

## **Role of Information and Communication Technology Industry in Indian Economy: Prospects , Challenges and Policies**

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### **Abstract**

Information and communication technology industry play a vital role in the development of Indian economy in the recent era. The government of India has identified information and communication technology shortly IT industry as one of the major industry in India, as this industry contribute a huge proportion to Indian GDP and directly and indirectly employed many people. IT industry is also responsible for increasing the competence and productivity of almost all sectors of the economy like services at bank, post offices, railways, airports etc. Recently, IT industry is an important emerging sector of the Indian economy. The size of this sector has increased at a tremendous rate of 35% per year during the last 10 years. Its contribution to national gross domestic product is estimated to be around 8.5% by the year 2010-11, quite similar to that in the United states today. This paper mainly tries to examine the relationship between development in Indian economy and Indian IT industry. This paper put forth the recent policies ,prospects, challenges faced by Indian IT industry by considering some secondary data sources.

**Keywords:** IT industry, Indian economy, Development, Policies, Productivity, Emerging.

### **1. Introduction**

Information Technology broadly include the study and application of computers and any other form of telecommunications, which is responsible for store, retrieve and send informations . Information Technology is the way of digital device through which informations are circulated across the globe. In the era of globalization, information and communication technology is seen as an important production factor by reason of knowledge driven economy. In this modern age, the competitive and demanding environment has forced companies to be operate efficiently and adding some final consumer value to a product or a service in the form of high quality, low

price and fastest service in the global level of that particular product. Historically, India is an agricultural dependent country. More than 80% of the people in India are directly and indirectly related to agricultural work. But now a days, India has witnessed a transformation from an agricultural based economy to a knowledge based economy. The IT industry of India played a great role in making India as a land of innovative entrepreneurs and professionals from the traditional slow growing agricultural based economy. The Indian IT industry has speeded up India's economic growth by contributing to various socio-economic parameters such as employment, standard of living, foreign exchange earning etc. The availability of comparatively cheaper efficient human resources in Indian economy and the IT friendly policies of Indian government have attracted many investors from different areas of the world towards Indian economy. Simultaneously, the contribution of people of Indian origin in IT revolution in the United States and the success of Indian software industry helped in this direction to a great extent. With this India is one of the leading sourcing destinations in the world for technology and business process services, accounting for approximately 55% market share of the global services sourcing business in 2017-18. Over the last three decades, the IT industry in India has seen significant growth. It accounted for 8% of the total GDP of the country in 2012-13 and jumped up to 9.5% in 2014-15. At the same time, India remains a poor country in terms of Per Capita Income (PCI) and Human Development Index (HDI). As per 2004, Human Development Report, India is among the countries with the worst disparities between their gender related development index and HDI values. Although the PCI in the country during the last 10 years has increased at the rate of 4.1% per year, leading more than 250 million people still living below the official poverty line. Therefore, there is no doubt that inequality in income, decent housing, clean drinking water and proper healthcare, good education etc. is rising in the country. But the greatest question is now, whether the IT sector of Indian economy has any prospects to remove this problem from Indian economy to some extent; because we know the services including information technology is the fastest growing industry in India has led to simultaneous growth in GDP, employment generation, trade and investment. And in statistical terms, this sector contributes about 60% of the country's GDP, almost 35% of employment, a quarter of the total trade and over half of the foreign direct investment. In this direction the government of India is taking many relevant steps to bring the whole nation under a single umbrella.

## **2.Objectives**

The main objectives of preparing this research paper are as follows-

- 2.1. To study the growth of Indian IT industry.
- 2.2. To analyze the relationship between IT industry and economic development.
- 2.3. To examine the recent prospects and problems faced by Indian IT industry.
- 2.4. To observed the policies recommended by government of India.

## **3. Methodology**

Both analytical and descriptive methods are use for preparing this paper. The method in determining the data are based on secondary data and the data has been collected from various reports, journals, articles and websites.

## **4. Literature Review**

Many authors and researchers have done research work in the field of information and communication technology and IT industry. A review of some research work has given below-

- 4.1. Nirupam Bajpai and Navi Radjow(2000) in his research work revealed that in the emerging knowledge based global economy and sustainable competitive advantage a nations will reside not in their possession of natural resources or cheap labour force, but in their countries intellectual asset. The knowledge revolution offers a unique chance to scale the heights of significant development. They argued that in order to make such a leap Tamil Nadu needed to initiated a knowledge development policy that build on the state's successful IT industry.
- 4.2. Oliner and Sichel(2000) in his study in USA found that the performance of US economy over the past several years was remarkable, including a rebound in labour productivity growth.
- 4.3. Kripalani and Clifford(2000) in his research work observed that, India has reached a pivotal moment and have an opportunity to prove themselves in the global spectrum in IT growth and economic development. As the benefits of joining the global IT revolution become ever more apparent, India is ready for its moment on the world stage.

4.4. Kapur and Ramamurti(2001) argue for even broader impacts, extending to industries such as biotech, chemicals, media and entertainment and construction all require knowledge services that go beyond the basic definition of IT enabled services, and have all benefited from the change in management approach wrought first within the IT sector.

4.5. Pooja Gupta (2011) explored that the growth of India's IT sector can be fuelled by appropriate policy adjustments, technological progress, including domestic innovation. Suitable IT policies, massive injections of resources in poor countries are needed to developed infrastructure facilities and incorporating all necessary ingredients to foster sustainable development.

4.6. Sanjay Kumar Singh (2006) observed that hardware segment of the IT industry in India has not shown the same level of progress as experienced by ITES and software. He states that it is also true that hardware segment of IT industry has not received the kind of government support received by its other counterparts.

## **5. Evolution of Indian IT Industry**

Indian IT industry has a remarkable potential for accelerating economic growth of the nation. This industry has created some emerging potential to improve the productivity of almost all the sectors in Indian economy. Indian IT industry mainly divided into five principal components. These are-

- A. Online business(E-commerce)
- B. IT services
- C. ITES(IT Enabled Services) e.g BPO
- D. Software Products
- E. Hardware

All these components are contribute a huge amount to Indian economy Growth. In 1974, Tata Consultancy Services (TES) of India by getting its first US client Burroughs Corporation of United States, leading to its first origin IT industry in India. Other IT giants of today also stated their growth stories with beginnings (WIPRO in 1960, Infosys in 1981). In this time, India government was imposed many strict restriction and regulation on IT industry, as a result of

which it is not easy to flourish private IT industry. After the 1991 with the liberalization policies, some development in this sector can be brightened up. Evolution of Indian IT sector can be studied in five stage-

**5.1. Before 1980:-** During this period Indian software industry was almost non-existent. IT industry of India started their business activity through hardware products. Indian government was protected this sector through licensing and high tariff rates. During this period Indian government was realized about the possibility of earning foreign exchange, therefore government allowed import of hardware and export of software through new software export scheme which was formulated in 1972.

**5.2 1980 to 1990:-** Despite starting software exports by some high profit standard companies like TCS, WIPRO, Infosys etc, the resulted earning has not more impressive during this period of time. There were some problems which was mainly related with government policies and moreover there were no perfect infrastructural facilities for software development. As a result of which Indian government took decision to liberalize the IT sector in 1986.

**5.3. 1990 to 2000:-** During this period Indian IT industry has faced intensified competition. In this period some substantial changes has taken place in Indian economy, including relaxation in the entry barriers, trade liberalization, opening up of Indian economy for foreign investors etc. Productive capacity in IT industry has improved. As a result of liberalization, a flow of foreign investment came in India and MNC's in India were introduced.

**5.4. 2000 to 2010:-** During this period Indian IT industry passes through a rapid growth software service companies were earning good amount of foreign exchange as a result of cheap hardware, faster communication and setting up of software technology parks. In 2005 Special Economic Zone (SEZ) act was passed. It helped in importing duty free hardware, and income tax exemption on export for 10 years. In 2000, Information Technology Act was passed resulted a boost to E-commerce. National broadband policy announced in 2004 made broadband available to 20 million Indians by 2020.

**5.5. Post 2000:-** After 2010, India has become world's largest sourcing destination for IT industry. Online retailing, cloud computing and E-commerce all are contributing to speedy growth of IT industry. The rate of growth in IT sector for 2016-17 is approximately 12 to 14%.

## 6. Relationship between Indian IT industry and Economic Development

During the later part of 1990's the software boom started in India. Initially most of the Indian software companies were providing limited software services such as the banking and engineering software. The emergence of Y2K problem stimulated software boom as a large number of skilled personnel were required to meet rapidly increasing demand for data correction to meet the challenges with the advent of new millennium. In India software Industry continued to be successful especially as Indian economy was growing at average rate of 6% per annum since 2006-07. Bill Gates once said that information influenced changes are happening at the speed of thought. This information field is moving so fast that, any plan will become absolute before government can act on it. Therefore IT industry plays an important role for development of an economy. The role of IT industry on Indian economy can be analyze from the following way-

**6.1. Employment Opportunities Created by the IT Industry-** Indian IT industry has provided large scale employment to educated and skilled workforce. The very success of IT industry in India is infact due to the availability of high skilled workforce. Spread of IT education has been given the necessary forces both at the government private level to ensure availability of trained manpower. The opening of Indian Institute of Information Technology (IIITs) on the lines of Indian Institutes of Technology (IITs) can play significant role in this direction. Besides this The National Association of Software and Service Companies(NASSCOM) have played a key role in the universalization of IT in India.

Year/Items	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
IT Services and Exports	0.51	0.69	0.86	0.92	0.99	1.15	1.29	1.4	1.5
BPO Exports	0.42	0.55	0.70	0.79	0.78	0.83	0.88	0.92	0.95

Domestic Market	0.38	0.38	0.45	0.50	0.52	0.56	0.60	0.64	0.68
Total Employment	1.29	1.62	2.01	2.21	2.29	2.54	2.77	2.96	3.13

Fig(1) Source: NASSCOM

From the above fig(1), it is observed that the total IT software and services employment was estimated at 3.13 million in the year 2013-14 and it was only 1.62 in 2006-07. The direct employment attributed by the sector is estimated to reach about 10 million in 2013-14. The share of BPO exports for employment creation increased from 0.42 in 2005-06 to 0.95 in 2013-14. Share of Domestic Market to provide employment opportunities also increased continuously as shown from fig 1. IT Services and Export segments constitute a major sources of employment in this IT sector in India its share increased over the years.

**6.2. Software and Services Production:** Information technology industry caters both the domestic as well as foreign market. But it is the software and services sector which has made impressive growth in the foreign as well as domestic market.

YEAR	RUPEES(million)	US\$(billion)
2008-2009	2850.64	61.984
2009-2010	3081.50	64.956
2010-2011	3412.00	74.590

2011-2012	4182.65	87.139
2012-2013	5097.00	94.389

Fig(2), Source: NASSCOM

From the fig(2), it is seen that the product of software and services during the year 2012-13 is estimated at 5097 billion(US\$ 94.34 billion) registering a growth of 22% (80% in US\$ terms) over the year 2011-12, when the total production was estimated to be 4182.65 million(US\$ 8.7.14 Billion).

**6.3. Export of Software and Services:** Export of software and services in IT industry also play an important role for development of Indian economy. From the fig(3), it is clearly observed that export of software and services are moving upward. During the year 2010-11, this segment amounted to US\$ 47.6 billion due to some stagnant in economy, but later on gained take momentum. This figure increased to US\$ 61.7 billion in 2012-13, registering a 10.18% over the figure for 2011-12.

YEAR/ITEAMS	2010-11	2011-12	2012-13	Growth in 2012-13 over 2011-12(%)
IT Services(US\$ billion)	33.5	40	43.9	9.75
ITES(US\$ billion)	14.1	16	17.8	11.25
total	47.6	36	61.7	10.18

Fig(3),Source: NASSCOM and Department of Electronics Information Technology, Government of India

**6.4. Revenue of Indian IT Industry:** Indian IT industry contribute a huge proportion revenue earnings to Indian government revenue fund.

YEAR	Export Revenue ( US\$ billion)	Domestic Revenue (US\$ billion)	Total Revenue (US\$ billion)
IT Services	26.9	27.3	33.5
ITES	12.8	12.4	14.1
Total	39.7	39.7	47.6

Fig(4), Source: NASSCOM and Economic Survey, Government of India

From the fig(4), it is noticed that the revenue from the IT industry excluding hardware also has been growing. Export shows a Compound Annual Growth Rate(CAGR) of 9.98%, while CAGR corresponding to domestic revenue is 8.56%.

**6.5. Contribution of IT industry to India's GDP:** A 10% increased in broadband penetration is associated with a 1.4% increased in GDP growth in emerging markets. Indian IT industry contribute a great proportion to Indian GDP.

YEAR	Contribution (%)
2009-2010	6.1
2010-2011	6.4
2011-2012	7.5
2012-2013	8.0

Fig(5), Source: NASSCOM

From fig(5), it is clear that IT industry's contribution to India's GDP is growing continuously. In 2010-2011, the contribution was 6.4% but in 2012-13, it was 8.0%.

### **7. Recent Prospects of Indian IT industry**

India emerged as one of the fastest growing economies of the world during the 1990's because of the spectacular dynamism shown by the services sector. India's services sector has been take its growth fast and one of the major drivers of the growth of service sector is IT and ITES ( Information Technology Enabled Services). Indian IT industry has huge potential to speed up economy growth and create employment opportunity to a large extent. Some prospects of this industry are-

- A. India has huge efficient workforce. As we know the relationship between competent work force and IT industry is positive. Therefore government and IT firms must take initiations to retain these workforce for better utilization of resources and socio-economic development.
- B. The Indian IT industry is an employer to both technical and non- technical graduates and has a great potential to create huge foreign exchange inflow in India. Exports software's and services approximately 95 countries around the world get benefits by outsourcing their work to Indian due to low labour cost. Therefore India's IT industry with government support has a high potential to create number of opportunities in coming future.
- C. The future of the Indian software industry looks promising. IT-BPO sector in India aggregated huge revenue, generating direct employment for over 2.5 million people , as the industry continued its journey on the core themes identified for next decade- Diversification, Transformation ,Innovation and Inclusion. The industry focused on emerging verticals ,markets and customer segments, driving innovation-led transformation in client organization and transforming its internal operations
- D. The IT sector is one of the largest employers of women, and therefore can play a crucial role in women empowerment and reduction of gender inequalities. The sector provides flexibility to its employee of operating from home and in working time,which enables women to carry on jobs with family life. Therefore it is clear that with promotion the Indian IT industry has huge potential to address the gender issues in the country.

## **8. Challenges faced by Indian IT Industry**

India is one of the leading sourcing destination in the world for technology and business process services. India's IT's core competencies and strengths have attracted significant investment from major countries. The government has identified IT as one of 12 champion service sector for which an action plane is being developed. Also the government has set a RS. 5000 crore fund for realizing the potential of these champion service sectors. Despite this Indian IT industry faced some challenges. These are-

- A. Phasing out of income tax holiday benefits for SEZ units could displace India as the favourite IT destination in the world, as it is being challenged by nations like China, Phillippines etc. which are having low cost advantage, as well a new age skill sets.
- B. Though government has introduced specific regulations, government funding and tax benefits for encouraging stratups, there is a lack of clarity on the criteria and approval requirement that need to be satisfied for availing such benefit.
- C. Technology is driving how the world operates amid the pandemic, but that is not translating into increased revenues ,for information technology and related companies. India's IT service companies, which have been a bedrock of the economy are likely to lose business in the coming month as a Covid -19 induced economic slowdown around the world hurts their clients revenue.
- D. Today, traditional business models have become outdated. It is the era of digital transformation, where companies around the world are embracing modern technologies like cloud computing, artificial intelligence and Internet of Things and blockchains. These technologies help them to reduced costs ,accelerate time to market, save time and increase employee productivity. However India's organization are still stuck with the traditional models. This is because of the lack of skilled employees,conventional infrastructure as well as restrictrive regulations.
- E. Cyber security and quality management are two key areas of concern in today's information age. To overcome these, an increasing number IT companies in India have gradually started adopting global standards benchmarks. This leads to wastage of resources and adversely affects employee morale and labour productivity.

## **9. Policies Recommendations**

India's IT competencies have brought significant international attention in terms of investments. In the period of 2000-2019, Foreign Direct Investment in this field about \$ 39.4 billion. Government of India provide several policy instruments to support Indian IT to work perfectly. Some of these are-

### **9.1. Fiscal Policies**

**A. Direct tax concessions and waivers:-** Through this instrument government gave income tax holidays, concessional tax rates, simplified return filing provision and special tax exemption on IT industry.

**B. Indirect tax concessions and waivers:-** Under this instruments government of India provide customs duty exemption on exports and imports, service tax concession, sales tax waivers on IT industry etc.

**C. Subsidies, grants, incentives and other financial support:-** By providing this instrument government can give capital subsidy, subsidies on land, power and telecom tariff, interest expences.

### **9.2. Innovation Policies**

Under this policies government of India provide Direct funding through strategic research and development(R&D) grants and patent incentives, development test bed facilities tax break on R&D expenses. Government also give support schemes for start ups and SME's offering plug and play facilities and other incubation services. Through this facilities the government of Andhra Pradesh offers free space for 5 years to companies engaged in high –end R&D together with requisite tools.

### **9.3. Human Capital Policies**

Under this Government sponsored and supported programs for developing and enhancing skill sets of IT work force. Government also provide subsidies linked to job creation, policies to attract foreign experts, relaxed visa regulations and labour market policies.

#### **9.4. Investment Climate Policies**

Through this policies government declaring IT as a “ priority sector” resulting in preferential treatment and efficient policy implementation mechanisms and also provide single window clearance facilities, investment facilitation services .Favourable export import policies, free trade agreement and double taxation avoidance agreement are also a part it.

In spite of this Ministry of Electronics and Information Technology in the month of May 2019 launched Meity Startup Hub. As a part of budget 2018-19 NITI Ayug launched national levels programs,that were decided to leverage for the potential benefits of artificial intelligence mainly for the core interest of the country.

#### **10. Conclusion**

Technology has been the main driven force of India’s recent economic situation and with the help of technology, hindrance to development of Indian economy can be removed at a large extent. From the above discussion it is observed that the IT industry has been successful in India precisely because it has been able to tap the existing social and cultural capital including educational attainments , knowledge of English and some degree of westernizes social orientation. From the analysis, it is clear that IT has potential of not only accelerating the growth in Indian economy but also promoting the broad- based economic development. To considering the importance of IT sector, Indian government take IT sector has been one of the key drivers for faster and inclusive growth in the eleventh five year plan. Prime minister of India Narendra Modi also gave strong thrust on technology as a solution provider and it is reflected in the headline programmes of the government like Digital India,Make in India, Stand-up India etc. But needs to enhanced manifold of IT literacy among the population of India at a large through conventional and non-conventional means, so that ordinary people can begin to use it to derive benefits both economically and socially.

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