CHAPTER 3

GROWTH OF INFORMATION TECHNOLOGY INDUSTRY
AND ITS IMPACT ON URBAN INDIA

3.1 INTRODUCTION

The literature review presented in the previous chapter established the relationship between the economic globalisation and its impact on cities. The new opportunities created by the globalisation process for the developing countries like India aided by advancements in I.C.T. were presented. However in order to understand the physical manifestation of I.T. and I.T.E.S. sector in urban areas, it is necessary to study the larger factor, namely the economic reforms introduced in 1991 in India and its link to the emergence of I.T. industry in India. Hence, the factors that have contributed to the growth of I.T. industry and its impact on some of the states of India and cities are presented in this chapter.

3.2 GLOBALISATION IN INDIA

Globalisation has many meanings depending on the context. In context to India, this implies opening up of the economy. Though the term Globalisation has not been openly used in officially spelt out view, the expression ‘integration with world economy’ is liberally employed. Reforms introduced in India in 1991 have direct and indirect implications for the globalisation process in the country (Velayudham 2002).
3.2.1 Economic Reforms of 1991

The year of 1991 was a turning point in the history of Indian development when the government declared a change in its existing economic policy to bring in reform. The reforms following the liberalisation ideals represented a change in the mindset and a broad acceptance of the idea that entrepreneurs and markets were to be given priority over government in the conduct of economic activity and that government interventions required proper justification rather accepted by default (Pangariya and Arvind 2004).

The new economic reform, popularly known as, Liberalisation, Privatisation and Globalisation (LPG model) aimed at making the Indian economy as fastest growing economy and globally competitive. The series of reforms undertaken with respect to industrial sector, trade as well as financial sector aimed at making the economy more efficient (Chawla and Maheswari 2009).

Mehta and Pathak (1999) note that, the main objectives of reforms were restoring macro-economic stability, integrating with the global economy and increasing economic efficiency. They included policy measures such as encouraging greater participation of the private sector, disinvestments in state owned public sector enterprises, deregulation of industries, liberalisation of trade and foreign investment and change in fiscal policy.

Major measures initiated as a part of the liberalisation and globalisation strategy included scrapping of the industrial licensing regime, reduction in the number of areas reserved for the public sector, amendment of the Monopolies and the Restrictive Trade Practices Act, start of the privatisation programme, reduction in tariff rates and change over to market determined exchange rates (Balakrishnan 2006).
The Reforms of 1991 were mainly in two key areas: industry and external trade. With respect to industries, it did away with investment licensing and the myriad entry restrictions on MRTP (Monopolies and Restrictive Trade Practices) firms. It also ended public sector monopoly in many sectors and initiated a policy of automatic approval for FDI up to 51%. Subsequently, the automatic approval of FDI was enhanced to 100% for all manufacturing activities in a newly created concept of Special Economic Zones (SEZs) barring certain sectors.

With respect to trade, the Reforms did away with import licensing on virtually all intermediate inputs and capital goods barring a few. Another major task undertaken since has been to lower tariffs through a gradual strategy, thus encouraging an increase in imports. The Reforms were also accompanied by the lifting of exchange controls that allowed Importers to purchase foreign exchange in the open market at the higher price. Besides the above referred impact on industry and external trade, India has also carried out a substantial liberalisation of trade in services. Traditionally, services sector had been subject to heavy government intervention (Pangariya and Arvind 2004).

3.2.2 Impact on the economy

The post-reforms climate allowed India to accept the various terms and agreements under the WTO, paving way for the entry of FDI and MNCs in various sectors, and has facilitated the strong role of the nation in globalisation process. In the post reforms globalised era, India has experienced a distinct improvement compared with the 1960s and 1970s. The Gross Domestic Product (GDP) growth rate has increased from a low of 3.5% in that period to 5.8% in the 1980s and 1990s. The growth rate touched as high as 8.5% in 2003 (Ahuwalia 2008).
The GDP in the first four years from fiscal year 2004-05 to 2007-08 were 7.5 %, 9.5 %, 9.7% and 9% respectively and it is to be noted that the sustained growth of over 9% has been witnessed for three consecutive years for the first time. Despite the global financial crisis which began in 2007 impacting most emerging market economies, 7.1% of GDP growth in 2008 makes India the second fastest growing economy in the world (Budget 2009).

The Prime Minister of India in his foreword to the XI plan document observes that the X plan period (2002 -07) saw the economy accelerating steadily to achieve an average GDP growth rate of 7.7 % which is the highest ever achieved in any plan period. During the period 2003 to 2007, the GDP growth rate has averaged 8.9 % (Planning Commission 2008).

With the drop in population growth rate from 2.2 % prior to the 1990s to around 1.8 % at present, these figures imply that the projected acceleration in the growth of per capita income is greater than the growth of Gross Domestic Product (GDP), which is a measure of the economy (Ahuwalia 2008).

The post reform period trends in the economic indicators under various sectors can be seen in Table 3.1.

**Table 3.1 Economic indicators of Post reform period**

<table>
<thead>
<tr>
<th>Description</th>
<th>1995</th>
<th>1997</th>
<th>1999</th>
<th>2001</th>
<th>2003</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Sector Growth Rate in %</td>
<td>-0.9</td>
<td>-2.4</td>
<td>0.3</td>
<td>6.2</td>
<td>10.0</td>
<td>2.3</td>
</tr>
<tr>
<td>Industrial Sector Growth Rate in %</td>
<td>11.6</td>
<td>4.3</td>
<td>4.8</td>
<td>2.7</td>
<td>7.6</td>
<td>9.0</td>
</tr>
<tr>
<td>Services Sector Growth Rate in %</td>
<td>10.5</td>
<td>9.8</td>
<td>10.1</td>
<td>7.1</td>
<td>8.2</td>
<td>9.8</td>
</tr>
<tr>
<td>Inflation Rate</td>
<td>10.2</td>
<td>6.8</td>
<td>3.4</td>
<td>4.3</td>
<td>3.9</td>
<td>4.5</td>
</tr>
<tr>
<td>GDP Growth Rate</td>
<td>7.3</td>
<td>4.8</td>
<td>6.1</td>
<td>5.38</td>
<td>8.5</td>
<td>8.1</td>
</tr>
</tbody>
</table>

One impact that is strongly visible however is that while the agricultural sector is apparently performing well with a positive growth rate, the decrease in its share of the GDP and the apparent increase in industrial and services sector growth rate is an indicator of the industrialisation and advancement of society.

The Figure 3.1 shown below depicts the share of various sectors in the economy. They include Agriculture, Manufacturing, Trade, Financing and Public Administration.

![Chart showing the share of various sectors in India's GDP from 1980-81 to 2004-07](chart_image)

Source: (Budget 2008)

**Figure 3.1 The Share of various Sectors in India’s GDP**
It can be seen that agriculture sector’s growth has diminished considerably from 36% in 1980-81 to 21% in 2006-07. From the decrease that is evident from 1980-2006, and the relative stability or even increase of the Financing, Insurance, Real Estate Services apart from the Manufacturing Sector, it can be inferred that a large component of the growth in the GDP has manifested in a equivalent growth in Services and Manufacturing sector only.

Apart from the GDP, the Foreign Exchange Reserves (FER) and Foreign Direct Investments (FDI) inflows are also indicators of robust economy. The FER has been increasing steadily after the reforms. The FER at the end of the financial year were US $ 39 billion for 2000-01, US $ 107 billion for 2003-04, US $ 145 billion for 2005-06 and US $ 180 billion for February 2006-07. It is expected that India will cross the US $ 285 billion mark in 2007-08. Similarly the post reforms period witnessed an increase in FDI inflows. The cumulative FDI inflows from 1991 to September 2006 were Rs 1, 81,566 crores (US $ 43.29 billion). The sectors attracting highest FDI inflows are electrical equipments including computer software and electronics (18%), service sector (13%), telecommunications (10%), transportation industry (9%), etc. (IBEF 2008).

These indicators point to the fact that economic reforms and liberalisation have brought a profound change in India’s economic development and the change is due to policy of the government in encouraging greater participation of the private sector. FDI from the MNCs also has a large role to play in this. The rise in share of service sector marks a beginning of the role of I.T. sector in global market.

Nasscom - McKinsey Report (2002) projects that I.T. and I.T.E.S. industry will account for over 7% of India’s GDP, 30% of Foreign Exchange flows and create over 4 million jobs in 2008. This sector holds immense scope
for the common person as it provides employment to technical and non technical graduates. It has potential to generate enormous foreign exchange inflow into the country.

3.3 INFORMATION TECHNOLOGY INDUSTRY IN INDIA

In India, the path towards technology induced development especially associated with I.C.T. was given in 1984 by the Congress Government under the Prime Ministership of Rajiv Gandhi (Bajwa, 2003). The economic liberalisation policies adopted since 1991 have helped the I.T. industry to develop in a big way.

3.3.1 Genesis of Information Technology Industry in India

India has realised that I.C.T. will revolutionize products, processes and services and in order to reap the benefit of I.C.T., it is essential that people should be able to absorb technology and enhance their knowledge generation capabilities (PIB, 2003). The various measures and policies of the government of India since 1984 are listed below in chronological order: (Bajwa, 2003)

1984: The computer policy of 1984 was adopted.
1985: Large sectors had announced computerisation plans which included Railways, banking operations etc.,
1990s: Stress of I.T. for producing wealth and enabling development continued.
1998: A high power National Task Force set up to prepare the blue print for making the adoption of I.T. a national
movement Task Force’s recommendation the each state Government should formulate I.T. policy was adopted by Central Government.

1999: Ministry of I.T. was established with the objective of creating job opportunities and to facilitate the use of I.T. in use Electronic Governance.

Domestic industry promoted to achieve full potential of the Indian Entrepreneurs.

2000: I.T. Act was brought into force to provide a legal framework to facilitate electronic commerce and transaction.

Task Force on Human Resource Development was set up for preparing a long term strategy for increasing the number of well trained I.T. professionals.

Task force of I.T. as Knowledge super power was set up by the Government to consider how India can become a knowledge economy and society.

3.3.2 Impetus given to Information Technology sector by Government

The National Task Force on I.T. and Software development 1998 was the first attempt by the State to provide an integrated approach to understand the role I.T. plays in the national economic and societal development. The withdrawal of the monopoly of VSNL in internet gateways, the redefinition of software, the reduction of custom duties, the exemption from taxes and the removal of restrictions on the location of Software parks are some of the recommendations of National Task Force which have been implemented in a speedy and effective way. India, during the last decade, has
also embarked on I.C.T. for development in rather big way and sought to transform India into what has been termed as *Knowledge Superpower* (Bajwa 2003).

As per the approach paper to X five year plan, the improvement in GDP growth from VIII plan period (1992-97) onwards indicates that India is one of the fastest growing economies and a substantial part of the buoyancy is due to the growth in the services lead by I.C.T. The X plan (2002-07) stressed the need for defining the development objectives not just in terms of increases in GDP or per capita income but in broader parameters which enhance human well being. The plan emphasized those sectors, which are most likely to create high quality employment opportunities, such as construction, real estate housing, modern retailing and I.T. enabled services. The plan identified telecommunications as a critical part of infrastructure in an emerging knowledge based economy. It attributed the importance of telecommunications to the growth of I.T. and its potential impact on rest of economy (Planning Commission 2001).

The XI plan (2007-12) observes that I.T. has marked a turning point in the history of global trade and services. India has found its niche in the I.T. world and is regarded as premier destination for the global sourcing of I.T. and I.T.E.S. The vision of the XI plan is to make India as a knowledge super power in the comity of developed nations (Planning Commission 2008).

The Indian software industry has been moving up the value chain and has the distinction of providing efficient software solutions with cost and quality as an advantage by using state-of the art technology. Information Technology has given India formidable brand equity in the global markets. Through joint efforts of Government and the Industry, software development and I.T.E.S have emerged as niche opportunities for India in the global context (MICT 2008). Recognising the economic opportunity and the
employment potential that the I.T. explosion represents to India. Government is providing for more liberal policy frame work for the I.T. sector in the form of infrastructure development and investment in education.

3.3.3 India’s strength in Information Technology sector

India’s strength in I.T. sector as compared to the other neighbouring countries is attributed to many factors as listed below which are considered an ideal off-shore destination (IBEF 2004)

- Quality and skilled manpower
- Proactive policy framework
- Specialised organisations and facilities
- State- of- the-art infrastructure
- Quality of service

Global research and consultancy firms like McKinsey & Co., and Forrestor affirm India’s quality and cost benefit edge as one of the major differentiators for establishing I.T. businesses. India ranks high on quality at significantly lower costs. Average wage of a programmer in India is US $ 5880 as compared to US $ 7200 in Malaysia, US $ 8900 in China.

In addition, the time difference with other countries especially in the West allows significant advantages to be gained by working in the offshore mode from India leading to a 24/7 development cycle. The foreign and India teams can work on joint projects seamlessly across the globe. (IBEF, 2004)

India today has the advantages of skilled manpower base, active and healthy competition amongst states in attracting investment in infrastructure as well as framing I.T. applications in areas in areas such as e-governance, e-
learning, e-commerce, entrepreneurship, software exports growth and a large potential in the domestic market (MICT 2008).

It is estimated that India has over 4 million technical workers, over 1832 educational institutions and polytechnics which train more than 67705 computer software professional every year. GOI is stepping up the number and quality of training facilities in the country to capitalize on this extraordinary human resource (Embassy of India 2001).

As per a report from National Association of Software and Services Companies (NASSCOM) among many areas which gives scope for India to offer its expertise to the world market, the share of BFSI (Banking, Financial and Insurance Services) is significant.

The vertical markets of I.T./ I.T.E.S. Industry are shown in Figure 3.2.

(Source: NASSCOM 2008)

Figure 3.2 Vertical Market Exposure for Industry exports
The reason for the significantly high percentage of BFSI is that Indian companies have developed a number of highly acclaimed and popular packages like the human resource management and business accounting by TCS, banking automation packages by Infosys, ERP tools by RANCO, etc. This segment is high-technology oriented and requires highly skilled professionals (SPC, Punjab 2002).

3.3.4  Contribution of Information Technology sector to India’s economy

The steps taken by the Government of India through I.T. policy have paid rich dividends in the form of increase in share of I.T. in GDP, Foreign Exchange Reserves and Foreign Direct Investments from multi nationals in I.T. sector (Bajwa 2003). India has emerged as the fastest hub in the world, its growth dominated by I.T. Software and Services.

The I.T. industry’s contribution to the country’s GDP has increased from 1.2% in 1997-98 to 5.2% in 2006-07. Growing at the rate it is now, the total I.T. industry can touch US $ 100 billion by 2010 (STPI 2007).

The growth is evident from the fact that the I.T. industry has multiplied its revenues tenfold in the past decade from US $ 4.8 billion in 1997-98 to US $ 47.8 billion in 2006-07. It is expected to generate exports worth US $ 60-75 billion in 2010 (Mathur 2006). The Punjab I.T. Report notes that the Indian software and service industry will achieve a turn over of US $ 80 billion by 2008 (SPC, Punjab 2002).

From the NASSCOM report on I.T. industry’s performance since 2004, it is observed that the revenue from software exports has risen from US $ 12.9 billion in 2004 to US $ 40.4 billion in 2008. The growth rate since 2005 had been in the range of 30-40 %. Similarly the domestic sector also has
shown promise. From US $ 3.8 billion in 2004, it has gone up to US $ 11.6 billion in 2008. The performance of the I.T. and I.T.E.S industry since 2004 is shown in Figure 3.3.

(Source: NASSCOM 2008)

**Figure 3.3 Performance of I.T. and I.T.E.S. industry in India since 2004**

According to NASSCOM - Mc Kinsey report prepared in 2005, the export forecasts for 2009-10, 2010-11 and 2011-12 are US $ 60 billion, 72.1 billion and 86.6 billion respectively.

The performance of I.T.-I.T.E.S. sector could be studied under 4 categories namely, I.T. services, I.T.E.S-BPO services, Engineering services - R&D-Software products and Hardware. Under each category the growth is observed in both domestic and export market and the sector wise performance is furnished in Table 3.2.
Table 3.2  Sector-wise performance of the I.T. Industry from 2004-2008

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I.T. Services</td>
<td>10.4</td>
<td>13.5</td>
<td>17.8</td>
<td>23.5</td>
<td>31.0</td>
</tr>
<tr>
<td>-Exports</td>
<td>7.3</td>
<td>10.0</td>
<td>13.3</td>
<td>18.0</td>
<td>23.1</td>
</tr>
<tr>
<td>-Domestic</td>
<td>3.1</td>
<td>3.5</td>
<td>4.5</td>
<td>5.5</td>
<td>7.9</td>
</tr>
<tr>
<td>I.T.E.S.-BPO</td>
<td>3.4</td>
<td>5.2</td>
<td>7.2</td>
<td>9.5</td>
<td>12.5</td>
</tr>
<tr>
<td>-Exports</td>
<td>3.1</td>
<td>4.6</td>
<td>6.3</td>
<td>8.4</td>
<td>10.9</td>
</tr>
<tr>
<td>-Domestic</td>
<td>0.3</td>
<td>0.6</td>
<td>0.9</td>
<td>1.1</td>
<td>1.6</td>
</tr>
<tr>
<td>Engineering Services and R&amp;D, Software Products</td>
<td>2.9</td>
<td>3.8</td>
<td>5.3</td>
<td>6.5</td>
<td>8.6</td>
</tr>
<tr>
<td>-Exports</td>
<td>2.5</td>
<td>3.1</td>
<td>4.0</td>
<td>4.9</td>
<td>6.4</td>
</tr>
<tr>
<td>-Domestic</td>
<td>0.4</td>
<td>0.7</td>
<td>1.3</td>
<td>1.6</td>
<td>2.2</td>
</tr>
<tr>
<td>Total Software and Services Revenues</td>
<td>16.7</td>
<td>22.5</td>
<td>30.3</td>
<td>39.5</td>
<td>52.0</td>
</tr>
<tr>
<td>Of which exports are</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic are</td>
<td>12.9</td>
<td>17.7</td>
<td>23.6</td>
<td>31.3</td>
<td>40.4</td>
</tr>
<tr>
<td></td>
<td>3.8</td>
<td>4.8</td>
<td>6.7</td>
<td>8.2</td>
<td>11.6</td>
</tr>
<tr>
<td>Hardware</td>
<td>5.0</td>
<td>5.6</td>
<td>7.1</td>
<td>8.5</td>
<td>12.0</td>
</tr>
<tr>
<td>-Exports</td>
<td>0.5</td>
<td>0.5</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>-Domestic</td>
<td>4.4</td>
<td>5.1</td>
<td>6.5</td>
<td>8.0</td>
<td>11.5</td>
</tr>
<tr>
<td>Total I.T. Industry (including Hardware)</td>
<td>21.6</td>
<td>28.2</td>
<td>37.4</td>
<td>48.0</td>
<td>64.0</td>
</tr>
</tbody>
</table>

Note: Figures may not add up due to rounding off. All figures are in US $ billion.

(Source: NASSCOM 2008)

It is observed from Table 3.2 that the performance of I.T. industry which includes Hardware has more than trebled in the last 5 years and the total Software and Services revenues had increased from US $ 16.7 billion in 2004 to a staggering US $ 52 billion in 2008 and the contribution of exports has risen from US $ 12.9 billion in 2004 to US $ 40.4 billion in 2008. It is apparent that the Revenue from Software and services is the main stay of the I.T. sector. The comparative performance of the Export and domestic sector is shown in Figure 3.4.
(Source: NASSCOM 2008)

**Figure 3.4  Comparative performance of Export and Domestic sector of I.T. industry**

It is seen from Figure 3.4 that compared to domestic market the increase in revenue from exports has been phenomenal which symbolises the potential of Indian industry to perform at world class standards.

The growth in major international markets for Indian software exports since 2004 are shown in Table 3.3

**Table 3.3  Growth in Major International Markets for Indian software exports**

<table>
<thead>
<tr>
<th>Market</th>
<th>FY04</th>
<th>FY05</th>
<th>FY06</th>
<th>FY07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Americas</td>
<td>69.40%</td>
<td>68.30%</td>
<td>67.18%</td>
<td>61.40%</td>
</tr>
<tr>
<td>Europe (UK and Continental Europe)</td>
<td>22.60%</td>
<td>29.10%</td>
<td>25.13%</td>
<td>30.10%</td>
</tr>
<tr>
<td>Rest of the world</td>
<td>6.00%</td>
<td>6.60%</td>
<td>7.69%</td>
<td>8.50%</td>
</tr>
</tbody>
</table>

(Source: NASSCOM 2008)

It can be seen that though the lion’s share of the export market is from USA, the share of Europe has been steadily increasing. Among the Indian companies, TCS, Infosys and Wipro maintained their position as the
top three exporters in the Nasscom Top 20 I.T. software and services exporters. Together these companies earned about US $ 8.7 billion.

While analysing the revenue from various categories of the export market it is observed that among the three categories, the contribution of I.T. services has been immense. The break up of revenue from various categories is illustrated in Figure 3.5.

(Source: NASSCOM 2008)

**Figure 3.5 Break up of revenue from various sectors of I.T. export**

It can be seen from Figure 3.5 that the contribution of I.T. services is more than the other two categories, namely, I.T.E.S-B.P.O. and Engineering services. R&D and Software products, put together. At the same time, it is observed that the share of I.T.E.S-B.P.O has been increasing steadily from US $ 3.1 billion in 2004 to US $ 10.9 billion in 2008. The I.T.E.S sector in India has emerged as a key engine of growth for the Indian I.T. industry and the technology-led services industry and providing employment to around 700,000 in 2008.

The employment opportunity generated by the I.T. industry has been increasing steadily over the last 7 years. From 0.43 million in 2000-01, it has
risen to about 2.01 million in 2007-08. Category-wise employment data and its growth are shown in Table 3.4.

**Table 3.4 Category-wise employment and its growth**

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I.T. Services Exports</strong></td>
<td>162,000</td>
<td>170,000</td>
<td>205,000</td>
<td>296,000</td>
<td>390,000</td>
<td>513,000</td>
<td>690,000</td>
<td>860,000</td>
</tr>
<tr>
<td><strong>BPO Exports</strong></td>
<td>70,000</td>
<td>106,000</td>
<td>180,000</td>
<td>216,000</td>
<td>316,000</td>
<td>415,000</td>
<td>553,000</td>
<td>700,000</td>
</tr>
<tr>
<td><strong>Domestic market</strong></td>
<td>198,114</td>
<td>246,250</td>
<td>285,000</td>
<td>318,000</td>
<td>352,000</td>
<td>365,000</td>
<td>378,000</td>
<td>450,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>430,114</td>
<td>522,250</td>
<td>670,000</td>
<td>830,000</td>
<td>1,058,000</td>
<td>1,293,000</td>
<td>1,621,000</td>
<td>2,010,000</td>
</tr>
</tbody>
</table>

Note: Figures do not include employees in the hardware sector
(Source: NASSCOM 2008)

It is seen from Table 3.4 that the I.T. services exports provides employment to around 860,000 (constituting about 43%), followed by B.P.O exports which is 700,000, constituting about 35% of the total employment generated in 2008. The domestic market has generated opportunities for 450,000 (constituting about 22%) personnel.

According to NASSCOM – A.T. KEARNEY Report (2008), the employment in IT – BPO industry will be about 8 million in 2018 an increase of about 6 million. In addition, if a direct to indirect employment ratio of 1:3 is assumed, this translates to incremental indirect employment of 18 million.

### 3.4 REQUIREMENTS OF INFORMATION TECHNOLOGY INDUSTRY

Among the many factors which are considered important for the growth of the I.T. industry, human resource and physical infrastructure are considered important. While it is necessary to create quality and trained man
power to sustain the growth and meet the ever increasing demand of I.T. industry, it is equally important to create the necessary physical infrastructure which includes quality service network and built environment. I.T. policy of the government recognised the same and took many pro-active measures in this direction.

3.4.1 Human resource requirement

Knowledge-based skill-oriented training is the key to quality of manpower. The Indian I.T. industry continues to be amongst the largest employers directly employing more than 2 million. It is also to be noted that for every job that is created in I.T. sector, four jobs are created in the rest of economy by way of indirect employment which includes vendors including telecom, power, construction, facility management, transportation, catering and other services. It is projected that the Indian I.T. industry would require 3.69 million professional workers 2012 (Planning Commission 2008).

In order to meet this demand, several state governments have drafted their respective educational policies towards increasing the number of engineering institutions as well as training institutes. As per a study by Economic Survey of India, there are 5179 professional institutions in the country apart from 1473 research institutions. (Economic Survey, 2007). The total number of engineering graduates with qualification in I.T. in India has increased substantially over the years.

3.4.2 Infrastructure requirement

An important component which has a direct bearing on the growth of the I.T. industry is the physical infrastructure based on telecommunications. As I.T. industry is a city based industry, the I.T. cities should have good quality telecom infrastructure, adequate basic infrastructure
in terms of continuous uninterrupted power supply, good quality roads, efficient transport, proximity to airport, good education and an R&D centre (Punjab, 2002). For I.T. industry to succeed, top-class infrastructure with adequate bandwidth, fault-free and continuous power with two layers of redundancy to avoid any breakdown are required.

The physical infrastructure also includes built environment required for accommodating the new generation work force. Based on the employment opportunities generated by the industry in 2008, it can be projected that the total built up area occupied by the industry is around 14.07 million Sq.M at the rate of 7 Sq.M per person employed. Based on the employment projection of 3.69 million by 2012, the total built up area is around 25.83 million Sq.M. Such large scale requirement for built environment particularly in the urban areas in short span of time calls for innovative urban development policies and concerted action from Government, I.T. industry and private sector.

I.T. industry associations such as the NASSCOM (National Association of Software and Services Companies), CII (Confederation of Indian Industries), and local chambers of Commerce have been actively lobbying with various governments for incorporating incentives for private investment and for strengthening of infrastructures (Unnikrishnan and Sreedharan 2008).

3.5 ROLE OF CENTRAL GOVERNMENT IN PROMOTING INFORMATION TECHNOLOGY INDUSTRY

The central government has taken many measures in response to the requirements of the I.T. industry. The Software Technology Parks India and Special Economic Zones are some of the important moves of the central government in catering to the requirements of I.T. industry.
3.5.1 **Software Technology Parks India**

Formation of Software Technology Parks India Limited (STPI) is a significant step in promoting I.T. sector. STPI is a society set up by the Ministry of Communications and I.T., Government of India in 1991 with the objective of encouraging, promoting and boosting the software export from India. STPI offers all statutory services and high speed data connectivity to its member companies as 100 % export oriented units. STPI’s role is to act as front end to the Software industry for the government’s policies and approvals. In short, it acts as a facilitator, a catalyst and a best interface between the I.T. industry and the Government (STPI 2008).

STPI offers a variety of benefits such as:

- STPI project may be set up anywhere in India. I.T. software and service activities, I.T. enabled services and infrastructure establishment for Software development qualify for a STPI member company.

- Import of capital goods needed by software and electronic units are completely duty free.

- 100 % equity is permitted.

- The capital goods purchased from Domestic Tariff Area are entitled for the benefit of excise duty exemption and reimbursement of central sales tax.

- No corporate income tax till March 2010. (The central government vide its budget for the year 2009-10 has extended this period up to March 2011.)

- Dedicated data communication links.

- Single window clearance
- Domestic Tariff Area sales allowed up to 50% of exports.
- Excellent infrastructure of global standards

Even though STPI has not been directly involved in creation of built infrastructure, the units registered with STPI are eligible for availing the benefits offered by government irrespective of their location. This has enabled developers and private sector to create many multi tenanted office spaces for the benefit of STPI units which are Small and Medium Enterprises. The number of units registered with STPI is an indication of the growth of the I.T. sector. More than 6000 businesses were registered under the STPI umbrella in 2006.

3.5.2 Special Economic Zones and Information Technology Special Economic Zones

With a view to provide an internationally competitive and hassle free environment for exports, a policy was introduced by Govt of India (2000) for setting up of Special Economic Zones (SEZ). SEZ is a spatially delineated duty free enclave and shall be treated as foreign territory for the purposes of trade operations, duties and tariffs (Kumar and Sashi 2008).

The policy provides for setting up of SEZs in the public, private, joint sector by State Governments for both manufacturing of goods and rendering services. The objectives of SEZs include making available goods and services free of taxes and duties supported by integrated infrastructure for export production, expeditious and single window approval mechanism and a package of incentives to attract foreign and domestic investments for promoting export led growth (SEZ 2005).
The concessions include:

i) Exemption from customs duty on goods exported from the SEZ by the developer or SEZ unit to any place outside India.

ii) Exemption from Service Tax, Central Sales Tax, Local Sales Tax/ VAT

In order to extend the benefits of SEZ to I.T. industry, a new section 10 AA has been inserted in the I.T. Act by SEZ Act 2005 which provides that the units in SEZ which start providing services on or after 1.4.2005 will be eligible for a deduction of 100% of export profits for the first five years from the year in which such provision of services commences and 50% of the export profits for the next five years (NASSCOM 2006).

There are many advantages for those operating in I.T.-SEZ. Once an SEZ occupier gets his unit registered, he is not liable to pay for excise and customs duty which is approximately equal to 18-20% of the turnover. Also, there is no VAT (12%) and Service Tax (12.36%). All this is in addition to the 10 year tax holiday in a block of 15 years. On account of this, an occupier can save tax benefit of 33 to 44%. The precondition of course is that an occupier must have a minimum of five year stay in period in the SEZ premises to avail the tax benefits and migration from STPI units to SEZs are ruled out under the present rules.

It can be seen from the concept of STPI and SEZ that the policy of the government has shifted focus from the traditional centralised public sector and investments towards State Government initiatives with private sector participation.
3.6 ROLE OF STATE GOVERNMENTS IN PROMOTING INFORMATION TECHNOLOGY INDUSTRY

The National Task Force set up in 1998 recommended that each state should have its I.T. policy. The support from the central government comes in the form of the formulating a national policy towards incentives to I.T. industry. The role of STPI is a significant in this regard

3.6.1 Role of Software Technology Parks India Limited

STPI, a government agency in India established in 1991 under the Ministry of Communication and I.T. STPI is an export oriented scheme for the development and export of computer software, including export of professional services. STPI has a presence in many of the major cities of India. With its head quarters at New Delhi, STPI has established 48 centres throughout the country of which 8 are Directorates. The presence of STPI centre is an indication of the presence of I.T. units in the respective region. The number of units registered with STPI indicates the progress made by the I.T. industry. The growth in the number of operating and exporting units during the last 6 years is shown in Figure 3.6.

![Bar chart showing growth in the number of operating and exporting STPI units](image)

Figure 3.6 Growth in the number of Operating and Exporting STPI units

(Source: STPI 2007)
It is to be noted that the of the total number of units registered with STPI exporting units are in majority.

3.6.2 Performance of Software Technology Parks India Limited units

STPI centres work closely with respective State Governments and act as interface between Industry and Government. They also assist state governments in formulating I.T. policies and liaise with them for promoting I.T. industries in the respective states to achieve higher cumulative growth of exports from all parks of the country. (STPI 2007). The performance of states varies with respect to many factors such as policy of respective state governments, infrastructure capability and the human resource potential. State-wise performance of STPI units for 3 years namely 2004-05, 2005-06 and 2006-07 is given in Table 3.5.

It is quite evident from the Table 3.5, that the states of Karnataka, Maharashtra, Tamil Nadu and Andhra Pradesh are far ahead of other states in terms of revenue generated through software exports. Together, these four states account for 80% of the total exports in the country, followed by Haryana, Uttar Pradesh, Delhi and West Bengal which together account for 18%. The southern states, namely Karnataka, Tamil Nadu and Andhra Pradesh together capture 61% of the nation’s software export, with Karnataka taking the lion’s share of about 34%.
Table 3.5 State-wise performance of STPI units for 3 years

(Rs in Crores)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the State</th>
<th>2004-05</th>
<th>2005-06</th>
<th>2006-07</th>
</tr>
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<tr>
<td>1</td>
<td>Andhra Pradesh</td>
<td>8270</td>
<td>12500</td>
<td>18582</td>
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<tr>
<td>2</td>
<td>Chandigarh</td>
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<td>294</td>
<td>345</td>
</tr>
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<td>3</td>
<td>Chhattisgarh</td>
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<td>1</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Delhi</td>
<td>2453</td>
<td>3520</td>
<td>4146</td>
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<tr>
<td>5</td>
<td>Gujarat</td>
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<td>247</td>
<td>564</td>
</tr>
<tr>
<td>6</td>
<td>Haryana</td>
<td>5953</td>
<td>8358</td>
<td>9287</td>
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<td>7</td>
<td>Himachal Pradesh</td>
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<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Jammu &amp; Kashmir</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
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<td>9</td>
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<td>48700</td>
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<td>750</td>
</tr>
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<td>220</td>
</tr>
<tr>
<td>12</td>
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<td>27625</td>
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<tr>
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<td>Orissa</td>
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<td>44</td>
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<td>15</td>
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<td>20745</td>
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<tr>
<td>18</td>
<td>Uttar Pradesh</td>
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<td>5476</td>
<td>8453</td>
</tr>
<tr>
<td>19</td>
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<td>6</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>20</td>
<td>West Bengal</td>
<td>2000</td>
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<td>3500</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>74019</td>
<td>100965</td>
<td>144214</td>
</tr>
</tbody>
</table>

(Source: STPI 2007) (Note: US $ 1 billion = Rs. 5100 crores in 2006 approximately)

3.6.3 Information Technology policy of the states

An important factor which has contributed to the dominance of the 3 Southern States, namely, Karnataka, Tamil Nadu and Andhra Pradesh and Maharashtra in the Western Region is the policy adopted by the respective states in promoting the I.T. industry. Karnataka and Tamil Nadu are the first
two Indian states to have framed their I.T. policy as early as 1997, followed by Maharashtra in 1998 and Andhra Pradesh in 1999.

Karnataka is in the forefront of I.T. and is called the Silicon State in India. It claims to be the first state to announce I.T. policy in 1997. Through the I.T. policy the government proposes to utilize the power of I.T. in the overall goal of the government in eradicating poverty. In order to promote the industry and attract investments the government offered many incentives and exemptions from provisions of many Acts. Towards building the infrastructure required for the industry the government removed the restrictions on land use for I.T. companies and relax the FAR (Floor Area Ratio) up to 50%. As a pro-active measure the government promoted the International Technology Park with world class infrastructure facilities, as a joint venture with a plinth area of 1.12 million Sq.m at Bengaluru, its capital city. The government also proposed to develop a special I.T. corridor around Bengaluru and establish the II phase of the Electronics City near Bengaluru for I.T. industry.

Maharashtra implemented the I.T. policy in 1998 with the mission of empowerment through connectivity. The mission is ‘to empower the people of Maharashtra to realize, the potential of I.T. in buildings a modern and computerised society’. The policy aimed to consolidate and greatly strengthen the I.T. industry in the state including the software and hardware as well as I.T.E.S. through fiscal and non fiscal incentives. To create the necessary infrastructure for I.T. it was decided that Maharashtra Industrial Development Corporation will develop ‘plug and play’ I.T. entrepreneurship incubation facilities at Navi Mumbai, Pune and Nagpur in addition to establishing a hardware park at Navi Mumbai. As a result of the policy, the development control rules of Greater Mumbai 1991 were amended. As per the same I.T. establishments are to be allowed in residential zone, service
industries zone, general industries zone and special industry zone. Further the I.T. establishments are given an incentive of additional FSI up to 100% (Maharashtra 1998).

Tamil Nadu announced its first I.T. policy in 1997 with the objective of increasing both domestic and export earnings of software and hardware sectors in the state and to upgrade the quality of life of the citizens of the state by facilitating access to consumer application of I.T. In order to realise the objectives the government offered several fiscal and administrative incentives. Towards the physical infrastructure the government proposed to remove the land use restrictions for I.T. parks and offer FSI benefits up to 50% and provide the necessary infrastructure for the I.T. parks. To encourage private sector participation the government decided to set up I.T. parks not only in Chennai but also in other major cities of Tamil Nadu (Tamil Nadu 1997).

Andhra Pradesh government formulated its first I.T. policy in 1999 with the vision of ‘Leveraging I.T. to attain a position of leadership and excellence in the information age and transforming Andhra Pradesh into a knowledge society’. The objective of the policy to use I.T. as an instrument to foster the economic development of the state which translates into growth of I.T. industry in the state, growth of software exports and creation of employment potential. To attract investments from outside the state a package of incentives were offered. Towards building infrastructure the government decided to establish a Hitec City at Madhapur in the outskirts of its capital city of Hyderabad with 93,000 Sq.m of built space. To government also decided to allot plots near the Hitec City to enable the I.T. companies to develop their own campuses. The government also proposed to create hi-tech spaces in and around all major cities and towns in Andhra Pradesh (Andhra Pradesh 1999).
It can be seen that the I.T. policies of different states reflect similar objectives and strategies for realizing them. The policy documents by and large have laid emphasis on incentives for industry, pro-active role of government in promoting I.T. industry, encouragement to private sector participation and expansion of I.C.T. infrastructure. The policies have had a direct bearing on the urban development policies.

3.6.4 Importance of cities

It is observed from the policies of the states which have taken a lead that importance has been attached to project their capital cities as all pro-active moves of the respective governments centered on strengthening the infrastructure in their capital cities and creation of large built infrastructure. Besides, land intensive developments have also been undertaken to attract I.T. companies.

Centered on Techno parks and Software Technology Parks which have created enclaves of I.C.T. centered in large cities with limited linkages to rural and backward areas, it is clear from the documents that I.C.T. has by and large been looked upon as an elite and urban requirement (IBEF 2005).

According to NASSCOM – A.T. KEARNEY Report on ‘Location Road map for I.T.-B.P.O. growth: Assessment of 50 leading cities’, of the total direct employment of 2 million in the I.T. – B.P.O. industry, 90% is captured by seven leading locations namely, Bengaluru, Chennai, Hyderabad, Kolkata, Mumbai, National Capital Region (New Delhi) and Pune. Apart from providing employment, these cities have realised significant benefits in terms of improved branding and visibility, consumption lead growth, improvements in social infrastructure etc.
These cities which are called ‘Leader cities’ are significantly ahead of the rest in terms of the availability and quality of employable workforce, in addition to the large size of incumbent talent pool. They are ahead of other cities in terms of connectivity, hotel availability and power situation. They have significantly better depth and breadth of overall business environment and opportunities.

In order to capitalise the potentials of the newly emerged knowledge industry and to effectively compete in the global market, the States had to come out with innovative policies. This had its impact on urban development policies of the respective states as well, since the industry’s requirements are translated in terms of built environment required for catering to the new workforce. Such massive requirements can be accommodated only in large cities. The rapid growth of the industry called for creation of large scale offices suitable for the industry. To encourage private sector participation and corporates to invest in I.T. related developments, certain incentives are offered. The market friendly and entrepreneurial approach adopted by various states to cater to the I.T. industry reflects the competition among states in projecting their capital cities. In this regard, some of the cities in India are found to be performing a new role of being a catalyst towards ushering the economic growth of the states they belong. The direct correlation between the economic factors and infrastructure and urban development is more evident in the globalised era and in India it seems more apparent due to the influence of I.T. industry.

3.7 SUMMARY

The economic reforms of 1991 and the liberalisation measures adopted resulted in India seizing the opportunities arising out of globalisation process. The concept of disinvestment in public sector and encouragement in private sector resulted in economic upsurge which is reflected in the form of
steady increase in GDP growth rate. The increase in FDI inflows and FER and the GDP growth point to robust economy.

Among the various sectors of economy, the contribution from services and manufacturing sector has been showing signs of steady progress. The government of India’s policy towards technology induced development and the liberalisation policy adopted helped India to establish itself as a dominant force in the I.T. sector in the global market. In order to sustain the growth of I.T. industry, policies were framed by the central and state governments with the thrust on strengthening the physical infrastructure.

The rapid stride made by the I.T. sector in a relatively short span of time is attributed to the active involvement of several state governments and the healthy competition amongst them in competing for a share in the global market. The economic opportunity and the employment generation capabilities of the I.T. industry have been the attraction for the states promoting I.T. industry. The employment opportunity created by the I.T. industry has called for the creation of exclusively designed built environment in addition to the strengthening of the infrastructure. The urban development triggered by the I.T. industry has been addressed by the state governments through separate I.T. policies of their own.

Being a city based industry, the concentration has been on the capital cities of the states promoting them. Some of these cities are found performing a new role in the market economy of being a catalyst to economic growth and competing with one another in attracting investments in the I.T. industry. The infrastructure development, pro-active measures in creation of built infrastructure and investor friendly urban development policy are observed to be the key elements for the rapid growth of the industry.

The growth of I.T. industry in Tamilnadu and its implications to on Chennai Metropolis is dealt in the next Chapter.