CHAPTER – III

PROFILE OF INFORMATION TECHNOLOGY SECTOR

Information technology (IT) is defined as the design, development, implementation and management of computer-based information systems, particularly software applications and computer hardware. Today, it has grown to cover most aspects of computing and technology. The reason why it has catapulted in importance is due to the improving accessibility, awareness and utility of technology. It is a common fact that a country’s IT potential is paramount for its march towards global competitiveness, healthy GDP and defence capabilities.

Information technology (IT) is both a huge industry in itself, and the source of dramatic changes in business practices in all other sectors. The term IT covers a number of related disciplines and areas, from semiconductor design and production (also covered in the profile of the electronics sector), through hardware manufacture (mainframes, servers, PCs, and mobile devices), to software, data storage, backup and retrieval, networking, and, of course, the internet.

On top of this, there has been a convergence between IT and telephony, driven by transforming voice traffic from an analogue signal to a digital packet, indistinguishable from other data packets travelling through a computer network. IT in the leisure sector is already about enabling interaction with video, movies, and TV, and this trend is increasingly carrying over into the business space.

Each of the major sub-areas in IT is itself capable of being divided into its component parts. Storage, for example, breaks down into disk drives, tape drives, and optical drives, and into attached storage and networked storage. PCs break down into utility-business desktop PCs, high-end work stations, and “extreme” gaming PCs for
games enthusiasts - the computer and console games industry has already produced “blockbusters” that outsell top releases from Hollywood.

Software subdivides into numerous specialist areas, from relational database technologies to enterprise applications, to “horizontal” office applications characterized by Microsoft Office 2007. Somewhat off the main track of IT at present, but very much related to both increases in processor power, and to work in simulation and artificial intelligence, is the field of robotics. This lies outside the scope of this profile, but the linkages between robotics and IT are already transforming both manufacturing and defense.

In addition, the IT arena is characterized by a number of key trends and emerging technologies which, again, have the potential to transform the way businesses currently use IT, and carry out their operations. An example of a trend would be the outsourcing of IT services, such as desktop PC support, or whole IT-supported functions, such as accounts processing. An example of a technology trend would be virtualization. This refers to the ability of large servers to be subdivided into a number of virtual machines, which can be either virtual PCs or virtual servers.

Virtualization carries with it a number of benefits, including stopping what, at one stage, looked like an endless proliferation of servers inside companies. One large server can now be split into a number of virtual servers, enabling the organization to reduce the number of boxes it has to manage. Server virtualization should not be confused with another powerful trend: the creation of virtual environments inside the machine. The fact that desktop processors are now powerful enough to mimic real-world physics in computer space is transforming both design and entertainment.

All these trends have enabled the IT industry to continue to generate a strong demand for the next generation of servers, PCs, and laptops. However, in a recession,
companies of all sizes generally postpone upgrading their IT, or implementing major IT projects that are not already in hand. This makes the sector vulnerable to downturns in the economy, and the current global downturn is already having a major impact on revenues in the sector worldwide.

IT professionals perform a variety of duties ranging from data management, networking, engineering computer hardware, database and software design, to the management and administration of entire systems. With the already high penetration of conventional personal computer and network technology, coupled with the growing convergence of information, communication and entertainment, the industry is now keenly focused on the integration with other technologies such as mobile phones, automobiles and televisions etc, thereby increasing the demand for such jobs. The largest firms globally include IBM, HP, Dell and Microsoft.

**Features of the IT Industry at a Glance**

Economies of scale for the information technology industry are high. The marginal cost of each unit of additional software or hardware is insignificant compared to the value addition that results from it.

Unlike other common industries, the IT industry is knowledge-based. Efficient utilization of skilled labor forces in the IT sector can help an economy achieve a rapid pace of economic growth.

The IT industry helps many other sectors in the growth process of the economy including the services and manufacturing sectors.

**INFORMATION TECHNOLOGY (IT) INDUSTRY IN INDIA**

Information Technology (IT) industry in India is one of the fastest growing industries. Indian IT industry has built up valuable brand equity for itself in the global markets. IT industry in India comprises of software industry and information technology
enabled services (ITES), which also includes business process outsourcing (BPO) industry. India is considered as a pioneer in software development and a favourite destination for IT-enabled services.

The origin of IT industry in India can be traced to 1974, when the mainframe manufacturer, Burroughs, asked its India sales agent, Tata Consultancy Services (TCS), to export programmers for installing system software for a U.S. client. The IT industry originated under unfavorable conditions. Local markets were absent and government policy toward private enterprise was hostile. The industry was begun by Bombay-based conglomerates which entered the business by supplying programmers to global IT firms located overseas.

During that time Indian economy was state-controlled and the state remained hostile to the software industry through the 1970s. Import tariffs were high (135% on hardware and 100% on software) and software was not considered an "industry", so that exporters were ineligible for bank finance. Government policy towards IT sector changed when Rajiv Gandhi became Prime Minister in 1984. His New Computer Policy (NCP-1984) consisted of a package of reduced import tariffs on hardware and software (reduced to 60%), recognition of software exports as a "delicensed industry", i.e., henceforth eligible for bank finance and freed from license-permit raj, permission for foreign firms to set up wholly-owned, export-dedicated units and a project to set up a chain of software parks that would offer infrastructure at below-market costs. These policies laid the foundation for the development of a world-class IT industry in India.

The Information technology industry has gained a brand identity as a knowledge economy due to its IT and ITES sector. The IT – ITES industry has two major components: IT Services and business process outsourcing (BPO). The growth in the service sector in India has been led by the IT–ITES sector, contributing substantially to
increase in GDP, employment, and exports. The sector has increased its contribution to India's GDP from 1.2% in FY1998 to 7.1% in FY2011. According to NASSCOM, the IT-BPO sector in India aggregated revenues of US$88.1 billion in FY2011, where export and domestic revenue stood at US$59 billion and US$29 billion respectively.

The top seven cities that account for about 90% of this sector's exports are Bangalore, Chennai, Hyderabad, Mumbai, Pune, Delhi, Kolkata and Coimbatore. Export dominate the IT-ITES industry, and constitute about 77% of the total industry revenue. Though the IT-ITES sector is export driven, the domestic market is also significant with a robust revenue growth. The industry’s share of total Indian exports (merchandise plus services) increased from less than 4% in FY1998 to about 25% in FY2012. According to Gartner, the "Top Five Indian IT Services Providers" are Tata Consultancy Services, Infosys, Cognizant, Wipro and HCL Technologies.

This sector has also led to employment generation. Direct employment in the IT services and BPO/ITES segment was 2.3 million in 2009-10 and is estimated to reach nearly 2.5 million by the end of financial year 2010-11. Indirect employment of over 8.3 million job opportunities is also expected to be generated due to the growth of this sector in 2010-11. Generally a dominant player in the global outsourcing sector. However, the sector continues to face challenges of competitiveness in the globalized world, particularly from countries like China and Philippines.

India's growing stature in the Information Age enabled it to form close ties with both the United States of America and the European Union. However, the recent global financial crisis has deeply impacted the Indian IT companies as well as global companies. As a result hiring has dropped sharply, and employees are looking at different sectors like the financial service, telecommunications, and manufacturing industries, which have been growing phenomenally over the last few years. India's IT
Services industry was born in Mumbai in 1967 with the establishment of Tata Group in partnership with Burroughs.

Today, Indian IT companies such as Tata Consultancy Services (TCS), Wipro, Infosys, HCL et al are renowned in the global market for their IT prowess. Some of the major factors which played a key role in India's emergence as key global IT player are:

**Indian Education System**

The Indian education system places strong emphasis on mathematics and science, resulting in a large number of science and engineering graduates. Mastery over quantitative concepts coupled with English proficiency has resulted in a skill set that has enabled India to reap the benefits of the current international demand for IT.

**High Quality Human Resource**

Indian programmers are known for their strong technical and analytical skills and their willingness to accommodate clients. India also has one of the largest pools of English-speaking professionals.

**Competitive Costs**

The cost of software development and other services in India is very competitive as compared to the West.

**Infrastructure Scenario**

Indian IT industry has also gained immensely from the availability of a robust infrastructure (telecom, power and roads) in the country.

In the last few years Indian IT industry has seen tremendous growth. Destinations such as Bangalore, Hyderabad and Gurgaon have evolved into global IT hubs. Several IT parks have come up at Bangalore, Hyderabad, Chennai, Pune, Gurgaon etc. These parks offer Silicon Valley type infrastructure. In the light of all the factors
that have added to the strength of Indian IT industry, it seems that Indian success story is all set to continue.

**Growth Potential**

The strong demand for electronic hardware and software in India has been fuelled by a variety of drivers including the high growth rate of the economy, emergence of a vast domestic market catering to the new generation of young consumers, a thriving middleclass populace with increasing disposable incomes and a relatively low-cost work force having advanced technical skills.

Indeed, the Government has also identified growth of this sector as a thrust area as there remains great expectation for significant growth given the fairly low levels of penetration of technology among the 1.1 billion population; There were only 60 million Internet users in 2009, 7 million DVD players and personal computers were sold in 2008-09, and 11 million new mobile subscribers were added every month in the same period. In this scenario there is now a big opportunity to step up the production to gain higher global share besides meeting the domestic demands.

The Indian IT sector has also built a strong reputation for its high standards of software development ability, service quality and information security in the foreign market - which has been acknowledged globally and has helped enhance buyer confidence. The industry continues its drive to set global benchmarks in quality and information security through a combination of provider and industry-level initiatives and strengthening the overall frameworks, creating greater awareness and facilitating wider adoption of standards and best practices.

The current scenario in the IT industry of India and the tremendous growth registered in recent years has generated much optimism about the future of the Indian
Information technology industry. Analysts are upbeat about the huge potential of growth in the Information Technology industry in India.

The major areas of benefit that the future growth in the IT industry can generate for the Indian economy are -

- Exports - The IT industry accounts for a major share in the exports from India. This is expected to grow further in coming years. The information technology industry is one of the major sources of foreign currency or India.

- Employment - The biggest benefit of the IT industry is the huge employment it generates. For a developing country like India, with a huge population, the high rate of employment in the IT sector is a big advantage. The IT industry is expected to generate employment of 2.2 million by the end of 2008 which is expected to increase significantly in coming years.

- FDI (Foreign Direct Investment) - High inflow of FDI in the IT sector is expected to continue in coming years. The inflow of huge volumes of FDI in the IT industry of India has not only boosted the industry but the entire Indian economy in recent years.

**Impact on India's Growth**

IT sector has become one of the most significant growth catalysts for the Indian economy. In addition to fuelling India’s economy, this industry is also positively influencing the lives of its people through an active direct and indirect contribution to the various socio-economic parameters such as employment, standard of living and diversity among others. The industry has played a significant role in transforming India's image from a slow moving bureaucratic economy to a land of innovative entrepreneurs and a global player in providing world class technology solutions and
business services. The industry has helped India transform from a rural and agriculture-based economy to a knowledge based economy.

**Key Highlights during FY2011**

- India – A trillion dollar economy; GDP growth rate projected at 9 per cent for 2011
- Fast emerging as a growth story driven by a growing middle class, consumer spending, and technology innovation
- Increasing adoption of technology and Telecom by consumers and focused Government initiatives – leading to increased ICT adoption

Domestic IT-BPO revenue (excluding hardware) is expected to grow at almost 17 per cent to reach Rs. 918 billion in FY2012. Strong economic growth, rapid advancement in technology infrastructure, increasingly competitive Indian organisations, enhanced focus by the government and emergence of business models
that help provide IT to new customer segments are key drivers for increased technology adoption in India.

**Key Highlights during FY2012**

- Uptake of IT-BPO in India is steadily increasing, with demand coming from both consumers and enterprises, government’s technology infrastructure initiatives, unified communications and availability of world class telecom infrastructure and services
- IT services is the fastest growing segment in the Indian domestic market, growing by 18 per cent to reach Rs 589 billion, driven by increasing adoption from all customer segments – government, enterprise, consumers and SMBs
- Domestic BPO segment is expected to grow by 17 per cent in FY2012, to reach Rs 149 billion, driven by demand from voice-based (incl. local language) services and increasing adoption by both traditional and emerging verticals, including the government
- The domestic software products segment is set to grow to Rs 180 billion in FY2012, a growth of -13 per cent over FY2011. This segment is being driven by the need to replace legacy systems and technology advancements around cloud, mobility, etc.
- Domestic Hardware market to cross Rs 615 billion in FY2012, driven by rapid uptake in notebooks/netbooks/tablet computers, mobility devices, improved connectivity tools, etc
- Domestic customer base comprising the government, large, micro, small & medium enterprises and household consumers, represent unique set of requirements
Suppliers are realigning themselves to suit India specific needs and innovating new ways to target customers.

Direct employment within the domestic IT-BPO sector is expected to grow by 7 per cent over FY2011 to cross 600,000 employees with the industry creating immense job opportunities in Tier II and Tier III cities.

Overview of overall IT services

Over the years, Indian IT service offerings have evolved from application development and maintenance, to emerge as full service players providing testing services, infrastructure services, consulting and system integration. The coming of a new decade heralds a strategic shift for IT services organisations, from a ‘one factory, one customer’ model to a ‘one factory, all customers’ model. Central to this strategy is the growing customer acceptance of Cloud-based solutions which offer best in class services at reduced capital expenditure levels.

Key Highlights during FY2012

- IT services exports is the fastest growing segment, growing by 19 per cent in FY2012, to account for exports of USD 40 billion
- Considerable traction in traditional segments – custom application development, application management, IS outsourcing and software testing
- Increased acceptance from mature segments such as BFSI, US, and large corporations, and emerging segments such as retail, healthcare, utilities, SMBs, Asia Pacific and RoW
- Industry re-tooling itself to adjust to rapid change in customer priorities – from SLAs to increased time-to-market
- Emerging technologies – cloud computing, mobility, social media and big data/analytics unleashing new opportunities for the industry
IT services is the fastest growing segment in the Indian domestic market, growing by 18 per cent to reach Rs 589 billion, driven by increasing focus by service providers.

The Nasscom- McKinsey report on the IT industry of India projects that the Indian IT industry will reach 87 billion US Dollars by the end of 2008. 2.2 million Employment is expected to be created in the IT industry according to this report. The report also projects 50 billion US Dollars of IT exports from India by the end of 2008.

Software exports from India are expected to grow in coming years. New markets for software exports from India have opened up in the Middle East, South and Southeast Asia, Africa, and Eastern Europe. The reputation that India has earned as a major destination for IT outsourcing has opened further possibilities. Many developing countries are now using the Indian model for growth in the IT sector.

Another important area of future growth for the IT industry of India is the domestic market. While exports dominate the IT industry at present, there is huge scope of growth in the domestic market which can be tapped in the future. The US recession has had its share of negative impacts on the Indian IT industry. However, the industry has faced the challenges posed by the global market and is sustaining its rate of growth. The focus for the future is to ensure that the benefits of the IT industry percolate to the grassroot levels.

The information technology (IT) industry has become of the most robust industries in the world. IT, more than any other industry or economic facet, has an increased productivity, particularly in the developed world, and therefore is a key driver of global economic growth. Economies of scale and insatiable demand from both consumers and enterprises characterize this rapidly growing sector.
The Information Technology Association of America (ITAA) explains 'information technology' as encompassing all possible aspects of information systems based on computers. Both software development and the hardware involved in the IT industry include everything from computer systems, to the design, implementation, study and development of IT and management systems. Owing to its easy accessibility and the wide range of IT products available, the demand for IT services has increased substantially over the years. The IT sector has emerged as a major global source of both growth and employment.

**Market Analysis**

According to the IT market analysis firm, Gartner, worldwide IT spending is forecast to reach US$3.4 trillion in 2010, a 5.3% increase from IT spending of US$3.2 trillion in 2009. The IT industry will continue to show steady growth with IT spending in 2011 projected to surpass US$3.5 trillion, a 4.2% increase from 2010.

Worldwide, computing hardware spending is forecast to reach US$353 billion in 2010, a 5.7% increase from 2009. Robust consumer spending on mobile PCs will drive hardware spending in 2010. Enterprise hardware spending will grow again in 2010, but it will remain below its 2008 level until 2014. Spending on storage will enjoy the fastest growth in terms of enterprise spending, as the volume of enterprise data that needs to be stored continues to increase. Near-term spending on servers will be concentrated on lower-end servers; longer-term, server spending will be curtailed by virtualization, consolidation and, potentially, cloud computing, Gartner said.

Worldwide software spending is expected to total US$232 billion in 2010, a 5.1% increase from 2009. Gartner analysts said the impact of the recession on the software industry was tempered and not as dramatic as other IT markets. In 2010, the majority of enterprise software markets will see positive growth.
The infrastructure market, which includes all the software to build, run, and manage an enterprise, is the largest segment in terms of revenue and the fastest-growing through the 2014, according to Gartner. It adds that the hottest software segments to 2014 include virtualization, security, data integration/data quality, and business intelligence. The applications market, which includes personal productivity and packaged enterprise applications, has some of the fastest-growth segments. Web conferencing, team collaboration, and enterprise content management are forecast to have double-digit compound annual growth rates (CAGR), in the face of growing competition surrounding social networking and content, according to Gartner.

“Cost optimization, and the shifts in spending from mega-suites to the automation of processes will continue to benefit alternative software acquisition models, as organizations will look for ways to shift spending from capital expenditures to operating expenditures,” said Joanne Correia, managing vice-president at Gartner. “Because of this, vendors offering software as a service (SaaS), IT asset management, virtualization capabilities, and that have a good open-source strategy will continue to benefit. We also see mobile-device support or applications, as well as cloud services driving new opportunities.”

The worldwide IT services industry is forecast to have spending reach US$821 billion in 2010, up 5.7% from 2009. The industry experienced some growth in reported outsourcing revenue at the close of 2009, an encouraging sign for service providers, which Gartner analysts believe will spread to consulting and system integration in 2010. “We continue to see a long-term recession ‘hangover’ as a more cautious mind-set continues as the norm among a lot of buyers who keep looking for small, safe deals where cost take-out is a key factor,” said Kathryn Hale, research vice-president at Gartner. “In the face of that ongoing strong pressure to renegotiate contracts, and in the
absence of equivalent pressure from stockholders, we believe vendors will generally choose to maintain margins over revenue growth.”

Worldwide, enterprise network services spending is forecast to grow 2% in revenue in 2010, but Gartner analysts said this masks ongoing declines in Europe and many other mature markets, as well as an essentially flat North American market.

**Future Prospects**

The industry is likely to continue growing from strength to strength, as local players incorporate best in class practices from global counterparts whilst retaining their edge in terms of lower cost of labour and focused governmental investments.

New graduates with degrees in related fields such as electrical engineering and computer science can hope to achieve significant professional growth and a healthy remuneration from companies looking to hire the best talent available, given the high proportion who leave to pursue jobs in this sector overseas.

The IT industry can serve as a medium of e-governance, as it assures easy accessibility to information. The use of information technology in the service sector improves operational efficiency and adds to transparency. It also serves as a medium of skill formation.

Information Technology has been the force behind the growth of Indian Inc over the last two decades. No doubt they are one of the largest recruiters and exporters in Indian Economy. We rise and tumble with the growth and fall of IT industry as a host of other industries are dependent on them. Say Media and Advertising, Logistics, Human Resource etc.