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Growth of Indian Information Technology Industry and its Management.

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ABSTRACT

In this study we are going to gain some concepts and important aspects of I.T. Industry in India.Growth and revolution in I.T. Industry plays a Phenomenal role in determining how we live our lives and redefining consumer/customer exceptation and experiences. It helps the economy growth in many ways. It gives more employment opportunities through its management properly, brings foreign currencies through export and so on. Information Technology is the recent development in communication. This industry has included information technology and business processing management. Size of I.T. Industry in india is very big with 948560 crores approx. in terms of revenue. It also brings a considerable amount of foreign currencies into the country through exports. It had been reveals that top I.T. Industry is TCS for last year and most leading states involve in I.T. Industries are Bangaluru, Kolkata, Pune, Hyferabad and Chennai. This industries also helps to generate employment and helps in the growth of GDP of the country. It has turned into the key driver of word wide management of Financial development. No doubts its impact in india has started a bit late but now it is taking fast strides and moving shoulder to shoulder even with the most advanced countries of the world.

KEY WORDS :- I.T Industry, Employment Generation, Innovation, Management, Foreign Currency, Business Opportunity, GDP, T.C.S,etc.

INTRODUCTION

Information Technology in India is an industry consisting of two major components: IT services and business process outsourcing (BPO). The sector has increased its contribution to India's GDP from 1.2% in 1998 to 7.7% in 2017. According to NASSCOM, the sector aggregated revenues of US$160 billion in 2017, with export revenue standing at US$99 billion and domestic revenue at US$48 billion, growing by over 13%. The United States accounts for two-thirds of India's IT services exports.

History:

India's IT Services industry was born in Mumbai in 1967 with the establishment of the Tata Group in partnership with Burroughs. The first software export zone, SEEPZ – the precursor to the modern-day IT park – was established in Mumbai in 1973. More than 80 percent of the country's software exports were from SEEPZ in the 1980s. The Indian economy underwent major economic reforms in 1991, leading to a new era of globalization and international economic integration, and annual economic growth of over 6% from 1993–2002. The new administration under Sri Atal Bihari Vajpayee (Posthumus) (who was Prime Minister from 1998–2004) placed the development of Information Technology among its top five priorities and formed the Indian National Task Force on Information Technology and Software Development. Wolcott & Goodman (2003) report on the role of the Indian National Task Force on Information Technology and Software Development: Within 90 days of its establishment, the Task Force produced an extensive background report on the state of technology in India and an IT Action Plan with 108 recommendations. The Task Force could act quickly because it built upon the experience and frustrations of state governments, central government agencies, universities, and the software industry. Much of what it proposed was also consistent with the thinking and recommendations of international bodies like the World Trade Organization (WTO), International Telecommunications Union (ITU), and World Bank. In addition, the Task Force incorporated the experiences of Singapore and other nations, which implemented similar programs. It was less a task of invention than of sparking action on a consensus that had already evolved within the networking community and government. Regulated VSAT links became visible in 1994. Desai (2006) describes the steps taken to relax regulations on linking in 1991: In 1991 the Department of Electronics broke this impasse, creating a corporation called Software Technology Parks of India (STPI) that, being owned by the government, could provide VSAT communications without breaching its monopoly. STPI set up software technology parks in different cities, each of which provided satellite links to be used by firms; the local link was a wireless radio link. In 1993 the government began to allow individual companies their own dedicated links, which allowed work done in India to be transmitted abroad directly. Indian firms soon convinced their American customers that a satellite link was as reliable as a team of programmers working in the clients' office. Videsh Sanchar Nigam Limited (VSNL) introduced Gateway Electronic Mail Service in 1991, the 64 kbit/s leased line service in 1992, and commercial Internet access on a visible scale in 1992. Election

results were displayed via National Informatics Centre's NICNET. "The New Telecommunications Policy, 1999" (NTP 1999) helped further liberalize India's telecommunications sector. The Information Technology Act, 2000 created legal procedures for electronic transactions and e-commerce. A joint EU-India group of scholars was formed on 23 November 2001 to further promote joint research and development. On 25 June 2002, India and the European Union agreed to bilateral cooperation in the field of science and technology. India holds observer status at CERN, while a joint India-EU Software Education and Development Center will be located in Bangalore.

Contemporary situation

In the contemporary world economy, India is the largest exporter of IT. Exports dominate the Indian IT industry and constitute about 79% of the industry's total revenue. However, the domestic market is also significant, with robust revenue growth. The industry's share of total Indian exports (merchandise plus services) increased from less than 4% in FY1998 to about 25% in FY2012. The technologically-inclined services sector in India accounts for 40% of the country's GDP and 30% of export earnings as of 2006, while employing only 25% of its workforce, according to Sharma (2006). According to Gartner, the "Top Five Indian IT Services Providers" are Tata Consultancy Services, Infosys, Wipro, and HCL Technologies. [10] Major information technology hubs Bangalore Bangaluru is known as the Silicon Valley of India. [11][12] Notable tech park are Electronics City Phase I & II, ITPL, Bagmane Tech Park, Embassy Golf Links, Manyata Tech Park, Global Village Tech Park, Embassy TechVillage. Chandigarh Chandigarh is also one of the growing international IT services and outsourcing exporters. The next upcoming tech park will be a world trade center. Chennai As of 2012, Chennai is India's second-largest exporter of information technology (IT) and business process outsourcing (BPO) services. Tidel Park in Chennai was billed as Asia's largest IT park when it was built. Major software companies have their offices set up here, with some of them making Chennai their largest base. Hyderabad Hyderabad – known for the HITEC City or Cyberabad – is a major global information technology hub and the largest bioinformatics hub in India.[yderabad has emerged as the second-largest city in the country for software exports pipping competitors Chennai and Pune. Notable tech and pharma parks are HITEC City, Genome Valley, and Hyderabad Pharma City Kochi Infopark, Kochi or Cochin is an information technology park situated in the city of Kochi, Kerala, India. Established in 2004 by the Government of Kerala, the park is spread over 260 acres (105.2 ha) of campus across two phases, housing 392 companies that employ more than 42,000 professionals as of 2018. The park is built on the 'Hub and Spoke model' for the development of the Information Technology industry in Kerala. InfoPark Kochi acts as the hub to the spokes located at Thrissur and Cherthala. Considering the requests of various IT companies and developers for space and land, Infopark Kochi is expanding its activities in Infopark Phase II. This campus is at a distance of around 2 km from Phase I campus and is on the side of Kadamprayar river. The new park lies in an extent of 160 acres in the neighboring Kunnathunad-Puthencruz villages of Kunnathunad Taluk, Ernakulam District. The Board of Approvals (BoA) of the Union Ministry of Commerce has granted SEZ status to the 98 acres in Infopark phase II. As per the latest data reported, total IT exports from Kochi stands at 6200 crore Pune The Rajiv Gandhi Infotech Park in Hinjawadi is a ₹600-billion (US$ 8.9 billion) project by the Maharashtra Industrial Development Corporation (MIDC).[The IT Park encompasses an area of about 2,800 acres (11 km2) and is home to over 800 IT companies of all sizes. Besides Hinjawadi, IT companies are also located at Magarpatta, Kharadi and several other parts of the city. As of 2017, the IT sector employs more than 300,000 people Employment generation India's growing stature in the Information Age enabled it to form close ties with both the United States and the European Union. However, the recent global financial crises have deeply impacted Indian IT companies as well as global companies. As a result, hiring has dropped sharply, and employees are looking at different sectors like financial services, telecommunications, and manufacturing, which have been growing phenomenally over the last few years. With fundamental structural changes visible everywhere in the IT services due to Cloud computing, a proliferation of Social media, Big data, Analytics all leading to digital services and digital economy, many of the leading companies in India's IT sector reported lower headcounts in their financial results. (DAV University, study materials and Wikipedia)

Rise of the IT Industry in India

SECTION 2. THE RISE AND DEVELOPMENT OF IT INDUSTRY The IT industry in India came into existence in the year 1974. It was the time when mainframe manufacturer Burroughs asked Tata Consultancy Services (TCS) to export programmers for installing system software for a U.S. client. The IT industry was formed in a very unusual market conditions. During this government was more focused towards the agriculture sector rather the service sector. Local markets were absent and government policy toward private enterprise was hostile. The IT industry started its roots from Mumbai based businessmen. They started their operations by sending software programmers to global IT firms located abroad and making money from this. During that time Indian economy was state-controlled and the state remained hostile to the software industry through the 1970s. Import tariffs were high (135% on hardware and 100% on software) and software was not considered an "industry", so that exporters were ineligible for bank finance. Government policy towards IT sector changed when Rajiv Gandhi became Prime Minister in 1984. His New Computer Policy (NCP-1984) consisted of a package of reduced import tariffs on hardware and software (reduced to 60%), recognition of software exports as a "delicensed industry", i.e., henceforth eligible for bank finance and freed from license-permit raj, permission for foreign firms to set up whollyowned, export-dedicated units and a project to set up a chain of software parks that would offer infrastructure at belowmarket costs. These policies laid the foundation for the development of a world-class IT industry in India. The industry structure in the IT sector has four major categories. These are - IT Software, IT services, BPO, & IT enabled services Hardware.It is noted that the Indian IT industry is growing at robust pace driven by greater acceptability of the outsourcing concept, expansion of service offerings and high quality delivery capabilities. The industry remains one of the highest contributors of employment and foreign exchange to the country. The key drivers of the robust growth include verticals such as Banking and Financial Services companies, Pharma and Legal Services. It is useful to understand the structure of the Indian IT Industry, and the place that the IT software, IT services, ITeS &BPO, hardware segment has within it.

I.T. Software: Software products are among the most highly exported products from India. The software industry in India originated in the 1970s and grew at a significant pace in the last ten years. Also a number of software product firms have grown over the last decade from a little over 100 in 2000 to nearly 2400 in 2013. The revenue from the software product segment currently stands at 2.2 billion.

IT services: IT services constitute a major part of the IT industry of India. IT services include client, server and web based services. Opportunities in the IT services sector exist in the areas of consulting services, management services, internet services and application maintenance. The Indian IT services market grew 7.1% to reach $7.7 billion in 2014 helped by higher demand for cloud infrastructure and cloud-hosted applications and a renewed focus on infrastructure projects.

BPO• & IT enabled services: The services which make extensive use of information and telecommunication technologies are categorized as IT enabled services. The IT enabled services is the most important contributor to the growth of the IT industry of India. In India, Business Process Outsourcing (BPO) is the fastest growing segment of the ITES (Information Technology Enabled Services) industry. Factors such as economy of scale, business risk mitigation, cost advantage, utilization improvement and superior competency have all lead to the growth of the Indian BPO industry. Business process outsourcing in India, which started around the mid-90s, has now grown by leaps and bounds. India is now the world's favoured market for BPO companies, among other competitors, such as, Australia, China, Philippines and Ireland. The BPO boom in India is credited to cheap labour costs and India's huge talent pool of skilled, English-speaking professionals. The BPO industry provides employment to around 0.7 million people across the country. The yearly revenue amounts to around $11 billion.

Hardware: The overall size of Indian ICT hardware market, which comprises printers, servers and computers among others, stood at US$15.87 billion, showing a growth of 23.98% over the previous year. The biggest driver of this growth has been Phablets, which has registered a humongous growth of 527% over last year to do 50.8 mn sales and is expected to grow by around 65% in the next fiscal years. Today, Indian IT companies such as Tata Consultancy Services (TCS), Wipro, Infosys, HCL etc are renowned in the global market for their IT prowess. These companies played a bigger role in transforming India into the world's largest sourcing destination for the information technology (IT) industry, accounting for approximately 67 per cent of the US$ 124-130 billion market. The industry employs about 10 million workforce. More importantly, the industry has led the economic transformation of the country and altered the perception of India in the global economy. India's cost competitiveness in providing IT services, which is approximately 3-4 times cheaper than the US, continues to be the mainstay of its unique selling proposition (USP) in the global sourcing market. However, India is also gaining prominence in terms of intellectual capital with several global IT firms setting up their innovation centres in India. (The Evolution and Growth of IT Sector in India Rahul Chattopadhyay Globsyn Business School, Kolkata, National Campus ISSN 2348-7585 (Online) Vol. 3, Issue 2, pp: (790-797), Month: October 2015 - March 2016, Available at: www.researchpublish.com)

The presence of a nascent IT industry could be found during the early years of post-independence India, although it remained an insignificant sector for long. As may be surmised from Figure 1, even by the early 1990s the sector had achieved little to underscore its contribution to the national industrialization process. This was although the state had made immense efforts to build and nurture a knowledge infrastructure, which enabled the IT industry to prosper post the 1990s. This exemplary role played by the state early on must not be undermined. Nevertheless, it has been argued that in keeping with the growing pace of transnationalization of business and trade, the state had played a proactive role from the mid-1980s to the mid-1990s (Evans 1995; Heeks 1996; and Joseph 1997). A particular mention may be made of the strong emphasis placed on the discipline of electronics and telecommunications, which picked up rapidly from 1980 onwards, leading to an increase in the number of seats in the discipline in public engineering and technical education/training institutions. 1 Moreover, with the economic reforms formally in place by the early 1990s, India's position as the preferred business process outsourcing (BPO) and knowledge process outsourcing (KPO) destination in the world had been established. India entered the global IT market by capitalizing on the demand for low-cost but high-quality programming skills (Parthasarathy 2004a). The establishment of a series of software technology parks (STPs) across several cities in India during the 1990s (and beyond) was an exemplary initiative of the state, akin to affirmative action, in promoting an industry. Besides a favorable domestic policy climate and highly attractive export promotion schemes, a host of external factors were crucial for the growth of the software industry (Sharma 2015). Several state-promoted technical and other professional institutes of higher learning contributed to the massive rise in the number of IT/ITES-trained graduates and professionals by introducing various relevant courses in their curricula. The import–export policy of 1983–84 and subsequent foreign trade policies of 2004–09 and 2009–14 laid a clear emphasis on the promotion of exports from the IT sector. Also, the foreign direct investment (FDI) policies adopted in the early 1990s and encouragement offered to IT companies to set up operations in special economic zones (SEZs) indirectly incentivized the IT industry. The deregulation of the telecom sector gave a big boost to the IT revolution in India. Moreover, labor reforms introduced during the post-liberalization period facilitated easy hiring and firing, thereby benefiting the firm owners in the sector. Figure 1 depicts the impressive performance of the sector in terms of the exports from the Indian IT/ITES sector since the turn of the millennium. This remarkable transformation of the sector is attributable in a large measure to the Indian IT sector's matchless solution to the unprecedented global IT crisis, best known as the "Y2K problem" or the "Millennium bug." 2 It is widely acknowledged that the Indian IT business grew manifold on the basis of the competence displayed in solving this crisis, and subsequently prominent multinational companies (MNCs) started outsourcing financial, legal, logistics, retail, and health services in large volumes to the Indian IT sector. In a sense, the Indian strategy and experience with software services is not very different from that of Taiwan or South Korea in manufacturing (Parthasarathy 2004a). However, the global financial crisis that precipitated in 2007–08 had an adverse impact on the Indian IT industry's prospects; the major MNCs, particularly from the United States (US) and United Kingdom (UK), scaled down their orders. This was in addition to the fact that the US government, as a matter of policy, was not keen that large-scale BPO assignments be awarded to the Indian IT firms. Despite these external challenges, the Indian IT services have performed impressively even during the recent years. For instance, in 2015 alone, the IT and BPO/business process management (BPM) business had generated a revenue worth $148

billion (amounting to 8.1% of the GDP), and its exports had amounted to approximately $98 billion. The Indian I.T. companies have set up over 600 delivery centers across 78 countries, thus maintaining their leadership position in the global sourcing arena. 3 Notwithstanding the moving up of India in the value chain over the last one and a half decades, the Indian IT sector is still viewed by major MNCs from the industrialized nations as a destination where cheap labor is available. This is because a significant portion of the Indian outsourcing industry still comprises low-end IT services.

The presence of a nascent IT industry could be found during the early years of post-independence India, although it remained an insignificant sector for long. As may be surmised from Figure 1, even by the early 1990s the sector had achieved little to underscore its contribution to the national industrialization process. This was although the state had made immense efforts to build and nurture a knowledge infrastructure, which enabled the IT industry to prosper post the 1990s. This exemplary role played by the state early on must not be undermined. Nevertheless, it has been argued that in keeping with the growing pace of transnationalization of business and trade, the state had played a proactive role from the mid-1980s to the mid-1990s (Evans 1995; Heeks 1996; and Joseph 1997). A particular mention may be made of the strong emphasis placed on the discipline of electronics and telecommunications, which picked up rapidly from 1980 onwards, leading to an increase in the number of seats in the discipline in public engineering and technical education/training institutions. 1 Moreover, with the economic reforms formally in place by the early 1990s, India's position as the preferred business process outsourcing (BPO) and knowledge process outsourcing (KPO) destination in the world had been established. India entered the global IT market by capitalizing on the demand for low-cost but high-quality programming skills (Parthasarathy 2004a). The establishment of a series of software technology parks (STPs) across several cities in India during the 1990s (and beyond) was an exemplary initiative of the state, akin to affirmative action, in promoting an industry. Besides a favorable domestic policy climate and highly attractive export promotion schemes, a host of external factors were crucial for the growth of the software industry (Sharma 2015). Several state-promoted technical and other professional institutes of higher learning contributed to the massive rise in the number of IT/ITES-trained graduates and professionals by introducing various relevant courses in their curricula. The import–export policy of 1983–84 and subsequent foreign trade policies of 2004–09 and 2009–14 laid a clear emphasis on the promotion of exports from the IT sector. Also, the foreign direct investment (FDI) policies adopted in the early 1990s and encouragement offered to IT companies to set up operations in special economic zones (SEZs) indirectly incentivized the IT industry. The deregulation of the telecom sector gave a big boost to the IT revolution in India. Moreover, labor reforms introduced during the post-liberalization period facilitated easy hiring and firing, thereby benefiting the firm owners in the sector. Figure 1 depicts the impressive performance of the sector in terms of the exports from the Indian IT/ITES sector since the turn of the millennium. This remarkable transformation of the sector is attributable in a large measure to the Indian IT sector's matchless solution to the unprecedented global IT crisis, best known as the "Y2K problem" or the "Millennium bug." 2 It is widely acknowledged that the Indian IT business grew manifold on the basis of the competence displayed in solving this crisis, and subsequently prominent multinational companies (MNCs) started outsourcing financial, legal, logistics, retail, and health services in large volumes to the Indian IT sector. In a sense, the Indian strategy and experience with software services is not very different from that of Taiwan or South Korea in manufacturing (Parthasarathy 2004a). However, the global financial crisis that precipitated in 2007–08 had an adverse impact on the Indian IT industry's prospects; the major MNCs, particularly from the United States (US) and United Kingdom (UK), scaled down their orders. This was in addition to the fact that the US government, as a matter of policy, was not keen that large-scale BPO assignments be awarded to the Indian IT firms. Despite these external challenges, the Indian IT services have performed impressively even during the recent years. For instance, in 2015 alone, the IT and BPO/business process management (BPM) business had generated a revenue worth $148 billion (amounting to 8.1% of the GDP), and its exports had amounted to approximately $98 billion. The Indian I.T. companies have set up over 600 delivery centers across 78 countries, thus maintaining their leadership position in the global sourcing arena. 3 Notwithstanding the moving up of India in the value chain over the last one and a half decades, the Indian IT sector is still viewed by major MNCs from the industrialized nations as a destination where cheap labor is available. This is because a significant portion of the Indian outsourcing industry still comprises low-end IT services.

Literature Review:

1. The Evolution and Growth of IT Sector in India Rahul Chattopadhyay Globsyn Business School, Kolkata, National Campus. Abstract: The paper explains the rise and growth of India's IT industry. In general, information technology covers all aspects of managing and processing information. The last decade of 20th century has witnessed information technology to have revolutionary effect on the lives of people. In the last two decades there is 20 times increase in export revenues for the IT industry, employing over two million people. Today the whole IT industry is playing a major role in the growth of Indian economy. The paper shows how to analyse the growth and performance of information technology industry in India. Various aspects of information technology industry like composition, revenue, exports, wealth creation, size and share, localization etc. are studied.

2. Indian Information Technology Industry : Past, Present and Future& A Tool for National Development Somesh.K.Mathur1 Abstract India's software and services exports have been rising rapidly. The annual growth rate ranges between 20 -22% in IT services and nearly 55 % in IT-enabled services (ITES), such as call centres, Business Process Outsourcing (BPO) and other administrative support operations. Together they are predicted to grow at 25% pa till 2010.The IT industry is highly export oriented and the exporters are predominantly Indian. The Indian BPOs (ITES) are moving up the value chain, handling high end data for airline information, insurance, banking sector and mortgage companies, enterprise resource planning, among others. Some of the companies have already moved into significantly higher value added segments such as mission- critical applications, development and support, product design, HR Management, knowledge process outsourcing for pharmaceutical companies and large complex projects.

3. CONTRIBUTION OF INFORMATION TECHNOLOGY AND GROWTH OF INDIAN ECONOMY Mohit Dubey Director, CRC,IFTM University, Moradabad Aarti Garg Assistant Professor, SBM, IFTM University, Moradabad. Information technology is an important emerging sector of the Indian economy. The Government of India has identified IT industry as one of the major industries in India and it plays an

important role in achieving the policy objectives like economic development. The IT industry has mellowed over the years andhas emerged to be a chief contributor to the globaleconomic growth. The IT sector, constitutedby the software and services, Information Technology Enabled Services (ITES) and the hardware segments, hasbeen on a gradual growth trajectory with a steady rise in revenues as witnessed in the past few years.The size of this sector has increased at a rate of 35% per year during the last 10 years. The share of information technology industry is 7 percent of gross domestic product (GDP) in Indian economy according to NASSCOM (www.imdr.edu; www.nasscom.org.). The prime aim of this paper is to analyze the growth and performance of information technology industry in India.

4. Indian IT industry: a performance analysis and a model for possible adoption Mathur, Somesh Kumar RIS. INDIAN IT INDUSTRY: A PERFORMANCE ANALYSIS AND A MODEL FOR POSSIBLE ADOPTION SOMESH K MATHUR1 Synopsis India's software and services exports have been rising rapidly. The annual growth rate ranges between 20 -22% in IT services and nearly 55 % in IT-enabled services (ITES), such as call centres, Business Process Outsourcing (BPO) and other administrative support operations. Together they are predicted to grow at 25% pa till 2010.The IT industry is highly export oriented and the exporters are predominantly Indian. The Indian BPOs (ITES) are moving up the value chain, handling high end data for airline information, insurance, banking sector and mortgage companies, enterprise resource planning, among others. Some of the companies have already moved into significantly higher value added segments such as mission- critical applications, development and support, product design, HR Management, knowledge process outsourcing for pharmaceutical companies and large complex projects.

5. A STUDY OF IMPACT OF INFORMATION TECHNOLOGY IN INDIAN BNAKING INDUSTRY Ibha Rani Research Scholar, VTU Bangalore, India Email: ibharani2006@gmail.com. Indian banking industry is in midst of IT revolution. Banking industry is backbone of Indian financial system and it is afflicted by many challenging forces. One such force is revolution of information technology. In this Globalized era, technology support is very important for the successful functioning of the banking sector. This research paper focuses on the impact of technology in Indian banking sector. Without information technology and communication we cannot think about the success of banking industry, it has enlarged the role of banking sector in Indian economy. Information technology refers to the acquisition, processing, storage and communication of all types of information by using computer technology and telecommunication system. Information technology is an integrated framework for acquiring and evolving of IT to achieve certain strategic goal.

Objective:

1. To know the overall concept of Information Technology.
2. To study the Current Scenario and Role of information Technology by different Policies implementated by the Government.
3. Last five years of growth rate, Top leading Companies and Top leading states for I.T.

Research Methodology :

This study is descriptive in character and is supported by secondary sources of information. Applicable information has been collected from various research papers, journals and magazines of national publications and various websites from The IT-BPM sector accounts for a significant portion of India's GDP, with a substantial share of global outsourcing. The data has been presented in the form of a table and interpretation has been made in light of the objectives of the study cited above.

Assessment of Government Policies

National-level IT Policy Initiatives

The state's policy of protection and promotional intervention has aided in the development of technological capabilities, including those in the IT sector, in a number of developing economies, including China, South Korea, Brazil, India, and others (Heeks 2004). Three phases have been identified by Parthasarathy (2004b) in an analysis of the nature of state intervention in the Indian IT sector: strict policy restrictions prior to 1984, loosened restrictions between 1984 and 1990, and proactive promotion of the IT industry after 1990. Post-reform policies for the Indian IT sector have aligned with the clear global trend in development policy thinking away from state intervention and toward market-oriented policies (Harindranath and Liebenau 1995). Through the implementation of numerous initiatives, the Indian government has taken on the role of an active promoter and facilitator of the IT sector.

Table 1: Selected Policies and Their Focus on the IT Industry in India

Policies with Primary Focus on the IT Industry	Policies That Indirectly Helped the IT Industry
New Computer Policy (1984); Software Policy (1986);IT Act, 2000 and IT Act (Amendment) (2008); National Electronics Policy (2012); National Cyber Security Policy (2013)	EXIM Policy (1985, 1992–97, 2002–07); Industrial Policy (1991);Labour Reforms Policy, SEZ Policy (2000); Science, Technology and Innovation Policy (2013); Foreign Trade Policy (2009–14, 2015–20); Fiscal Policy; FDI Policy; Education Policy (1968, 1986, 1992, 2015); National Manufacturing Policy (2011)

Source: Prepared by authors on the basis of information obtained from the Ministry of

Statistics and Programme Implementation, Reserve Bank of India, and Ministry of Human

Resource Development.

Across several developing economies, such as India, Brazil, China, and South Korea, the state policy of protection and promotional intervention has helped build technological capabilities, including those in the IT sector (Heeks 2004). In an analysis of the nature of state intervention in the Indian IT sector, Parthasarathy (2004b) has identified three phases—rigid policy restrictions (prior to 1984), eased restrictions (1984–90), and proactive promotion of the IT industry (post 1990). Policies for the Indian IT industry in the post-reform period have been congruous with the obvious global shift in development policy thinking from state intervention towards market-oriented policies (Harindranath and Liebenau 1995). In India, the state has assumed the role of a facilitator and active promoter of the IT industry through the initiation of several policies directly and indirectly concerning the sector and its various facets. 4 In addition to the IT Act of 2000 (Ministry of Law, Justice, and Company Affairs 2000) and the IT (Amendment) Act of 2008 (Ministry of Law and Justice 2009), it is possible to identify policies, at least since the mid-1980s, that directly or indirectly helped the growth of the IT industry (Table 1). These policies, inter alia, simplified procedures and reduced the number of documents and formalities required in foreign trade. The reforms made the import of capital goods, including computer hardware, smart mobiles, and related accessories, cheaper. This helped in meeting the demand for products needed to fuel the IT revolution in our country. The removal of state controls and regulations and export incentives offered to IT firmsthrough a series of policy reforms led the Indian exporters to explore business opportunities in new markets outside India. Macro policies with general growth objectives also helped this industry grow significantly. For example, several STPs and electronics hardware technology parks (EHTPs) were set up across the country under the export, import, and foreign trade policies. The IT industry also cashed in on several government-initiated major projects such as computerization of train reservation and banking operations, networking of government offices, modernization of telecom infrastructure during the 1980s, withdrawal of money through ATMs, the use of the Unique Identification Authority of India (UIDAI) card for the transfer of government benefits to people, and e-governance for better public service delivery (Sharma 2015). The IT/ITES industry will play a vital role in the recently launched government programs/schemes such as Make in India, Stand-up India, Digital India, and Smart City Mission. The role of state policy in the IT industry, particularly in India, has been well-acknowledged in literature (Parthasarathi 1987; Joseph 1997 and 2007; Heeks 1996; Chowdary 2002; Mani 2001a and 2001b; Joseph and Parayil 2008). The government set up or promoted a number of professional and specialized institutions of repute in different stages across the country that helped lay a strong foundation for the growth of the IT industry. 5. Without the state's infrastructure during the 1960s and 1970s—designed to promote import substitution industrialization—the industry would not have been in a position to exploit the opportunities that arose during the 1980s (D'Costa 2011). During the past six decades, the central government has provided fiscal concessions such as tax holidays and reductions in excise duty and import duty to promote the IT sector. The liberalization of imports since the mid-1980s rendered it easier to import computer spare parts and components for assembling, repairing, and maintainingold computers. Trade fairs, seminars, and conferences were organized regularly to facilitate networking to boost the IT sector. A number of trade and technology-related agreements signed by central and state governments with other nations and United Nations agencies benefited the IT sector substantially. Further, the establishment of computer-related infrastructure such as IT parks, 6 earth stations, satellite links, and international gateways and the setting up of institutions such as the Computer Software Export Promotion Council were proactive policy initiatives. Importantly, the government itself has been a bulk buyer of computer hardware and software manufactured by domestic firms to promote local manufacturers. While a single window clearance mechanism for trade in IT products has been facilitated, state policies on data security, prevention of piracy, content regulation, and cyber crimes have also been framed from

GOVERNMENT INITIATIVES

Some of the major initiatives taken by the government to promote the IT and ITeS sector in India are as follows:

- The Union Budget 2024-25, presented by Finance Minister Nirmala Sitharaman on July 23, 2024, proposes an allocation of Rs. 1,16,342 crore (US$ 13.98 billion) for IT and Telecom sectors. (ibef.org)
- In March 2024, The Cabinet approved an allocation of over Rs. 10,300 crore (US$ 1.2 billion) for the IndiaAI Mission, marking a significant step towards bolstering India's AI ecosystem. (ibef.org)
- The government prioritizes cybersecurity, hyper-scale computing, AI, and blockchain. With data costs at Rs. 10/GB ($0.12/GB), India ranks among the world's cheapest. (ibef.org)
- Cabinet approved PLI Scheme – 2.0 for IT Hardware with a budgetary outlay of Rs. 17,000 crore (US$ 2.06 billion). (ibef.org)
- In September 2022, the new Telecommunications Bill 2022 was published for public consultation by the Ministry of Communications as a move toward creating a new telecom framework in India. (ibef.org)
- In August 2022, the Indian Computer Emergency Response Team (CERT-In), in collaboration with the Cyber Security Agency of Singapore (CSA), successfully planned and carried out the "Synergy" Cyber Security Exercise for 13 countries to build network resilience against ransomware attacks. (ibef.org)
- In June 2022, STPI Director General Mr. Arvind Kumar stated that exports through STPI units have increased from Rs. 17 crore (US$ 2.14 million) in 1992 to Rs. 5.69 lakh crore (US$ 71.65 billion) in 2022. (ibef.org)
- In May 2022, it was announced that Indians can now avail of their DigiLocker services through WhatsApp to get easy access to their official documents. (ibef.org)
- In April 2022, the Indian Computer Emergency Response Team (CERT-In) issued Directions to strengthen cybersecurity in the country. (ibef.org)
- The government introduced the STP Scheme, which is a 100% export-oriented scheme for the development and export of computer software, including the export of professional services using communication links or physical media. (ibef.org)
- In November 2021, the government launched the Internet Exchange in Uttarakhand to enhance the quality of internet services in the state. (ibef.org)
- The Karnataka government signed three MoUs worth Rs. 100.52 crore (US$ 13.4 million) to help the state's emerging technology sector. (ibef.org)
- In September 2021, the Indian government announced a plan to build a cyber-lab for the 'Online Capacity Building Programme on Crime Investigation, Cyber Law, and Digital Forensics' to strengthen cyber security capabilities. (ibef.org)
- In September 2021, the Ministry of Electronics, and Information Technology (MeitY) organised a workshop under the theme of 'Connecting all Indians' to promote public and private stakeholders' interest in the country and expand internet access to remote areas. (ibef.org)
- In September 2021, the Indian government launched the Meghalaya Enterprise Architecture Project (MeghEA) to boost service delivery and governance in the state by leveraging digital technologies, to make Meghalaya a high-income state by 2030. (ibef.org)
- In September 2021, the Indian government launched Phase II of the Visvesvaraya PhD Scheme to encourage research in 42 emerging technologies in Information Technology (IT), Electronics System Design & Manufacturing (ESDM) and Information Technology-Enabled Services (ITES). (ibef.org)
- In September 2021, the Indian government inaugurated five National Institute of Electronics & Information Technology (NIELIT) Centres in three Northeastern states to boost the availability of training centres and employment opportunities. (ibef.org)
- On July 2, 2021, the Ministry of Heavy Industries and Public Enterprises launched six technology innovation platforms to develop technologies for globally competitive manufacturing in India. The six technology platforms have been developed by IIT Madras, Central Manufacturing Technology Institute (CMTI), International Centre for Automotive Technology (iCAT), Automotive Research Association of India (ARAI), BHEL, and HMT, in association with IISc Bangalore. (ibef.org)
- The Department of Telecom, Government of India and Ministry of Communications, Government of Japan, signed an MoU to enhance cooperation in areas of 5G technologies, telecom security and submarine optical fibre cable systems. (ibef.org)

Table 2: Policy Thrust Areas in the IT Sector in India since 1955

Period	Thrust Areas	Inadequacies
1955–70	Early computing	Only individual motivation to the sector
1970–78	Slow growth of indigenous computers	No clear IT policy
1978–90	Hardware manufacturing	Substantial dependence on electronics/computer imports
1991–97	Improved telecom infrastructure, sops and incentives	Confined to select citie
1997–2008	Export promotion, clusters of IT or STPIs	Unevenly spread across space
2008–14	ITES, software development for export purpose. India becoming software superpower	No hardware manufacturing, no pan-India presence, domestic demand untapped, poor data security
2014 and After	Maturing with diversification of ITES, big data, cloud computing, e-commerce	No autopilot mode, stuck with low-end of the IT services value chain

Source: Compiled from Rajaraman (2012), Sharma (2009 and 2015), Heeks (2004) and

Department of Electronics and Information Technology.

Time to Time. The central government has incentivised IT fi rms for obtaining international quality certifications such asISO 9000 and Capability Maturity Model (CMM). Similarly, public–private partnership (PPP) model in the sector has beenencouraged for greater foreign and domestic investment, faster technology transfer, and improvement in efficiency. Table 2

(p 58) briefl y outlines the areas on which the government IT policies have focused upon.

Though the central government had realised the importance of harnessing the benefits of computer technology and promotingan indigenous electronics industrial base by the 1960s, not much could actually take place due to restrictive tradepolicies in place (Table 2). While recommendations of the Electronics Committee, 1966, headed by Homi J Bhabha, hadoutlined the proposal to promote a self-reliant domestic industry, the refusal to entertain foreign technology (mainly American)through the FDI route to set up an export-oriented industry base did not allow the sector to take off during the 1960s andmuch of the 1970s (Sharma 2009).7 During the 1970s, some of the top-class science and engineeringinstitutes—Indian Institutes of Technology (IITs), Indian Institute of Science (IISc), Bhabha Atomic ResearchCentre (BARC), Tata institute of Fundamental Research (TIFR) and Indian Statistical Institute (ISI)—had provided superior ITtraining and education to their students. Unfortunately, these professionals did not have the expertise to manufacture ITproducts. This could be attributed to the woeful state of scientific c laboratories to carry out extensive research. This acted asmajor barrier to develop hands-on capacity to manufacture computer hardware and other IT products domestically. Therewas a definite shortage of skilled professionals in design development and engineering of production machinery. AsParthasarathi (1987) has argued, this shortage made the domestic industry heavily dependent on imported technology,and the benefits of technological innovations remained elusive despite an enviable human resource base in IT and ITES spheres.

In fact, as a late fallout of India's war with China in 1962, the central government realised the significance of technology fornational security, and this realisation led to the establishment of the Department of Electronics in June 1970.

The policy emphasis on self-reliance through the promotion of an indigenous IT industry remained throughout much of the1970s. But by 1978, there had emerged a growing recognition of the potential of imported technology in accelerating thenational electronics and computer industry. It was, therefore, no coincidence that between 1978 and 1984 a host of state andcentral electronics development corporations were established with the "state-of-the-art" facilities for manufacturing, trainingand education. This reorientation in policy could be seen in the formulation of several "forward-looking" policies, which underlined this newfound belief. The Electronics Commission (1971), New Computer Policy (1984), New Electronics Policy (1985), and Indian Software Policy (1986) were formal initiatives undertaken to create a strong base for an outward-oriented and liberalised IT sector in India. Notwithstanding these bold policy efforts, in practice, the IT activities undertaken by the state, private sector, universities, or institutions continued to remain dependent on the imports of computers, peripherals, and other components. Hence, by the mid-1980s a gradual but visible shift towards external

orientation of the so-far "protected" ITindustry could be noted. With the economic reforms formally in place by 1991, the IT sector received a major boost during the 1990s through a series of state policies—the dismantling of Foreign Exchange Regulation Act (FERA) and other restrictive regulations; setting up of STPs and EHTPs; introduction of single window clearance and, importantly, removal of physical controls on imports of most electronics equipment and components (Joseph 2007). Similar policies were introduced in the subsequent decades as well.8 Moreover, the implementation of the New IndustrialPolicy of 1991 and subsequent state policies to facilitate the IT (including BPO) sector through tax-free and fi scally-incentivisedSEZs and National Manufacturing Investment Zones have been recognised as important measures in this direction.

Changes in state policies during the 1980s, which rejected a highly regulated, autarchic development approach, were essentialfor the rise of a software industry in India (Parthasarathy 2004a). As Chowdary (2002: 3887) remarks:Luckily, the IT industry was born in India after 1992; were it born in 1960s or 1970s, it too would have been nationalized, that is, taken over by the state and ruined just like any other public sector enterprise, so, to conclude, the IT industry, particularly the software industry is apost-1992 phenomenon and depended on no permits, quotas, licenses and favours of the government. The major change in the nature, intensity and objectivesof state intervention in the IT industry after 1991 is obvious(Table 3). During the pre-1991 period, it was only the centralgovernment that provided all kinds of fi scal incentives andinfrastructure facilities to promote the IT industry in India

Table 3: State Policies in India: Before and After 1991

Pre-1991	Post-1991
Strong state protection for industry from competition through licence raj and FERA and very high tax rates	Without protection of domestic industries,tax rateswere reduced substantially,fewer financial and bureaucratic controlson imports of IT products and technologytransfer
Emphasised more on hardwaremanufacturing and its exports	Emphasised more on softwaredevelopment and its exports
Fundamental research anddevelopment for innovation at publicsector academic and research institutes	Value added research and development at both public and private research institutesand only technical support
Import of technology and foreigncollaboration for production	Import of computers and spare parts for maintenance and repair services, tradeand marketing of IT products
Only central governmentofferedfiscal incentives	Both central and state governmentsoffered fiscal incentives
Proactive role of government at thecentre and limited role of the stategovernments	Less proactive role for central governmentbut the provincial governments havebeen trying hard to get a larger share of the IT sector
Less emphasis on e-governance	Greater emphasis on e-governance
Export bias and ignoring domesticsector	Exploring opportunities in the domesticmarket

Source: Prepared by the authors based on Heeks (2004) and Sharma (2009 and 2015).

output, employment, and exports, the state governments too started offering attractive incentives on a competitive basis to set up IT businesses in their respective states. Moreover, the extensive use of IT, mainly to improve governance at all levels, is a distinctive phenomenon in post-reforms India. Notwithstanding decades of central government intervention, the Indian IT sector had largely served the low-end voice and non-voiced ITES and was nowhere near what the global IT giants (as SAP, HP, Microsoft, Google, etc) had achieved. The Government of India, possibly for the fi rst time, through its National Policy on Electronics, 2012, focused on building the Electronic System Design and Manufacturing (ESDM) capability in the country.

Major Challenges before the IT Sector

Not withstanding a range of policy initiatives to take the industry forward, the Indian IT sector is still stuck in the low-end

segment, threatening its pre-eminent position which it enjoyed during the early 2000s. Some of the major concerns plaguing this sector have been discussed below.

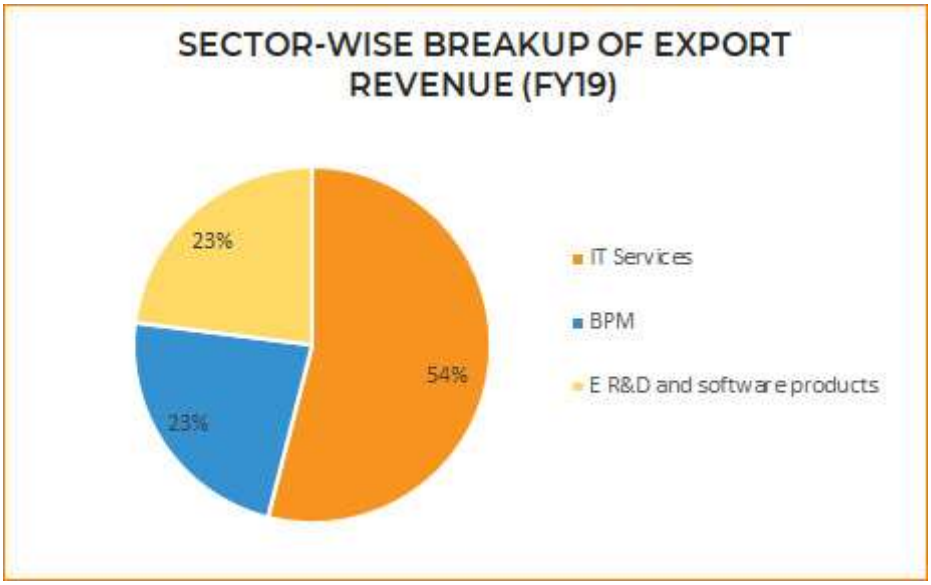
Neglect of research and development: The neglect of research and development (R&D) in the IT sector is evident from the fact that the number of information technology related patents registered by Indian companies during the 15-year period (1999–2013) has remained relatively low; only 14% patents were registered in computer technology (14%), 3% in IT methods for management, and 3% in digital communication (Figure 2). While this unenviable record reflects the poor R&D taking place in STPs, which account for much of the software exports from India, it also shows that the fi rms outside the software parks were just not exporting enough. It has been pointed out that the uneven performance of fi rms in STPs across states has affected the R&D activities. As shown in Figure 3, four states, namely, Andhra Pradesh (14%), Karnataka (35%),

Maharashtra (20%) and Tamil Nadu (11%) accounted for 80% of the total exports from registered units with STPIs (software technology parks of India) for 2012–13.

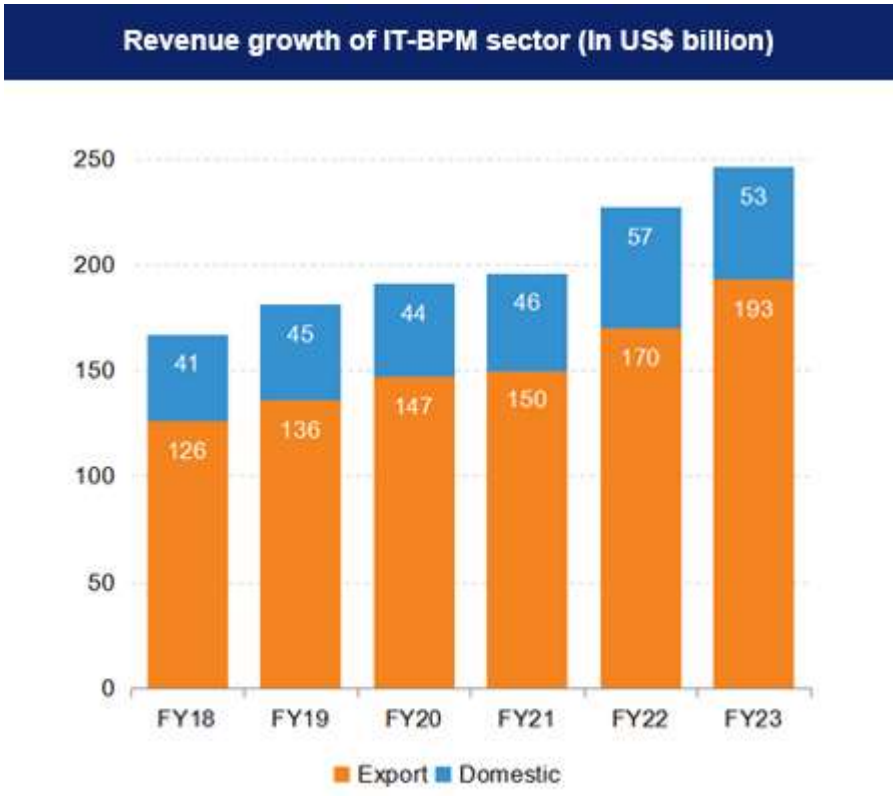
Neglect of electronic hardware manufacturing: Mani (1995) argues that innovation capabilities of developing countries in areas of high technology such as telecommunication equipment get influenced in a significant manner by not only the domestic policies and support systems which favour such activities but also by the external environment. In the last 10–15 years (2000–15), countries such as China, Korea, Taiwan, Singapore and Malaysia have emerged as leading global IT hardware and electronics manufacturers/exporters and have contributed significantly to the growth of their economies, whereas the Indian electronics industry has failed to keep pace with these countries and is still at a nascent stage of development (Vijayasri and Rao 2013). India's current competitiveness in the international IT market may be undermined by the emergence of new players like China, which has a solid hardware base and a rapidly strengthening software base (Joseph 2007).

Indicator: Internet subscribers per 100 population 13.5 Over a period of 12 years, internet subscriber base has increased from 0.21 million in 1999 to 20.99 million in 2011. The 20.99 million Internet subscribers at the end of Sep-2011 as compared to 19.67 million at the end of March-2011 registered a growth of 6.71% within a period of six months.

*As on 30th September 2011; for other years, the figures are as on 31st March. Source: Telecom Regulatory Authority of India



Growth Rate for Non-Current Assets incresed during F/Y 2019 to I.T. Sector by 54%, BPM by 23% and E R&D and Software e products by 23%. (ibef.org)



Source: NASSCOM

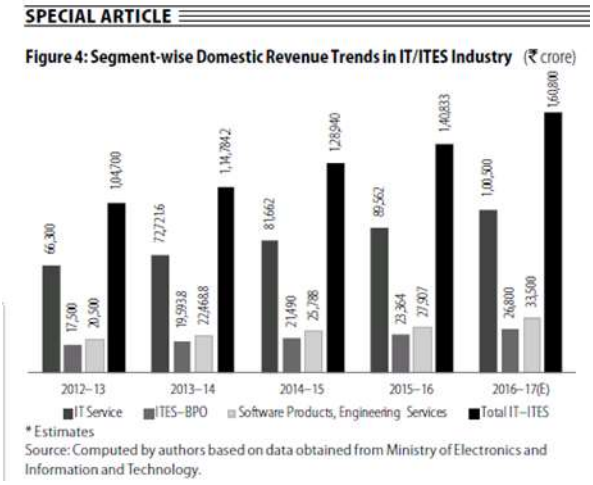
According to the National Association of Software and Service Companies (NASSCOM), the Indian IT industry's revenue touched US$ 227 billion in FY22, a 15.5% Yearly growth and was estimated to have touched US$ 245 billion in FY23.The IT spending in India is estimated to record a double-digit growth of 11.1% in 2024, totalling US$ 138.6 billion up from US$ 124.7 billion last year. By 2025, the Indian software product industry is projected to hit Rs. 8,68,700 crore (US$ 100 billion) as companies seek to expand globally. (ibef.org)

Too much emphasis on low-end IT services: The Indian IT/ ITES industry is virtually in a trap, providing low-end services.

Most of the Indian IT fi rms provide business-to-business (B2B) services and not business-to-consumer (B2C) till date. India is

yet to see its own corporate IT product company the size of Google, Yahoo, Facebook, SAP, WhatsApp, or Adobe. However,

in recent times, the high-end IT segments like cloud computing, big data, and mobile applications are also becoming an integral part of the IT fi rms in India. Constant innovation in SMAC (social, mobile, analytics, and cloud computing) technologies is the biggest factor posing serious threats as well as creating



opportunities for the IT industry in India. The ever-changing terms and conditions of IT business models coupled with clients' demand for latest IT technologies and technological disruptions are transforming this sector significantly.

Although the value of domestic revenue from the IT/ITES industry has been on the rise, the share of the high-end softwareproducts and engineering services for the period 2012–16 remained just half of that of the IT services and one-fifth of the total revenue from these three segments of the industry in2016–17 (Figure 4). But, the compound annual growth rate(CAGR) for the segment, unlike a decade back, for the same period was 13.22%, and was the highest among the threesegments—IT services (8.68%), ITES/BPO (12.53%), and totalIT/ITES (8.96%).9

Indian IT and BPM industry's revenues

	in US$ Rs (as of FY23)
Export revenues	194 billion
Domestic revenues	51 billion
Total IT Revenues	245 billion
Total direct employees in IT sector:	54 lakh

Largest Indian IT companies based on market capitalization

Top IT services companies in India in 2022 by market capitalization. In September 2021, TCS recorded a market capitalization of US$ 200 billion, making it the first Indian IT tech company to do so.On 24 August 2021, Infosys became the fourth Indian company to reach $100 billion in market capitalization.

Rank	IT Services Company name	Market capitalization in 2022(US$ Billion)	Market capitalization in 2022(₹ Cr)
1	Tata Consultancy Services	200	14,63,372.44
2	Infosys	100	7,34,140.78
3	Wipro	50	3,17,428
4	HCL Technologies	36.67	3,18,061
5	LTIMindtree	20.86	1,33,592.40
6	Tech Mahindra	12.65	1,33,592.40

Largest Indian IT companies in India based on revenue

Top IT services companies in India in 2022 by revenue.

Rank	IT Services Company name	Revenue in 2022(US$ Billion)	Revenue in 2022(₹ Cr)
1	Tata Consultancy Services	27.5	195,772
2	Infosys	18.2	123,936
3	HCL Technologies	12.3	85,651
4	Wipro	11.2	79,093
5	Tech Mahindra	6.5	38,642
6	LTIMindtree	4.1	33,000

IT-BPM employees headcount by location

IT-BPM Employees headcount in India

S.No	Region	Employee Count in IT/ITES (as of FY23)
1	Bengaluru	15 lakh
2	Hyderabad	9.05 lakh
3	Chennai	6 lakh
4	Pune	8 lakh
5	Kolkata	2 Lakh

Concluding Observations

The I.T. policy in India has undergone drastic changes duringthe past 60 years. Following the early decades of protectionism, by the mid-1980s, the state, partially and gradually though, moved ahead to liberalise the economy and formulated its firstcomputer policy. However, even though the government had realised early on the potential of computer technology for the economic progress of the nation, the dependence on imports of I.T. hardware remained heavy for the decades to come. Anothe rpolicy concern was the uneven growth of the sector spatially. By the early 1990s, the central government had created a notable IT infrastructure, especially the STPs and related transport and communication network. However, in subsequent years, several state governments started offering attractive fiscal sops and other incentives for IT firms; a few states succeeded in creating IT clusters, which were mostly concentrated in the four states of Karnataka, Maharashtra, Andhra Pradesh, and Tamil Nadu.

The Indian IT industry has experienced substantial growth over the last five years, with a significant contribution to the country's GDP and a substantial increase in exports. Key factors driving this growth include increased domestic demand, digital transformation, and the expansion of the Software as a Service (SaaS) and digital infrastructure industries. While short-term challenges like rising hiring costs exist, the long-term outlook for the industry remains positive, with projections of continued expansion and global market share gains.

Key Growth Metrics:

Revenue:

The Indian IT industry's revenue reached US$227 billion in FY22, with a 15.5% year-on-year growth. It's estimated to have reached US$245 billion in FY23.

IT Spending:

IT spending in India is projected to grow by 11.1% in 2024, reaching US$138.6 billion.

GDP Contribution:

The IT industry contributes significantly to India's GDP, accounting for 7.5% in FY23. It's

Global Market Share:

India holds a significant share of the global IT outsourcing market.

Job Creation:

The IT sector has created a substantial number of jobs, making it a major career provider for educated young Indians.

The Indian IT industry has experienced substantial growth over the last five years, with revenue reaching $227 billion in FY22 and an estimated $245 billion in FY23. This represents a 15.5% year-on-year growth in FY22, according to IBEF. The industry is expected to continue its growth trajectory, with projections indicating it could reach $350 billion by 2026 and contribute 10% to India's GDP, according to (IBEF).

Indian IT and BPM industry's revenues:

Export revenues	194 billion
Domestic revenues	51 billion
Total IT Revenues	245 billion
Total direct employees in IT sector:	54 lakh

Largest Indian IT companies based on market capitalization is Tata Consulatancy Service.

Rank IT Services Company name Revenue in 2022(US$ Billion) Revenue in 2022(₹ Cr)

is Tata Consultancy Service.

IT-BPM Employees headcount in India are Bangaluru, Hyderabad, Pune, Channai and Kolkata.

Globally, India has continued to perform well in the computer software and ITeS sphere since the post-reforms period.

However, this achievement has been dwarfed by the neglect of high-end IT services, albe it can be noted that latest technological advancements like cloud computing, big data and mobile applications, increasingly, are becoming part of business of IT firms in India. Too much of dependence on a few external markets for IT exports could prove to be a risky business model,

and there is a serious need to explore possibilities of broad market by looking at the African, Asian and Latin American markets.India's leading position as the global outsourcing hub has now come to be challenged by the anti-outsourcing policy of the US government, slowing down of growth in the developed world, and the fast-growing competition from Philippines, China, and Costa Rica. Also, the IT/ITES sector in the country faces a scarcity of professionals and venture capital. The increased threat to cyber security due to cloud computing, internet of things e-commerce, and digital payments is another concern which the industry has to deal with today. Recent government initiatives like Make-in-India, 100 Smart Cities Mission, and Digital India aim at improving e-governance, reducing electronics imports, spreading the benefits to smaller towns, and access untapped markets in India. But the success of such state initiatives would hinge upon constant innovation, improving the IT infrastructure, and removing legal and administrative bottlenecks to sustain its leadership position.

References

1. Relevant information and data from other website likes: www.ibef.org, www.google.co.in and www.wikipidea.org.
2. Few Journals, Magazines others many more articles had been studies during the study or preparation of this articles.
3. Kaiser, M. O. 1974. "Kaiser-Meyer-Olkin Measure for Identity Correlation Matrix." Journal of the Royal Statistical Society 52 (1): 296–298.
4. Keong, L. S., and O. Dastane. 2019. "Building a Sustainable Competitive Advantage for Multi-Level Marketing (MLM) Firms: An Empirical Investigation of Contributing Factors." Journal of Distribution Science 17 (3): 5–19. https://doi.org/10.15722/jds.17.3.201903.5
5. Ketokivi, M., and J. T. Mahoney. 2020. "Transaction Cost Economics as a Theory of Supply Chain Efficiency." Production and Operations Management 29 (4): 1011–1031.
6. Kim, Y., T. Y. Choi, T. Yan, and K. Dooley. 2011. "Structural Investigation of Supply Networks: A Social Network Analysis Approach." Journal of Operations Management 29 (3): 194–211. https://doi.org/https://doi.org/10.1016/j.jom.2010.11.001
7. Lamming, R., T. Johnsen, J. Zheng, and C. Harland. 2000. "An Initial Classification of Supply Networks." International Journal of Operations and Production Management 20 (6): 675–691. https://doi.org/10.1108/01443570010321667
8. Lee, K., and K-Y.Loi. 2016. "Towards Satisfying Distributors in Multilevel Marketing Companies." International Journal of Management and Applied Research 3 (1): 48–64. https://doi.org/10.18646/2056.31.16-004
9. Legara, E. F., C. Monterola, D. E. Juanico, M. Litong-Palima, and C. Saloma. 2008. "Earning Potential in Multilevel Marketing Enterprises." Physica A: Statistical Mechanics and Its Applications 387 (19–20): 4889–4895. https://doi.org/10.1016/j.physa.2008.04.009.
10. The Evolution and Growth of IT Sector in India Rahul Chattopadhyay Globsyn Business School, Kolkata, National Campus. International Journal of Management and Commerce Innovations ISSN 2348-7585 (Online) Vol. 3, Issue 2, pp: (790-797), Month: October 2015 - March 2016,
11. Indian Information Technology Industry : Past, Present and Future& A Tool for National Development Somesh.K.Mathur1.

12. CONTRIBUTION OF INFORMATION TECHNOLOGY AND GROWTH OF INDIAN ECONOMY Mohit Dubey Director, CRC, IFTM University, Moradabad Aarti Garg Assistant Professor, SBM, IFTM University, Moradabad. Voice of Research Vol. 2, Issue 4, March 2014 ISSN 2277-7733

13. Indian IT industry: a performance analysis and a model for possible adoption Mathur, Somesh Kumar RIS. INDIAN IT INDUSTRY: A PERFORMANCE ANALYSIS AND A MODEL FOR POSSIBLE ADOPTION SOMESH K MATHUR1 Online at http://mpra.ub.uni-muenchen.de/2368/ MPRA Paper No. 2368, posted 07. November 2007 / 02:26.

14. A STUDY OF IMPACT OF INFORMATION TECHNOLOGY IN INDIAN BNAKING INDUSTRY Ibha Rani Research Scholar,VTUBangalore,IndiaEmail: ibharani2006@gmail.com.