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A CONCEPTUAL FRAMEWORK & REVIEW OF
LITERATURE

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CHAPTER-3

Information Technology Sector

3.1 : About IT-Sector

Information Technology essentially refers to the digital processing, storage and communication of information of all kinds. Therefore, IT can potentially be used in every sector of the Indian economy with more robust - at least in certain areas. Software industry is acknowledged as an important engine of economic growth for many developing and under developed countries. Software development is a service that is both labour and knowledge-intensive, and thus an important aspect of related policy is concerned with the provision of appropriately educated and trained human resources in sufficient quantity. This chapter gives an overview of IT-Sector, inception of IT-Sector, Segments of the Indian IT-Sector, Present Scenario IT-Sector, Indian IT market size growing, Notable trends in the Indian IT & ITeS, Challenges Faced by IT & ITeS Sector, Sources of information for IT-Sector and Opportunities of IT-Sector.

3.2 : Introduction

In recent years, Indian software industry has boomed due to rapid increase in globalization. It has accomplished this growth by becoming an important part of the global division of labour in software. In particular, nearly two thirds of the revenues of the Indian software industry are from exports, with a much smaller domestic market. The talent pool of computer engineers is rising qualitatively as well as qualitatively. According to NASSCOM figures, the top 25 companies has accounted for 58.67 percent share of software exports revenue in 1997-98.
In the past decades industrial scenario in India was dominated by agriculture and manufacturing sector growth. But in the last 10 years especially after 1995 information technology industry has started contributing significantly in economic growth of India. Information Technology now has a robust industry worth $60 billion (Anjum and Tiwari 2012).

India’s Information technology (IT) and information technology enabled services (ITeS) segments are aligned in a way that the growth in one opportunity has flow effects on another. The IT & ITeS industry, as a whole, is the mainstay of Indian technology sector as it has driven growth of the economy in terms of employment, revenue generation, standards of living etc and has played a major part in placing the country on the global canvas.

India has already established its brand equity in the global IT market. Indian IT software and services firms offer software product/packages. A wide spectrum of IT services including system management and maintenance, consultancy services, system integration, chip design, E-Governance, E-Commerce, IT enabled services covering banking/financial /insurance sector. Their IT enabled services also include CAD/CAM Multimedia, animation work, BPO (Business Process Outsourcing) assignments, Call centre related assignments, as well as Knowledge Process Outsourcing (KPO) / Legal process Outsourcing (LPO), medical lab, diagnostic and dental services, medical transcription services, e-publishing data conversion or digitization, typesetting, copy editing, content and design, graphics etc.

The software industry is not only growing exponentially, it is moving up the value chain. It is creating, from the initial staffing to software development at present the world’s major supplier of engineers to integration and IT business consulting.
3.3 : Inception of IT-Sector

The Indian economy saw a wave of liberalization for the first time in 1980. Besides formulating the national vision to promote software industry in India in the early 1980s by the government, there were deliberate attempts by the companies to promote software production like compilers, device drivers and operating systems to cater to the domestic hardware sector. The high tariffs for the hardware sector had meant that the production of domestic hardware segment (including PCs which were introduced in the same period) had to be sustained requiring necessary software’s like operating system and drivers. Subsequently by mid 1980s, software started coming up unbundled with the hardware. This further gave fillip to the software industry and exports. The 1990s and early 2000 saw the rise of Software Technology Parks and formation of the Ministry of Information Technology, respectively. Despite liberalization of the 1991, the software industry flourished signifying the inherent strength that it developed due to benign and enabling environment provided over a period of time and also the fact that the 1990s saw the dramatic decline in telecommunication costs (government explicit intervention) and the commercialization of the internet along with the Y2K “problem”. The Data Envelopment Analysis (DEA) model is used to work out technical efficiency of Information and Communication Technology (ICT) Industry in host of countries which are front runners as far as ICT is concerned. India lags behind the most as far as ICT (not IT) is concerned.
3.4 : Segments of the Indian IT-Sector

The Indian IT-ITeS are segmented into IT-Services, Business Process Outsourcing (BPO), Software products and engineering services and Hardware. The IT-Services market size is USD 52.0 billion during FY12, Over 76 per cent of the revenue comes from the export market and BFSI has been the major vertical of this segment. For BPO market size is USD19.0 billion during FY12, around 84 per cent of the revenue comes from the export market. For Software products and engineering services the market size is USD17.0 billion during FY12 and over 76 per cent of the revenue in the segment comes from exports. And for Hardware market size is USD13.0 billion during FY12, domestic market contributes for significant share and domestic market is witnessing good growth as penetration of personal computers is rising in India.

India’s specialization in software has been driven by two sorts of wage advantages that have reinforced each other:

- The lower wages for Indian software developers relative to that of their US and European counterparts make Indian software cheaper in global markets,
- While the higher wages earned by software professionals in India relative to that in other industrial sectors has ensured a steady stream of supply of software professionals (Jhamb R.K., 2011)

3.5 : Present Scenario of IT-Sector

The information technology (IT) and IT-enabled services (ITeS) sectors in India have become crucial growth catalysts for the Indian economy. India’s IT and ITeS services besides its impact on growth (both direct and indirect), it is also a provider of skilled employment both in India and abroad, generating
direct employment for nearly 2.8 million persons and indirect employment of around 8.9 million in 2011-12. The IT-ITeS industry has four major subcomponents: IT services, business process outsourcing (BPO), engineering services and R&D, and software products.

As per NASSCOM, the global slowdown has impacted the revenues of the IT-Business Process Management (BPM) sector, the growth of which decelerated from 15 percent in 2011-12 to an estimated 8.4 percent reaching US $ 95.2 billion in 2012-13. The deceleration in growth of the dominant export sector (80 percent share) was from 16.5 percent in 2011-12 to 10.2 percent in 2012-13, while domestic revenue growth decelerated from 9.7 percent to a 1.9 per cent (due to currency effect) during these years. In Indian rupee terms domestic revenues have grown at 14.1 per cent in 2012-13 compared to 16.6 per cent in 2011-12. NASSCOM estimate of growth for 2013-14 are 13-15 percent for total IT-BPM revenue, 12-14 percent for exports and 13-15 percent for domestic sector. As a proportion of national GDP, IT and Business Process Management (BPM) sector revenues have grown from 1.2 per cent in 1997-98 to an estimated nearly 8 percent in 2012-13.
Table: 3.5.1: Overall growth performance of the IT-BPM

<table>
<thead>
<tr>
<th>year</th>
<th>Value (US $ Billion)</th>
<th>Growth rate (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total IT-BPM Service Revenue</td>
<td>52.1</td>
<td>59.9</td>
</tr>
<tr>
<td>Exports</td>
<td>40.4</td>
<td>47.1</td>
</tr>
<tr>
<td>Domestic</td>
<td>11.7</td>
<td>12.8</td>
</tr>
</tbody>
</table>

Source: NASSCOM, Note: Data excludes Hardware; E: Estimates; P: Projections.

While the global slowdown, increasing competition from new countries, and rising protectionist measures in the wake of job losses in developed countries have slightly dimmed the prospects for exports of IT and ITeS services, a great opportunity is waiting in India’s domestic market with increasing technology adoption within the government sector and the small and medium business (SMB) sector. The 12th Five Year Plan aims to harness the potential of the software and services sector to contribute to the country’s development and growth, particularly in terms of investment, exports, employment generation, and contribution to GDP and to retain India’s leadership position as a global IT-BPO destination, consolidate and grow in
both mature and emerging markets. The government has also announced the National Policy on Information Technology 2012 which aims to maximally leverage the power of ICT to help address the economic and developmental challenges the country faces. Under the National e-Governance Plan (NeGP), the government focuses on making critical public services available electronically and promoting rural entrepreneurship. Of the 31 Mission Mode Projects (MMP), 24 have been approved by the Government of India (with 22 MMPs having gone live).

As per Annual Report 2011-12 of Department of Electronics & Information Technology, Electronics & IT Production (consumer electronics, industrial & strategic electronics, electronics components, computer hardware, communication & broadcast equipments) recorded 361% increase in production since 2000-01 whereas software production (both for export & domestic use) an increase of 1024 per cent, taking the overall increase to about 724 per cent (Rs 68,850 to 5,67,510 Crores).

The increase in production of Software for domestic use was about 876% compared to 1073 per cent increase observed in case of software for export. During the period, the share of software for domestic consumption has declined (from 25 to 22 percent) in the total software production because production of export related software has increased more rapidly.

Table: 3.5.2: Overall growth performance of the Electronics & IT (Hardware) & Software

<table>
<thead>
<tr>
<th>Production in Rs Crores</th>
<th>2000-01</th>
<th>2011-12</th>
<th>Percent Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronics &amp; IT (Hardware)</td>
<td>31,100</td>
<td>143,300</td>
<td>361</td>
</tr>
<tr>
<td>Software</td>
<td>37,750</td>
<td>424,210</td>
<td>24</td>
</tr>
</tbody>
</table>

Source: NASSCOM
3.6: Indian IT market size growing

Indian technology and BPO sector (including hardware) is estimated to have generated USD101 billion in revenue during FY12, compared to USD88.1 billion in FY11, at a growth rate of 14.4 per cent and As a proportion of India’s GDP, the contribution of IT Sector has risen to 7.5 per cent in FY12 from 1.2 percent in FY98.

Table: 3.6.1: Market size of IT industry in India (USD billion)

<table>
<thead>
<tr>
<th>Year</th>
<th>Domestic</th>
<th>Export</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2008</td>
<td>22</td>
<td>41</td>
</tr>
<tr>
<td>FY 2009</td>
<td>22</td>
<td>47</td>
</tr>
<tr>
<td>FY 2010</td>
<td>24</td>
<td>50</td>
</tr>
<tr>
<td>FY 2011</td>
<td>29</td>
<td>59</td>
</tr>
<tr>
<td>FY 2012 E</td>
<td>32</td>
<td>69</td>
</tr>
</tbody>
</table>


3.7: Export revenue of IT- Sector

Total exports from the IT-BPO sector (excluding hardware) are estimated to reach USD69 billion during FY12; the industry has seen strong growth at a CAGR of 13.6 per cent during FY08-12E despite weak global economic growth scenario. IT services’ exports has been the major contributor to the exports market of India, while they accounted for around 58 per cent of the total IT exports during FY11 and BPO commands a share of around 23.2 per cent of the total IT exports from India.
Table: 3.7.1: Growth in export revenues (USD billion)

<table>
<thead>
<tr>
<th>year</th>
<th>Software products &amp; Engineering services</th>
<th>BPO</th>
<th>IT-Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2008</td>
<td>22.2</td>
<td>9.9</td>
<td>8.8</td>
</tr>
<tr>
<td>FY 2009</td>
<td>25.8</td>
<td>11.7</td>
<td>10.0</td>
</tr>
<tr>
<td>FY 2010</td>
<td>27.3</td>
<td>12.4</td>
<td>10.4</td>
</tr>
<tr>
<td>FY 2011</td>
<td>33.5</td>
<td>14.1</td>
<td>11.4</td>
</tr>
<tr>
<td>FY 2012 E</td>
<td>40.0</td>
<td>16.0</td>
<td>13.0</td>
</tr>
</tbody>
</table>

Source: Annual Report 2011-12 of Department of Electronics & Information Technology

3.8 : Notable trends in the Indian IT & ITeS

India is global hub for outsourcing, once again rated as the most attractive location for global sourcing by the AT Kearney Global Services Location Index, 2011. As India offers low cost services, vast skilled talent pool, good quality of infrastructure etc., India is the most preferred location for engineering, off-shoring according to a customer poll conducted by Booz and Co. Companies are now off-shoring complete product responsibility. The number of global delivery centers of Indian IT firms has reached 560, spreading out across 70 countries, as of 2011. As of 2009, over 150 centers have been set up by various Indian IT firms in North America.

Increased focus on R&D by Indian IT firms has resulted in rising number of patents filed by Indian IT firms. The share of IT firms in total patents filed in India went up from 4 per cent in FY05 to 13 per cent in FY08. India’s IT market is witnessing a significant shift from a few large size deals to multiple small size deals. Delivery models are also being altered; as business is moving to capex (capital expenditure) based models from opex (operational
expenditure) based models, from a vendor’s frame of reference. Large players with wide range of capabilities are gaining ground as they move from being simple maintenance providers to full service players, offering infrastructure, system integration as well as consulting services. Disruptive technologies such as cloud computing, social media and data analytics are offering new avenues of growth, across the verticals, for IT companies.

India’s IT-Sector is gradually moving from linear model (increasing head count to increase revenues) to non-linear models. In line with this, Indian IT companies are focusing on new models such as platform based BPO services, creation of Intellectual property, etc.

Availability of skilled talent has been a major reason behind India’s emergence as global outsourcing hub. India added an estimated 4.4 million graduates to the talent pool during FY12. Growing talent pool of India has the ability to drive the R&D and innovation business in the IT-BPO space. About 2 per cent of the industry revenue is spent on training employees in the IT-BPO sector. 40 per cent of the total spend on training is spent on training new employees. A number of firms have forged alliances with leading education institutions to train their employees.

The software and ITES-BPO sectors accounted for 813,000 jobs by 2003-04. Of these, nearly 500,000 (260,000 jobs in the software industry and 245,000 jobs in ITES-BPO) have been primarily for export oriented activities. In particular, jobs in ITES-BPO have risen rapidly, from 42,000 in 1999-2000 to 245,000 in 2003-04. One may argue that the IT-BPO services that are booming currently are relatively low value adding and low skill-intensive activities.

Apart from creating jobs for highly qualified professionals as well as ordinary college pass outs, the rise of the software industry has provided
opportunities for expanding the local base of entrepreneurship. The initial starts up costs in the sector are low than the economies of the scale are not particularly significant especially for service enterprises. Hence, the entries barriers are low. This has helped a number of technical professionals to start on their own. Many of the leading software enterprises of today were started by first generation entrepreneurs. Infosys, Mastek, Silver line and Polaris, among numerous others, were started by software professionals and engineers with small savings and loans at a modest scale to begin with.

The rapid rise of software industry in the country has also helped to reduce the extent of the brain drain by creating rewarding opportunities within the country, a trend also supported by the availability of venture capital to implement in new software ventures. According to some estimates, the rate of returning of professionals increased from 2% in 1991 to 8 to 10 % in the late 1990s, with several senior software professionals returning to India to set up their own companies.

Despite a large pool of trained engineering manpower, India’s image in the world has been that of a poor and underdeveloped economy having a comparative advantage only in low skill and low technology industries. As a result, the country has suffered from the disadvantage in exporting knowledge-intensive goods. The emergence of the country as a centre for outsourcing such a highly knowledge-intensive service as software is helping to change the public perception of India and is focusing attention on the potential of the country in knowledge-based industries.

The development of the software industry has led to an increased flow of capital to the country in three forms: foreign directive investment (FDI) by outside MNEs in their subsidiaries and joint venture in India, foreign
institutional investments (FIIs) in software companies in India through stock purchases, and capital raised abroad by Indian software companies. It has been estimated that MNE affiliates account for 23% of exports of software services and 26% of ITES-BPO exports.

The development of the software industry in different parts of the world is characterized by a strong tendency towards clustering because of agglomeration economies. In India, the software industry developed initially in Mumbai. Bangalore subsequently emerged as a centre of software industry development, especially after as a centre of software industry development, especially after the entry of Texas Instruments in the mid-1980s. In addition to Bangalore and Mumbai, Delhi and the suburban communities of Noida and Gurgaon have emerged as the third most popular location for software units. As Bangalore has become saturated owing to the limits of its infrastructure and the scarcity of space, Hyderabad and Chennai have started to provide alternative locations in the south. The top five cities together account for 80.5% of the top 600 companies.

3.9  : Challenges Faced by IT & ITeS-Sector

Some of the challenges faced by the IT and ITeS-sector include increasing competition from other countries with incentivized low costs, rising costs in India with wage-push inflation, increasing costs of relevant talent and skilled personnel, infrastructure constraints with over 90 per cent of total revenue generated from seven Tier-1 locations, risks like currency fluctuations and security, both physical and data related, and rising protectionist sentiments in key markets.

Some of the challenges faced by the IT/ITeS-sector include:

- Increasing competition from other countries with incentivized low costs
• Rising costs in India with wage-push inflation
• Increasing costs of relevant talent and skilled personnel
• Infrastructure constraints with over 90% of total revenues generated from seven Tier-1 locations risks like currency fluctuations and security, both physical and data related

3.10 : Sources of information for IT-Sector

Certain data, in particular, data on the telecommunication sector, the IT industry and business process outsourcing (BPO) and data on the information society at large, are produced on a regular basis. A significant amount of data exists on the IT service industry, collected by National Association of Software and Services Companies (NASSCOM), reflecting their members’ data. In India, the indicators related to workforce, value added, imports & exports respectively are not strictly measured as per the International Standard Industrial Classification (ISIC). However, the information related to workforce & exports for this sector is maintained in National Association of Software and Services Companies (NASSCOM) for the IT-BPO sector. Similarly, data on IT manufacturing is captured by another private body, the Communication and Manufacturing Association of India (CMAI).

• NASSCOM is a premier trade body as well as the Chamber of Commerce of IT-BPO sector in India. It is a not-for-profit organization and has emerged as an authentic voice of this industry in India. It publishes an annual edition of its strategic review to disseminate the latest status of the industry based on the survey of large companies of this sector.
• The data related to production, exports and imports of this sector is also maintained by the Ministry of Communication and Technology.
• Telecom Regulatory Authority of India (TRAI) maintains information on teledensity, number of internet subscribers etc.

• National Sample Survey Office (NSSO) of the Ministry of Statistics and Programme Implementation, which conducts multi-subject integrated sample surveys all over the country, will conduct survey on the basis of a 10 year time frame on the number of household using computers (HH5). NSSO has been conducting, Annual Survey of Industries (ASI), regularly whereby information related to the use of ICT is also collected.

• Recently Govt. of India, Ministry of Statistics and Programme Implementation (MOSPI) has signed an MOU to participate in the project on “Statistical Compilation of IT Sector and Policy Analysis” undertaken by Orbicom, the network of UNESCO Chairs in Communication. In this project an attempt has been made to compile data on the contribution of IT Sector to the Gross Domestic Product (GDP) and employment to the Indian economy following internationally accepted and harmonized definitions and concepts emerging from the OECD and United Nations. The value added has been compiled from the existing data holdings of the MOSPI.

• Office of Registrar General of India, MHA also collects some information on availability of computers/laptops with/without internet connection, telephone connection etc. as a part of household amenities in households all over India during its decennial Census exercise.

3.11: Opportunities for IT-Sector

One area that provides considerable opportunities to the IT/ITeS sector is the Small and Medium Enterprises (SME) segment in India. With an approximate 60% of this segment still uses paper-based accounting, getting
them on-board would provide considerable opportunities to this sector. Another area that has generated considerable interest is Cloud Computing, (dubbed as the next big thing) which is still in its nascent stage in India. However, it is expected that almost 30% of the applications can be provided via this hosting model thereby increasing opportunities.

Hither to, a detailed note on the IT-Sector, right from its inception till the present scenario is presented. In the next chapter to come, the Research Methodology used for the present study is given in detail.

References:
3. Census of India 2011 Website.