore, the BPO companies need to find alternatives to deal with the currency fluctuations.

Tax Holidays

Countries like China and Philippines are offering 10-year tax holidays to their IT companies. A major concern for the Indian BPO sector is the expiry of the income-tax holiday period in 2009. The STPI scheme is also set to expire in 2009, likely to cause nearly a 10 percent cut in business margins of the BPO companies.



Background screening

A recent report by a background screening firm First Advantage revealed that in the IT sector, one in every four CVs has some discrepant information and in the BPO sector one in every six CVs has a discrepancy. The report said three in every 10 people have been found to misrepresent some information or the other in their job applications. Out of that, there are several one in every third individual causing discrepancy in the IT and ITES sector. While BPO is gaining popularity for employing more people, it also faces the risk of candidates and recruitment agencies faking information related to academic qualifications, experience, salary on the resumes.

Today, the Indian BPO industry is striving towards customer satisfaction, quality improvement and people retention. To sustain its growth and performance, the Indian ITES-BPO industry needs to continue its focus on processes, people and technology i.e. the industry now needs to focus on people retention and efficiency improvement. To be successful, BPO companies need to understand the need to invest in quality and consistency during their early stages of operation. According to Nasscom, currently the range of end-user satisfaction ratings for Indian BPO organizations is 82–100 percent. The range of fatal accuracy defects percentages for Indian BPO organizations is 98-100 percent and this is better than most regions across the world.

Consumer electronics

The consumer electronics industry is projected to grow at a healthy 6.1 percent in revenues in 2008, according to Consumer Electronics Association (CEA). This industry is a major contributor towards economic growth with sales expected to top USD 171 billion by end of 2008. The CEA analysis has identified some key areas that would hold enormous potential in the market due to the introduction of innovation.The key trends to look out for in the consumer electronics sector includes the role of software, consumer electronics retailing, consumer GPS services and the future of radio.

Of the total exports of consumer electronic goods, TV displays were rated the largest contributor, with over 15 percent share in the total exports. This is likely to grow by 13 percent to nearly 30 billion dollars in the coming year.

Gaming category is also ready to set records in terms of revenue. Due to the availability of next generation consoles, gaming hardware alone has grown by 50 percent to USD 6.6 bn in 2008.

Software used in consumer electronics is also likely to touch USD 11.5 bn by end of 2008, growing by 26 percent. Mobile video and navigation category will nearly grow by twice as much in 2008 to more than USD 3.1 bn due to huge sales of Portable Navigation Devices (PNDs). It is also anticipated that there will be rapid revenue growth of over 74 percent for devices that include traffic and data functionality.[2]

It has been established that the industry is likely to see further innovations and will grow at an unprecedented pace in the coming years.

[2] CEA

ICT towards a greener world

We often talk of building a cleaner India, a greener India. We have gone about planting trees to achieve our goal towards a greener environment. However, only a few of us have realized that "technology" can play a vital role towards achievement of our goal. Though hard to believe, it has been established in a recent report by an NGO- The Climate Group that if we altered the way we did business with the help of technology, we could be reducing global emissions by as much as 15 percent by 2020. Not only this, we will also be indirectly contributing to savings from energy efficiency by over USD 800 billion. The report "SMART 2020- Enabling the low carbon economy in the information age" published by The Climate Group in June 2008 revealed some interesting statistics:

- ICT contributes currently to nearly two percent of global CO2 emissions and is likely to double by 2020
- As a corollary to the above statement, ICT will also enhance its capabilities to maximize efficiencies thereby contributing to more than 5 percent deductions in CO_2 emissions
- In effect, this has led to an estimate of salvaging nearly 7.8 Giga-tonnes of carbon-dioxide equivalent called the $GtCO_2e$ by 2020

Wonder how a smarter use of technology could lead to such unbelievable figures? Think of a simple scenario where you replace paper with e-paper. That does it all. In today's corporate India, "Please consider the environment before printing this e-mail" has become a commonly used phrase at the end of communications like e-Mails.

Videoconferencing and e-commerce are the order of the day. Thus replacing physical services with their virtual offerings are likely to save as much as 6 percent of the benefit listed there in terms of saving CO_2 emissions. It has been estimated that the greatest savings in global emissions can be made if ICT was used more in the space of infrastructure services. One could contribute tremendously by better design of buildings, robust industrial motor systems and smarter logistics services.

"Global Warming" is not a word you can ignore in today's technology-driven context. Several of us fear that the burgeoning fuel prices is the biggest drain on our pockets and are exploring alternate means of transport to reach our everyday destinations. This has forced all of us to fundamentally question the way we operate, in order to cut costs and save energy. With the advent of the web and the mobile phones, the ICT

industry has helped us unleash all our capabilities towards leveraging technology to the maximum in order to build a greener world.

The SMART 2020 study further predicts that:

- PC ownership will grow by 4 times its present size between 2007 and 2020 to 4 billion devices
- Emissions will double over the same period, and laptops will supersede desktops as the main source of global ICT emissions accounting for 22 percent
- Mobile phone ownership will almost grow twice to nearly 5 billion accounts to 2020
- Broadband uptake will triple to touch almost 900 million accounts, with emissions doubling over the entire telecoms infrastructure

It has been proven beyond doubt that countries like China and India, being frontrunners in the technology wave, are the major contributors towards such unprecedented statistics stated above.

ICT in India - Rural Foray

ICT offers promises for the future of rural India in terms of economic growth and alleviation of poverty. The World Bank in its annual report on 'Global Economic Prospects' highlighted that the population of the poor living on less than 1 dollar per day has increased from 474.4 million in 1987 to 552 million in the year 2000. You may wonder what this statistic has to do with the ICT sector. This directly translated to Indian government opening up more avenues for disseminating knowledge to the needy and thereby empowering them.

The government started with introduction of initiatives for software development in rural areas for taking ICT to the masses.

A case in point was net-enabled software called "Gram Haat" which stands for village market. The village market allowed people to buy and sell their commodities online through internet kiosks set up in the rural areas.

In the field of telecommunications also, some waves were created in the rural areas to empower people. One such event was the "Ujjas innovation" whereby there was an initiative for empowering women by bringing out their own newsletter called "Ujjas", which later went on air in

"Village Knowledge Centres are the essential component for realising our goal of graduating to a knowledge society and India's transformation to a developed country by 2020."
- A P J Abdul Kalam, Former President of India

the All India Radio Bhuj station. This was a medium for women to express their strong views against infanticide, dowry, and misbehavior by men.

"Gyandoot" was another internet based project wherein internet was administered through several kiosks across the villages in a state. The project extended to including initiatives like connecting the health centers in the villages with the district hospitals for better availability of healthcare services to the masses.

The government also introduced software like "Jal-Chitra" for harnessing water resources in rural India.

The government of India has also introduced several initiatives for fighting corruption through the use of ICT. A story that has caught many people's attention is the computerization of checkposts in the border of Gujarat where in entry taxes had to be paid by any vehicle entering Gujarat with Cargo. Often, the officials at the border took a cut on these taxes into their own pockets. The government of India then came up with a simple solution to this problem with the help of ICT tools- record the weight of the cargo on a computer and video-graph the number plate of the vehicle carrying the cargo.

This audio-visual information was made available to the control room in the state's capital for monitoring the entry of vehicles. This directly led to the tax collection increasing by four times. Add to it a zero level corruption scenario.

Thus ICT has helped India truly become a global village by taking technology to the masses.

Summary

With India emerging as the 'services hub' of the world with a sizeable share in the offshore IT/ITES market, the path for the ICT industry is strewn with several challenges. On one side of the fence is a plethora of opportunities offered by the web world to break barriers and partner with global giants. On the other side, however, is the digital divide which could take at least a decade to take information to all corners of the society and achieve an all-inclusive growth. The intense volume of information and the simplicity of its transfer pose challenges that require intervention by the government and calls for strengthening of the Indian IT regulatory framework to address cross border issues. The need of the hour is to bridge the demand supply gaps- by upgrading technologies, establishing public–private partnerships and building regulatory frameworks that not only control but also foster innovation. These frameworks would thereby lead to capability building to surpass the global competition. Emphasis also needs to be placed on capability growth in bandwidths, data communication speeds, and a trained skillful work force. With a strong focus on some of the key areas listed here, backed up by full support of the government for research and innovation, India can go a long way in beating the competition and emerging as a super power of the world.

About KPMG in India

KPMG is a global network of professional firms providing Audit, Tax and Advisory services. We operate in 145 countries and have 123,000 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 the 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 and Pune. 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.

About CII

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the growth of industry in India, partnering industry and government alike through advisory and consultative processes.

CII is a non-government, not-for-profit, industry led and industry managed organisation, playing a proactive role in India's development process. Founded over 113 years ago, it is India's premier business association, with a direct membership of over 7500 organisations from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 83,000 companies from around 380 national and regional sectoral associations.

CII catalyses change by working closely with government on policy issues, enhancing efficiency, competitiveness and expanding business opportunities for industry through a range of specialised services and global linkages. It also provides a platform for sectoral consensus building and networking. Major emphasis is laid on projecting a positive image of business, assisting industry to identify and execute corporate citizenship programmes. Partnerships with over 120 NGOs across the country carry forward our initiatives in integrated and inclusive development, which include health, education, livelihood, diversity management, skill development and water, to name a few.

Complementing this vision, CII's theme "India@75: The Emerging Agenda", reflects its aspirational role to facilitate the acceleration in India's transformation into an economically vital, technologically innovative, socially and ethically vibrant global leader by year 2022.

With 63 offices in India, 8 overseas in Australia, Austria, China, France, Japan, Singapore, UK, USA and institutional partnerships with 271 counterpart organisations in 100 countries, CII serves as a reference point for Indian industry and the international business community.

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