India’s Software Industry

Introduction

The Indian software industry has been a remarkable success story. It has grown more than 30 percent annually in the last 20 years, with 2008 exports projected at close to $60 billion. India exports software services to more than 60 countries, with two-thirds to the United States, including half of all Fortune 500.\(^1\)

Economic policy has undergone substantial revision driven by this sector, and India began to open up. Foreign exchange reserves are high, markets greatly influencing the policy, and a string of coalition governments have not deviated from economic liberalization. Benefits are uneven, though, as they are very poor and have been little affected. High unemployment continues, and huge bureaucracies still yield to corruption. While problems remain, India is an emerging economy fueled by techno-savvy manpower and a world-class information technology (IT) industry.\(^2\)

Indian software firms quickly moved up in the value chain, by performing with low cost programming providing the comprehensive software development services from the India for overseas clients. An abundant pool of Indian technical manpower, allocation of funds by the government for investmentment on the technical education, created a series of elite technical and management institutes that responded to a severe global shortage of technical manpower. English-speaking, trainable and urge for higher wages, Indian firms sent the staff to do onsite client services in the United States.

Indian professionals built personnel networks in Silicon Valley and valuable reputations and used their growing influence within US companies to help the Indian companies get a foot in the door of the expanding opportunity of outsourced IT work. Once the potential of software exports were demonstrated, the Indian Government helped to build a high-speed data communication infrastructure, which allowed the overseas Indians to return home and set up offshore sites for U.S. clients. The Indian “brand” image for affordable speed and the quality grew.\(^3\)
Intense quality and productivity improvements built client value and today these Indian companies deliver a wider range of software development tasks, as well as benefits in new service segments such as product design and information science (IS) outsourcing. Many firms have met top certification requirements for the quality standards in demand around the world. New frontiers in the data protection practices are moving quickly to the top of the agenda.

**International level Issues on the Software field**

1. Global PC software piracy dropped in 54 of the 111 countries studied; however the worldwide piracy rate rose from 41 percent in 2008 to 43 percent in 2009\(^4\), due to exponential growth in PC software deployments in emerging economies.
2. The United States, Japan, and Luxembourg continue to hold the lowest piracy rates of economies surveyed (20, 21, and 21 percent, respectively).
3. In Asia Pacific, economies with the highest piracy rates include Sri Lanka, Indonesia, Vietnam and Pakistan.
4. China’s piracy rate dropped 12 percentage points during the six years from 2003 to 2008, but slowed last year. This was, to some degree, a result of growth of activity in the consumer sector, but there was also less focus on anti-piracy enforcement by the government and by some vendors during the recession.
5. Factors driving piracy rates up included rapid growth of the consumer PC market (India, China and Brazil), and greater activity in the installed base of older computers where unlicensed software is more prevalent, and the increasing sophistication of software pirates and cyber criminals.

**India’s enterprise software industry**

India’s enterprise software industry has been slowly bubbling since the 1980s but has generally failed to deliver a large number of high impact, high value companies. We do have some companies that everybody talks about – iFlex, Tally, Zoho – but these are far and few between. I believe that we are seeing a new scalable wave of enterprise software companies coming out of India and there is a potential to deliver several high impact companies over the next decade. Indian IT companies are
looking at opportunities to partner with companies that are cloud-native and have
scracked a global market – examples of current active categories in India are CRM,
analytics/big data, marketing automation and infrastructure.

India’s enterprise software industry has to be looked at separately from the
outsourcing/BPO firms like Genpact, Cognizant, Tata Consulting Services and
Infosys. Starting in the 1980s and early 1990s, this services industry is now mature
and at scale.5

Separate from the outsourcing/BPO industry, India’s enterprise software
industry (or “products” as it is called by many here in India) has evolved from the
1980s to now in what I think can be divided into four waves, coinciding somewhat
with three trends: 1) enterprise software moving from desktop to client-server to
cloud; 2) evolution of Indian industry post 1991 liberalization; and 3) increased
experience of Indians at successful US product companies.

The change and growth of the software industry in India in the waves - wise
have been shown below.

Wave 1
The first wave of software products came along in the late 1980s/early 1990s –
the focus was desktop products for business accounting. Companies in this wave
include Tally Solutions (still the undisputed leader in SME accounting software in
India), Instaplan, Muneemji and Easy Accounting.

Wave 2
This generation of software products emerged in the 1990s as projects within
outsourcing firms or from internal services arms of larger corporates. Infosys
launched Finacle. Ramco Systems launched its ERP. And Citibank launched CITIL
which became i-Flex. Other notable companies included 3i Infotech, Cranes
Software, Kale Consultants, Newgen Software, Polaris Financial Technologies,
Srishti Software and Subex. The late 1990s saw a wavelet of ASP (application service
provider) startups in India, most of which got crushed after the dotcom bust.
Wave 3

The 2000s saw on-premise India-first companies such as Drishti-Soft, Eka Software, Employwise, iCreateSoftware, iViz, ManthanSystems, QuickHeal Technologies, Talisma (for which I did some initial product management work while at Aditi Technologies) and Zycus get started. This was the era of 8-10% GDP growth in India which lasted till about 2010. Many of these companies had a direct sales model. After India, they generally expanded into the global South (Africa, Middle East, SE Asia, and Latin America) where they found similar customer requirements and little competition from Western software companies. Bootstrapped in their earlier years, some of these companies grew over several years and have broken through to $25 million+ in annual revenue. Key verticals have traditionally been BFSI (banking, financial services and insurance), telecom, retail/FMCG (fast-moving consumer goods aka CPG in the US) and outsourcing/BPO.

Having been around for over a decade, some of these companies generally face the challenge of migrating to the cloud, upgrading user experience to modern Web 2.0 levels, and expanding addressable markets beyond the global South to the US and Europe. We have seen some of these companies get venture funded, typically at much later stages in their go-to-market relative to US-based software companies. Several of these companies have received funding in the past couple of years, ostensibly to “go international” and “go cloud,” not an easy task, especially when done together.

Wave 4

Starting in around 2010, a new wave of cloud-native companies were launched, perhaps following the slowdown in India’s economy and the growth/acceptance of SaaS as a delivery model and as a sales model in the US. These companies have grown and now could power beyond the $10M/year revenue glass ceiling. The reason for the scale potential being higher for this cloud-native wave is the cracking of efficient online sales channels to reach markets globally.

Why this decade? Because there is an increased willingness of companies around the world to search for and buy software products online. There is now a large pool of founders who have worked at global enterprise product companies (e.g. Indian
offshore development centers or in Silicon Valley itself with companies like SAP, Oracle, Google, Microsoft, Adobe) and have experience in product management, marketing and sales. And finally, there has been a dramatic reduction in the capital required to bootstrap enterprise software companies. Everybody uses AWS and software from other startups to get started. It’s quite meta.

Wave 4 companies have the opportunity to break through the barriers that previously relegated Indian enterprise software companies to selling to the global South. We have seen Atlassian (Australia), Zendesk (Denmark) and Outbrain (Israel) do this move to Western or global markets. Zoho is an Indian company that is rumored to be at $100 million per year revenue scale – they have been part of many of the waves that have been described.

Major IT Hubs

1. **Bangalore**

   Popularly known as the **Silicon Valley of India** and **IT Capital of India**. Bangalore is considered to be a global information technology hub and largest software exports from India. The top Indian IT service providers like Infosys and Wipro are headquartered in Bangalore, It is also country headquarters to many top firms like Intel, Texas Instruments, Bosch, Yahoo, SAP labs, Continental and many more, Bangalore alone consists of more than 35 percentage of all the IT companies present in India and contains close to 5000 companies making it the largest IT contributor in India.

2. **Chennai**

   Chennai is the **second largest exporter of IT and ITES of India**. Some of the major companies having operation centres at Chennai are Accenture, Cognizant, TCS, Syntel, Wipro, Infosys, Verizon, L&T, HCL, Amazon.com, eBay, Paypal, Polaris, Patni, Capgemini and many major global providers. The city has a world class IT infrastructures with dedicated expressway nicknamed as IT expressway, and many other IT parks promoted by both government and private entities. The city's strong industrial base also favors setting up of many major R&D centers in its vicinity.
3. Hyderabad

Hyderabad is the third major IT hub in India. It has become the first destination for the Microsoft development centre in India and largest software development centre outside of their headquarters in Redmond, Washington. Facebook is also based here. It is also known as Cyber city which consists of many Multinational corporation companies such as Google, Cognizant, Tata Consultancy Service.

4. Delhi

The National Capital Region comprising Delhi, Gurgaon and Noida are clusters of software development.

5. Mumbai

The Financial capital of India, but many IT companies like TCS [disambiguation needed] which is India's first and largest have headquarters in Mumbai along with Reliance, Patni, Syntel, L&T Infotech, Melstar Information Technologies, Mastek and i-Flex.

6. Pune

Major Indian and International Firms present in Pune and is one of the biggest global IT services & outsourcing exporter of India. The next biggest IT park of India (Rajiv Gandhi IT Park at Hinjewadi) is expected to scale up to phase 7. It is also known as Tech city which consists of many Multinational corporation companies such as TCS, Tech Mahindra, Capgemini, Syntel, Infosys etc., and is one of the IT hub of India. Pune is also C-DAC headquarters.

7. Kolkata

The city is a major back-end operational hub for IBM, Deloitte.

8. Coimbatore

Proudly called as "Manchester of South India", Coimbatore is one of the fastest emerging IT hub and developing cities of India. Coimbatore has major IT companies like Cognizant, Wipro, Robert Bosch, HCL Technologies, DELL, Exterro,
Tata Consultancy Services. It also hosts the training center of Cognizant. There are many other IT majors which have planned to start the operations soon.

9. Bhubaneswar

The capital city of Odisha, an emerging IT and education hub, is one of India's fastest developing cities.

10. Thiruvananthapuram

The capital of Kerala, now houses all major IT companies including Oracle, TCS, Infosys, and contributes in IT export of India.

11. Kochi

The commercial capital of Kerala, now houses all major IT companies including TCS, Cognizant, and contributes in IT export of India.

Human issues and challenges in the Indian Software Industry

India, is the world’s largest demographic country with population of and nearly one billion people, is quietly but quickly emerging as a leader in the field of software engineering and development. The Indian software industry is having a phenomenal compounded growth of about 60 percent per annum. Indian Prime Minister’s National Task Force on Information Technology and Software Development has set a target of US $50 billion of annual software exports by the year 2008. During the year 2001-02, the software industry in India would be close to Rs. 60,000 crore or US $14 billion. Due to increase of the Government spending towards IT in the domestic market, the domestic software market has fetched record revenue of almost Rs.8,200 crore in 1999-2000 (NASSCOM, 1999).

Government of India has directed that 1 to 3 percent of the budget of every government department would be towards IT hardware and software. In addition, the government has also withdrawn import duty on software. Both these policy initiatives from the government have been further brought encouraging signals to the domestic software market.
Microsoft’s Chairman Bill Gates in his maiden visit to India stated that India would become emerge as a software super power in the coming years. Based on the health of the Indian software Industry, Bill Clinton, President of USA in his visit to India had predicted that India would have a tremendous growth in the next two decades.

Thus everybody is projecting and anticipating that Indian software industry will play a very vital role in the growth of Indian Economy. However, the projected growth of Indian software industry will be depending upon the industry’s ability to manage human issues and challenges being experienced by it. The cost of Indian software professionals has been increasing by 25-30 percent per annum. As a consequence from China, Philippines, Russia and Mexico are increasingly emerging as competitors to Indian software industry. Presently, Indian software organizations have been working on the lower end of the value chain such as providing business solution, programming and body shopping. For retaining its competitive edge, the Indian software industry has been striving to move up the value chain. However, moving up the value chain implies working on technology and product development. In turn, these initiatives require availability of experienced and more competent software professionals for sufficiently long period of time. Software professionals with 3 years or more experience are in short supply in USA, Europe and literally every part of the world. Indian software professionals having proved their competence and capabilities are increasingly in demand in USA and other developed countries. As a consequence, there is a large number of Indian software professionals has been moving to USA and Europe.

Multinational companies arrived in India relatively late and account for only about a quarter of exports. Multinational firms use their Indian operations primarily as export platforms. Increasingly multinationals are setting up shop in India to conduct sophisticated software development activities and as a captive source of R&D, utilizing India's pool of highly trained engineers.

Many Indian firms have been started by entrepreneurs who acquired some wealth and experience working in larger established firms and then set up new companies. Many of the corporate leaders did their graduate study in the United
States and/or worked in Silicon Valley, so they have a keen understanding of the software development process. The high profitability and relatively low risk of the industry has attracted a large number of professionals. Also, entry costs are relatively low. To start software company does not require huge investments in land, plant, or machinery. Most of the assets can be acquired on lease without a high upfront investment. The lead time for generating revenues is also much shorter than in many other industries.

**Industry growth**

**Beginnings in bodyshopping**

The birth of the software industry in India began in 1970 with the entry of Tata Consulting Services (TCS) into the domain of outsourced application migration work. In the late 1960s, the Tatas (name of a large conglomerate of companies) [[several individuals named Tata?]] created TCS as a central service center for Tata Group companies. A few young MIT-trained Indian professionals were recruited, and a large computer system were imported. **Entry of IBM into the Indian Economic environment**, the concept of outsourcing and application development work had become a necessity for Indian companies. Utilizing its excess computer capacity, the TCS began doing outsourced application work for the organizations such as Central Bank of India and Bombay Telephones. Within a few years TCS began sending the young Indian Engineers to a joint venture partner in the United States, in Burroughs, the trainee engineers excelled at doing platform conversions, and TCS started earning conversion assignments for its engineers in Germany and elsewhere.

Later, a new company named Tata-Burroughs was formed. Tata was keen to exploit the personnel placement or “bodyshopping” opportunities whereas Burroughs was interested in selling hardware to the Indian market. After a few successful years the partnership was broken at the behest of Unisys which had by then acquired Burroughs in the United States and the company was rechristened as Tata Information System Limited. A U.S.-trained Indian electrical engineer took over management of TCS in 1969. He used his influence in the Institute of Electrical and Electronics Engineers to further promote TCS and founded the Computer Society of India with fellow scientists and professionals from the Tata
Institute of Fundamental Research. Many of these professionals later moved to government and became very influential policymakers. These early networks played a very useful role in overcoming severe administrative and procedural constraints in India’s economy during the 1970s and 1980s. Following the success of TCS, many other companies were set up in India.

Beginning in the 1970s, a growing shortage of engineers for the expanding computer industry in the United States and Europe, an oversupply of Indian engineers relative to domestic demand, and a growing international reputation for the skills of Indian engineers, provided an opportunity for bodysourcing in which Indian firms such as TCS sent Indian engineers to overseas to do software programming onsite, mostly in American firms for limited, billable projects.

During the first phase (1968–84) of exports, four types of companies interlinked in direct and indirect ways to facilitate bodysourcing (Xiang Biao 2002). 1) There were established companies in India such as TCS and Infosys Technologies which supplied programmers to large multinationals in IT and non-IT sectors primarily in the United States. These multinationals also recruited programmers through local U.S. companies such as Mastech (now iGATE) and Information Management Resource established by Indians living in the United States. Such companies in turn recruited manpower through local search agents (small companies run by Indians in the United States). These agents, from several states in the United States, would contact local agents in India from a multitude of small companies and operators. The responsibility of collecting resumes, forwarding them to U.S. placement agents, preparing visa and contract finalization with the programmers was done by the agents in India. The programmers were paid low wages. Commissions were charged by different members of the supply chain. Sometimes there were subagents spread in different towns and cities in India. There was an interesting network among revolving players. Programmers who returned to India after a stint overseas would join the pool of software engineers who could be hired by the established companies in India. Often, programmers sent onsite by large Indian companies would move laterally to another assignment in the United States through a local U.S. agent to prolong their U.S. experience. Later they would return to India and
be in the market for local Indian agents to hire them. The Indian Diaspora had played a key role in the bodysourcing exports. Arora and others (2001) also report several instances where Indian immigrants in the United States helped U.S. buyers to locate Indian suppliers. Field interviews with U.S. customers reported that the impetus for outsourcing to India came from employees of Indian origin.

The development of bodysourcing links between firms in the United States and India was due mainly to the large Indian Diaspora in the United States, many of them worked as professionals in the American IT industry. They promoted and facilitated connections between U.S. firms and firms or agents in India who could supply programmers for onsite work in the United States. The successful growth of Bodysourcing was due to the skills of Indian entrepreneurs and the steady supply of low cost and trainable Indian engineers. Bodysourcing had been continued to be an attractive strategy for the new entrants into the industry, requiring nothing more than knowledge and established relations with a few potential clients.

The severe shortages are there in the skilled technical labor for the growing IT industry in the West and the liberal immigration policies of the United States fueled the emergence of Bodysourcing. For example, in the 1990s annual growth of IT expenditures on equipment in the United States was 24 percent and in Germany and Britain just under 20 percent. At the end of the 1990s the shortage of programmers, systems analysts, and computer engineers were estimated at about 346,000 in the United States and 30,000 in Canada.

The Era of outsourcing

In the initial stage the development of India's software industry has been based primarily on Bodysourcing work onsite at U.S. firms, in recent years the trend has been increased in the Indian firms to conduct software development for U.S. clients “offshore” in India. This shift has been given the result of a maturing of India's software industry and its international reputation in the last 15 years, and the development of the required infrastructure and communications technologies in India have made offshore work possible.
As the Indian software industry matured, increasing client confidence in Indian capabilities and quality standards enabled the Indian firms to move their work towards offshore. With this maturity became a goal to move up the value chain. Many new companies have been started in 1980s’ the entrepreneurship with ambitions of creating world-class software development centers. Firms which have started primarily as subcontractors for technical manpower, gradually shifted to managing complete parts or phases of projects, and then to deliver complete solutions from India. During this phase, most companies made significant efforts to assimilate good practices in the project management and the quality and to acquire internationally recognized quality standards certification. NASSCOM played an aggressive role in promoting the Indian brand in the abroad. In some ways, during this period, India launched I pad for the eventual take off of its software service industry. The Indian software industry is now in its third phase – that of take off. Today, most leading companies are operating in the high-end software services business and are also making the efforts to enter the products segment. A new breed of companies, led by second generation software entrepreneurs, are setting up product-oriented companies. The industry has weathered ups and downs in the global market, maintaining a high rate of growth. The industry moved center stage in the domestic media because of its visibility in the United States, high market capitalization and wealth creation for its employees. It is a source of national pride, and as a consequence continues to attract disproportionate government attention. The government set ambitious software export targets and has provided the policies to enable the industry to achieve those targets. Software companies are increasingly being recognized for their leadership in adopting best practices in management by the media. Indian companies have fine-tuned the “offshore model” and projected their brands as service companies. Companies have moved further, towards value chain, improving productivity, targeting new geographies, vertical domains and businesses.

**Investment on the Technical Education**

India’s public investments on the technical education regained in the 1960s provided the foundation for growth of the IT industry. Lack of adequate
opportunities for Indian engineers in the domestic economy has ensured an abundant supply of high quality and cost effective workers for India's export software industry.

In the 1960s the government created a series of elite institutes for higher education in the field of Engineering and Management, in collaboration with leading universities in the United States. Five Indian Institutes of Technology (IIT) and two Indian Institutes of Management (IIM) were set up in the 1960s. The IITs were set up through technical collaboration with the most industrialized countries of the time. At current prices, the cost of setting up an IIT was perhaps 10 billion Indian rupees (US$200 million). The IIMs were set up with active collaboration from two leading business schools in the United States. The cost of setting up an IIM at current prices would be approximately 1.5 billion rupees (US$30 million). The annual cost of undergraduate education at IIT Delhi is 150,000 rupees per student (US$3,000 excluding the capital investment and depreciation) and that of graduate education at IIMA Rs. 280,000 (US$5600) per student. Both types of institutions attracted a large number of U.S. trained Indian faculty. Subsequently, most state governments set up regional engineering colleges (REC) the present name that attracted students from all parts of the country.9

Professional education in India has been attracting the attracts large number of applicants. Most of the IIT, REC (present NIT) and IIM admissions programs are able to choose one out of 100 or more applicants. This selectivity and reasonably good training produced the high Caliber Engineers that formed the backbone of the software industry in its early years. A unique feature of these high-caliber engineers was their willingness to work as programmers, partly due to the shortage of lucrative jobs in a closed economy. IIT engineers who moved to the United States and those who worked for companies in India in the 1970s and 80s built a reputation that helped Indian companies procure software development contracts in the initial years.

The HRD Ministry playing its role in ensuring the adequate supply and
quality of the technical work force. The Ministry policies encouraged creation of private engineering colleges and industry IT training institutions. With the proliferation of new private colleges and IT training institutions, the HRD Ministry developed mechanisms to assure the quality control, including the establishment of an All India Council for Technical Education in the year 1986 to regulate technical education, and an Accreditation system run by professional societies such as the Computer Society of India to monitor private training institutions and NAAC (National Accreditation and Asseeement Council).

Additionally, the introduction of a Master of Computer Applications (MCA) degree in many universities in the late 1980s was aimed at producing graduates with the combination of technical and management skills required for the expanding IT industry. While the pool of MCA graduates became a primary source of recruitment, the programs tended to be stronger in technical rather than management skills. Recognizing that raw technical recruits are generally unprepared to work immediately as software engineers, most large companies rely on extensive training divisions. Since engineers were willing to work as programmers in a domestic environment with few job opportunities, growth was also driven by larger salaries in the IT industry abroad.

**Human Resources in the Software Industry**

The following statements characterize the Human Resources in the Software Industry:

1. The Human Resource function plays a key and very important role, as it is a ‘People Centered’ organization.
2. Employees are’ knowledge workers’. Majority of them are qualified professionals and then were toppers in colleges and are very ambitious and so, they seek a fast track career.
3. They expect challenges from the starting, highly creative, highly sensitive, motivation is the key for performance.
4. Prefer informal environment, openness /trust.
5. About 25 to 30% proceed to United States at the earliest; hence all actions aimed towards this move. All this is driven by peer pressure, life style, savings and improvement in their profile.
The report begins by briefly characterizing the organization of the industry today. The historical overview of the software industry explains how India’s software sector has evolved since the early 1970s. Important explanatory factors are discussed in the following sections, including the role of government investment in technical education, the role of the Indian Diaspora in promoting and facilitating early growth of the industry, the facilitating role of government policies, and the role of the industry association in promoting the Indian software "brand" abroad and in lobbying for favorable policies. Final sections discuss the impact of the industry on the Indian economy, sector strategies for moving up the value chain, and the role of R&D in the industry. A short discussion of the future concludes the paper.

Human Resource Development is critical in software companies where 95 percent have formal training divisions and learning needs analysis programs. Minimum training per employee is 40 hours. This covers both technical and behavioral training and the proportions vary between managerial and technical positions.

Statistics reveal that among innovations in the software industry, the most significant interventions have taken place in human resources. For example, nearly 60 percent of companies have formal employee suggestion systems from which 28 percent of suggestions are actually implemented. Another study (Bhatnagar and Dixit 2004) of two large organizations reports how special attention is paid to organizational innovations that meet the challenges of external and internal imbalances. They suggest that current software service activity has built-in incentives to innovate up the value chain toward more complex services, software products and hardware-software integrated products.

In terms of rewards and recognition, a majority of companies uses market data to determine basic pay. Employment and wages in the software sector have increased over the last decade but not enough to erode India’s competitive advantage. The differential between client countries and India remains very high. In terms of competition, countries comparable to India in
overall cost/quality/delivery metrics have significantly higher wages than India. Moreover, expanded capacity of Indian engineering colleges will ensure that the supply is adequate for the likely demand in the next five years.

With the entry of many multinationals in the Indian market, more competition has been started to trace the the best talent. The top 10 companies reportedly have retention rates over 90 percent indicating a fairly stable environment. It is interesting to note that the Indian companies are neck-and-neck with multinationals in these surveys (Dataquest, August 31, 2003), indicating the highly professional nature of the HRD function in the industry.

Nearly 87 percent of the companies reported a routine performance management process in which managers and employees together set performance goals and 30 percent of the organizations had 360° feedback system. A key measure of employee satisfaction is the attrition rate. Most large companies have created work environments which contain attrition to low levels. This is a significant benefit to assure clients that disgruntled employees are not distributing confidential information. To date, hardly any cases of this crime have been reported.

**The role of the Indian Diaspora**

The success of Indian IT professionals in the United States has been a significant factor in the development of the software sector in India. The stream of U.S.-educated Indian professionals who joined the IT industry in Silicon Valley and met technical, managerial, and entrepreneurial success, created a positive image of the capabilities of Indian professionals. By the year 2000, Indians headed 972 Silicon Valley technology companies, accounting for $50 billion in sales and nearly 26,000 jobs. Indians headed up 3 percent of technology companies started between 1980–85; ten years later, they headed up 10 percent of the companies.12

The Indian Diaspora also expedited bodyshopping, by showcasing the value of Indian programmers and fostering connections between software firms in the United States and India. Some have returned to work for multinationals
which have established Indian subsidiaries, while others have launched firms in India. A few straddle both countries, able to speed the transfer of know-how about emerging markets and technologies, and willing to nurture long-term relationships across borders.

In spite of the large English-speaking, technically educated, Indian population, the number of doctorates awarded in the United States to scholars from India has been far fewer than China and Taiwan during the 15-year period from 1985 to 2000. Whereas the number for India varied between 500–1000 per year, the number for China has varied between 2000–3000 in the last 10 years. Interestingly Taiwan, as a small country, has had more U.S. doctorates degree holders than India.

The Role of the Government

Although the story of the Indian software industry is a story of private initiative, the government played a supporting role with public funding of a large, well trained pool of engineers and management personnel who could forge the Indian IT industry into a world class treasure in a short time. During the initial period of introducing of Information Technology, in the Indian environment, the visionary support mainly came from the civil servants. Later, the government of India considered the views of the civil servants and included this concept in the policies of the government by recognizing the direct foreign investment for the same purpose.

_Government targeted the software exports once the market identified the industry’s potential and created the necessary institutions._ As early as 1972, the Department of Electronics introduced a policy to permit duty-free imports of computer systems, if importers would promise to export software and services worth twice the value of the imported computers within a specified time. This policy helped a number of leading companies in their inception stage. In the 1980s the Department gave software developers a further boost by initiating software export friendly policies. It formed a software export promotion council and liberalized import rules for materials needed for the industry. Software was explicitly targeted as a key sector for export promotion. In the late 1990s,
the government created four major taskforces comprising chief executives of leading software companies to study the sector and recommend actions, and then acted on most of the recommendations. At that time the Department of Electronics became the Ministry of Communication and Information Technology. This was followed by the IT Act to address a large number of issues. In addition to these federal interventions, many states promoted local software industry by improving infrastructure, IT education, and provision of more facilitating environments.

With the beginning of economic reforms in the early 1990s, efforts were made to attract foreign as well as domestic investment. Foreign companies were permitted to establish fully owned subsidiaries in the electronics export processing zones. Within the Ministry of Finance there was greater recognition of India’s comparative advantage in the sector, as it abolished entry barriers for foreign companies, made available fast, low-cost data connection facilities, and reduced and rationalized duties, taxes, and tariffs.

The Reserve Bank of India adopted several measures to support the IT industry. These included: simplification of the filing of Software Export Declaration Form (SOFTEX); acquisition of overseas parent company shares by employees of the Indian company; companies whose software sales were over 80 percent could grant stock options to nonresident and permanent resident employees; foreign exchange could be freely remitted for buying services; and companies which executed contracts in “computer software” abroad could use income up to 70 percent of contract value to meet contract-related expenses abroad. Tax holidays were given on company profits, although the government is progressively phasing out these deductions. Tax breaks from corporate income and tax on profits was available to units in any free trade zone, any software technology park, or any special economic zone to the extent of 100 percent of the profits derived from the business. These deductions will not available from Financial Year 2009–2010 onwards.\(^{13}\)

Indian direct investment in joint venture (JV)/wholly owned subsidiaries (WOS) abroad was simplified and a fast track window is available for large
investments. IT software and services companies in India can acquire companies overseas through American Depositary Receipt/ Global Depositary Receipt stock swaps without prior approval for up to $100 million or ten times the export earnings of the previous year.

While the government has enacted significant reforms in the area of Intellectual Property Rights (IPRs), and has joined the World Trade Organization and Trade-Related Aspects of IPRs, the reforms have so far not led to a surge in patents in the Indian software industry, nor have IPRs been perceived as effective in protecting innovations in the Indian software industry (Gupta 2004).

Several policy reforms in the telecom sector helped accelerate the domestic and export industry. In 1998, a national telecom policy was announced to clarify the role of the regulator, transition from license fee to a revenue sharing model and open domestic long distance to private operators. The ISP gateway monopoly ended in 2000 and permitted private companies to set up international gateways. In 2002, international long distance was liberalized two years ahead of WTO commitments and competition increased in cellular markets. As a result, India’s teledensity, the number of phones per 100 people, increased to five and cellular penetration overtook the land line penetration.

Recognizing the growing need for manpower in the software industry the Ministry of Human Resources Development took the following actions:
1. Helped to create and expand computer science departments in existing engineering colleges.
2. Eased policies in order to enable private sectors to open educational institutions without public funding. A large number of engineering colleges were opened in the private sector.
3. Introduced the Quality Control Systems for engineering colleges and other IT training institutions, such as the All India Council for Technical Education and an Accreditation System run by professional bodies such as the Computer Society of India to monitor private training institutions.
4. Encouraged the private sector to open training institutions. At its peak nearly one million Indians were being trained in a year with the IT training
industry earning over nearly 10 billion rupees in 1998 with no government subsidy.

**Software technology parks**

Creation of NASSCOM in 1988 and later establishment of STPs in 1990 represented a fundamental approach to policy making for the software industry. An important institutional intervention was the establishment of STPs to provide infrastructure for private companies to export software established in 39 locations, including most major towns, they provided ready-to-plug IT and telecom infrastructure. STPs also allowed single-window clearance for all regulatory matters. The benefits and approvals for STPs are similar to those of Export Oriented Units. Incentives provided in the Export–Import Policy are also applicable to STP members. The companies registered with these parks account for about 68 percent of software exporters. Many of these companies have not benefited from the actual STP infrastructure in any significant way. Perhaps, the major contribution of these STPs was to enable new enterprises to launch, and small and medium enterprises to grow. Already established companies merely registered with these parks but did not use the infrastructure that was created.

The performance of STPs has been variable. Where the environment was right the STPs enabled small and medium enterprises (SMEs) to set up and grow. On the other hand in Gujarat, total sales from 60–70 SMEs was Indian Rs. 1,000 million (US$22 million), miniscule in comparison with industry norms. The Gandhinagar STP had a membership of 300 companies, many of which may have been attracted because of the incentives. However, only 60–70 are active. Out of the 5 Mbps (megabits per second) bandwidth available for use, hardly 2 Mbps is being utilized.

One of the STPs’ key contributions is providing high-speed data communication services to the industry. The Software Technology Parks of India (STPI) had international gateways at 39 locations (2003). For the last mile users can connect through point-to-point and point-to-multipoint microwave links, and terrestrial fiber/copper cables were used (where feasible). The up time of STPI connections is 99.9 percent. STPI works with major international telecom
operators such as AT&T, Sprint, MCI, Intelsat and British Telecom. STPI offers two main services: Softpoint service, secure and exclusive digital circuits for data and voice transmission; and SoftLink, Internet access on a shared basis.

**Cluster development**

The software industry in India has been concentrated in six to seven cities such as Bangalore, Hyderabad, Chennai, Mumbai, Delhi and Pune. Well-researched reasons to explain why these locations have become fertile centers have not been propounded. Many centers do not necessarily have the best infrastructure. The one reason often suggested is the availability of a large pool of locally trained manpower as the distribution of engineering colleges closely mirrors the distribution of the software industry. The other significant reason may be the attractiveness of these locations for young and upwardly mobile professionals (Meine Pieter van Dijk 2002). Most have a strong cosmopolitan character. Other authors (Srinavas 1998) have reported the importance of a lower cost of living and favorable climate as important reasons for choosing a location lending support to this argument. For example, Bangalore perhaps boasts of the best education system in India and, therefore, is very attractive as a place for educational professionals.

Presence of progressive chief ministers and special state government benefits to attract firms may explain the growth of the Hyderabad center but other locations thrived without such political support. Because of the high degree of professionalism in most exporting companies there is consistency in the quality of experienced manpower that sometimes moves laterally from one company to the other. Other than this movement, there is not enough evidence of horizontal linkages between IT firms located in the clusters. Even though five to six centers account for more than 90 percent software exports the typical clustering effect associated with Silicon Valley does not seem to exist in these centers. Perhaps a lack of informal knowledge exchange exists because many companies view other companies as close competitors. Most Indian companies operate in a narrow market space such as in the U.S. market in 2–3 verticals which essentially account for just five percent of the total global outsourced market. Some researchers have corroborated the absence of these linkages in the
domestic market (Basant and Chandra 2004) and found very little evidence of horizontal interaction in a case where there were four Indian sub contractors in Bangalore working for the same multinational.

**Formation of NASSCOM and its role**

The National Association of Service and Software Companies (NASSCOM), India's software industry association, was founded in 1988 and has been a vocal and potent force in lobbying for policy reforms, including rules limiting access to capital markets, issuance of stock options, easing rules on foreign currency transactions, and improving telecom infrastructure.\(^{15}\)

NASSCOM played a significant role in establishing a brand image for India in the global software services markets by participating in global trade fairs and events and organizing learning events in India that feature prominent experts from major markets. Through its annual reports, NASSCOM has become the most reliable source of data and information about the Indian software industry. NASSCOM activities were influenced by the dominant software players, who share a great commonality of interest in terms of policy recommendations and the Indian brand. NASSCOM also had a very dynamic leader (in Dewang Mehta) whose contribution was widely acknowledged by Indian media.

NASSCOM's membership grew from 38 members in 1988 to over 1000 firms in 2005. It was most effective in policy concerns and brand promotion abroad. NASSCOM was less effective in representing small and medium scale enterprises or domestic rather than export firms.

**Top Ten Software Companies in India**

NASSCOM since the past few years has been ranking the Top 20 IT-BPO Export Companies, top 15 BPO Export Companies and Top 20 IT-BPO Employers based on a survey conducted annually, which is open to all NASSCOM members. Through this survey NASSCOM collects financial and other information from its member companies and the participating companies are ranked based on the data submitted. Top Ten List is shown in table 4.1.
### Table: 4.1 The list of Top Ten Software Companies (2008-2013) in India

<table>
<thead>
<tr>
<th>Rank</th>
<th>Name of the Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tata Consultancy Services Ltd</td>
</tr>
<tr>
<td>2</td>
<td>Infosys Technologies Ltd</td>
</tr>
<tr>
<td>3</td>
<td>Wipro Ltd.</td>
</tr>
<tr>
<td>4</td>
<td>HCL Technologies Ltd</td>
</tr>
<tr>
<td>5</td>
<td>Tech Mahindra Ltd.</td>
</tr>
<tr>
<td>6</td>
<td>L&amp;T Infotech</td>
</tr>
<tr>
<td>7</td>
<td>Syntel Ltd.</td>
</tr>
<tr>
<td>8</td>
<td>Mphasis Ltd.</td>
</tr>
<tr>
<td>9</td>
<td>Genpact India Pvt. Ltd.</td>
</tr>
<tr>
<td>10</td>
<td>iGATE</td>
</tr>
</tbody>
</table>

Source: Compiled from NASSCOM.COM

**Note:** This list does not include some firms whose corporate headquarters are located outside India, but have significant India-based delivery capabilities, and have not shared their India-based revenue figures. Had they been ranked based on their India revenues, firms such as Convergys, Accenture, Concentrix and Sutherland Global Services would have also appeared in this list.

**Highlights of IT sector in 2014**

- Industry recovers from slowdown; sustains double digit growth
- Adopts disruptive technologies and new models of engagements
- Turnaround in sentiment and upbeat mood
- Industry's perception turns positive overseas
- Re-structuring to keep pace with new technologies and demands
- Software exports poised to touch $100 billion in 2014-15
- Braces for Digital India program and Make in India campaign
Revenue

As shown in figure 1, Indian IT-ITES industry revenue is estimated at USD 105 billion in FY 2013-14 as compare to USD 95.2 billion in FY2012-13, registering an increase of around 10.3%. The overall industry’s growth of this sector over the last five years is given in the table below.

Table: 4.2. IT – ITES Industry Revenue Trends (in USD billion)

<table>
<thead>
<tr>
<th>Year/Description</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
<th>2012-13</th>
<th>2013-14(E)</th>
<th>CAGR % (2009-14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exports</td>
<td>49.7</td>
<td>59.0</td>
<td>68.8</td>
<td>76.1</td>
<td>86.0</td>
<td>12.80</td>
</tr>
<tr>
<td>Domestic</td>
<td>14.3</td>
<td>17.3</td>
<td>19.0</td>
<td>19.2</td>
<td>19.0</td>
<td>8.22</td>
</tr>
<tr>
<td>Total</td>
<td>64.0</td>
<td>76.3</td>
<td>87.8</td>
<td>95.2</td>
<td>105.0</td>
<td>11.88</td>
</tr>
</tbody>
</table>

Source: Nasscom, E: Estimated

Graph 4.1

Exports

As shown in figure 2, IT-ITES exports is estimated to gross USD 86 billion in FY 2013-14, growing by 13.1% over FY 2012-13 and contributing nearly 82% of the total IT-ITES revenues (excluding hardware). A combination of solutions around disruptive technologies such as SMAC (Social media, mobility, analytics and cloud)), artificial intelligence, embedded systems etc. have become the life-force of the industry.
IT services exports (excludes BPO, Engineering, R&D and Software products) is expected to be the fastest growing segment in FY 2013-14, with an y-o-y growth over 14%, generating exports of USD 52 billion, driven by collaboration, communication, business intelligence projects, and integration of SMAC services with traditional offerings. During FY 2013-14, an ITES/BPO export is likely to be USD 20 billion, with a growth rate of ~11.4% over FY 2012-13. Customer Interaction Services (CIS) continues to have the largest share of 41%, followed by Finance & Accounting (F&A) 23% and Knowledge Services (KS) 19%. Within BPO segment, Knowledge services is the fastest growing segment and is expected to generate export of USD 3.7 billion, as compared to USD 3.2 billion, a y-o-y growth of over 15%. Software products and ER&D segment achieved a double-digit growth rate of ~11% over FY 2012-13 and is estimated to generate exports of US$ 14.2 billion in FY 2013-14. The domain specific solutions focusing on convergence, customization, efficiencies and localization, M2M technology and newer technologies around SMAC are playing a significant role in driving the growth of ER&D and software products. With over 3,000 firms, India is emerging as a hotbed for software products with SMAC and a supportive ecosystem creating successful stories.

Table: 4.3. Segment wise export Revenue Trends in IT – ITES Industry (in USD billion)

<table>
<thead>
<tr>
<th>Year/ Segment</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
<th>2012-13</th>
<th>2013-14(E)</th>
<th>CAGR % (2009-14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT Service</td>
<td>27.3</td>
<td>33.5</td>
<td>39.9</td>
<td>45.4</td>
<td>51.9</td>
<td>15.0</td>
</tr>
<tr>
<td>ITeS-BPO</td>
<td>12.4</td>
<td>14.2</td>
<td>15.9</td>
<td>17.9</td>
<td>19.9</td>
<td>11.21</td>
</tr>
<tr>
<td>Software</td>
<td>10.0</td>
<td>11.4</td>
<td>13.0</td>
<td>12.8</td>
<td>14.2</td>
<td>8.14</td>
</tr>
<tr>
<td>Products,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Services, R&amp;D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total IT-ITES</td>
<td>49.7</td>
<td>59.0</td>
<td>68.8</td>
<td>76.1</td>
<td>86.0</td>
<td>12.8</td>
</tr>
</tbody>
</table>

Source: Nasscom, website, E: Estimated
Domestic Market

As shown in figure 4, Domestic IT-ITES revenue (excluding hardware) is estimated to reach INR 1147 billion in FY 2013-14, as compared to INR 1041 billion in FY 2012-13, a y-o-y growth of ~10%. During FY 2013-14, domestic IT services growth is likely to be at 9.7% as large enterprises exhibit cautious spending pattern; driven by technology upgrades in BFSI, telecom and State Governments, and compliance of MIS investments. The domestic BPO services growth is estimated at
~12% in FY 2013-14, driven by demand from select customers reverting to outsourcing business processes, especially from the BFSI, automotive and retail sectors. Domestic software products is estimated at 9.5% due to increased demand for retail, healthcare, education, manufacturing (vertical-specific) and SMAC (Social media, mobility, analytics and cloud) -based solutions. With the advent of cloud, the next opportunity is India’s 47 million SMBs, who are able to rapidly bridge the technology adoption gap.

Table 4.4. Segment wise Domestic Revenue Trends in IT – ITES Industry (in INR Crores)

<table>
<thead>
<tr>
<th>Year/ Segment</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
<th>2012-13</th>
<th>2013-14(E)</th>
<th>CAGR % (2009-14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT Service</td>
<td>42901</td>
<td>50068</td>
<td>58908</td>
<td>66300</td>
<td>72722</td>
<td>14.01</td>
</tr>
<tr>
<td>ITeS-BPO</td>
<td>10898</td>
<td>12699</td>
<td>14849</td>
<td>17500</td>
<td>19594</td>
<td>17.18</td>
</tr>
<tr>
<td>Software Products, Engineering Services</td>
<td>14001</td>
<td>15902</td>
<td>18010</td>
<td>20500</td>
<td>22469</td>
<td>12.72</td>
</tr>
<tr>
<td>Total IT-ITeS</td>
<td>67800</td>
<td>78670</td>
<td>91766</td>
<td>104700</td>
<td>114784</td>
<td>14.25</td>
</tr>
</tbody>
</table>

Source: NASSCOM website

Graph: 4.4
Emerging Overseas Markets

The five-year CAGR (from 2008 to 2013) for the offshore IT services market will be lowest in the United States, increasing at just 4.0%, with EMEA growing at 8.8% over this same period of time. Canada and Asia/Pacific will be growing the fastest over this five-year period at 16.5% and 19.0%, respectively. While the United States continues to compose about 65% of the market over the forecast period, EMEA is expected to grow to 35.8% of the global total in 2013. Due to the economic slowdown in the United States, many offshore providers have increased their strategic focus on EMEA in a bid to shift their mix of customers to include a greater percentage of European companies.

Table 4.5. Worldwide Offshore IT Services Spending by Importing Region, 2008-2013 ($M)

<table>
<thead>
<tr>
<th>Region</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2008-13 CAGR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>20,125.0</td>
<td>19,918.0</td>
<td>20,439.1</td>
<td>21,379.6</td>
<td>22,677.8</td>
<td>24,429.3</td>
<td>4.0</td>
</tr>
<tr>
<td>Canada</td>
<td>375.0</td>
<td>462.2</td>
<td>518.8</td>
<td>590.4</td>
<td>687.7</td>
<td>804.6</td>
<td>16.5</td>
</tr>
<tr>
<td>EMEA</td>
<td>9,818.3</td>
<td>10,362.6</td>
<td>11,130.1</td>
<td>12,179.1</td>
<td>13,426.8</td>
<td>14,978.9</td>
<td>8.8</td>
</tr>
<tr>
<td>Asia Pacific</td>
<td>687.0</td>
<td>766.0</td>
<td>910.0</td>
<td>1,112.0</td>
<td>1,351.2</td>
<td>1,640.8</td>
<td>19.0</td>
</tr>
<tr>
<td>Total</td>
<td>31,005.3</td>
<td>31,508.8</td>
<td>32,998.0</td>
<td>35,261.1</td>
<td>38,143.5</td>
<td>41,853.6</td>
<td>6.2</td>
</tr>
</tbody>
</table>


The five-year CAGR, ending in 2013, for the offshore IT services market in Asia/Pacific (including Japan) is 19.0%. The market is expected to grow from $687 million in 2008 to $1.64 billion by 2013. Over the five-year forecast period, application outsourcing represents the fastest-growing offshore IT service from 2008—2013, with a five-year CAGR of 23.4%.
Unlike the United States and EMEA, where application-related services represent the largest single block of offshore IT spending, Asia/Pacific leans more heavily toward offshore systems and infrastructure services, with systems integration and infrastructure outsourcing representing a combined 49.2%. Even by 2013, this combined percentage is expected to shrink to just 46.1%. However it is likely that language issues may make it more difficult and costly for Asia/Pacific to outsource application work.

Table 4.6. Worldwide and U.S. Business Process Outsourcing Services 2009-2013 Forecast

<table>
<thead>
<tr>
<th>Region</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2008-13 CAGR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Americans</td>
<td>69,998.8</td>
<td>73,762.9</td>
<td>79,953.2</td>
<td>87,378.6</td>
<td>96,349.2</td>
<td>105,358.5</td>
<td>8.5</td>
</tr>
<tr>
<td>EMEA</td>
<td>21,894.3</td>
<td>23,640.0</td>
<td>25,848.0</td>
<td>28,302.3</td>
<td>30,960.2</td>
<td>33,789.9</td>
<td>9.1</td>
</tr>
<tr>
<td>Asia/Pacific</td>
<td>19,489.5</td>
<td>21,544.7</td>
<td>23,870.8</td>
<td>26,502.0</td>
<td>29,384.9</td>
<td>32,630.6</td>
<td>10.9</td>
</tr>
<tr>
<td>Worldwide</td>
<td>111,382.7</td>
<td>118,947.6</td>
<td>129,672.0</td>
<td>142,182.9</td>
<td>156,694.4</td>
<td>171,779.0</td>
<td>9.1</td>
</tr>
<tr>
<td>Growth</td>
<td>9.1</td>
<td>6.8</td>
<td>9.0</td>
<td>9.6</td>
<td>10.2</td>
<td>9.6</td>
<td></td>
</tr>
</tbody>
</table>


The worldwide BPO spending forecast for 2013 will increase to US$171.8 billion at a five-year CAGR of 9.1%. The Americas continue to dominate the BPO spending landscape and is projected to spend US$105.4 billion in 2013 at a CAGR of 8.5%.

This represents approximately 61.3% of worldwide BPO spending. The overall EMEA region will contribute 19.7% of global BPO spend in 2013 representing a market value of US$33.8 billion at a CAGR of 9.1%. The Asia/Pacific market will grow at a CAGR of 10.9% and will represent 19% of global BPO spends. The Asia/Pacific region continues to lead in growth over the other regions.

Smaller Emerging Markets are The “Little Engines that could” – The formation and recognition of the G-20 underscores that countries other than the G7
and BRIC are major players in world economic and financial affairs. Here are a few other reasons to pay closer attention to them:

- The Next-11 (N-11) and others will provide growth opportunities. With the BRIC story well known and the opportunities well priced, economists at Goldman Sachs have now identified the Next-11 (N-11). Of them, four have the potential in terms of population and conditions necessary to rival the current major economies and the BRIC countries — Korea, Mexico, Turkey, and Vietnam.

- Internet penetration will be a catalyst for technology spending. Some of the largest growth rates in Internet use are in non-BRIC emerging markets. For example, Vietnam, with more than 20 million Internet users, has experienced 10,000% growth from 2000 to 2008, and, with only 24% of its population connected today, there is room still for growth. Turkey, with almost 30 million Internet users, also registered impressive growth of more than 1,000% over the same period, yet it only has 37% of its population online today. More people online creates demand for more infrastructure and related services.

However, this means that Indian companies can no longer rely purely on the English speaking demographic to fuel the growth engine. In order to access the emerging BRIC and European countries, Indian companies need to up their investment in intensifying multi-cultural orientation and focus on developing new language competencies.

**Growth Drivers in the Domestic Market**

The BFSI, Government, Telecom and Manufacturing sectors are the key verticals driving growth in the IT service segment in the domestic market. They accounted for 34%, 29%, 11% and 8% respectively in 2008-09.

- According to CRISIL estimates the Government contribution is likely to expand to 35% becoming the top vertical of domestic IT service revenues by 2013-14. This can be attributed to increased use of IT for e-governance projects and defence.
- The share of BFSI is projected to come down to 30% by 2013. Nonetheless, IT spends will remain significant on account of greater emphasis on financial
inclusion measures, expansion of ATM and bank branches along with growth of internet banking services.

- Telecom and Manufacturing are likely to see their shares fall marginally to 10% and 6% respectively.
- Retail, healthcare and education are some of the emerging sectors with IT adoption likely to increase as they become more organized.

With around 650,000 villages comprising close to 60% of the total population, the Indian Rural Market forms one of the largest potential markets in the world today. With rising demand for consumer products, healthcare, telecom, insurance, banking and micro-finance, we see immense opportunities for the IT/ITeS sector as an enabler for these services through supply chain automation, micro-finance / rural banking related solutions to address inclusive growth, mobile content / interface application development to help agriculture, weather forecasting applications, rural BPO, telemedicine etc.

The Urban Domestic market (64%) has emerged as the new hot destination for IT/ITeS service providers. Considering the fact that providers consider the domestic opportunity second only to the developed markets in US and UK, which were the traditional bread providers for the industry, proves that the IT/ITeS industry as a whole is waking up to the immense potential in the domestic space.

**Push Factors for Overseas Delivery Locations**

**Evolving Trends**

Need to offer IT and business process services: As highlighted in a recent end-user study on BPO in the U.S. market, customers increasingly look toward technology-led BPO firms to support them in key areas of cost optimization, integration of IT and business process, transformation to new technologies. Increasing shift to outsourcing/managed services and newer models of delivery: The key message is that the direction of adoption is increasingly focused on the convergence of these two markets in the form of utility-based services (e.g., SaaS, cloud/utility computing, platform-based BPO). It is this trajectory for which offshore providers that compete in the “traditional” IT services markets need to prepare. This will require
making significant changes to their business models, though this will apply to all traditional IT and business process services providers.

Integrated Offerings / End to end solutions are perceived to be the key factor, for growth of the industry, by both Providers (67%) and End-Users (89%). IT Service providers believe that with Integrated Offerings / End to end solutions they can charge a premium and similarly the end-users consider it as a critical factor while selecting the service provider.

Both Providers (93%) and End-Users (89%) agree that Integrated Offerings / End to End solutions is the key factor that would help growth of Indian IT / ITeS industry and also serve as the key selling point for the providers.

IT Service providers consider that Developing Unique IP (73%), Integrated Offerings / End to end solutions (67%) and their Past credentials (67%) would help them charge a premium on their products/services.

On the other hand, we see clients planning considerable increase in the investment in areas like System Integration (89%) and Infrastructural Management (67%). This is closely followed by Packaged Applications (48%) Application Development (41%) and Maintenance (37%).

Interestingly, we see the large companies planning on investment increases across the board as compared with their smaller counterparts who are more focussed on System Integration, Infrastructure Management and Packaged Applications.

This is a significant indication of growth in the economy post the recent turbulence. Also the focus on System Integration shows that companies, irrespective of size, are focusing more on optimizing costs through internal consolidation.

High Growth Areas

With regards to IT services, the fastest-growing markets are application outsourcing (AO) and infrastructure outsourcing, with five-year CAGRs (2008–2013) of 11.1% and 15.5%, respectively. This is partially because of its relatively smaller
base and the growth in more robust outsourcing engagements with offshore players, particularly under current market dynamics. Conversely, custom application development weighs in with the smallest five-year CAGR of 2.3% over this same period, due in part to its large and mature size and the fact that customers are shying away from pursuing custom application development as a result of the economic downturn.

IT consulting represents a fairly stable share of the worldwide offshore IT services market. However, discrete, standalone IT consulting will experience slower growth because this consultative approach will be rolled up into bigger and longer-term contracts such as infrastructure or application outsourcing engagements. This dynamic also accounts for the growing share of infrastructure and application outsourcing engagements over the forecast period. In addition, the focus on transformation gives customers the opportunity to improve and streamline their IT environment over a longer-term period of time, while it is being managed by an offshore provider, rather than making a large capital investment up front.

Table 4.7: Global Offshore IT Service Spending by Offerings

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2008-12 CAGR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Outsourcing</td>
<td>4,770.6</td>
<td>5,145.8</td>
<td>5,631.3</td>
<td>6,267.3</td>
<td>7,054.3</td>
<td>8,069.3</td>
<td>11.1</td>
</tr>
<tr>
<td>Custom Application Development</td>
<td>8,138.5</td>
<td>7,977.5</td>
<td>8,084.4</td>
<td>8,342.5</td>
<td>8,691.5</td>
<td>9,136.4</td>
<td>2.3</td>
</tr>
<tr>
<td>IT Consulting</td>
<td>1,404.0</td>
<td>1,353.5</td>
<td>1,402.1</td>
<td>1,473.6</td>
<td>1,572.5</td>
<td>1,695.9</td>
<td>3.9</td>
</tr>
<tr>
<td>Infrastructure Outsourcing</td>
<td>2,169.7</td>
<td>2,410.3</td>
<td>2,725.0</td>
<td>3,157.4</td>
<td>3,694.1</td>
<td>4,452.7</td>
<td>15.5</td>
</tr>
<tr>
<td>Systems Integration</td>
<td>6,430.1</td>
<td>6,332.2</td>
<td>6,5880</td>
<td>7,064.1</td>
<td>7,678.4</td>
<td>8,431.1</td>
<td>5.6</td>
</tr>
<tr>
<td>Other</td>
<td>8,092.4</td>
<td>8,289.5</td>
<td>8,567.2</td>
<td>8,956.3</td>
<td>9,452.8</td>
<td>10,068.2</td>
<td>4.5</td>
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<tr>
<td>Total</td>
<td>31,005.3</td>
<td>31,508.8</td>
<td>32,998.0</td>
<td>35,261.2</td>
<td>38,143.6</td>
<td>41,853.6</td>
<td>6.2</td>
</tr>
</tbody>
</table>

Source: NASSCOM.COM
A Sum-up

Favorable outlook: The growth rates of global GDP and India’s net software earnings have been observed to move in sync with each other. The recent upward revisions to global growth for 2010, including the significant improvements in the growth forecast of the advanced economies (US, UK and the Euro Area) along with the favorable GDP outlook for the Indian economy are likely to strengthen the growth prospects of the Indian IT sector, benefiting both export and domestic revenues.

Small is Large

The Small and Medium players will continue to be an integral part of the IT/ITeS growth story. They will emerge as winners if they focus on the right markets, develop niche offerings, increase operational efficiencies, tap appropriate capital and improve talent management.

Harvesting the Cloud

Though adoption of cloud computing involves dealing with fundamental changes in the traditional business operation and outlook, this model has the potential to improve agility while streamlining costs through centralization of resources and multi-tenancy. This would be a boon for companies looking to expand their delivery reach and scalability while maximizing their operational economy.

Emerging Consumption Centres

While momentum has to be maintained with innovation and climbing up the value chain to grow the large markets of US and UK and protect them from growing competition, Indian providers have to make investments to tap emerging overseas consuming territories like China and Latin America. The Indian domestic market is poised to be a significant growth driver, in addition to delivery capacities, providers should also invest in sales and account management structures for the India geography.

Shifting centers of Delivery

It is becoming imperative for Indian providers to expand their delivery presence beyond India. While some of them have started making investments, we believe this process has to accelerate accompanied by intake of local human capital.
This would enable them to ramp up to speed and establish a presence across both the demand as well as the supply end of the business thus increasing client proximity while mitigating risks.

**Thought Innovation**

The need for creation of high value IP to sustain growth is no longer a luxury. Having established the global benchmarks, the delivery engine should now be the channel to bring Indian IP to the clients.

Partnering with Clients: Service Providers need to align themselves with client and market requirements and become one-stop Solution Providers for their clientele. For this purpose, they would increasingly need to use non-linear models (OBP) and services (SaaS) to maximize returns on investment.

**Green Apple Strategy**

Indian IT/ITeS service providers need to differentiate themselves from the pack. The focus should be to avoid being perceived as a commodity services provider through a combination of niche markets and services and differentiated branding and marketing. The explosion in social networking also gives a great platform to reach out to prospective clients and employees.
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