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# CONTENTS

Sr. No.	TITLE & NAME OF THE AUTHOR (S)	Page No.
1.	TRENDS IN PRODUCTION, SALES AND COST STRUCTURE OF SELECT PHARMACEUTICAL INDUSTRIES IN INDIA <i>DR. N. PASUPATHI</i>	1
2.	A STUDY ON ETHICAL VALUES AS CONTAINED IN BHARAT RATNA DR. M. G. RAMACHANDRAN'S SELECTED FILM SONGS – AN ACADEMIC COMPARATIVE ANALYSIS WITH CONTEMPORARY THEORIES OF ETHICS <i>P. SARVAHARANA, DR. P. THYAGARAJAN &amp; DR. S. MANIKANDAN</i>	10
3.	ROLE OF EMOTIONAL INTELLIGENCE IN HR PRACTICES: AN EMPIRICAL EVIDENCE FROM INDIAN MANUFACTURING SECTOR <i>DR. DEVENDER SINGH MUCHHAL &amp; DR. AJAY SOLKHE</i>	17
4.	EXAMINATION OF MICRO FINANCE RESOURCES AND AWARENESS LEVEL OF PEOPLE IN WARDHA DISTRICT <i>KAMLESH P. THOTE &amp; DR. RAVISH A. SARODE</i>	20
5.	CUSTOMER RELATIONSHIP MARKETING: IT'S IMPACT ON CUSTOMER SATISFACTION IN BANKS <i>NEHA VIJ &amp; DR. JYOTI RANA</i>	23
6.	FINANCIAL PERFORMANCE ANALYSIS ON SELECT PARAMETERS OF TELANAGAN GRAMEENA BANK <i>DURDANA BEGUM &amp; BADIUDDIN AHMED</i>	25
7.	UNDERSTANDING THE LINK BETWEEN HUMAN RESOURCE MANAGEMENT PRACTICES AND EMPLOYEE LOYALTY <i>PAVITHRA.S, DR. V. KRISHNAMOORTHY &amp; DR. R.SOMASUNDHARAM</i>	28
8.	QUALITY OF WORK LIFE AS PREDICTOR OF EMPLOYEES MENTAL HEALTH IN PUMP INDUSTRIES WITH REFERENCE TO COIMBATORE DISTRICT <i>DR. V. ABIRAMI &amp; R. SWARNALATHA</i>	34
9.	EXAMINING TOURIST BEHAVIOR TOWARDS TOURISM PRODUCTS IN HIMACHAL PRADESH <i>KULDEEP KUMAR &amp; ASHWANI KUMAR</i>	37
10.	PERFORMANCE APPRAISAL SYSTEM (PAS) - A REVIEW <i>DR. A. PUNNAVANAM</i>	44
11.	AN ECONOMIC ANALYSIS OF MAIZE MARKETING IN KARNATAKA: A CASE STUDY OF DAVANGERE DISTRICT <i>SUNITHA.N.M &amp; DR. B. P. VEERABHADRAPPA</i>	48
12.	A STUDY OF CROSS-LEVEL FACTORS IN MOTIVATING TEAM CREATIVITY: IN TAIWAN'S UNIVERSITIES <i>YEH, YU-MEI, LI, FENG-CHIA &amp; LIN, HUNG-YUAN</i>	54
13.	TREND AND MAGNITUDE OF NPA IN CO-OPERATIVE BANK <i>SURESH BABU K N &amp; DR. SURESHRAMANA MAYYA</i>	61
14.	RECENT TRENDS OF CONSUMER BEHAVIOUR TOWARDS DURABLE PRODUCTS IN INDIA: A LITERATURE REVIEW <i>PRITI JHA &amp; DR. JYOTI RANA</i>	66
15.	IMPACT OF CAREER DEVELOPMENT ON QUALITY OF WORK LIFE IN IT SECTOR <i>KATHIRAVAN &amp; DR. R RAJENDRAN</i>	69
16.	THE COW - ECONOMIC AND FINANCIAL ASPECTS AND PROSPECTS <i>DR. LALIT KUMAR &amp; ROHIT KUMAR</i>	73
17.	FACTORS AFFECTING SELECTION OF B- SCHOOLS IN INDORE, INDIA <i>NIDHI JHAWAR &amp; BARKHA AGRAWAL</i>	79
18.	THE ROLE OF IT INDUSTRY IN INDIAN ECONOMY <i>DR. SHEFALI PANWAR</i>	83
19.	IMPACT OF E- COMMERCE: CHANGING TRENDS OF SMES <i>D. MELBHA</i>	89
20.	THE IMPACT OF STOCK SPLITS ON STOCK LIQUIDITY AND INVESTOR WEALTH CREATION <i>KUSHAGRA GOEL</i>	94
21.	MASTERSTROKE: DEMONETISATION <i>VANASHREE H. TRIVEDI</i>	98
22.	ROLE OF HR IN THE MODERN CORPORATE WORLD <i>M. JEEVAN JYOTHI</i>	101
23.	AN EXAMINATION OF INFLUENCE OF SELECTED MACROECONOMIC VARIABLES ON INDIAN STOCK MARKET <i>ILAKKIA M.M. &amp; DR. KRISHNAMOORTHY V.</i>	104
24.	A STUDY ON THE RELATIONSHIP BETWEEN DIVIDEND PER SHARE AND MARKET PRICE PER SHARE - WITH RESPECTIVE TO INDIAN PHARMACEUTICAL INDUSTRY <i>PR VENUGOPAL &amp; PURNACHANDER KONDERI</i>	111
25.	AGRICULTURAL MARKETING - CHALLENGES & CHANCES <i>M. SELVAMUTHU, M. NAVEENKUMAR &amp; B. KIRUTHIKA</i>	114
26.	DETERMINATES OF PARTICIPATION IN MICROFINANCE INSTITUTION: THE CASE OF ZIWAY DUGDA AND MUNESA DISTRICTS IN ARSI ZONE OROMIA REGIONAL STATE OF ETHIOPIA <i>TEKELAB CHERENT TOHBO</i>	117
27.	AWARENESS AND ACCEPTANCE OF GOLD AS AN INVESTMENT AVENUE AMONG WOMEN EMPLOYEES IN TECHNO PARK <i>IRENE ELSA MANI</i>	124
28.	FOOD SAFETY KNOWLEDGE AND PRACTICES OF MOTHERS OF ANGANWADI SCHOOL CHILDREN IN THOOTHUKUDI DISTRICT <i>R. ANANTHA LAXMI</i>	130
29.	INFUSE FLAME TO INDIAN BUSINESS WORLD THROUGH WOMEN ENTREPRENEURS <i>POOJA</i>	134
30.	SELFIE ADDICTION AMONG YOUTH IN KOLLAM CITY <i>ANN MARY ALEXANDER &amp; FATHIMA SHEREEF</i>	136
	<b>REQUEST FOR FEEDBACK &amp; DISCLAIMER</b>	<b>141</b>

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## THE ROLE OF IT INDUSTRY IN INDIAN ECONOMY

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### ABSTRACT

*The Indian IT industry has received remarkable support and attention from the government, media, capitalists, and technocrats. During the last 2 decades, it has made astonishing achievements. The share of IT Industry in India's gross domestic product (GDP) has radically increased from 7.5 percent in 2011-12 to 9.3 percent in 2015-16. The industry provides over 3.77 million direct and more than 10 million indirect jobs to the India's workforce. On the other hand, currently the industry come up with a number of challenges, like, global slowdown in economic activities, low employability of IT graduates, protectionist measures adopted by some importing countries, emergence of other competitors, infrastructure constraints, rising costs of production, discontinuation of fiscal incentives and lack of a supportive policy framework. In view of these aspects, this paper attempts to measure the current state of the industry and identify its future concerns. This study is based on secondary data collected from different published sources, including NASSCOM and Department of Information Technology, Government of India. This paper studies the growth trends in the gross value added, employment, and export of the industry; discusses its key challenges and give a brief description of its future prospects. The policies and initiatives taken by the government for its development have also been examined.*

### KEYWORDS

Indian software industry, economic development, IT exports, employment, GDP.

### 1. INTRODUCTION

With the remarkable support and attention received from the government, the Indian IT industry has achieved exceptional growth during the last 2 decades. Its share in the India's gross domestic product (GDP) has significantly increased from 0.62 percent in 1994-95 to 5.8 percent in 2008-09 and further to 8.1 percent 2013-2014. In the financial year 2015-2016, the share of the industry in the total GDP of the country was estimated to be about 9.3 percent. As far as employment generation in the industry is concerned, the number of direct jobs created by the industry has significantly increased from 0.52 million in 2001-02 to 3.6 million in 2015-16. The IT industry provides indirect employment to more than 11 million people of the country (GOI, 2012). The industry has comparative advantage in the production and exports of IT products and services mainly due to availability of a large English speaking talent pool relatively at much cheaper wages (Arora et.al: 2001; Singh: 2002; Arora and Athreya: 2002; GOI: 2009; NASSCOM:2010 & 2012). The liberalized policy 'fast technological advancement and reduction in prices of computer hardware and fast expansion of engineering education in the areas of computer science and technology, have been emerged the key factors behind its remarkable growth. However, currently the industry faces a number of challenges such as global slowdown in economic activities, low employability of IT graduates, protectionist measures adopted by some importing countries, infrastructure constraints, rising costs of production of services, discontinuation of fiscal incentives under STPs scheme and lack of a supportive policy framework.

### 2. OBJECTIVES

1. To study growth trends in the industry.
2. To study Revenue Trends of IT and ITES Industry.
3. To study Employment Status of IT and ITES Industry.
4. To addresses its key challenges along with its future prospects.

### 3. RESEARCH METHODOLOGY

**PERIOD OF STUDY:** The study based on Industry Data for the period from 2011 to 2016 (i.e for 5 years)

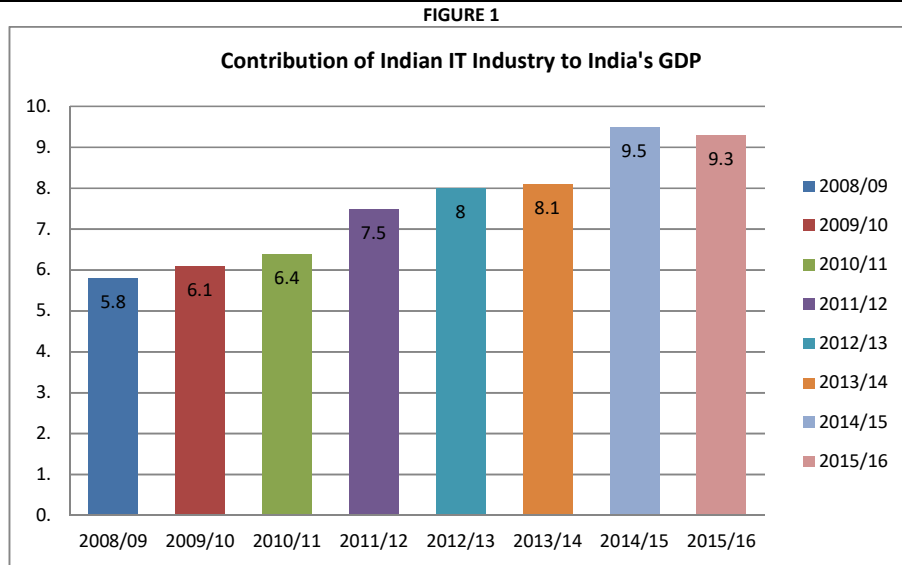
**SOURCE OF INFORMATION:** Secondary data from various Reports from Department of Electronics and Information Technology has been taken to collect the required data for this study.

### 4. BRIEF HISTORY OF THE INDUSTRY

The emergence of the IT industry in India is a recent phenomenon, especially after mid 1990s, its origin can be dated back to 1974 when the mainframe manufacturer, Burroughs, asked its India sales agent, Tata Consultancy Services (TCS), to export programmers for installing system software for a U.S. client. During 1970s, domestic market for the IT products and services was almost absent and government policies toward private sector were not conducive. Indian economy was, then, state-controlled and private sector was subjected to various restrictions, including licensing. Import tariffs on computer hardware and software were quite high. Moreover, software companies were not given the industry status and as a result, software exporters were not eligible for bank finance (Dossani, 2005). Thanks to the Central Government headed by Rajiv Gandhi as Prime Minister during mid-1980s that the IT industry got policy thrust and it started evolving as a vibrant and fastest growing industry. The computer policy of 1984 explicitly acknowledged the importance of software development and underlined the need for institutional and policy support. The 1984 policy consisted of a package of reduced import tariffs on hardware and software (reduced to 60%), recognition of software exports as a "de-licensed industry", i.e., henceforth eligible for bank finance and freed from license-permit raj, permission for foreign firms to set up wholly-owned, export-dedicated units and a project to set up a chain of software technology parks that would offer infrastructure at below-market costs. In 1986, an explicit software policy was announced and software was identified as one of the key sectors on India's agenda for export promotion (Government of India, 1986). The Government of India enacted Information Technology Act 2000 to deal with different issues related to the industry. These efforts laid the foundation for the development of a world-class IT industry in India.

### 5. INDUSTRY GROWTH AND STRUCTURE

Indian IT industry has achieved phenomenal growth during the last 15 years. In 2010-11, the industry was estimated to generate aggregate revenues of USD 88.1 billion, with the IT software and services sector (excluding hardware) accounting for USD 76.2 billion of revenues (NASSCOM: 2012). Fig. 1 shows the trends in GDP of ICT sector at the current market prices. The ICT sector is divided into organized manufacturing and services. Further, services are also classified into two categories, namely computer related services and communication related services. It is observed that the overall GDP of the country has increased from 5.8% in 2008-09 to 9.3% in 2015-16.



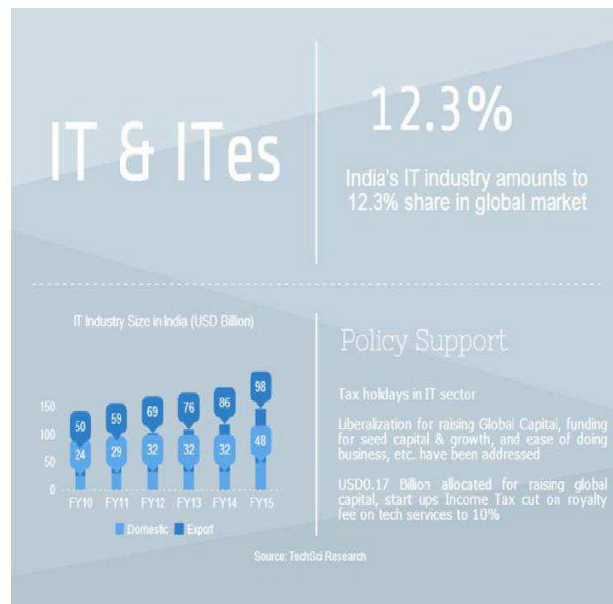
Source: Nasscom

Figure 2 also shows that the market shares of ICT sector (both service and manufacturing together) in the overall GDP of the country has gone up from 74 billion in 2009-10 to 146 billion in 2015-16. Within the ICT sector, it is the service sector that has recorded the phenomenal growth in its share in the total GDP, while share of ICT manufacturing sector does not evince any increase.



Source: Nasscom, TechSci Research  
Note: E - Estimates

FIGURE 2



The structure of the IT industry is quite different from other industries. Unlike manufacturing units where bulk of raw material is required to produce the finished products, IT companies require knowledge as a major input and therefore mainly depend on skilled manpower. The success of the IT industry has been largely due to huge availability of skilled manpower relatively at cheaper cost. Since capital requirement for setting up an IT company is relatively low (mainly computer hardware, software and internet infrastructure), availability of trained manpower along with the enabling policy environment acted as driving factor for the emergence and growth of small IT companies.

The IT industry structure can be classified into four categories, namely, IT services, IT-BPOs (ITES), software products and hardware. IT services include a major part of the industry. These services comprise client, server, and web-based services. The major users of IT services are banks, government departments, finance & insurance services, retail & distribution, manufacturing etc. ITES is the most important category of the IT industry. Among others, it covers customer-interaction services, such as, call centres, back-office services, revenue accounting, data entry and conversion, HR services, transcriptions and translation services, remote education, data search, GIS, market research, network consultancy, etc. Software products are the major source of export of IT sector. India does not have any big role in the production of computer hardware. However, use of computer hardware in the domestic market is quite high. Due to increase in the number of IT companies, sales of desktops, laptops, servers, routers, etc have been on the rise in recent years. Recently many domestic and multinational companies have invested in the computer hardware market in India.

The industry has a pyramid structure with a few large domestic companies dominating the industry and a large number of small and medium sized companies. Small firms play a dominant role in the domestic market by supplying IT software and services. Most of the IT companies are operating in the high-end software services and are making efforts to enter in the software product segment. Government of India has established STPs and SEZs to boost the IT software and services exports. Now the software companies have moved up in the value chain, improving productivity, and exploring new markets.

TABLE 1: TOP 10 IT SOFTWARE AND SERVICE COMPANIES IN INDIA (2015)

Sr. No	Name of Company	Revenue (Rs. crores)	Net Profit	Market Capitalization
1	TCS	64672.93	18474.92	487919.14
2	Infosys Technologies	44341	10194	221528.83
3	Wipro	38757.2	7387.4	132380.73
4	HCL technologies	16497.37	5984.62	129933.28
5	Tech Mahindra	16295.1	2685.5	58621.88
6	Oracle Financial Services	3159.47	1148.36	29538.11
7	Mindtree	3031.6	451.2	11148.64
8	Mphasis	1328.97	223.08	8132.48
9	Rolta India	1142.89	459.39	1786.72
10	Cyient	1224.49	254.91	5725.92

Source: Official Website of NASSCOM

There are about 8000 IT software products and services companies have registered under the STPs, the market is dominated only by 15-20 big companies. Table 1 shows the ranking of top 10 companies according to their revenue. In terms of 2014-15 sales revenues, TCS occupies the first place among all the firms. It is followed by Infosys, Wipro, HCL Technologies and Tech Mahindra. Cyient has the lowest rank, followed by Rolta India, Mindtree and oracle financial services.

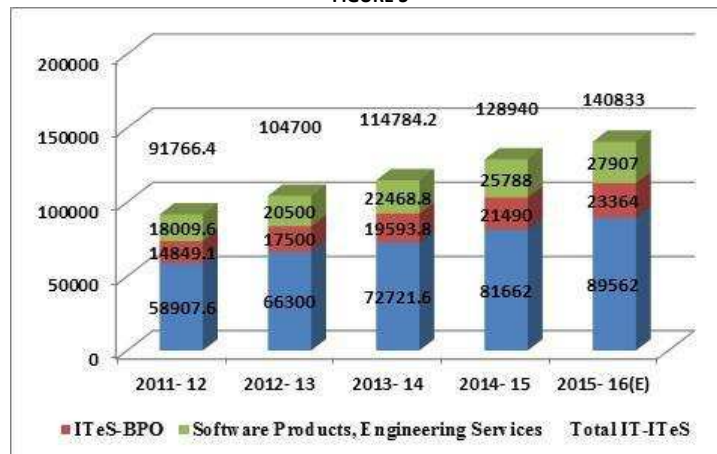
6. TRENDS IN OUTPUT AND EMPLOYMENT

The industry output is aggregate revenue (sales turnover) generated through selling of IT software and services, including IT-BPO. Trends are estimated only for the last 5 years. As table 2 shows that total revenue generated in the IT industry has enormously increased from Rs. 91766.4 crores in 2011-12 to Rs 140833 crores in 2015-16. Compound annual growth rate (CAGR) in the IT revenue is estimated to be 12.35 percent which is statistically significant at 1 percent level of significance. The annual growth rate in the revenue of IT industry is much higher than the overall GDP growth rate in the Indian economy during the same period. Figure 3 shows the revenue generated by IT industry through various segments.

TABLE 2: SEGMENT WISE DOMESTIC REVENUE TRENDS IN IT – ITES INDUSTRY (in INR Crores)

Year/Segment	2011-12	2012-13	2013-14	2014-15	2015-16(E)	CAGR % (2011-16)
IT Services	58907.6	66300	72721.6	81662	89562	12.33
ITes- BPO	14849.1	17500	19593.8	21490	23364	12.97
Software product & Engineering services	18009.6	20500	22468.8	25788	27907	11.91
Total IT- ITes	91766.4	104700	114784.2	128940	140833	12.35

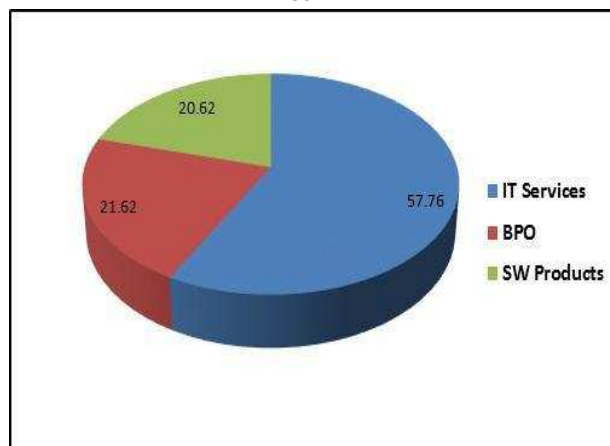
FIGURE 3



The given below figure 4 show that the maximum contribution in Revenue share is of IT Services i.e. 57.76% followed by BPO and SW Products with a share of 21.62% and 20.62% respectively.

IT-BPO REVENUE SHARE (YEAR 2015-16)

FIGURE 4



The various key driving factors in the growth of Indian IT industry are: strong competitive position of the industry with high market share; huge talent pool; well established delivery centres across the world; cost and tax advantages due to government policy initiatives such as STPs and SEZs; strong growth in export demand from new verticals and the non-traditional sectors such as public sector, health, media and utilities; increasing use of new and emerging technologies; and increasing IT adoption in various sectors of domestic economy. With Recent trends like, online retailing, cloud computing, e-commerce and e-governance have become the major driving forces behind the growth of the industry. Increasing internet penetration and affordability for personal computers has led to a rapid increase in the number of Internet users in the country to reach more than 121 million, out of which 17 million are online shoppers, according to the Internet and Mobile Association of India (IAMAI). Thus, keeping in view the size of domestic market and low penetration of IT and ITES, it seems that the Indian IT industry would not only have more demands of its products and services in the global market but it also has huge potential demand in the expanded domestic economy.

If we look at the segment-wise employment in the industry, we find that exports of IT services constitute the highest share in the total employment generation in the industry. It is followed by IT-BPO export and domestic market. IT and ITES export has been the major source of employment in this industry and its share has increased from 1.15 million in 2011-12 to 1.844 million in 2015-16. The share of domestic market in total employment of the IT Software and Services Industry has also increased from 0.56 million in 2011-12 to 0.758 million in 2015-16. Table 4 shows that the total employment created by the industry has gone up from 2.77 million in 2011-12 to 3.68 (E) million in 2015-16.

IT-ITeS exports constitute the major source of employment in this industry and its share has increased over the years. The details of direct employment by the sector for both, the Exports segment and domestic market segment, over the last five years are given below:

TABLE 3: EMPLOYMENT IN IT-ITES INDUSTRY (in millions)

Year/Segment	2011-12	2012-13	2013-14	2014-15	2015-16(E)
IT Services & Export	1.15	1.29	1.6	1.74	1.844
BPO Export	0.83	0.88	0.989	1.03	1.086
Domestic Market	0.56	0.60	0.699	0.745	0.758
Total employment	2.775	2.966	3.267	3.485	3.688

Source: Nasscom, E: Estimated

7. EXPORT TRENDS IN THE IT INDUSTRY

The most significant contribution of IT industry in the Indian economy is the foreign exchange earnings through export of IT software and services. The foreign exchange earnings of the IT sector are one of the key sources for reducing the trade deficit. The current account deficit (CAD) would have been much higher if the IT industry did not generate foreign exchange in the invisible head of the current account.

Table 4 shows that total export revenue of the IT industry has remarkably increased from US\$ 68.8 billion in 2011-12 to US\$ 107.8 billion in 2015-16. The table also reveals that

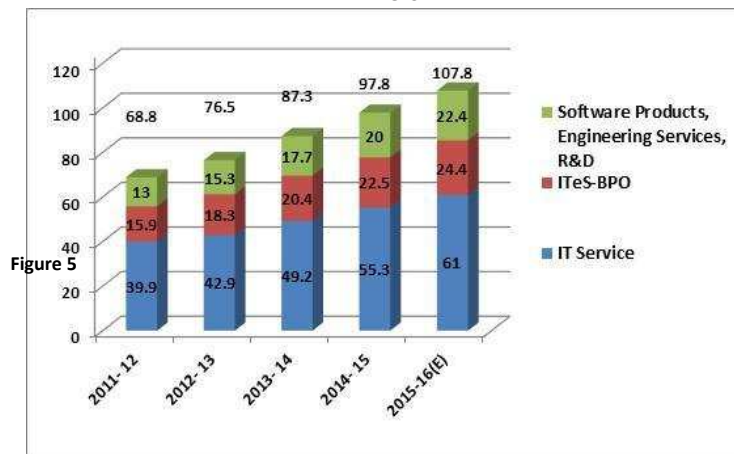
TABLE 4: SEGMENT WISE EXPORT REVENUE TRENDS OF IT AND ITES INDUSTRY EXPORT REVENUE TRENDS (In USD billion)

Year/Segment	2011-12	2012-13	2013-14	2014-15	2015-16(E)	CAGR%
IT Services	39.9	42.9	49.2	55.3	61	12.73
ITeS- BPO	15.9	18.3	20.4	22.5	24.4	11.43
Software Product ; Engineering services; R&D	13	15.3	17.7	20	22.4	14.46
Total IT-ITeS	68.8	76.5	87.3	97.8	107.8	12.81

Source: Nasscom, E: Estimated

As this is evident from the table 4 that Export of IT and ITes industry is estimated about USD 107.8 billion in the year 2015-16 that is rose upto 9% as compared to last year which was USD 97.8 billion. The growth rate of last five years is given in this table. There is an increasing trend with CAGR (12.81%) of last five years.

FIG. 5



The Segment-wise trends in export earnings of the IT sector are also estimated. Table 4 shows that IT services constitute the largest share of total export of IT industry, distantly followed by IT-BPO and software products/engineering services. Export of IT services has increased from US\$ 39.9 billion in 2011-12 to US\$ 61 billion in 2015-16(E). Thus, during the entire period under study, export of IT services grew. In case of export revenue of IT-BPO, the value has increased from US\$ 15.9 million in 2011-12 to US\$24.4 billion in 2015-16. As far as export revenue from software products/engineering services are concerned, Table 4 reveals that it has gone up from US\$ 13 billion in 2011-12 to US\$22.4 billion in 2015-16.

8. GOVERNMENT INITIATIVES

The liberalization of the Indian economy in the nineties has played a major role in the growth and development of the IT industry. The Economic reform measures, which include trade liberalization, elimination of duties on imports of IT products, relaxation of controls on FDIs and foreign exchange and the fiscal incentives, have been major contributory factors for the emergence of this industry. The Government of India set up Software Technology Parks (STPs) and Special Economic Zones (SEZs) for the promotion of the industry. Software Technology Parks of India (STPI) was set up in 1991 as an Autonomous Society under the Department of Electronics and Information Technology for boosting the software products and services. The scheme is a 100% export-oriented and is meant for undertaking of software development for export using data communication links. The scheme allows software companies to set up operations in most convenient and cheapest locations and plan their investment and growth driven by business needs. STPI has played a key role in the promotion of software exports with a special focus on SMEs and start up units. Since, the inception of the scheme, 52 STPI centres have been set up for the purpose of increasing the export of IT and ITES. Out of these 52 centres, 45 are in Tier II and Tier III cities (Annual Report of STPI, 2010-11). The major incentives provided to the IT companies under the scheme are: exemption

from customs duty on import of computer hardware and other IT products; exemptions from service tax, excise duty, and rebate for payment of central sales tax; 100 percent exemption from income tax of export profits till 31st March 2011; 100% FDI through automatic route; etc. The scheme is spread all over India and more than 8000 units have been registered under STP scheme. However, in view of the withdrawal of tax benefits for the STP units, the STPI has to evolve a new strategy and road map for further development of the IT sector.

Another scheme that benefits the IT industry is SEZ, which was set up by the Ministry of Commerce, Government of India with an objective of providing an internationally competitive and hassle free environment for exports. A SEZ is defined as a "specifically demarked duty-free enclave and shall deemed to be foreign territory (out of customs jurisdiction) for the purpose of trade operations and duties and tariffs". The SEZ Act, 2005 came into effect on 10th February, 2006. The SEZ offers similar benefits to SEZ units as compared to those under STPI in respect of indirect taxes, with some minor differences in operational details. There is, however, a significant difference, in respect of income tax exemption. In SEZ scheme, the exemption of export profits from income tax is 100% for the first five years, 50% for the next five years and 50% for another five years' subject to transfer of profits to special reserves. These two schemes have helped to boost the growth of the IT sector of India.

Apart from these initiatives, the Central and the State Governments have also taken several other steps which directly or indirectly facilitate the growth of IT industry. Investment made by the government on various e-governance projects, including 'Aadhaar' and digitalization of databases of government ministries, expansion of IT services in rural areas, etc. have provided impetus to the domestic market of the IT industry. The Indian government has also established a National Taskforce on IT with an aim of formulation of a durable National IT Policy for India (GOI: 2009). The 12<sup>th</sup> Plan also focuses on the development of the IT industry. The Department of Information Technology proposes to strengthen and extend the existing core infrastructure projects, including fibre optic based connectivity and setting up additional 150,000 Common Service Centres (CSCs) to create the good governance and service delivery ecosystem at the Panchayat level (GOI, 2012).

Report of Working Group constituted by the Planning Commission (GOI: undated) for IT Industry under the 12<sup>th</sup> Plan also emphasizes on promotion of e-governance, e-learning, e-security, e-industry, etc. The National e-Governance Plan with a vision to make all government services accessible to the common man in his locality, through common service delivery outlets, and ensure efficiency, transparency, and reliability of such services at affordable costs is an important initiative to be taken by the Government of India. In the area of education, e-learning initiative would provide cost effective and flexible system of delivery of education. Cyber security threats pose one of the most serious economic and national security challenges. Government initiatives in this direction would also provide additional opportunities to the IT companies. The key strategies under the Plan are to create an enabling policy environment for making IT industry a leader in developed and emerging markets; support SMEs through fiscal incentives and innovations; build world class infrastructure in identified Tier II and Tier III cities to create potential centres of excellence; and reduce the employability gap through skill development initiatives. It is hoped that all these initiatives would further boost the output, employment and export growth in the IT industry.

**9. CHALLENGES BEFORE THE INDUSTRY**

The Indian IT industry has been facing number of challenges in the changing global scenario, Though, the industry continues to remain a major player in the global IT outsourcing market, over the period, some new players, such as China, Philippines, Vietnam, Poland, Hungary, Mexico, Brazil, Egypt, etc., have also entered in the global IT outsourcing market. Many of these countries are offering a number of incentives to attract global players to set-up operations in their countries. The attractive incentives offered by these countries to the IT companies have encouraged MNCs and Indian companies to set up their units in these countries. The Chinese government has initiated several schemes to promote R&D activities and building talent pool through investing more in education and skill formation. Another challenge before the Indian IT industry is that since the IT companies are relatively less capital intensive and more flexible in their operations, these companies can easily be relocated in a very short time to those countries which provide better infrastructure, policy environment and fiscal incentives. Therefore, if competitiveness of the Indian IT industry is to be kept maintaining, this potential challenge needs to be given a serious thought.

Reduced competitiveness of the Industry is also seems to be a challenge. Cost of producing IT products and services is rising mainly due to inefficiencies in various infrastructural facilities such as power, transport, security; high real estate prices in the metros; and inadequate infrastructure in Tier II and Tier III cities Due to Lack of public infrastructure, the IT companies have invested in world class facilities, extensive talent development initiatives, disaster recovery and business continuity, high cost of transport, enhanced security, captive power generation, UPS and other equipments which have overall created a cost disadvantage of 10 –15% as compared to other emerging markets.

Employability of majority of computer software and IT graduates is the major problem. According to NASSCOM that about 25 percent of technical graduates and 10-15 percent of other graduates are found suitable for the employment in the growing IT and ITES companies. Consequently, the effective pool of employable graduates is far lower than the overall pool of people entering the working-age population. The Table 5 shows a study conducted by *Aspiring Minds* related to the employability rate. The table demonstrates that employability of graduates is higher in Tier I cities as compared to other cities in all sub-sectors of the IT industry.

**TABLE 5**

Role	Tier 1 cities	Tire 2 Cities	% Decrease (T1 to T2)	Tire 3 Cities	% Decrease (T2 to T3)
<b>IT Roles</b>					
Software Engineer- IT Product	4.65%	3.48%	25.13%	2.31%	33.64%
Software Engineer- IT Services	18.99%	17.70%	6.77%	16.24%	8.25%
Associate- ITeS Operations	37.91%	36.70%	3.21%	36.00%	1.89%
<b>ENGINEERING ROLES</b>					
Design Engineer – Non IT	6.65%	6.61%	0.70%	6.32%	4.31%
Sales Engineer – Non IT	19.62%	18.82%	4.12%	18.43%	2.06%
<b>NON-TECH ROLES</b>					
Business Analyst – KPO	11.88%	10.88%	8.38%	8.99%	17.36%
Associate – ITeS/BPO	41.62%	39.96%	4.00%	39.48%	1.19%
Technical Content Developer	12.59%	11.79%	6.37%	9.79%	16.94%
Creative Content Developer	17.84%	16.75%	6.08%	14.64%	12.64%

Growth of the Indian IT industry largely depends on the export which has become more volatile due to global economic and financial crisis. USA and UK account for about 75-80 percent of the total export earnings of the industry. The financial crisis in USA and resultantly protectionist policy measures adopted by the USA government has adversely affected the Indian IT industry. Some European countries have also adopted the protectionist measures against the outsourcing.

Although the Indian IT industry is a global leader in the outsourcing business, it lacks original technological development and relies mainly on the imported technology. A study by Chakraborty and Dutta (2002) identifies inadequate R&D investment, poor regulatory framework and lack of a sizable domestic market as the key constraints in the future development of the industry. Arora and Athreye (2002) also raise the doubt about the sustainability of the current export led growth in the industry without a vibrant domestic market. Therefore, technological innovation is necessary for improving the efficiency and productivity in the industry and maintaining its global leadership. Agrawal and Thite (2003) conducted in-depth interviews of stakeholders from Indian software organizations and found that the industry is facing many challenges, such as high rate of voluntary employee turnover; reluctance of professionals to make a transition from a technical to managerial position; lack of basic managerial and leadership skills; and work and learning preferences of software professionals that remain unmet.

In short, low employability of IT graduates, protectionist policy measures adopted by USA and some other countries, infrastructure constraints, rising costs of production of services, discontinuation of fiscal incentives under STPs scheme and lack of a supportive policy framework are the key challenges before the industry.

## 10. IT INDUSTRY FUTURE

In general India's success in the IT sector is due to the software industry's knowledge and expertise in cutting-edge technologies and its large base of skilled manpower. Both these strengths are likely to contribute to the industry's future growth. Wage costs in India are estimated about 1/3rd to 1/5<sup>th</sup> of the corresponding US levels for comparable work. In most of the countries, especially in advanced ones, number of aging persons is rising, while in India, proportion of young population has been rising over the period. This demographic factor would provide additional opportunities to the IT sector. The young people will not only consume more IT products and services and fuel the domestic market but also be the potential source of supply of low cost trained IT manpower for the industry. Apart from creating more number of IITs and NITs, the government has established several Indian Institutes of Information Technology, exclusively for the requirement of the IT industry. Private sector is also taking lead in opening up engineering institutes to cater to the manpower need of the software and IT companies. The brand equity that the Indian IT industry has made in the global market over the period will have an edge over the other competitors in the global market. The proliferation of IT and ITES and their continuing demand-led growth may well emerge to be a strong opportunity for India, both in terms of generating employment and export. Informal sector will also provide more opportunities to the industry in the areas of retail and wholesale trade, computer training, maintenance and repair, web design, desktop publishing, Internet cafes, web-based research, journalism, coaching centers, software development, etc. The increasing use of computers as an educational tool, rise in e-governance projects, and increasing demand of computers by households, small businesses, self-employed persons such as lawyers, doctors, architects, CAs, teachers, wholesalers, retailers, traders, transporters, etc would generate income and employment opportunities. Education and healthcare in rural areas are still a thrust area where IT can play a vital role to link the rural areas with advanced city life style. The domestic IT market, still in a nascent stage, is expected to witness substantial growth in future.

During the last 10 years, growth of the industry has largely driven by the external demand in the verticals like manufacturing, telecom, education, insurance, banking, finance and lately the retail. Now doubt, demands will continue to be made by these verticals, however future demand of the industry will be extended to some other emerging areas such as climate change, healthcare, energy efficiency, automobile, e-governance, sustainable energy, agriculture and rural development. With the future growth in educational institutions, healthcare infrastructure, transport and communication, socio-economic and physical infrastructure and digitalization and computerization of government ministries and organizations, and household demands for personal computers/laptops with internet services, the industry get further impetus. Keeping in view the huge size of the country in terms of population and aggregate GDP, the future of the IT industry in the domestic market also appears to be quite bright. Availability of low cost skilled manpower and the cutting-edge technologies are the key strengths of the industry which are expected to continue in future too. However, in order to retain talent, the industry should focus on three key areas—imparting professional training, offering competitive reward and employee empowerment (PcW: 2011).

## 11. CONCLUSION

Indian IT sector has made marvellous contribution to the GDP, employment generation, export earnings, poverty reduction, economic globalization, and women empowerment. It not only helped in improving the functioning of public services through e-governance but also promoted socio-cultural development and the concept of global village and borderless society. The liberalized policy; technological advancement and fall in prices of computer hardware and increase of engineering education in the areas of computer science and technology have been the driving factors in the magnificent performance of the industry. Though, the low employability, protectionist policies adopted by several countries, including USA, infrastructure constraints, rising costs of production of services, discontinuation of fiscal incentives under STP scheme and lack of a supportive policy framework and an innovation ecosystem are considered the main concerns in context of future growth of the industry.

Focus of the government and the industry should be on: improving of existing IT infrastructure; building of more enabling and conducive policy environment; improving the employability of prospective employees through effective industry-academia interaction and designing the curricula suited to the changing need of the industry; Moreover, there is a need to create effective domestic IT market to supplement export and insulate the industry from the volatile global market. Appropriate policy interventions are required to promote the diffusion of IT into various sectors and sub-sectors of the domestic economy. Growth of the Indian software industry largely depends on the imported hardware which is putting more pressure on the foreign exchange. To speed up and sustain the growth of the industry, focus on more investment in hardware infrastructure and technical education is required so that dependence on imported hardware may be reduced and the employability of manpower be improved.

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