INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, IT & MANAGEMENT

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INTRODUCTION

REVIEW OF LITERATURE

NEED/IMPORTANCE OF THE STUDY

STATEMENT OF THE PROBLEM

OBJECTIVES

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RESEARCH METHODOLOGY

RESULTS & DISCUSSION

FINDINGS

RECOMMENDATIONS/SUGGESTIONS

CONCLUSIONS

LIMITATIONS

SCOPE FOR FURTHER RESEARCH

REFERENCES

APPENDIX/ANNEXURE

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- Bowersox, Donald J., Closs, David J., (1996), "Logistical Management." Tata McGraw, Hill, New Delhi.
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- Garg, Bhavet (2011): Towards a New Gas Policy, Political Weekly, Viewed on January 01, 2012 http://epw.in/user/viewabstract.jsp

INDIAN IT SECTOR: AN OCEAN OF OPPORTUNITIES

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ABSTRACT

Technology is the second greatest gift of God, after the gift of life. It is the mother of civilizations of arts and of sciences. Information Technology (IT) is nothing new; rather it was around us since long, may be since the inception of man on this planet. It has made possible information access at gigabit speeds. It has made marvelous impact on the lives of millions of people who are deprived, poor, marginalized and living in rural and remote geographies. Internet is one of the un-matchable gifts of Information technology, which has introduced revolutionary changes with possibilities of e-government measures like e-health, e-education, e-agriculture, etc. Today, whether it is transfer of funds, filing of Income Tax returns or applying for passports online or railway e-ticketing, everything is possible with few clicks on the mouse. India's IT potential is on a steady march towards global competitiveness, improving defense capabilities and meeting up energy and environmental challenges amongst others. Information technology (IT) industry in India has played a key role in putting India on the global map. This sector has proved to be one of the most significant growth contributors for the Indian economy by providing world class technology solutions and business services. The industry has helped India transform from a rural and agriculture-based economy to a knowledge based economy. The paper endeavors to study the Indian Information technology sector, its growth and the Indian states which are performing excellent in IT sector. The paper further discusses the initiatives taken by Indian government to facilitate this sector and the contribution of this sector in India's GDP.

KEYWORDS

information, technology, development, India, GDP.

INTRODUCTION

ne machine can do the work of fifty men, but no machine can do the work of an extraordinary man".

Elbert Hubbard

Human beings have arranged a civilization in which most crucial elements profoundly depend on science and technology (Carl Sagan, 1996). Technology is the second greatest God's gift, after the gift of life. It is the mother of civilizations of arts and of sciences (Freeman Dyson). Information Technology (IT) is nothing new; rather it was around us since long, may be since the inception of man on this planet. Generally, the history of IT is segregated in four major ages, but it is only the latest stage (electronic age) which has rigorously transformed the life of human being. Information Technology has made possible information access at gigabit speeds. It has made marvelous impact on the lives of millions of people who are deprived, poor, marginalized and living in rural and remote geographies. Internet has made revolutionary changes with possibilities of e-government measures like e-health, e-education, e-agriculture, etc. From the transfer of funds overseas, filing of Income Tax returns, applying for passports online or railway e-ticketing, everything is possible only by few clicks of the mouse. India's IT potential is on a steady march towards global competitiveness, improving defense capabilities and meeting up energy and environmental challenges amongst others. Information technology (IT) industry in India is playing a key role in putting India on the global map. This sector has proved to be one of the most significant growth contributors for the Indian economy. The industry has played a significant role in transforming India's image from a slow moving bureaucratic economy to a land of innovative entrepreneurs and a global player in providing world class technology solutions and business services. The industry has helped India transform from a rural and agriculture-based economy to a knowledge based economy.

INDIAN INFORMATION TECHNOLOGY (IT) SECTOR

Information Technology covers all aspects of managing and processing information. Since the last decade of twentieth century, this sector is introducing revolutionary changes to the lives of mankind. India being a developing nation is also growing at a faster pace in this sector. Indian scientists and engineers have earned high degree of fame in the entire world for their matchless and innovative contributions to this sector. Developed countries like USA, Japan, and Germany etc. are showing interest in hiring the services of Indian IT professionals. Locally also, information technology industry has shown highest growth rates consistently over the last many years as compared to any other industry. India is among the three countries that have built super computer on their own; along with USA and Japan. India's INSAT is among the world's largest domestic satellite communication systems. A variety of national and international studies have indicated that this sector is still not fully utilized and the broad-based deployment of information technology can have a substantial impact on our nation's economic productivity and growth as well as the educational and social success of our country. India is 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 workforces. 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. According to Evgeny Morozov (2011), Information Technology has been one of the leading drivers of globalization, but it may also become one of its major victims.

The Indian IT and ITeS industry is divided into four major segments – IT services, business process management (BPM), software products and engineering services, and hardware. The IT-BPM sector in India grew at a Compound Annual Growth rate (CAGR) of 15 per cent over 2010-15, which is 3-4 times higher than the global IT-BPM spend, and is estimated to expand at a CAGR of 9.5 per cent to US$ 300 billion by 2020. Apart from wealth creation and large export earnings, Indian information technology industry has also provided large scale employment to educated and skilled work-force. This industry has also created significant demand in the Indian education sector, especially for engineering and computer science. This is the fastest growing sector which is providing large employment opportunities. The very success of information technology industry in India is in fact due to the availability of highly skilled work-force.

GROWTH HISTORY OF IT SECTOR AND VISION 2020

FIG. 1


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1970s

1990

2020

1980s

2000-10
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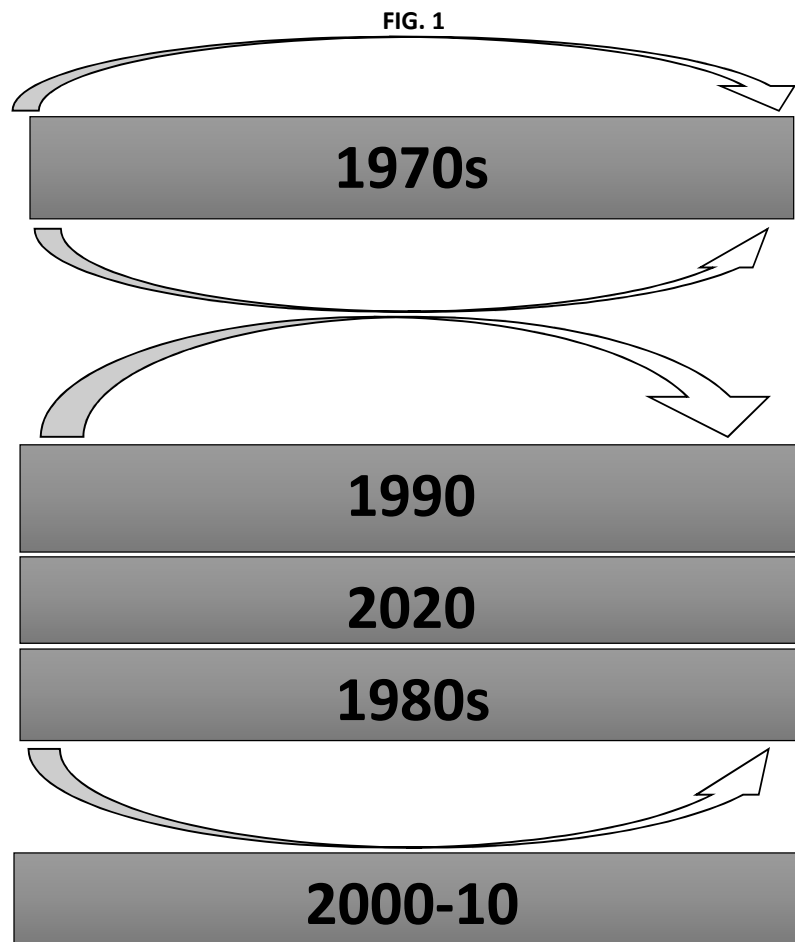
- ➢ Economic reforms of 1991 reduced tariffs & taxes.
- ➢ IBM returns to India.
- ➢ TCS, Infosys, Wipro merge as market leaders.

- ➢ Explosive growth for industry.
- ➢ IT-BPO Industry had grown from USD 8.2 billion in 2000 to USD 88.1 billion in 2011.

- ➢ IT-BPO Industry to grow to USD 300 billion.

- ➢ Policy reforms reduce cost of hardware and software
- ➢ New computer policy introduced in 1984.
- ➢ In 1935, software export made exemption from tax.

- ➢ Inception IT Industry with establishment of Tata consultancy Services
- ➢ Setting up of National Informatics centre

The target of the industry is to increase revenues of IT and ITeS (Information Technology Enabled Services) Industry from US$ 100 billion currently to US$ 300 billion by 2020 and to expand exports from US$ 69 billion currently to US$ 200 billion by 2020. To achieve these targets, there is a need to promote innovation and R&D in cutting edge technologies and development of applications and solutions in location based services, mobile value added services, cloud computing, social media and utility models. The industry also aims to create a pool of 10 million additional skilled manpower in the Information Communication Technology (ICT) sector.

MAJOR GLOCAL (GLOBALAND LOCAL) INDIAN IT PLAYERS

IT sector in India has the main focus on increasing technology adoption and developing new delivery platforms. There are a large number of multi-national IT enterprises operating in India in sectors such as: Integrated Chip Design, System Software, Communication Software, R&D Centres, Technology Support Sector, Captive Support Sector, BPO Sector etc and are reaping the cost and quality advantages. These multinationals include Siemens, Philips, Intel, Texas Instruments etc. (Chip Design); Siemens, Motorola, Lucent Technologies, Sony, Nortel etc. (Communication Software); Microsoft, Oracle, Sun Microsystems, HP, Compaq etc. (Systems Software); Google, Yahoo etc. (R&D Centres); Axa Business Services, Swiss Shared Services, Siemens Shared Services etc. (BPO Sector); Accenture, DELL, HSBC, GE Capital, Fidelity etc. (Captive Support Sector).

TABLE 1

Indian state	City	IT sector
Karnataka	Bangalore	• The state has attractiveness as an IT destination • The state offers a good infrastructure, with large floor space and great telecom facilities • It is the most preferred destinations of all the big banners like HSBC, Dell, Microsoft, GE, Hewlett Packard, and several Indian multi-national firms like Infosys Technologies, Wipro, and Microland who have set up their offices in the city
Andhra Pradesh	Hyderabad	• The second IT hub of India • A major IT hub
Tamil Nadu	Chennai	• The state is emerging as a global capital for business process outsourcing (BPO) • It is propelling the number one position in IT exports. • The state is a pioneer in IT and software services and has a 100 percent digital exchange network thus having the potential to garner a major chunk of ITES business.
Maharashtra	Pune, Mumbai, Navi, Aurangabad, Nagpur and Nasik.	• The state is the second largest exporter of software with annual exports of Rs 20 000cr (20% of India's software exports). • The state has set up software parks in various cities.
Gujarat	Ahmedabad	• Globally branded firms have their presence in the state. • NASSCOM (National Association of Software and Services Companies) has ranked the city of Ahmedabad to be among the top five Indian destinations for business process and knowledge process outsourcing.
West Bengal	Kolkata	• The state is recognized as the fastest growing IT destination in the country with more than double the national average growth rate. • A number of IT majors are doing significant business in the state. • The state aims to become one of the top three IT states by 2015, contributing 15-20 per cent of the country's total IT revenue.

GOVERNMENT INITIATIVES

The first decade of 21st century has revolutionized the sector of information technology. The legal enactment which governs the process and dissemination of information digitally in India is the Information Technology Act, 2000. The Act along with its Rules legalizes the acceptance of electronic records and digital signatures providing a legal backbone to e-commerce. The Indian Information Technology Act addresses the various issues such as Legal Recognition of Electronic Documents; Legal Recognition of Digital Signatures; Offenses and Contraventions and Justice Dispensation System for Cybercrimes. After the economic reforms that were introduced in 1991-1992, various incentives were provided by both the state and central government for better emergence of the IT sector like liberalization of external trade, removing duties on imports of IT products, setting up Export Oriented Units(EOU), setting up of Software Technical Parks(STP) etc. Government of India has also set up National Task Force on IT and Software development to investigate the possibility of strengthening the economy.

a) **Eleventh Plan**: Information Technology sector had been one of the key drivers for faster and inclusive growth in the Eleventh Five Year Plan. It has contributed immensely to the development of Indian economy. India has become a global power house in software and software services sector. Over the year's various initiatives have been taken in the Information Technology sector to foster innovation, improve delivery of e-services to citizens and bring about profound change in the way business is conducted and the way Government works.

b) **Twelfth Plan** (2012-17): Accordingly the vision and mission for IT sector for the Twelfth Plan is on e-Development of India through a multi-pronged strategy of e-infrastructure creation to facilitate and fast track e-governance, promotion of Electronics hardware manufacturing & Information Technology, Information Technology Enabled Services (IT-ITES) Industry, providing support for creation of Innovation / Research & Development (R&D), building knowledge network and securing India's cyber space. A Working Group on Information Technology sector has been formed by the government to make recommendations on the various policy matters to formulate the Twelfth Five Year Plan for Information Technology Sector. In the Twelfth Five Year Plan it is proposed to sustain IT-ITES industry's growth momentum by building an enabling policy environment, support small and medium enterprises and provide competitive edge through fiscal benefits, innovation fund and incubation, build world-class infrastructure in identified tier II & tier III cities to create new hubs for industry development as potential centers of excellence and to address the gap of employability through skill development initiatives.

c) **National Task Force:** In order to alleviate and to promote Indian IT industry, the Government of India had set up a National Task Force on IT and Software Development to examine the feasibility of strengthening the industry. Venture capital has been the main source of finance for software industry around the world. In line with the international practices, norms for the operations of venture capital funds have also been liberalized to boost the industry. The Government of India is also actively providing fiscal incentives and liberalizing norms for FDI and raising capital abroad. In 2014, India's growth has reflected new demand for IT goods and services, with a major surge in the use of private and public cloud and mobile computing on a variety of devices and through a range of new software applications.

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

i) The Human Resource Development (HRD) Ministry has entered into a partnership with private companies such as Tata Motors Ltd, Tata Consultancy Services Ltd to open three Indian Institutes of Information Technology (IIITs), through public-private partnership (PPP), at Nagpur, Ranchi and Pune.

ii) Government of India is planning to develop five incubation centers for 'Internet of Things' (IoT) start-ups, as a part of Prime Minister Mr. Narendra Modi's Digital India and Startup India campaign,

iii) Various centers are planned to be established with at least two centers to be set up in rural areas to develop solutions for smart agriculture.

iv) Indian government is expected to increase its spending on information technology (IT) products and services by 5.2 per cent to US$ 6.88 billion in FY 2015-16 (Gartner Inc).

v) The Government of India has launched the Digital India program to provide several government services to the people using IT and to integrate the government departments and the people of India. The adoption of key technologies across sectors spurred by the 'Digital India Initiative' could help boost India's gross domestic product (GDP) by US$ 550 billion to US$ 1 trillion by 2025, as per research firm McKinsey.

vi) India and the United States (US) have agreed to jointly explore opportunities for collaboration on implementing India's ambitious Rs 1.13 trillion (US$ 18.22 billion) 'Digital India Initiative'.

vii) The Government of Telangana has begun construction of a technology incubator in Hyderabad—dubbed T-Hub—to reposition the city as a technology destination.

viii) The state government is initially investing Rs 35 crore (US$ 5.3 million) to set up a 60,000 sq ft space, labeled the largest start-up incubator in the county, at the campus of International Institute of Information Technology-Hyderabad (IIIT-H). Once completed, the project is proposed to be the world's biggest start-up incubator housing 1,000 start-ups.

INDIA'S GROWING MARKET SIZE

According to a report prepared by National Association of Software and Services Companies (NASSCOM), the Indian Information Technology (IT) sector is expected to grow 11 per cent per annum and triple its current annual revenue to reach US$ 350 billion by financial year 2025. India, the fourth largest base for new businesses

in the world and home to over 3,100 tech start-ups, is set to increase its base to 11,500 tech start-ups by 2020, as per a report by NASSCOM and Zinnov Management Consulting Private Ltd. India's internet economy is expected to touch Rs 10 trillion (US$ 151.6 billion) by 2018, accounting for 5 per cent of the country's gross domestic product (GDP), according to a report by the Boston Consulting Group (BCG) and Internet and Mobile Association of India (IAMAI). India's internet user base reached over 350 million by June 2015, the third largest in the world, while the number of social media users grew to 143 million by April 2015 and smart phones grew to 160 million.

The National Association of Software and Service Companies (Nasscom) also said that India's nearly $150 billion IT services outsourcing sector is expected to see export revenue growing 12-14 percent in the financial year starting in April. India's top IT outsourcing service providers, including Tata Consultancy Services Ltd and Infosys Ltd, have thrived by offering infrastructure management and application development services to U.S. and European clients. Faced with increased competition and pressure on prices for routine services, the companies are now looking to move up the value chain and boost growth by tapping high-margin businesses including artificial intelligence and automation.

• India's technology and BPM sector (including hardware) is estimated to have generated US$ 146 billion in revenue during FY15 compared to US$ 118 billion in FY14, implying a growth rate of 23.72 per cent

• The contribution of the IT sector to India's GDP rose to approximately 9.5 per cent in FY15 from 1.2 per cent in FY98

• The top six firms contribute around 36 per cent to the total industry revenue, indicating the market is fairly competitive, with TCS being the leader accounting for about 10.1 per cent.

FIG. 2

Market size of IT industry in India (US$ billion)
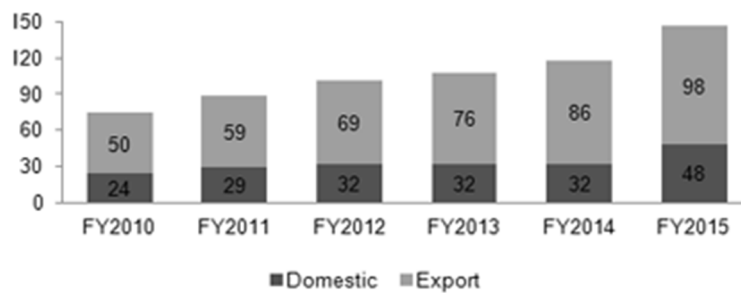
Source: Nasscom, TechSci Research
Note: E - Estimates

GROWTH OF INDIAN IT SECTOR AND GDP

Information Technology sector has played a vital role in acquiring a Brand Equity for the nation and has contributed immensely to the increase in the GDP, employment and exports. According to NASSCOM, the IT/ITeS export revenue have grown from a mere $ 4.0 billion in 1999-2000 to $ 31.2 billion in 2006-07, $88.1 billion in 2011, to a staggering $100 billion in 2012-13, which further raised to 105.6 billion in 2014. The sector generated direct employment for over 2.5 million people in 2011. Further, this sector accounted for over 7.8 % of India's GDP, and employed 4.5 million professionals directly and another 9.2 million people indirectly in 2013. A majority of the Fortune 500 and Global 2000 corporations are sourcing IT/ITES from India.

The growth of technology sector in India has been the result of a rare symbiotic relationship between policy reforms and will of the private sector. Based on data available in public domain, this sector has seen an exponential growth from 8.2 billion $ in 2000 to 88.1 billion $ in 2011 and is now targeting 300 billion $ by 2020. Five principle sectors in the IT industry, namely online businesses, IT services, IT-enabled services and software and hardware merchandise received most of the investments. Compelling cost advantage coupled with available skilled force has driven this spectacular growth. Although many low-cost delivery destinations, such as China, Philippines and Vietnam, are emerging, India's leadership position cannot be challenged. Its benefit of long term cost competitiveness, supply of highly trained engineers and its expertise in processes and quality will continue to foster its growth.

TABLE 2

IT Exports	
Year	Export Revenue
1999-2000	$4.0 billions
2006-07	$31.2 billions
2010-11	$59 billions
2011-12	$88.1 billions
2012-13	$100 billions

INDIA GDP GROWTH RATE

FIG. 3

GDP Growth Rate

FIG. 4

Growth in India's IT Sector

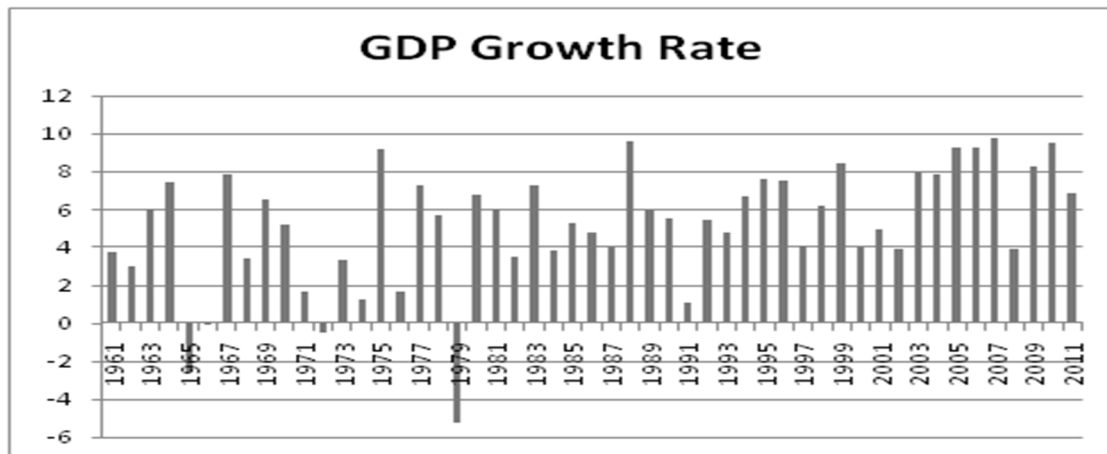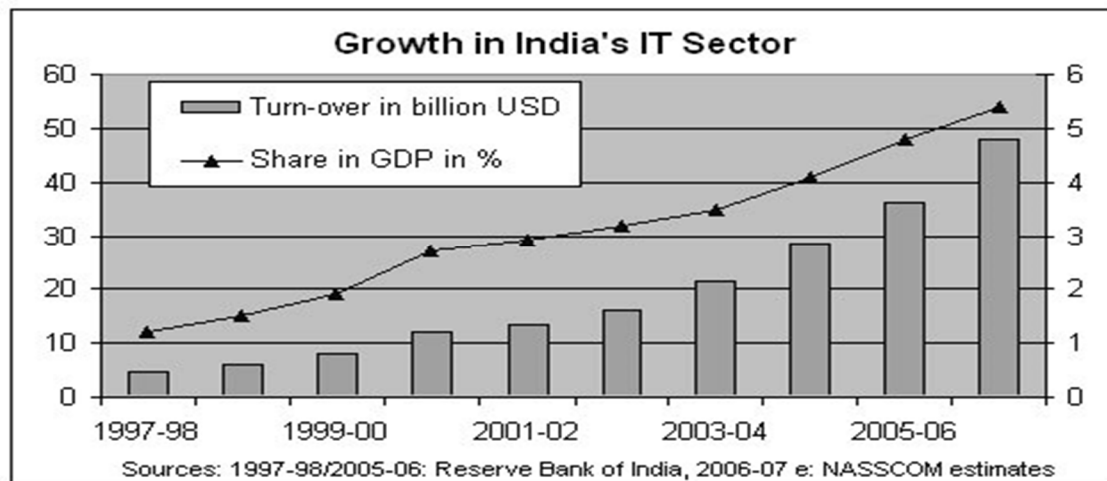Sources: 1997-98/2005-06: Reserve Bank of India, 2006-07 e: NASSCOM estimates

India continues to be a premier destination for the global off-shoring market of IT/ITeS, accounting for almost 55% in 2010 as compared to 49% in 2005. India has emerged a dominant player in global IT services outsourcing with increase in India's share to 73% in 2013 from 70% in 2010 and 52% in 2005. Although India's share in BPO sourcing market has declined from 45% in 2005 to 34% in 2010 but continues to be the leader in this space. China, Philippines, Vietnam, Poland, Hungary, Mexico, Brazil, Egypt are emerging as competitive locations. Another important factor to be considered is that due to its nature of being less capital intensive and flexibility in operations, IT/ITeS industry can be relocated in a very short time. This increases to almost 50 locations which present a huge challenge to India's success story.

KEY DRIVERS OF GROWTH IN THE IT SECTOR
1.   Low cost of operation and tax advantages
2.   Supportive government policies
3.   Availability of technically skilled manpower
4.   Rapid introduction of IT technologies in major sectors such as telecom, BFSI.
5.   Strong growth in export demand
6.   Use of new technologies like cloud computing
7.   Government established SEZs

ROAD AHEAD
India is the topmost offshoring destination for IT companies across the world. Having proven its capabilities in delivering both on-shore and off-shore services to global clients, emerging technologies now offer an entire new gamut of opportunities for top IT firms in India. Social, mobility, analytics and cloud (SMAC) are collectively expected to offer a US$ 1 trillion opportunities. Cloud represents the largest opportunity under SMAC, increasing at a CAGR of approximately 30 per cent to around US$ 650-700 billion by 2020. The social media is the second most lucrative segment for IT firms, offering a US$ 250 billion market opportunity by 2020. One of the biggest factor that has helped India to make its mark on the world map is its booming IT industrial sector. The contributions being made by the IT industry towards the country's GDP has led to a steady growth of the Indian economy. India's IT industry is regarded as a hub of innovators providing world class technology solutions across the globe. Various international organizations have set up their offices here in India like Google, Accenture etc. It has helped in changing Indian economy from an agricultural based economy to a knowledge driven economy. IT sector has helped the domestic economy to integrate with the world economy. It has made significant impacts on the lives of many people. It has also helped people settled in far flung topographies to connect with the rest of the world. It has given birth to e-governance practices, as a result of which people get an easy access via e-health, e-education, e-ticketing etc. to the various governmental services. Today almost everything can be done online whether its shopping, ticketing, filing Income Tax returns etc. Though the year 2014 was full of challenges and uncertainties but the IT sector managed to achieve double digit growth rate and attained revenues of USD 108 billion in the fiscal year 2014-2015.

As per NASSCOM's research, the IT sector is likely to generate revenues worth USD 130 billion by the end of 2015 which will result in a positive metamorphosis of the Indian economy, pushing it towards high growth rates. Government will also try to widen its e-governance measures. However, the most important factor for the continuous growth of the IT sector is innovation. The IT industries must always strive to come with something new and must respond to the needs of the dynamic environment. The IT industrial sector should stand tough in the face of challenges and try to provide more and more end to end technological solutions to their customer base to keep the impetus growing.

High inflow of FDI in the IT sector is expected to continue in coming years. The inflow of huge volumes of FDI in the IT industry of India has not only boosted the industry but the entire Indian economy in recent years. Foreign technology induction is also encouraged both through FDI and through foreign technology collaboration agreements. India welcomes investors in Information Technology sector. Greater transparency in policies and procedures has made India an investor friendly platform. A foreign company can hold equity in Indian company's upto 100%. IT and ITES have been major contributory factors for the sector to flourish in India and for the country to be able to acquire a dominant position in offshore services in the world.

India aims to transform India into a truly developed and empowered society by 2020. However, to achieve this growth, the sector has to continue to re-invent itself and strive for that extra mile, through new business models, global delivery, partnerships and transformation. A collaborative effort from all stakeholders will be needed to ensure future growth of India's IT-ITeS sector. There exists a need to rise up to the new challenges and put in dedicated efforts toward providing more and more of end-to-end solutions to the clients to keep the momentum going. Globalization has had a profound impact in shaping the Indian Information Technology industry. By 2015, IT sector is expected to generate revenues of USD 130 billion (NASSCOM) which will create a transformational impact on the overall economy. IT spending is expected to significantly increase in verticals like automotive and healthcare while the government, with its focus on e-governance, will continue to be a major spender. However, to achieve this growth, the sector has to continue to re-invent itself and strive for that extra mile, through new business models, global delivery, partnerships and transformation. A collaborative effort from all stakeholders will be needed to ensure future growth of India's IT-ITeS sector. There is a need to rise up to the new challenges and put in dedicated efforts toward providing more and more of end-to-end solutions to the clients to keep the momentum going. The year 2016 is expected to be better for the IT industry due to its diversification in analytics, mobility, cloud, social media and emerging verticals such as healthcare and medical services. As per NASSCOM estimates, while Indian IT exports are likely to grow in a range of 15-17 per cent per annum, the resilient $270-billion plus Indian IT industry returned to the higher growth trajectory in 2013 and is hoping to gain momentum in the ensuing year for a greater share of the global multi-billion-dollar outsourcing market.

CONCLUSION

With this fast pace sharing of information attributed to rapid development of IT sector, Cyber security and quality management are important areas of concern. In order to avoid such malpractices various BPO companies in India have started adopting the global quality standards like ISO 9001 for ensuring Quality Management and ISO 27000 for emphasizing information security.

We had to address IT in the ways we had not before and give the agents the tools that they need to do their job more efficiently and more expeditiously (Robert Mueller). Technology applied to an efficient operation will magnify the efficiency and vice versa. Men have become tolls of their tools (Henry David Thoreau). Technology is supposed to make our lived easier, allowing us to do things more quickly and efficiently. But too often it seems to make things harder, leaving us with fifty button remote controls, digital camera with mysterious features. The march of science and technology does not imply growing intellectual complexity in the lives of people, but vice versa is true.

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