CHAPTER 3
AN OVERVIEW OF THE INFORMATION TECHNOLOGY / SOFTWARE INDUSTRY

3.1. GLOBAL SCENARIO

Information technology, and the hardware and software associated with the IT industry, are an integral part of nearly every major global industry. The information technology (IT) industry has become one of the most robust industries in the world. IT, more than any other industry or economic facet, has 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 the “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 computer systems, 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 therefore emerged as a major global source of both growth and employment.

3.1.1. Features of 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 labour 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.

The IT industry serves 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 transparency. It also serves as a medium of skill formation. Most of the U.S. software/IT companies\(^1\) were spreading their service delivery infrastructure within India by moving into Tier II and Tier III cities. They are making inroads into China and setting up near shore centers in Eastern Europe, Latin America and Canada.

The reasons for spreading out the service delivery infrastructure are to enhance cost competitiveness, improving customer comfort, moving closer to customer locations, leveraging a specific locally available skill set and de-risking dependence on any single location. (Source Business Review, The Hindu Daily dated 24.12.07)\(^2\).

Recent decades have witnessed a rapid expansion of the computer software industry in advanced industrial economics. However, Japanese companies have not generally achieved major global market shares in most areas of the computer software industry. (Source: Reika Kohashi and Toshio Nakanishi 2007)\(^3\). The relative lack of Japanese success in this industry has often been attributed to the conflict between the need for the computer software development process for individuality and creativity and the organizational characteristics, in particular the human resource practices of Japanese firms (Cusumano, 1991)\(^4\).

China’s high quality and effective IT infrastructure network has laid a technical foundation for the business and China has already attracted a number of multinationals which could be potential clients. Compared with the foreign outsourcing IT companies including Indian ones, Chinese firms are lagging behind in Service Quality and in the attraction of talented people. In the fast growing domestic IT service, technical personnel are trained in China in line with international practice (Source: The Hindu, Business Line March 9, 2008)\(^5\).

The Global Information Technology Report (2008-2009)\(^6\) of the World Economic Forum (WEF) reveals the Network Readiness Index (NRI) showing the preparedness of countries in using ICT (Information and Communication Technologies) effectively.

The Global Information Technology Report 2008-2009 articulates that India has been edged out by China in the Network Readiness Index (NRI) ranking. India has fallen from the 50th place in 2007-08 to the 54th position, while China has been able to occupy the 46th position. India has been slipping down in the NRI ranking. According to the G.I.T India was in 44th place during 2006-07.
On the contrary, China has made a phenomenal 11 positions jump in the latest ranking. China is transforming its IT infrastructure through a combination of human development and technology-related policies. Countries like Denmark and Sweden have been able to retain 1st and 2nd positions respectively in the Network Readiness Index (NRI) ranking, while United States has managed to hold 3rd position. Singapore, ranked at 4th position, is the only Asia Pacific country that has been able to find a place among the top 10 countries in the world.

The GIT report places Switzerland at 5th position, and the Netherlands and Canada come with in the top 10. The report ranks South Korea at 11th place, Hong Kong at 12th place and Taiwan at 13th place.

Among the Gulf countries, UAE has been ranked at 27th position, Qatar at 29th position, Bahrain at 37th position, Saudi Arabia at 40th place, Oman at 50th position, and Kuwait at 57th place.

According to the GIT report, Malaysia is at 28th position, Thailand is at 47th, Brunei at 63rd position, Brazil at 59th, Russia at 74th, Vietnam at 70th position, Indonesia at 83rd position, Philippines at 85th position, Tajikistan at 104th position, and Cambodia at 126th position, in the NRI ranking of 134 countries.

The IT superpower India ranks at the bottom in the world’s Wi-Fi index with only 454 public wi-fi hot spots. U.S. leads the wi-fi hot spot index with 64670 public hotspots followed by UK (30613), Germany (21,236) and France (22,799) hot spots. Significantly, all 9 of the top 10 wi-fi countries also rank in the top 30 in the 2007 U.N. Human Development index.

<table>
<thead>
<tr>
<th>Country</th>
<th>No. of Wi-Fi hot spots</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>64670</td>
</tr>
<tr>
<td>U.K.</td>
<td>30613</td>
</tr>
<tr>
<td>France</td>
<td>22799</td>
</tr>
<tr>
<td>Germany</td>
<td>21236</td>
</tr>
</tbody>
</table>

Table No. 3.1

TOP Wi-Fi countries
### 3.2. INDIAN SCENARIO

The growth of the Indian software industry has been a phenomenal success when measured against standard indicators such as growth in sales, generation of employment and exports, and especially when contrasted with the performance of other industrial sectors in India. Even measured against successful new exporters of software such as Israel and Ireland, the Indian software industry stands out in terms of the volume of employment created and the indigenous nature of its growth. (Suma S Athreye 2005)  

It has been widely accepted that the structure of the Indian Software industry is long-tailed, barring a few firms who are engaged in hi-tech areas; most of the industry is actually engaged in low-tech, low skill, high-volume activities (Nath and Hazra 2002). The industry, however, has contributed significantly (about 3%) to the GDP, and more significantly to employment generation at a comparatively lower capital investment, and minimal government support and intervention. Another important aspect is creation of employment opportunities for large number of young graduates who otherwise considered as unemployable. The industry also has got a fare share of globally known myths and heroes, and for the first time recognized for its ability in project management and execution in high technology areas. The emergence and the growth of Indian software industry also show the importance of human resources in the industrial development of a country. (Pradosh Nath 2008)

The largely untold story of the Indian software industry centers on the abilities of the pioneer firms in the industry who learnt how to transform the programming skills of their labour force into firm-specific capabilities, and to become credible

<table>
<thead>
<tr>
<th>Country</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Korea</td>
<td>15634</td>
</tr>
<tr>
<td>Japan</td>
<td>8326</td>
</tr>
<tr>
<td>Italy</td>
<td>5128</td>
</tr>
<tr>
<td>Taiwan</td>
<td>4390</td>
</tr>
<tr>
<td>Switzerland</td>
<td>2997</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2773</td>
</tr>
<tr>
<td>India</td>
<td>454</td>
</tr>
</tbody>
</table>

Source: The Economic Times, 3rd December 2007

Note: Wireless Fidelity (WiFi) is a technology which allows wireless internet access through la top, mobile or P.C.
rivals of firms such as Accenture, EDS and IBM Services in the outsourced-software market. The particular strength of Indian firms was their ability to assemble teams of talented engineers and deliver a technical, outsourced service to exacting and different customers anywhere in the world. They also leveraged their capabilities for maximum economic value through the adaptation and perfection of a new business model. This model was based around an outsourced service offering, and different variants of it were developed by Indian firms as new economic opportunities arose. Over time, one variant of this outsourcing model commonly known as offshoring, has come to be applied to other domain and areas: call centers, financial services and other forms of content management services of large firms that can be done remotely. As a result India now enjoys a ‘created’ comparative advantage in outsourced services and offshoring.

An interesting aspect of outsourcing is that the factors that were crucial to the emergence of outsourced software exports from India were quite distinct from the factors that sustained the competitive edge of Indian software firms’ and hence the growth of the industry overtime. For example, while abundant (and cheap) human capital were the basis of India’s early software exports, the growth in software exports was based on improved productivity of the industry. This improved productivity was due to the development by Indian firm’s dynamic capabilities, which enabled them to use changing economic opportunities to carve out a niche in the export of outsourced service (Suma S. Athreye 2005).8

During the year 2008-09, electronics and IT exports were estimated to be Rs. 235,300 crore, as compared to Rs. 177,600 crore in 2007-08, showing a growth of 32.5 per cent. The software and services industry continues to show a robust growth and the total value of software and services export were estimated at Rs. 216,300 crore (US $ 47 billion) in 2008-09, as compared to Rs.164,400 crore (US $ 40.4 billion) in the year 2007-08, an increase of 31.6 per cent in rupee terms and 16.3 per cent in dollar terms.

Figure 3.1
Electronics and IT Exports
The economic recession in leading export destinations adversely impacted the performance of Indian IT companies.\textsuperscript{12}


Table No. 3.2

\textbf{Growth in IT –ITeS Industries}

US$ billon
The increase of 14.6 per cent in software and services exports in 2008-09 (Table 3.2) was the net effect of a growth of 35.3 per cent in the first six months and a decline of 1.9 per cent in the next six months (Table 3.3). The decline continued in the first half of 2009-10 as well.

<table>
<thead>
<tr>
<th>Items</th>
<th>2006-07</th>
<th>2007-08</th>
<th>2008-09</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT-IT- enabled Services</td>
<td>47.8</td>
<td>64.1</td>
<td>70.5</td>
</tr>
<tr>
<td>Revenue (including Hardware)</td>
<td></td>
<td>(34.1)</td>
<td>(9.9)</td>
</tr>
<tr>
<td>Software &amp; Services Industry (excluding hardware)</td>
<td>39.3</td>
<td>52.1</td>
<td>58.7</td>
</tr>
<tr>
<td>Industry (excluding hardware)</td>
<td></td>
<td>(32.6)</td>
<td>(12.7)</td>
</tr>
<tr>
<td>Total Software and Services Exports (including ITeS-BPO)</td>
<td>31.1</td>
<td>40.4</td>
<td>46.3</td>
</tr>
<tr>
<td>IT BPO Revenue from the Domestic Market</td>
<td>8.2</td>
<td>11.7</td>
<td>12.4</td>
</tr>
<tr>
<td>IT BPO Revenue from the Domestic Market</td>
<td></td>
<td>(42.7)</td>
<td>(5.9)</td>
</tr>
<tr>
<td>IT Software and Services Employment (million)</td>
<td>1.62</td>
<td>2.01</td>
<td>2.20</td>
</tr>
</tbody>
</table>

Table No.3.3
Software and services exports

During 2008, electronics hardware production in India constituted around 1.5 per cent of global electronics production. The production of electronics hardware in the country stood at Rs 94,690 crore in 2008-09 (Table 3.4), registering a growth of 12.1 per cent, compared to a growth of 27.8 per cent in 2007-08; the decline is attributable to the global economic slowdown.

<table>
<thead>
<tr>
<th>Year</th>
<th>Growth( Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First half</td>
</tr>
<tr>
<td>2006-2007</td>
<td>37.21</td>
</tr>
<tr>
<td>2007-08</td>
<td>26.27</td>
</tr>
<tr>
<td>2008-</td>
<td>35.35</td>
</tr>
<tr>
<td>2009-10</td>
<td>-11.5</td>
</tr>
</tbody>
</table>


Table No. 3.4
Electronics and IT production

<table>
<thead>
<tr>
<th>Item</th>
<th>2005-06</th>
<th>2006-07</th>
<th>2007-08</th>
<th>2008-09</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.Consumer Electronics</td>
<td>18,000</td>
<td>20,000</td>
<td>22,600</td>
<td>25,990</td>
</tr>
<tr>
<td></td>
<td>2007</td>
<td>2008</td>
<td>2009</td>
<td>2010</td>
</tr>
<tr>
<td>----------------</td>
<td>------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>2. Industrial Electronics</td>
<td>8,800</td>
<td>10,400</td>
<td>11,910</td>
<td>12,740</td>
</tr>
<tr>
<td>3. Computers</td>
<td>10,800</td>
<td>12,800</td>
<td>15,870</td>
<td>13,490</td>
</tr>
<tr>
<td>4. Comm &amp; Broadcasting Equipment</td>
<td>70,000</td>
<td>9,500</td>
<td>18,700</td>
<td>26,000</td>
</tr>
<tr>
<td>5. Strategic Electronics</td>
<td>32,000</td>
<td>4,500</td>
<td>5,700</td>
<td>6,840</td>
</tr>
<tr>
<td>6. Components</td>
<td>8,800</td>
<td>8,800</td>
<td>9,630</td>
<td>9,630</td>
</tr>
<tr>
<td>Sub Total</td>
<td>56,600</td>
<td>66,000</td>
<td>84,410</td>
<td>94,690</td>
</tr>
<tr>
<td>7. Software for Exports</td>
<td>1,04,100</td>
<td>1,41,000</td>
<td>1,64,400</td>
<td>2,16,300</td>
</tr>
<tr>
<td>8. Domestic Software</td>
<td>29,600</td>
<td>37,000</td>
<td>47,010</td>
<td>57,230</td>
</tr>
<tr>
<td>Total</td>
<td>1,90,300</td>
<td>2,44,000</td>
<td>2,95,820</td>
<td>3,68,220</td>
</tr>
</tbody>
</table>

**Source:** Economic Survey of Government of India 2009-2010.

### 3.2.1. Software Industry

The progress in Software Industry has been very rapid, new concepts and technologies are constantly emerging and are leading to the development of new products and innovative applications. IT is also expected to fuel development of next generation technologies in other disciplines. IT has become a critical tool for economic, business and social development and play a pivotal and catalytic role in our nation’s progress.

The new technological developments were be inherently inter-disciplinary, as they address all scientific, engineering and industrial
The research and development for both new technologies, as well as their effective deployment will require extensive collaboration from researchers from different areas to foster novel ideas.

The industry has demonstrated its ability to undertake a variety of projects and deliver solutions. Today, the focus is on software services and contract software development, largely to fill the ever-widening manpower shortage. To sustain the growth projections of the software industry, the Indian IT industry faces several challenges\textsuperscript{13}. These include:

- Non-availability of senior development personnel (who can design and lead development of innovative applications by applying leading-edge technologies),

- Limited opportunities to track, assimilate and apply latest technologies (multimedia, work-flow, EDI, distributed component technologies, CAD/CAM, `smart' products, etc.)

- Inability to focus on product development. The industry needs to develop new products and services to capitalize on high growth markets, and to apply the state-of-art technologies in multiple disciplines to user applications to obtain best results.

- Manpower trained in new technologies, techniques and methodologies to develop high-quality products,

- A channel through which they can enter into a partnership with experts to facilitate medium and long term research,

- A forum where their experience and the expertise of academic researches could be used to define products of the future,

- A flexible approach to continuous education,

- A channel to develop prototypes and assist the commercialization of product ideas,
• A channel where entrepreneurs can be promoted.

Usage of IT is growing in the government and industrial sector. The user industry is building its applications using the best-of-breed products in Database Systems, Data Communications and Networking, etc. They are integrating IT in their operations and decision making. Due to this exponential growth, computer user community is facing shortage of manpower, trained in developing quality solutions, and planning for long-term IT requirements. The need for human resources in the IT industry is being addressed at various levels. A large number of engineering colleges offer Bachelor degrees (BE) in Computer Science and Engineering. Here, the focus is on systems rather than applications and processes. The Master of Computer Applications (MCA) is also available at many universities. Although its focus is on entry-level applications, the programme lacks in depth where technology and processes are concerned. These two degree programs in the country form the main technical inputs to IT industry. However, their numbers are short in comparison to the projected needs of the industry. This gap is met by many private-training institutions. Some of these have countrywide network of training centers. It may be noted here that the focus of these training institutes is to provide junior programmers with skills on popular products.

There is thus a need for a sophisticated academic programme that will have the necessary depth and focus to meet needs of both the user and the IT industry. The need for training, research and development in IT and its applications suggests a formal yet flexible educational and research structure.

3.2.2. IT Enabled Services

India's sunshine sector, ITeS, continues to chart double-digit growth. It has recorded revenues of US$ 39.6 billion in 2006-07, up 30.7 per cent against a projected growth of 27 per cent, according to the National Association of Software Services Companies (Nasscom). With growth in the sector being
stupendous, the average increase in salary levels in the ITeS sector has been between 16 and 18%.

Fig.3.2
Indian IT and ITES Sectors: Growth in Professionals

![Graph showing growth in professionals from 1990-91 to 2004-05]

Source: NASSCOM (2009)

Table No. 3.5
Indian IT and ITES Sectors: Professionals Employed

<table>
<thead>
<tr>
<th></th>
<th>2001-02</th>
<th>2002-03</th>
<th>2003-04</th>
<th>2004-05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software Exports</td>
<td>170,000</td>
<td>205,000</td>
<td>270,000</td>
<td>345000</td>
</tr>
<tr>
<td>Software-</td>
<td>22,000</td>
<td>25,000</td>
<td>28,000</td>
<td>30000</td>
</tr>
<tr>
<td>Software- in</td>
<td>224,250</td>
<td>260,000</td>
<td>290,000</td>
<td>322000</td>
</tr>
<tr>
<td>ITES-BPO</td>
<td>106,000</td>
<td>180,000</td>
<td>253,500</td>
<td>348000</td>
</tr>
<tr>
<td>Total</td>
<td>522,250</td>
<td>670,000</td>
<td>841,500</td>
<td>1045,000</td>
</tr>
</tbody>
</table>

Source: NASSCOM (2009)

3.2.3. Supply pool of IT professionals
Table No.3.6
Indian IT sector: Labour Supply

<table>
<thead>
<tr>
<th>(in '000s)</th>
<th>2003-04</th>
<th>2004-05</th>
<th>2005-06E</th>
<th>2006-07E</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Engineering Graduates</td>
<td>215</td>
<td>284</td>
<td>348</td>
<td>382</td>
</tr>
<tr>
<td>No. of IT (Computer Science, Electronics, Telecom) professionals</td>
<td>141</td>
<td>165</td>
<td>181</td>
<td>193</td>
</tr>
<tr>
<td>No. of IT professionals entering the workforce</td>
<td>80</td>
<td>94</td>
<td>103</td>
<td>109</td>
</tr>
<tr>
<td>No. of non-IT engineers entering the workforce</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>No. of graduates (other disciplines) entering the IT workforce</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Total fresh IT labour supply</td>
<td>150</td>
<td>164</td>
<td>173</td>
<td>180</td>
</tr>
</tbody>
</table>

SOURCE : NASSCOM (2009)

With India poised to be US$ 70 billion software market in 2009, providing direct employment to more than 2.2 million (and nearly twice the number by way of indirect employment), it is essential to strengthen professional education (through curricula, faculty, infrastructure, pedagogy improvements) in line with the IT industry’s requirements and further catalyze the interface between the academia and corporate/industry.

3.2.4 Indian IT-BPO Industry 2009: NASSCOM Analysis

According to NASSCOM, 2008 was a year of transformation for the Indian IT – BPO sector as it began to re-engineer challenges posed by macro-economic environment, with the worldwide spending aggregate estimated to reach nearly USD 1.6 trillion, a growth of 5.6 per cent over the previous year.

- Software and services touched USD 967 billion, an above average growth of 6.3 per cent over the past year.
• Worldwide BPO grew by 12 per cent, the highest among all technology related segments
• Hardware spend is estimated to have grown by 4 per cent from USD 570 billion nearly USD 594 billion in 2008
• Though the demand side challenges have emerged in terms of reduction in discretionary IT spending, the upside is that outsourcing can help organizations to work through financial and competitive challenges
• In 2008 a number of new contracts were secured and the total contract value and annualized contract values exceeded as compared to 2007.
• Among all users, above average growth was witnessed in the Government, Healthcare and manufacturing segments

![Fig. 3.3 IT- BPO Industry Performance (USD billion)](image)

SOURCE: NASSCOM (2010)

Table No.3.7

Indian IT – BPO Industry – Sector wise Revenue Break Up
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IT Services Exports</td>
<td>13.5</td>
<td>17.8</td>
<td>23.3</td>
<td>31.0</td>
<td>35.2</td>
</tr>
<tr>
<td>Domestic</td>
<td>10.0</td>
<td>13.3</td>
<td>17.8</td>
<td>23.1</td>
<td>26.9</td>
</tr>
<tr>
<td></td>
<td>3.5</td>
<td>4.5</td>
<td>5.5</td>
<td>7.9</td>
<td>8.3</td>
</tr>
<tr>
<td>BPO Exports</td>
<td>5.2</td>
<td>7.2</td>
<td>9.5</td>
<td>12.5</td>
<td>14.8</td>
</tr>
<tr>
<td>Domestic</td>
<td>4.6</td>
<td>6.3</td>
<td>8.4</td>
<td>10.9</td>
<td>12.8</td>
</tr>
<tr>
<td></td>
<td>0.6</td>
<td>0.9</td>
<td>1.1</td>
<td>1.6</td>
<td>1.9</td>
</tr>
<tr>
<td>Engineering Services &amp; R&amp;D Exports</td>
<td>3.8</td>
<td>5.3</td>
<td>6.5</td>
<td>8.6</td>
<td>9.5</td>
</tr>
<tr>
<td>Software Products Domestic</td>
<td>3.1</td>
<td>4.0</td>
<td>4.9</td>
<td>6.4</td>
<td>7.3</td>
</tr>
<tr>
<td></td>
<td>0.7</td>
<td>1.3</td>
<td>1.6</td>
<td>2.2</td>
<td>2.3</td>
</tr>
<tr>
<td>Total Software &amp; Services Revenues Of which Exports are</td>
<td>22.5</td>
<td>30.3</td>
<td>39.3</td>
<td>52.0</td>
<td>59.6</td>
</tr>
<tr>
<td>Domestic</td>
<td>17.7</td>
<td>23.6</td>
<td>31.1</td>
<td>40.4</td>
<td>47.0</td>
</tr>
<tr>
<td>Hardware Exports</td>
<td>5.6</td>
<td>7.1</td>
<td>8.5</td>
<td>12.0</td>
<td>12.1</td>
</tr>
<tr>
<td>Domestic</td>
<td>0.5</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>5.1</td>
<td>6.5</td>
<td>8.0</td>
<td>11.5</td>
<td>11.8</td>
</tr>
<tr>
<td><strong>Total IT Industry (Including Hardware)</strong></td>
<td><strong>28.1</strong></td>
<td><strong>37.4</strong></td>
<td><strong>47.8</strong></td>
<td><strong>64.0</strong></td>
<td><strong>71.7</strong></td>
</tr>
</tbody>
</table>

**SOURCE : NASSCOM (2010)**

### 3.2.5 IT – BPO Industry , Growth in Revenues

- Indian IT-BPO grew by 12 per cent in Financial Year 2009 to reach USD 71.7 billion in aggregate revenue. Software and services exports (includes exports of IT services, BPO, Engineering Services and R&D and Software products) reached USD 47 billion, contributing nearly 66 per cent to the overall IT-BPO revenue aggregate. IT-BPO exports (including hardware exports) reached USD 47.3 billion in financial year 2009 as against USD 40.9 billion in financial year 2008, a growth of 16 per cent.

- While the US (60 per cent) and the UK (19 per cent) remained the largest IT-BPO export markets in financial year 2008, the industry footprint is steadily expanding to other geographies - with exports to Continental Europe in particular growing at a rate of more than 51 per cent over the last five years. The industry’s vertical market exposure is well diversified across several
mature and emerging sectors. Banking, Financial Services and Insurance (BFSI) remained the largest vertical market for Indian IT-BPO exports, followed by Hi-tech/Telecom which together accounted for 61 per cent of the Indian IT-BPO exports in financial year 2008.

• Domestic IT market (including hardware) reached USD 24.3 billion in financial year 2009 as against USD 23.1 billion in financial year 2008, a growth of 5.3 per cent. Hardware grew at 2.6 per cent; Software and services spending supported by increasing adoption, grew by almost 8 per cent.

• Direct employment in Indian IT-BPO crossed the 2.2 million mark, an increase of about 226,000 professionals over financial year 2008; indirect job creation is estimated at about 8 million.

• IT services (incl. engineering services, R&D, Software products) exports, BPO exports and Domestic IT industry provides direct employment to 947,000, 790,000 and 500,000 professionals respectively.

• As a proportion of national GDP, the sector revenues have grown from 1.2 per cent in financial year 1998 to an estimated 5.8 per cent in financial year 2009. Net value-added by this sector, to the economy, is estimated at 3.5-4.1 per cent for financial year 2009.

• Exports - Contributing 66 per cent to the overall revenue aggregate, exports remained the mainstay of the Indian IT-BPO growth story. Software and services exports, accounting for over 99 per cent of the total exports, reached USD 47 billion and directly employed over 1.7 million professionals in financial year 2009.

Broad-based growth across all the segments of IT services, BPO, Software products and engineering services, is reinforcing India’s leadership as the key sourcing location for a wide range of technology related services with Increasing traction in RIM & Application management and widening service portfolios.

IT services (excluding BPO, product development and engineering services), contributed 57 per cent of total exports to reach USD 26.9 billion.
BPO services exports, up 18 per cent, was the fastest growing segment across software and services exports driven by scale as well as scope. BPO service portfolio was strengthened by vertical specialization and global delivery capabilities.

Complementing the strong growth in IT services and BPO exports was the continued growth across Software product development and engineering services, which also reflected India’s increasing role in global technology IP creation. Export revenues from these relatively high-value-added services such as engineering and R&D, offshore product development and made-in-India software products grew at 15 per cent, reaching USD 7.3 billion in financial year 2009.

Domestic – In financial year 2009, domestic market (including hardware) grew at nearly 19 per cent in INR terms to reach INR 1,113 billion (USD 24.3 billion); domestic software and services market reached INR 572 billion (USD 12.5 billion).

While the US and the UK remain the largest export markets (accounting for about 60 per cent and 19 per cent respectively, in financial year 2008), the industry footprint is steadily expanding

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>America</td>
<td>68.30%</td>
<td>67.18%</td>
<td>61.40%</td>
<td>60%</td>
</tr>
<tr>
<td>Europe (incl. UK)</td>
<td>23.10%</td>
<td>25.13%</td>
<td>30.10%</td>
<td>31%</td>
</tr>
<tr>
<td>Rest of the World (incl. APAC)</td>
<td>8.60%</td>
<td>7.69%</td>
<td>8.50%</td>
<td>9%</td>
</tr>
</tbody>
</table>

SOURCE: NASSCOM (2010)

3.2.6. Location of the Indian software industry

India is one of the main destinations of outsourcing for global software
industries. In terms of the knowledge hierarchy, as main destination of the outsourcing, the Indian software industry is thriving on the process of externalisation of knowledge by the firms in the developed countries. The Indian industry, therefore, can be broadly categorized as the backyard of the global software industry. Even in the backyard its position is nothing very enviable in terms of technological capabilities. (Pradosh Nath 2008)

NASSCOM has classified the software companies according to 22 different technical areas of specialization and their expertise in 18 relevant application areas. Specialization ranges from the low technology various enterprise resources planning (ERP) packages to complex CAD/CAM, telecom and chip design. It is interesting to note that the maximum number of firms specialize in web technologies, Internet and Intranet. More than 66 per cent of total firms fall in this classification. Other areas of specialization are software product development, E-commerce/EDI, software maintenance and migration, RDBMS, ERP/MRP solutions, where at least 40 per cent of total firms are pursuing their activity in each category. Large numbers of firm cater to legacy problems, which are considered as low value-added software services. These include providing Y2K compliance, conversion projects (moving from one system to another), Euro and variety of data conversion. Such specializations are labour intensive and require low value added services such as low level of programming and coding, testing and maintenance. (D’costa 2002)

This observation suggests that the software industry of India actually belongs to the bottom of the global knowledge hierarchy of the industry. At the bottom the industry reveals again another interesting characteristic. The firms operate in a market where price competition rules. Large numbers of firm are offering the same kind of services and competing with each other on the basis of cost-price advantage. This is broadly the market place – the bottom of the knowledge hierarchy, where firms are market coordinated and firm specific knowledge generation is at its lowest. A NASSCOM survey shows that most of the firms try to grab a piece from different types of services in demand. As a
result, market gets segmented among large number of small players. The table No. 3.9 below gives information about 479 firms providing services in 22 areas identified by NASSCOM.

### Table No. 3.9

**Areas of operation**

<table>
<thead>
<tr>
<th>Number of areas of operation</th>
<th>No. of Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 4</td>
<td>180 (37.58)</td>
</tr>
<tr>
<td>5 to 8</td>
<td>165 (34.45)</td>
</tr>
<tr>
<td>9 to 12</td>
<td>92 (19.21)</td>
</tr>
<tr>
<td>13 to 16</td>
<td>34 (7.10)</td>
</tr>
<tr>
<td>17 to 20</td>
<td>8 (1.67)</td>
</tr>
<tr>
<td>Grand Total</td>
<td>479 (100)</td>
</tr>
</tbody>
</table>

Source: Indian IT Software & Service Directory NASSCOM (2009)

Among many concerns about the vulnerability of the industry most talked about is its export dependence, and that too mainly on a single country, which is USA. While geographical diversification of the clients is one way to reduce such dependence, the vulnerability of the industry rests on the fact that the Indian counterpart of the global software industry is actually at the receiving end of the technological knowledge hierarchy. The source of this vulnerability is the inadequate development of the hardware segment of the industry and also limited exposure to the core software technology.

The concern about the location of the industry in the global knowledge hierarchy is overshadowed by the fact that the industry has emerged as the largest employment creator during the last decade. Having fare share of the global unemployment problem, the location in the knowledge hierarchy appeared as non-issue. However it is the question of sustainability and utilisation of the potentiality of the industry that bring in to the surface the distortions created by the present state of the industry and its long term implications.
3.2.7. Nature of distortions

This has created two types of distortions: a) distortion in the product market and b) distortion in the labour market. The product market distortion is the result of backyard status of the industry and also the absence of linkages with the domestic production system. The labour market distortion is a corollary of the product market distortion. Comparative compensation package being much higher the software industry has created considerable bias in the career options, education systems, and wage differentials. According to a NASSCOM estimate during 2001 and 2005 on an average about 55% of the total IT professionals is constituted of engineering degree/diploma holders. Out of a total of 122,000 engineers trained each year, about 75,000 join the software industry. Universities, and IITs, are the principal sources of newly qualified personnel. In addition, private sector institutes train thousands of other technical personnel (www.indiainfoline.com)\(^\text{16}\).

The software industry of India has singularly generated employment and income like never before by a single sector. The impact of the success of the industry in the economy as a whole has been secondary, mainly derived through the income effect that indulged in conspicuous consumption. The high rate of profit earned by the industry has been generally invested in the expansion of the business overseas through acquisitions.

3.3. KERALA SCENARIO

The State of Kerala has attained worldwide acclaim for its achievements in improving the physical quality of life of the people, and in the creation of social infrastructure, particularly in health and education systems\(^\text{17}\). While this focus has led to an all round quality of life that is significantly superior to that of other Indian States, industrial growth has not been commensurate with the State’s potential.
Although various initiatives have been taken in the recent past for promoting industrial growth, bold and forward looking measures would be required if Kerala is to capitalise on its unique strengths, and attain its deserved position as a leading industrial State in the region\textsuperscript{17}. The Government recognises that for promoting rapid industrial development, there should be a basic measure of agreement between the various stakeholders and interest groups about the desired policy objectives and the means of their attainment; between present and prospective investors, the workforce and trade unions, and informed public opinion.

3.3.1. The Kerala Advantage

Kerala has an enviable tradition of literacy and social development, is endowed with unique natural resources and is supported by a thriving diaspora.

3.3.2. High quality human capital and social development.

Kerala has enviable human resources. Its literacy levels are over 90 per cent, significantly above the country average, especially for women. On social indicators, too, Kerala is well ahead of other Indian states. The state scores the highest among all Indian states on the UNDP Human Development Index. Its female-to-male ratio is the best in the country, and among the best in the world. It has the most extensive medical infrastructure and the lowest infant mortality rate in the country. Moreover, at 25 per cent, the number of people below the poverty line in the state is significantly less than the national average of 35 per cent\textsuperscript{17}.

3.3.3. Economically successful diaspora.

NRIs from Kerala are economically successful, and remit significant amounts to their home state. Over the past 5 years, deposits from non-resident
Keralites have grown at a healthy 15 per cent CAGR, and account for an impressive 13 per cent of the country’s total NRI deposits. This could grow further, through a systematic programme on the lines of the initiatives undertaken by the Chinese Government. However, the performance of the State in the industrial sector leaves much to be desired. The hopes and aspirations of people of Kerala can be fulfilled only by bringing in a paradigm shift in the policies hitherto followed and articulating a vision of Kerala, new and bold\(^\text{17}\).

Kerala offers numerous advantages to investors. A study conducted by the Confederation of Indian Industry (CII) across 18 states in India, on the attractiveness of the states in attracting investments, rated Kerala as the third best in the country in overall ranking.

<table>
<thead>
<tr>
<th>Table No. 3.10</th>
<th>Kerala's Ranking Among 18 Indian States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Law &amp; order</td>
<td>1</td>
</tr>
<tr>
<td>Education, health expenditure</td>
<td>1</td>
</tr>
<tr>
<td>Social sector</td>
<td>2</td>
</tr>
<tr>
<td>Affluence</td>
<td>3</td>
</tr>
<tr>
<td>Infrastructure penetration</td>
<td>5</td>
</tr>
<tr>
<td>Investment attractiveness</td>
<td>5</td>
</tr>
<tr>
<td>General Achievement</td>
<td>6</td>
</tr>
<tr>
<td>Finance</td>
<td>6</td>
</tr>
<tr>
<td>Labour</td>
<td>8</td>
</tr>
<tr>
<td>Investment climate</td>
<td>13</td>
</tr>
<tr>
<td>Overall Composite Rank</td>
<td>3</td>
</tr>
</tbody>
</table>
Kerala is the most favourable location in India for ICT and ITES industries to flourish. But the performance of Kerala is not spectacular compared to that of other southern States Kerala contributes only a nominal share in the overall software export of India, indicating the extreme low level of IT activity in the State.

3.3.5. The Communication Advantages

- 100% digital telephone exchanges
- 98% of telephone exchanges connected by OFC to the National Internet Backbone (NIB)
- OFC backbones throughout the state by Reliance, Bharti, Asianet.
- Highest telephone density; 20 per 100, double the national average.
- Malappuram – First wi-fi district in the country.
- ‘SEA-ME-WE-3’ and ‘SAFE’ submarine cable landings (1 of the states in India to have two submarine cable landings).
- 15 GBps bandwidth support.
- VSNL’s primary international gateway in Kochi handles around two third of the country’s data traffic.

3.3.6. The Human Resources Advantage

- Highest density of science and technology personnel in India
- Lowest employee attrition rate in the country - < 5%
- 87 engineering colleges in the state
- Sanctioned intake of over 23,000 engineering students
- Database of readily employable graduates enabling interested ITES companies to access the best of professional talent.
- Ongoing training for ITES HR pool.
3.3.7. The Cost Advantage

- A fully burdened cost of just $8 per hour when compared to the global average of $15.
- Salaries – 1/5th of the international average.
- Operational costs less than 50% when compared to the other major IT Parks.
- Rentals lower by more than 60%.
- Power and water tariff among the lowest in the country.
- Sourcing bandwidth from VSNL’s International Communication Gateway at Kochi provides significant savings vis a vis most other locations in the country.

3.3.8. Major problems with regard to software export

- Absence of major Indian and multi national firms
- Shortage of highly skilled and adequately trained manpower in the middle level and top level
- Inadequate language and communication skills and other soft skills essential for the ITES industry
- Lack of interaction between industry, academia and the State
- Non – availability of metropolitan social infrastructure to retain its human resources.
- Lack of associated infrastructure including convenient and frequent national air connectivity to centres of technical and management excellence
- Poor perception of the investors to accept the State as an investment destination due to false image creation
The main cities which are the bee hive of IT / ITES buzz are Thiruvananthapuram and Kochi. These modern cosmopolitan cities are the home of Technopark and Infopark respectively.

The Government of Kerala has announced its IT Policy in 2007\textsuperscript{18} to make Information and Communication Technology (ICT) a tool for improving governance and promote economic development through investment in this sector. The IT policy provides various incentives to the IT and Information Technology Enabled Services (ITES) units in the State. The government is trying to make Kerala an ideal IT investment destination. Kerala has always been giving highest priority to IT sector and has been doing everything possible to facilitate investment in the IT sector. The new IT Policy aims to generate more employment opportunities in the State and to make the government more accessible to the citizens\textsuperscript{19}.

The IT Organizations working in the State are:
1. Kerala State Information Technology Infrastructure Ltd (KSITL)
2. Techno park
3. Info park
4. Cyber park
5. Indian Institute of Information Technology Mission Kerala (IIITM-K)
6. Centre for Advanced Training in Free and Open Source Software (CATFOSS)
7. Model Finishing Schools
8. Akshaya
9. ITeS Habitat Centre
10. Standardizing, Testing and Quality Certification (STQC)
11. Centre for Development of Imagine Technology (C-DIT)
12. KELTRON
13. Information Kerala Mission (IKM)
14. National Informatics Centre (NIC)
15. Centre For Development of Advanced Computing (CDAC)

The Major IT Parks are:
1. Techno Park
2. Info Park
3. Cyber Park
4. ITeS Habitat Centre
5. Rural IT parks/Technolodges

**Private IT Parks:**

1. Smart City
2. L & T Park
3. Leela Park
4. Brigade Park
5. Muthoot Park

The IT sector has created more employment opportunity than any other sector in the state. It has provided more than 40,000 direct employment in Technopark and Info park, and indirect employment of more than 2,00,000. The number of jobs created due to IT in the last decade is more than 2,50,000. This would be higher than any other sector in the state. Moreover, there is good scope for higher number of jobs. It is possible to scale up the IT development to the next phase. This is proposed to be done by increasing the number of IT parks and cyber parks from the present locations. Since such scaling up would require huge investment, the state government strategy is to do this by setting up a joint venture of public-private participation. Accordingly the Government of Kerala has constituted a company viz. Kerala State IT Infrastructure Ltd for accelerating the development of IT infrastructure in the State.

The strategy to increase IT infrastructure is coincidentally happening at a time when the overall global economy is going through a severe turbulence. While the economic downturn is slowly passing out, pressure on the private participation can be made easy, as it creates ample job opportunity for Kerala. The economic downturn provides an opportunity to develop the proposed economic infrastructure so that when the next growing phase of the cyclic IT industry comes, Kerala will be ready with world class IT infrastructure. Besides, economic pressures would force IT companies to look at cost-cutting measures, which could make Kerala an attractive destination compared to bigger metro destinations like Bangalore, Hyderabad and Chennai.

Kerala State Information Technology Infrastructure Ltd (KSITIL) is a public limited company formed for the creation of infrastructure for IT/ITES in the State with 51% share capital contribution of the Government. The company has been incorporated under the Companies Act on 31.1.2008 and has started functioning on
5.3.2008\textsuperscript{19}. The objective of the company is to acquire land, create value addition by providing basic infrastructure like electricity, water and road, to obtain SEZ status and such other Government approvals that may be required and then allot lands to private developers for development of either IT SEZs or IT parks, realizing value of land based on market prices. The revenue so generated will be reinvested in projects as company’s share capital.

The company holds up to 26% share in the projects. The company is currently in the process of acquiring land for the following projects: phase 3 expansion of the Techno park, Techno city at Thiruvananthapuram, Cyber Park at Kozhikode, Info park expansion at Kochi. Further new sites for acquisition are under consideration at Kollam, Kochi and Kozhikode. In addition, it has been decided that land shall be provided in the districts of Kollam, Alappuzha (Ambalappuzha and Cherthala), Thrissur, Kannur and Kasaragod for development of IT parks. In all these areas the company is simultaneously in the process of developing basic infrastructure necessary to start the IT development process. It has made SEZ applications and initial master planning activity has been started. Approval for SEZ status has also been received in respect of Kannur, Kasaragode, Ambalapuzha and Kollam IT parks. SEZ notification has been issued in respect of IT parks at Cherthala. The IT park at Koratty in Thrissur District has been opened with 40000 sq.ft. built up space in the first phase.

Creation of IT infrastructure including built up space matching with the demand from IT companies is the prime focus of the KSITIL\textsuperscript{19}

### 3.3.9 The Technopark, Thiruvananthapuram

The Technopark in Thiruvananthapuram is India’s first Technology Park and one of largest IT Parks in the country. The Park was set up by the Government of Kerala way back in 1990, in the picturesque capital city of Thiruvananthapuram, located in the southern tip of the State. Technopark, Thiruvananthapuram is managed by an autonomous society, Electronics Technology Parks-Kerala (ETPK), under the administrative control of the Department of Information Technology of Government of Kerala. As on March 2010 the Park is home to over 108 companies, employing more than 25,000 professionals. Of the 108 companies, 30% are US based, 40% from
Europe, 5% from Middle East, 20% from within Kerala and the rest 5% from outside Kerala. A wide range of activities are undertaken in these companies like high speed scientific Embedded Software, Smart Card, Telecom, E-Commerce, Networking, Computer Aided Design, Engineering Software, Business Application Software, ERP Software, IT Enabled Services, BPO Facilities, Back Office Facilities etc. These companies contribute more than 75% of software exports from the State. In 2009 Techno Park has achieved two landmarks by initiating and its phase III expansion and the Kollam Techno park campus.

Techno park is also actively supporting Incubation initiatives through its Techno park- Business Incubation Centre (T-BIC), Techno park Technology Business Incubator (T-TBI), National Centre Innovation, Incubation and Entrepreneurship (NCIIE) and Techno park Software Engineering Competency Centre (TSECC), Techno park TePP Outreach Centre (T-TUC), Innovation & Entrepreneurship Development Centres (IDEC) where plug & play facilities are offered to potential entrepreneurs 20.

The Business Incubation Centre has helped many small IT ventures to transform themselves into global conglomerates. Other unique enabling factors at Techno park include the smart space named as Smart Business Centre (SBC), Techno park Project Facility Centre, the Technomall commercial centre and the Techno park Resource Centre.

Of the 142 acres of land with in the existing campus, 31 acres have been notified as a Special Economic Zone (SEZ), out of which 26 acres have been allotted to Tata Consultancy Services (TCS) and 5 acres to IBS Software Services for setting up of Software Development Centres. Another 86 acres of land acquired for the Phase II expansion has been notified as another SEZ and allotted to Infosys Technologies (50 acres) and U.S. Technologies (36 acres) for setting up their own 92 acres of land in Phase III and a more ambitious integrated township called Techno city, spread across 450 acres. With the ongoing expansion activities getting partially completed in the next three years, it is expected that more than 40,000 jobs will be created additionally 20.

The total land now available with Techno park is about 239.54 acres and steps are under way for acquisition of 92 acres for expansion of Phase III which is expected to be completed by the end of 2010. For the project “Techno city” a total land of 451
acres are to be acquired. So far an area of 138 acres of land has been acquired. In addition to the above, Techno park also provides business value added services like Convention centre with auditorium, Conference halls, Techno park Resource Centre, Open air theatre, Club house, Guest house, Restaurants, Technomall Business Centre etc. Business enabling services include Techno park Business Incubation Centre (T-BIC), Smart Business Center, Techno park Software Engineering Competency Centre (TSECC), Techno park Project Facility Centre, Health clinic Post office, Banking services ATM Networks, Commercial Shops etc.

Table No. 3.11
Area of land and built up space in Technopark- key highlights

<table>
<thead>
<tr>
<th>1. Total Land (phases I, II, III)</th>
<th>308.54 Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Total Built up space for industries</td>
<td>20,81,500 Sq ft.</td>
</tr>
<tr>
<td>3. Total Space for support facilities</td>
<td>1,78,100 Sq ft.</td>
</tr>
<tr>
<td>4. Total built up space for companies</td>
<td>20,23,000 Sq ft.</td>
</tr>
<tr>
<td>5. Total built up space for SEZ</td>
<td>33,27,000 Sq ft.</td>
</tr>
<tr>
<td>6. Land of Techno city</td>
<td>138 Acres</td>
</tr>
<tr>
<td>7. No. of companies in Technopark</td>
<td>104</td>
</tr>
<tr>
<td>8. Total employment</td>
<td>22,500</td>
</tr>
<tr>
<td>9. Total investment (up to 9.09 )</td>
<td>Rs. 2000 crores</td>
</tr>
<tr>
<td>10. Total turnover (up to 9.09 )</td>
<td>Rs. 1800 crores</td>
</tr>
<tr>
<td>11. Total Export (up to 9.09 )</td>
<td>Rs. 1800 crores</td>
</tr>
</tbody>
</table>
The Industrial modules already created by Techno park are detailed in the following Table.

Table No. 3.1.2

**Split up details of built up space in Technopark**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of Building</th>
<th>Area (sq ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pamba</td>
<td>36,000</td>
</tr>
<tr>
<td>2.</td>
<td>Periyar</td>
<td>36,000</td>
</tr>
<tr>
<td>3.</td>
<td>Nila</td>
<td>4,69,500</td>
</tr>
<tr>
<td>4.</td>
<td>Chandragiri</td>
<td>60,000</td>
</tr>
<tr>
<td>5.</td>
<td>Gayathri</td>
<td>1,50,000</td>
</tr>
<tr>
<td>6.</td>
<td>Bhavani</td>
<td>4,80,000</td>
</tr>
<tr>
<td>7.</td>
<td>Thejaswani</td>
<td>8,50,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>20,81,500</strong></td>
</tr>
</tbody>
</table>

3.3.10 **Info park, Kochi**

Info Park Kochi is located in 100.86 acres of land at Kakkanad village, Kanayannur Taluk, Ernakulam district. Around 80 acres has been notified as an IT sector Specific Economic Zone by the Ministry of Commerce, Government of India. Apart from Infopark owned infrastructure, parallel developments by co-developers such us Leela Soft, L&T Techpark and Brigade Enterprises are also taking shape in the campus. Thus offering IT companies a choice of office space solutions to fit their requirement and budget. Major Private IT campus by Wipro, TCS and IBS Software are also in progress. When Info park Kochi Phase-I is fully developed a total super built-up area of 4.50 million sq.ft would be completed. The campus includes amenities such as food courts, banking counters, ATM, shopping arcade, etc. Athulya, the new IT building being developed by Info park is nearing completion The state of
the art building is being developed with one of the largest floor plates of 50,000 sq. ft, a separate training & cafeteria block, Multi-level car parking facility, etc\textsuperscript{21}

3.3.11 Cyber Park, Kozhikode

Government of Kerala IT department is setting up its 3rd IT Hub in Kozhikode and will be called Cyber park. Around 28 hectares of land in Nellikkode and Pantheeran kavu villages of Kozhikode Taluk, near to Medical college at Chevayur has been ear marked for setting up IT park with SEZ status\textsuperscript{20}.

Another scheme being implemented by KSITI is the Technolodge scheme. Technolodge scheme proposes to promote setting up of rural IT parks thereby promoting development of IT in smaller towns also. Technolodge scheme is proposed to be undertaken wherever Government/LSG land (one to two acres) or vacant Government building (about 2000 sq. ft to 10000 sq. ft) are available. Government has already issued orders for identifying such lands, which are suitable for transfer to KSITI for setting up of IT parks. On a pilot basis two such Technologes have been sanctioned in Kollam District in the buildings owned by Panchayats.

The year 2009 has been a period where Kerala’s stand in the IT sector was promising and which is on a steady growth path\textsuperscript{19}. Cities in Kerala especially Thiruvananthapuram and Kochi have been rated as the next booming metros and challenging IT locations in India. It is also predicted by National Association of Software & Service Companies (NASSCOM) that the tier two cities such as Thiruvananthapuram, Kochi etc. offering quality life with good infrastructure and educational institutions will attract more IT/ITES businesses than existing leading locations like Bangalore, Hydrabad and Chennai.

3.3.12 India Institute of Information Technologies and Management – Kerala (IIITM – K)

IIITM-K is an autonomous premier educational institution established by the Government of Kerala under the Companies Act 1956 in November 2000. It is an institution of excellence in Science, Technology and Management related to
Information that develops professionals and leaders of high caliber imbued with values of entrepreneurship, ethics and social responsibility and initiating a number of education, research, development and services activities of direct relevance to society and the government. Here it summarizes the several ongoing services, developments and proposed programs in this area of IT for the Social Sector. These may broadly be classified into the following areas.

(i) Education Grid : Education related programs, system, processes and services
(ii) Agriculture related Information Systems and Services
(iii) New concepts and systems in E-Governance
(iv) Community Informatics developments
(v) Specific courses, training programs, consulting and development services for capacity building areas of relevance to social development

The institute is offering the following courses now.

(i) Master of Science in Information Technology
(ii) M.Phil Programme in Eco-Informatics
(iii) Post Graduate Diploma in e-governance

3.3.13 Kerala State Information Technology Mission (KSITM)

Kerala State Information Technology Mission (KSITM) is a Society registered under the Travancore Cochin Literary Scientific & Charitable Societies Registration Act (Act 12 of 1955). It is an autonomous nodal IT implementation agency for Department of Information Technology.

Government of Kerala which provides managerial support to various initiatives of the Department. The website of Kerala State IT Mission has bagged the second prize in the first edition of Kerala State e-Governance Award. The Award was given in recognition of the website, “which is a single – yet multilayered and comprehensive web resource that reflects all aspects of Information Technology initiatives of Kerala”.

The objectives of KSITM are as follows:-
1. Interfacing between the Government and the industry
2. Interacting with potential investors
3. Strengthening the IT / ITES industry base
4. Holding promotional campaigns for hard selling the State.
5. ICT dissemination to bridge the digital divides
6. E- Governance
7. Developing Human Resources for IT & ITES
8. Advising the Government on policy matters

The Kerala State IT Mission is implementing the following projects in the State.

i). INSIGHT
ii). Akshaya
iii). FRIENDS
iv). Entegramamam
v). Malayalam Computing
vi). Village Documentation

i) INSIGHT

Insight is a joint initiative of the Kerala State IT Mission and SPACE, aimed at empowering the disabled - through computers, internet and other ICT tools. Insight aims to find solutions to the problems faced by the disabled, with the help of ICT.

ii) Akshaya

An e-literate citizenry is a key component of a successful e- governance strategy. The first step in taking ICT to the masses has been rolled-out in Kerala. As a part of this initiative, at least one person in each of the 65 lakh families in the State will be made IT-literate. This project, piloted in one of the backward districts - Malappuram - has evolved into one of the most dynamic interventions in public-private- partnerships in the State.

Akshaya project’s deliverables include:
(a) Creating & expanding economic opportunities in the knowledge economy
(b) Empowering individuals and communities through enhanced access to information
(c) Modernizing and upgrading skill sets of ordinary citizens
(d) Integrating communities through creation of e-networks
(e) Creating awareness of ICT tools and usage
(f) Generating e-content useful to the common man in local language
(g) Generation of service delivery points even in the remotest areas
(h) Generating at least 15,000 job opportunities
(i) Generating direct investment of over Rs. 500 cr

iii) FRIENDS

Adopting an easy-to-recall acronym, FRIENDS (Fast Reliable Instant Effective Network for Disbursement of Services), ‘Jan Sevana Kendrams’ has been designed as a single-window facility where citizens can make Government related transactions at ease and comfort, without having to inch forward in serpentine queues. Now operational in all 14 districts of Kerala, FRIENDS accepts payments of the Kerala University, Local Body, Kerala State Electricity Board, Kerala Water Authority, Revenue, Civil Supplies, Motor Vehicles, Electrical Inspectorate, and BSNL etc. During 2008-09 35,16,571 transactions were made and an amount Rs.226.01 crore collected through FRIENDS. Railway reservations can also be made in the three centres at Wayanad, Pathanamthitta and Malappuram. The computerized counters manned by customer friendly officials operate between 9 am to 7 pm on all days, including Sundays.

iv) Entegramam

Entegramam – My village is a flagship project funded by UNESCO in association with Akshaya and SPACE is now drawing attention all around. Nine Panchayaths and one Municipality in Kannur District are today connected to Internet. Entegramam (my village) portal introduced in eleven districts, contain information related to local governance process, public institutions like hospitals and schools, local events, labour banks and the like. These portals can be a major step forward in ensuring transparency in governance process. It is also planned to have school-level competition for website creation and competition for web developers also. The
initiatives will also cover skill development among non-web developers and websites for Grameena Libraries, arts and sports club and other social organization

v). Malayalam Computing

Availability of computing tools and digital content for Malayalam is essential to bring benefits of Information Technology to more people. Rightly undertaking this, the State government has come forward with Malayalam Computing Campaign, which is an attempt to enrich the local language, Malayalam, in the cyber sphere. It provides a platform for enabling the use of Malayalam on our operating systems with the help of Unicode. Started in February 2008, the campaign is active at present in five districts of Kerala – Kannur, Malappuram, Kollam, Pahtanamthitta and Kozhikode.

vi). Village Documentation

Village Documentation and Community Computing Centers (VDCCs) is a local unit run by community members trained in all aspects of computing services and media production. It will impart e-literacy to local communities and provide essential computing services to the communities and empowers them to combat rights violations, isolation, exclusion from mainstream media and their lack of control over decisions affecting their lives. VDCCs are particularly relevant for isolated and disenfranchised communities which have limited or no access to mainstream technologies and media. Though Kerala has a wide network of e-services across the state, many communities continue to be isolated and unable to make use of these resources due to issues of access and costs. VDCCs aim to fill an essential gap in this regard. Village Documentation and community Computing Centers can produce a range of media content focused on critical social issues using technologies such as audio, video, web and new media.

Kerala State IT Mission has been implementing special IT programmes for under-privileged sections in the society. These initiatives are in line with government policy of digital inclusion. Under this scheme Kerala State IT Mission was primarily
focusing on helping visually challenged. Programmes for mentally challenged and backward communities have also started off. INSIGHT programme has been launched under this scheme to use ICT to help differently – abled persons in our society to participate in emerging Knowledge Society. INSIGHT centre currently operating in Thiruvananthapuram has already provided training to more than 100 persons.

3.3.14 Kerala State Wide Area Network (KSWAN)

Kerala State Wide Area Network (KSWAN) is being setup as the backbone of the State Information Infrastructure (SII), connecting Thiruvananthapuram, Kochi and Kozhikode, extending to 14 Districts and 152 Blocks of the State. The network will also connect 1660 offices of Government Departments through Wireless and a larger number through Leased Lines. The infrastructure would support integration of a large number G2G, G2C services in hand with the applications hostel in the State Data Centre.

United Telecoms Limited (UIL) is implementing the KSWAN project on BOOT basis, with a Quarterly Guaranteed Revenue-based payment of Rs.1.9 crore from Central Funds and Rs.0.97 crore from State Funds for a period of 5 years.

3.3.15 Secretariat Wide Area Network

Digitization of Secretariat & Directorate level activities by connecting the Secretariat, Public office and Vikas Bhavan under a WAN is the prime aim of the project. Secretariat being the main administrative centre, its computerization is the basic need for the state-level e-governance activities. So it is selected for pilot implementation. The functioning of the application software through the networked computer system will enable the electronic file flow. Majority of the activities and communications could be thus digitized. The digitized records can be stored and various reports can be generated from the data.

3.3.16 E-governance initiatives

Citizen Call Centre
The Citizens’ Call Centre (CCC) is a single window IT-enabled facility of Government that enables citizens and Government to interact effectively. Call centre is envisaged to enable the Government to Citizen (G2C) interface for the quick delivery of critical information, which is otherwise either inaccessible or difficult for the citizens to trace. CCC is providing all the services in a 24x7 fashion and working on all calendar days except national holidays. The calls are being answered by a team of Call Centre Executives, who are experienced and skilled professionals.

3.3.16 Sutharyakeralam

It envisages speedy redressal of complaints of the general public programme. The Chief Minister of Kerala interacts with selected complainants through video conferencing and give on the spot instructions to officers concerned for solving them. Complaints can be registered through Citizens Call Centre by dialing 155300 round the clock except on national holidays.

3.3.18 Akshaya e-pay

Akshaya, an innovative project implemented in the State of Kerala aimed at bridging the digital divide, addresses the issues of ICT access, basic skill sets and availability of relevant content. Quality ICT dissemination and service delivery facilities (‘Akshaya Centres’) are set up within a maximum of 2 kilometers for any household and networked leveraging entrepreneurship. Though originated as an initiative to address the backwardness of Malappuram district, Akshaya was conceived as a landmark ICT project by the Kerala State Information Technology Mission to bring the benefits of this technology to the entire population of the State. The modus for this was establishment of grass roots level ICT centres at the Panchayat/Municipal ward level.

Akshaya e-pay is an online system for collecting various utility bills from the citizens. It was introduced at 98 Akshaya centres in Malappuram district in August 2004 and was extended to all Districts in the State.

3.3.19 SPARK
Personnel and Payroll Management System using Service and Payroll Administrative Repository for Kerala (SPARK) is an Integrated Personnel, Payroll and Accounts information system which is Web based application implemented for all the Employees in the State of Kerala. Kerala State has 39 Government Departments, over 122 Field Departments and over 30000 offices spread across the nook and corner of the State. Personnel and Payroll Management System using SPARK is to be implemented in all the Government Offices across the state.

The system has been developed with a view to cater to the Administration, Payroll and other Accounts activities of Government Establishments. Every employee is allotted with a unique Permanent Employee Number (PEN) through the system. This Centralized system helps the departments to get details of any employee immediately, achieve highest level of transparency in dealing with the employees, more consistent application of rules etc. Being a well integrated system, the changes made through one module reflects in all related areas of activity. In the payroll side, accurate and automatic payroll processing is facilitated. It also ensures that the rules and regulations are uniformly applied to all employees thereby avoiding complaints and thereby achieving better employee relations.

Thus the Government of Kerala acknowledges the critical importance of Information Technology as an instrument for the State’s overall development a crucial engine of economic growth and as a tool for increasing productivity, speed & transparency in governance and improved quality of life for the common man. In order attract new IT companies to setup their operations in the state as well as incentivise the existing IT companies in the State the IT Policy document (2007) document has allowed certain incentives. They are

1. Fiscal Incentives

Fiscal incentives are applicable to all eligible companies operating in Kerala other than those located within an SEZ.
Fiscal incentives shall remain in force for a period of 5 years w.e.f 01-12-2005

Fiscal incentives for eligible companies will be as follows

a. Standard Investment Subsidy - 30% of Fixed Capital Investment subject to a limit of Rs. 15 lakhs for companies located in Thiruvananthapuram and Ernakulam districts. For companies located outside the districts of Thiruvananthapuram and Ernakulam the applicable SIS will be 40% of Fixed Capital Investment subject to a limit of Rs. 25 lakhs.

b. Government will constitute a Technology Development Fund for the ICT industry in Kerala. Grant will be made available for R&D projects from this Fund, subject to the approval of the project by a committee constituted for the purpose. Such projects shall be made available to the public in suitable Free Software License.

2. Other Incentives

IT industry units, Government IT parks, certified IT parks and Akshaya centers are entitled to power tariff under HD1 industry and LT 1V industry depending on the supply of and connected load to the IT industry.

FAR in the Government and certified IT parks shall be maintained at the level of five.

IT units in Government IT Parks:

a. Exemption from stamp duty and registration fees upon executing lease / sale agreement with the park for lease / sale of land and built up space.

b. Exemption from entry tax for goods like machine equipments, capital goods and construction materials procured for implementation of infrastructure projects

IT infrastructure developers in Government IT Parks:

a. Exemption from stamp duty and registration fee and transfer duty of land.

b. Concessions offered to Government parks will be made available

c. Power tariff under HD1 industry and LT 1V industry depending on the supply of and connected load

Private IT Parks that meet a minimum set of standards shall be governed by the same set of industry enabling regulations that are applicable to Government IT Parks unless otherwise specified by the Government. The Government will constitute
a committee to decide on the minimum set of standards required by the private IT Parks to qualify for certification

An IT software unit that has its registered office in Kerala and employs a minimum of 30% of its workforce in its Kerala operations, and otherwise compliant with the tender requirements, shall be entitled to 7.5% price preference on IT software solutions required by Kerala Government / PSU’s / Government Bodies. Other conditions remaining the same, they shall be given higher preference.

An IT hardware unit that has its registered office in Kerala and employs a minimum of 30% of its workforce in its Kerala operations, that is either excise paying or ISO certified, and otherwise compliant with the tender requirements, shall be entitled to 10% price preference on IT hardware required by Kerala Government / PSU’s / Government Bodies. Other conditions remaining the same, they shall be given higher preference^{18}.

### 3.3.15. SMART CITY

Smart City Kochi is proposed as a joint venture between the Government of Kerala and Dubai Technology, Electronic Commerce & Media Free Zone Authority (TECOM). Covering 246 acres of land and an estimated built-up space of 88 lakh sq.ft, Smart City Kochi is expected to be one of India’s largest business parks. The project, when completed, will feature an architecture that is an assorted blend of modern and local traditional styles amidst an exquisitely designed landscape, Smart City Kochi will create an infrastructure and environment for knowledge-industry companies to grow and flourish. 70% of the built-up space would be devoted exclusively for IT related activities. Kochi will join Malta as the first two members of a global network of knowledge-based industry townships that Smart City seeks to create. The Kochi project was proposed to generate 90,000 jobs and was expected to make Kerala to become one of the leading IT destinations in the country^{22}.  

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