

GROWTH OF INFORMATION TECHNOLOGY INDUSTRY IN INDIA

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ABSTRACT

This paper presents the Growth of Information Technology (IT) Industry in India. The last decade of 20th century has witnessed IT to have revolutionary effect on the lives of people. During this period, Indian engineers and scientists have earned high degree of esteem around the world for their highly professional and innovative contributions. In general, IT covers all aspects of managing and processing information. IT industry has emerged as one of the fastest growing industries in India. As a proportion of Gross Domestic Product, the IT industry revenue has grown from 1.2 % in 1998 to an estimated 8.2 % in 2014. The software products market in India, includes accounting software and cloud computing-based telephony services. Apart from wealth creation and large export earnings, Indian IT industry has also provided large scale employment to educated and skilled work-force.

Keywords: Employment, Foreign market, GDP growth, Information Technology

INTRODUCTION

Information Technology (IT) is the application of computers and telecommunications equipment to store, retrieve, transmit and manipulate data, often in the context of a business or other enterprise. IT has made possible information access at gigabit speeds. It has created a level playing field among nations and has a positive impact on the lives of millions. Several industries are associated with IT, including computer hardware, software, electronics, semiconductors, internet, telecom equipment, e-commerce and computer services. Humans have been storing, retrieving, manipulating and communicating information [1] since the Sumerians in Mesopotamia developed writing in about 3000 BC, but the term Information Technology in its modern sense first appeared in a 1958 article published in the Harvard Business Review; authors Harold J. Leavitt and Thomas L. Whisler commented that "the new technology does not yet have a single established name. We shall call it Information Technology".

Now-a-days, India has come up in the hot field like IT. Bill Gates quoted that information induced changes are occurring at the speed of thought. The information field is moving so fast that, any plan will be outdated before public authorities can act on it. IT refers to a broad term

spectrum comprising of new communication and computing technologies. Computer hardware, software and internet are keys to the systems, designed, developed and managed by IT professionals. In general, IT covers all aspects of managing and processing information. The IT industry has emerged as one of the fastest growing industries in India.

Developed countries like USA, Germany and Japan have shown keen interest, in hiring Indian software professionals in their IT sector. [2] On the domestic front also, IT industry has shown highest growth rates consistently over the last many years as compared to any other industry. India is among the three countries that have built super computer on their own; the other two are USA and Japan. India is among six countries, which have launched satellites and done so even for other countries like Germany and Belgium. India's INSAT is among the world's largest domestic satellite communication systems. India has the third largest telecommunication network, among the emerging economies in earth.

The prime aim of this topic is to analyze the growth and performance of IT industry in India. Various aspects of IT industry like composition, revenue, exports, wealth creation, size and share, localization etc. are presented. Employment opportunities [3] created by this sector and

steps undertaken by government are discussed.

1. IT at a Glance

1.1 Composition of IT Industry

IT policies are mainly based on the recommendations of NASSCOM. The thrust of the policies is to provide key infrastructure for proliferating Information technology Enabled Services (ITES) throughout the country, liberalizing import of capital equipment by software and BPO companies, providing world class info-infrastructure with an extensive spread of Fiber Optic Networks, Satcom Networks and Wireless Network so as to ensure fast national wide onset of Internet, Extranets and Intranets. In order to encourage ITES business, government has facilitated expansion of band width requirement, Inter Connectivity of Networks of different services providers, International Telecommunication links PSTN, etc.

Composition of total IT industry mainly comprises of software, ITES-BPO and hardware segment. Total software and services segment includes IT services and products, ITES-BPO, engineering services, R&D and software products. This segment is growing faster than the hardware segment in India. Figure 1 shows the Applications of IT industry.

The total IT industry has grown from USD 16.1 billion in 2003 to USD 78 billion in 2013. Indian IT primarily comprises of software and services segment which accounts for 82.2 % of total IT industry in 2013. The percentage share of ITES-BPO segment has grown from 16.8 % in 2003 to 24.5 % in

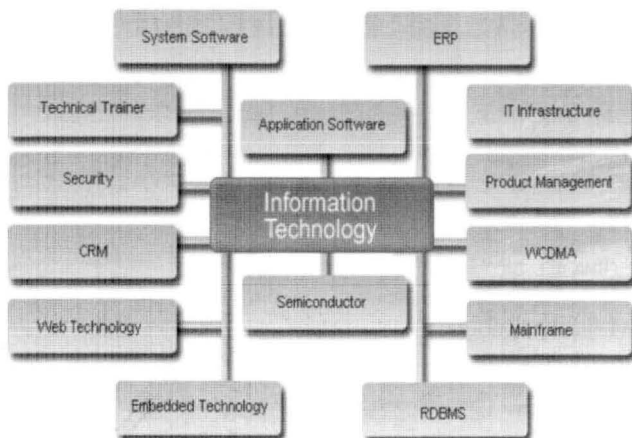
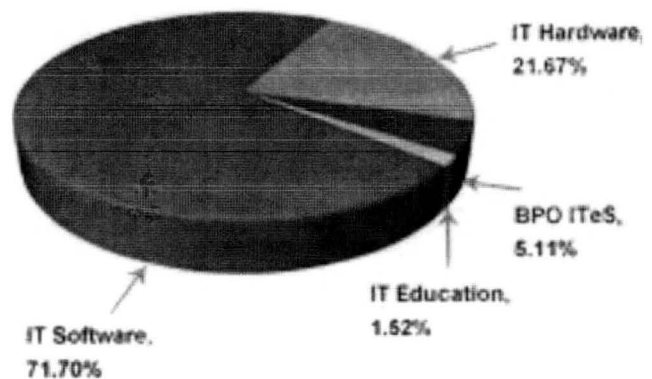


Figure 1. Applications of IT industry

2013. It means that there is more opportunity for this segment to develop in future. India's percentage share in engineering services, R&D and software products are throughout approximately 17.4 % from various years. Hardware segment has accounted for 25.7 % of total IT industry in 2013. It is estimated that in 2013 total IT software and services segment will account for USD 59.6 billion, hardware segment will account for USD 12.1 billion and total IT industry will account for USD 71.7 billion respectively as per reports. Figure 2 shows the segment wise market share in IT and Figure 3 shows the share of employment in IT. Figure 4 shows share of employment in IT in different sectors in other country

1.2 Contribution of IT Industry in Employment

The contribution of software to India's economic development is paying particular attention to the role of



Segment-wise Market Share

Figure 2. Segment wise market share in IT in different sectors in India

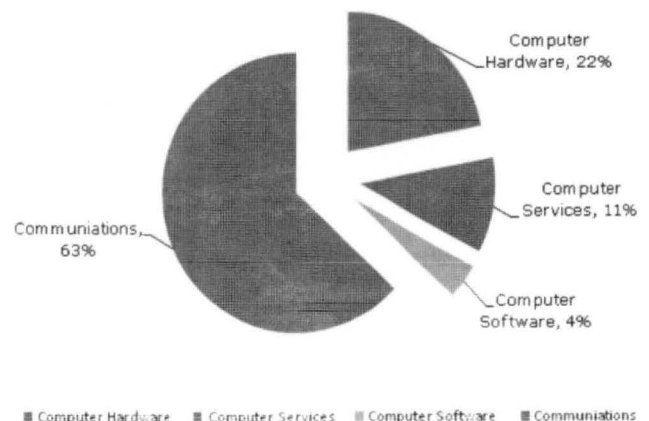


Figure 3. Share of employment in IT in different sectors in India

software in the absorption of labour and the development of human capital in the economy. The success of the software industry has increased the relative value of professional workers, not only programmers, but also managers and analysts. The growing importance of human capital, in turn, has led to innovative models of entrepreneurship and organization, pioneered by the software sector, and these are slowly taking root and spreading to other sectors of India's industry. A potentially important and under-appreciated contribution of the software industry is thus its exemplar of good entrepreneurship and corporate governance to the rest of India. Though less visible than the macro contributions to employment and foreign exchange, this role is a source of productivity improvement for all industries, and can have powerful long-term benefits for India's industrialization and growth.

Apart from wealth creation and large export earnings, Indian IT industry has also provided large scale employment to educated and skilled work-force. This is the fastest growing sector which is providing large employment opportunities. The very success of IT industry in India is infact due to the availability of highly skilled work-force. Indian education system gives more emphasis on mathematical skills and proficiency in English language and this has created skilled work-force ideally suited to the IT industry. Indian universities are pumping out approximately 6, 20,000 engineering graduates in

various disciplines in a year.

In IT industry, number of employees is increasing. In 2000, the number of employees in IT sector was 284 thousands, whereas in 2013 it has reached at 5,237 thousands. In 2013, 1646 thousand employees are engaged in IT services and software exports. 700 thousands employees in domestic market and 989 thousands employees are employed in BPO export sector. Hence, IT is emerging as one of the biggest employment generating industries. There has been a rapid increase in the employment opportunities in IT industry especially in ITES. It means that these two segments are employment-oriented segments, which provides large scale employment opportunities in India.

2. Growth and Performance of IT Industry in India

An analysis of the issues has influenced the development of informatics policy of India. [5] Factors such as impact on employment, trade, and foreign exchange have acted as constraints in the adoption of IT. At the same time, IT has presented a significant opportunity for accelerating progress towards meeting India's goals of self-reliance and faster economic development. IT was also viewed as necessary for India's strategy of development, which is based upon centralized planning and management of the economy. We also discuss the role of potential demand for computer systems, the existing industrial base, R&D infrastructure, availability of technical manpower, and regulations for import, foreign investment, and licensing in determining the policies for indigenous manufacture of computer systems.

According to the latest findings of NASSCOM, the aggregate revenues of the sector have reached USD 120 billion in 2012-13. Industry will continue to net hire and focus on value creation, provide direct employment to 4.23 million and indirect job creation is estimated to 9.0 million employees. Indian IT sector is developing as the biggest source of revenue and employment generator. The growth of IT industry [6] will also develop the other industries of the economy. This industry has a number of customers in India, as well as in abroad. The USA (65 %) and the UK (27 %) remain the largest IT export markets in

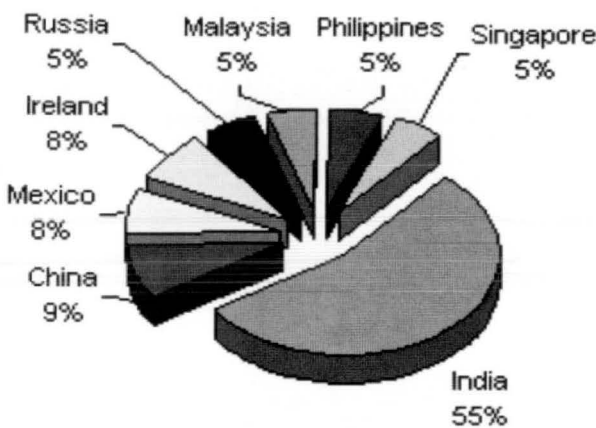


Figure 4. Share of employment in IT in different sectors in other country

2013. The industry footprint is steadily expanding to other geographies - with exports to continental Europe in particular growing at a CAGR of more than 56 % over 2008-2012.

2.1 India's GDP and IT Industry Growth

Indian IT industry has grown manifold during the period 1997-98 to 2012-13. The size of Indian IT industry has increased from USD 5.0 billion in 1997-98 to USD 64.0 billion in 2012-13. The share of IT industry in Gross Domestic Product (GDP) has increased from 1.2 % in 1997-98 to 7.6 % in 2012-13. Thus, IT industry is considered as a key industry for the development of Indian economy.

IT industry has emerged as one of the fastest growing industries in India. As a proportion of Gross Domestic Product, the IT industry revenue has grown from 1.2 % in 1998 to an estimated 8.2 % in 2014. India's domestic market is estimated to grow by 40 % growth in 2012-13. Hardware segment is estimated to grow by 19 % to be Rs. 556 billion; IT services segment is estimated to grow by 26 % to be Rs. 589 billion. Whereas software products and BPO segment is estimated to grow by 18 % to be Rs. 318.9 billion in 2014. Export growth is estimated at 16-17 % in 2013-14. According to the latest findings of NASSCOM, the aggregate revenues of the sector reached USD 95 billion in 2012-13.

2.2 Growth of Software and Services Industry in Indian Domestic and Foreign Market

India is one of the fastest-growing IT services markets in the world. It is also the world's largest sourcing destination, accounting for approximately 52 per cent of the US\$ 124-130 billion market. The country's cost competitiveness in providing IT services continues to be its USP in the global sourcing market. The Indian IT and IT enabled Services (ITES) sectors go hand-in-hand in every aspect. The industry has not only transformed India's image on the global platform, but also fuelled economic growth by energizing the higher education sector (especially in engineering and computer science). The industry has employed almost 10 million Indians and, hence, has contributed significantly to social and economic transformation in the country.

IT industry caters both to domestic as well as foreign market. But it is the software and services sector which has made impressive growth in the foreign as well as domestic market. Table 1 conveys that the size of IT software and services sector in domestic market in 1999 was just USD 1.7 billion, which has increased to USD 47 billion in 2013. The % age share of domestic market has increased from 39.5 % in 1999 to 44.7 % in 2013. The foreign market of software and services sector has grown rapidly. In 1999 the growth of foreign market was just USD 2.6 billion, which has grown nearly by about USD 69.5 billion in 2013. While India has been able to establish arena, it has not been able to make a dent in the software product market. In spite of all this, Indian total IT market has increased from USD 4.3 billion in 1999 to USD 69.5 billion in 2013, which is itself an achievement.

The contribution of IT industry in domestic market verticals is, BFSI (banking, finance, services and insurance) (41 %), Hi-tech/telecom (20 %), in manufacturing (17 %) and retail (8 %). Health care, airlines and transportation, constructions and utilities are the growing segment in the domestic market. Offshore market verticals include customer interaction and support, finance and accounting, knowledge services, human resource management. Offshore market verticals have attained USD 10.9 billion in 2008. The contribution of IT industry in

Years	Domestic MKT. (USD bn.)	%age Growth	Foreign MKT. (USD bn.)	%age Growth	Total IT MKT. (USD bn.)
1999	1.7 (39.5)	-	2.6 (60.5)	-	4.3
2000	1.9 (32.2)	11.8	4.0 (67.8)	53.8	5.9
2001	2.5 (28.7)	31.6	6.2 (71.3)	55.0	8.7
2002	2.6 (25.2)	4.00	7.7 (74.8)	24.2	10.3
2003	3.0 (23.8)	15.4	9.6 (76.2)	24.7	12.6
2004	3.9 (23.4)	30.0	12.8 (76.6)	33.3	16.7
2005	4.8 (21.8)	23.1	17.2 (78.2)	34.4	22.0
2006	6.1 (20.7)	27.1	23.4 (79.3)	36.0	29.5
2007	8.2 (20.9)	34.4	31.1 (79.1)	32.9	39.3
2008	11.6 (22.3)	41.5	40.4 (77.7)	29.9	52.0
2009	12.5 (21)	7.76	47.0 (79)	16.3	59.5
2010	14.2 (23.4)	34.4	31.1 (79.1)	32.9	39.3
2011	15.6 (24.3)	41.5	40.4 (77.7)	29.9	52.0
2012	16.4 (26)	42.5	47.0 (79)	35.3	59.5
2013	18.9 (28)	44.7	47.0 (79)	36.3	69.5

Table 1. Growth of Software and Services Industry in Indian Domestic and Foreign Market

offshore market verticals is customer interaction and support (43.5 %), finance and account (22.1 %), vertical specific BPO services (17.1 %) and knowledge services (8.1 %) respectively [8].

Locational distribution of IT companies in India shows the high concentration of IT companies in certain regions. The report reveals that maximum numbers of IT software and ITES firms are located in National Capital Region (19.1), Mumbai (16.2) and Bangalore (12.6) respectively. The share of Hyderabad in Locational distribution of IT firms is 10.7 % , Pune (6.3%) and that of Chennai is 12.8 %. More than 60 %, IT firms are located in these five locations. It shows that there is need to diversify IT industry for its proper explosion in future.

2.3 Growth of IT Software and Services Exports

India has exported its IT services to more than hundred countries around the world, but there is a heavy reliance on the USA market, which accounts for 62 % of the total software exports. The leading software-exporting firms include the companies like Tata Consultancy Services, Infosys and Wipro etc. The reports show that the exports of IT software and services have increased from USD 3.4 billion in 1999-00 to USD 5.3 billion in 2000-01. Further these exports have increased to USD 17.7 billion in 2004-05 and USD 39.4 billion in 2012-13. The yearly growth rate of these exports have slightly declined during 2001-02 and 2002-03 but from 2003-04 onwards, the growth rate of exports of IT software and services have increased significantly. During 2012-13, the growth rate was 45.3 %. Figure 5 shows Computer Service Exports from India.

Initially the IT industry was developed by a small group of innovative entrepreneurs and later on government of India provided facilitating environment to take advantage of export opportunities. Sale turnover of many IT firms is increasing rapidly. As per NASSCOM report, 88 % of total IT firms in India have sale revenue less than Rs.10 crore in 1992. In 2003, there were only five companies, whose annual turnover was more than Rs.1000 crore, Market Verticals in Domestic and Offshore: Vertical markets include services for banking, finance, services and insurance, manufacturing, telecom, healthcare,

customer interaction and support, finance and accounting, knowledge services, human resource management, construction and utilities, airlines and transportation, retail etc. IT industry provides its services to different sectors and earns a large amount of revenue.

The Indian IT-BPM industry is expected to add revenues of US\$ 19-21 billion to the existing revenues by 2015, according to NASSCOM. The industry grew at a compound annual growth rate (CAGR) of 13.1 % during 2008-13. Total exports from the IT-BPM sector (excluding hardware) were estimated at US\$ 76 billion during 2013. Export of IT services has been the major contributor, accounting for 57.9 % of total IT exports (excluding hardware) in 2013. BPM accounted for 23.5 % of total IT exports during the same fiscal. The IT outsourcing sector [4] is expected to see exports growing by 15-18 % during 2015. The data center infrastructure market of India is estimated to reach US\$ 4.03 billion in 2015, an increase from US\$ 1.92 billion in 2014.

The sale of personal computers (PC) in India has registered significant growth as 2.55 million units were sold in January-June, 2013 compared to 2.03 million units in the corresponding period of 2012. E-commerce space in India is expected to grow at 20-25 % over the next 2-3 years in terms of jobs, salaries and growth, which in turn could create at least 350,000 new jobs. The current estimated size of the industry is about Rs 18,000 crore (US\$ 2.91 billion) and is expected to reach Rs 50,000 crore (US\$

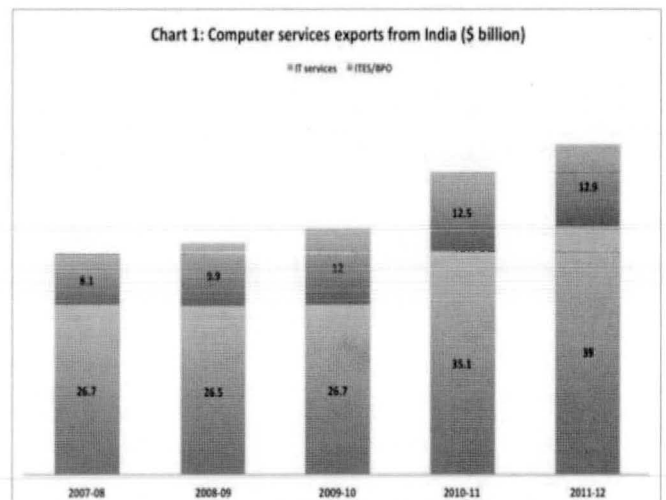


Figure 5. Computer Service Exports from India

8.08 billion) by 2015 and as the industry grows, the demand for talent would grow proportionally.

2.4 Government Policies for IT Industry

Government of India has taken important steps in promoting the growth of Indian IT industry particularly in its initial stage during eighties and nineties. Indian IT industry, which was started by small group of entrepreneurs, without any government intervention, has grown into a large and growing industry providing all types of services and high end products. The government initially adopted non-interventionist role but provided all facilities and incentives as requested by the industry and its representative body, NASSCOM, from time to time. The stature of this industry has grown so large that government has come up with a long term IT policy.

The Government of India has played a key role with public funding of a large, well trained pool of engineers and management personnel who could forge the Indian IT industry. Its spending on IT (IT) will reach US\$ 8.08 billion in 2015, a 5% increase over 2014, according to a report by Gartner Inc. The Central Government and the respective state governments are expected to collectively spend US\$ 6.4 billion on IT products and services in 2014, an increase of 4.3 per cent over 2013, according to a study.

Some steps were taken to promote the use of information based resources in facilitation of plan formulation and implementation, governance and for using IT for social economic growth of the country. In order to promote the growth of export led IT industry, Government of India has set-up IT Task-Force in 1998 which has submitted reports. In view of strategic importance of IT industry, a new ministry was set up by merging DOE, NIC and Software Export Promotion Council in 1999. In the action plan III, Government has drafted a long term national IT policy for the country. The main focus is on adding value, taking IT to masses so as to not only promote external demand, but also internal demand proliferating the use of IT in the country.

The substantial tax benefits like exemption in income tax, excise duties, custom duties etc., have been given to this industry. SOFTEX forms to promote export of computer

software are made very simple. RBI has permitted the import of software through internet and permitted the use of International Credit Card (ICC) for import of software through internet in advance even before the software is downloaded. To maintain India's domination in IT industry, government of India is giving priority to Research and Development (R & D) centers in order to maintain its high quality at global level and to promote innovations and inventions in IT sector.

2.5 Road Ahead

India continues to be the topmost offshoring destination for IT companies followed by China and Malaysia in second and third position, respectively. Leading IT services firms are expanding their traditional offerings (in India) to include research and development (R&D), product development, and other niche services. Emerging technologies present an entire new gamut of opportunities for IT firms in India. Social, mobility, analytics and cloud (SMAC) collectively provide a US\$ 1 trillion opportunity. Cloud represents the largest opportunity under SMAC, increasing at a CAGR of approximately 30 % to around US\$ 650-700 billion by 2020. Social media is the second most lucrative segment for IT firms, offering a US\$ 250 billion market opportunity by 2020. According to a report of NASSCOM-Mckinsey, the export component and domestic component are expected to reach USD 175 billion and USD 50 billion in 2020. Together both markets are likely to bring opportunities in revenue USD 225 billion in 2020 in India.

Conclusion

Today, IT potential is paramount for its march towards global competitiveness, healthy gross domestic product (GDP) and meeting up energy and environmental challenges. The Indian IT sector continues to be one of the sunshine sectors of the Indian economy showing robust growth. Despite, huge success of Indian IT industry, there are still many constraints in the expansion of IT sector. Majority of Indian IT firms, are small in size, hence cannot explore full potential of global opportunities in this sector. Thus, the industry needs a facilitating environment so that a large number of small firms can grow into large and

medium size firms. Most of the present IT firms are concentrated in few regions. Thus, there is need for locational diversification for future development. Indian IT industry is also dependent on USA market for exports, which is another drawback of this industry. Both the government and the industry will have to take effective steps for promoting research and development (R&D) and quality standards. Government should provide adequate and efficient infrastructure to facilitate future growth of this industry. India has the potential to build a US\$ 100 billion software product industry by 2025, according to Indian Software Product Industry Roundtable (ISPIRT). The software products market in India, which includes accounting software and cloud computing-based telephony services.

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