

CHAPTER 13

INFORMATION TECHNOLOGY

13.1 India as Knowledge Power: In less than two decades, advances in information technologies have revolutionized government, scientific, educational, and commercial infrastructures. Powerful personal computers, high-bandwidth and wireless networking technologies, and the widespread use of the Internet have transformed stand-alone systems and predominantly closed networks into a virtually seamless fabric of interconnectivity. During this period, Indian IT industry has also built up an enormous confidence for itself in the global markets. The IT and IT enabled services (ITeS) sector are giving India the image of a young and resilient global knowledge power. The IT-ITeS industry has four major sub-components: IT services, business process outsourcing (BPO), engineering services and research and development (R&D), and software products.

13.2 India is considered as a pioneer in software development and a favorite destination for IT-enabled services. The Indian IT-BPO sector including the domestic and exports segments continue to grow from strength to strength, witnessing high levels of activity both onshore as well as offshore. The companies continue to move up the value-chain to offer higher end research and analytics services to their clients. India's leadership position in the global IT and BPO industries are based primarily on the following advantages. It has a rapidly growing urban infrastructure fostering several IT centres in the country. Offshore service centres are spawning in the country due to operational excellence with low delivery cost, quality leadership and a conducive business environment. Favorable policy interventions, enabling infrastructure and augmenting a wide skill base from the government has further enhanced India's brand image.

13.3 However, there is a real need to measure the digital divide in the country, including the urban-rural and gender divides, and the use of community Internet access centers by low-income users.

India's progress in Information and Communication Technology (ICT) related indicators:

13.4 As per **Millennium Development Goals (MDGs), India Country Report 2015** three indicators related to ICT under Goal 8 (Develop a Global Partnership for Development), target 18 (In cooperation with the private sector, make available the benefits of new technologies, especially information and communication) are being monitored in case of India. They are as under :

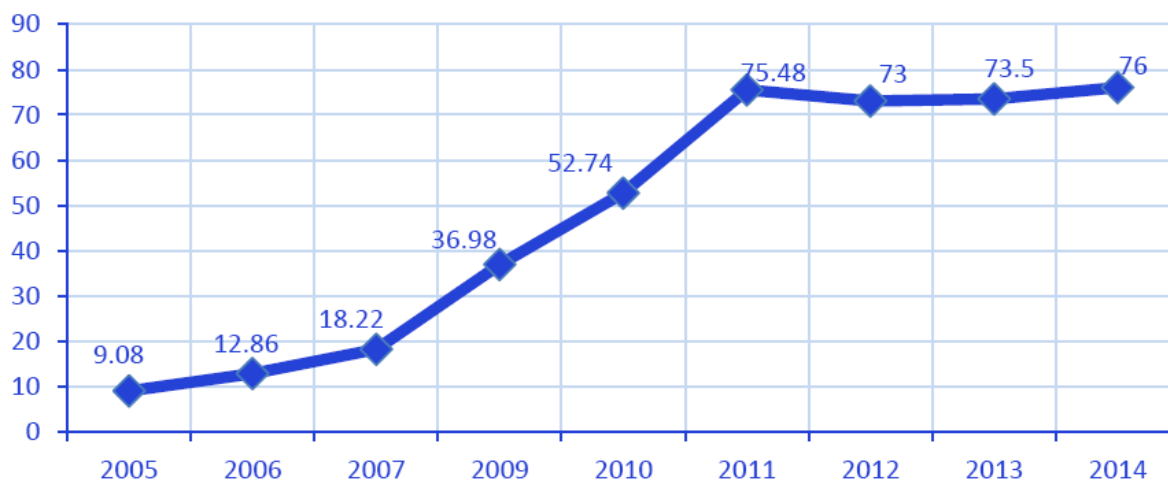
- (i) Telephone lines and cellular subscribers per 100 population
- (ii) Internet subscribers per 100 population
- (iii) Personal computers per 100 population

13.5 Telephone lines and cellular subscribers

The Indian telecom with 946.4 million telephone connections, including 918.72 million wireless telephone connections as on 31.07.2014 is the second largest network in the world after China. Out of above 946.4 million telephone connections, only 40.57% were in rural areas where population is much more than in urban areas of the country. As regards wireless subscribers, rural areas accounted for 39.97% of total such connection in the country as on 31.07.2014.

13.6. Teledensity which means no. of telephones per 100 population is an important indicator of telecom penetration in the country. As on 31.07.2014, overall teledensity in the country was 76% as compared to 9.08% in the year 2005.

Teledensity (%)



13.7 Overall position in the country as on 31.03.2015 is given below: -

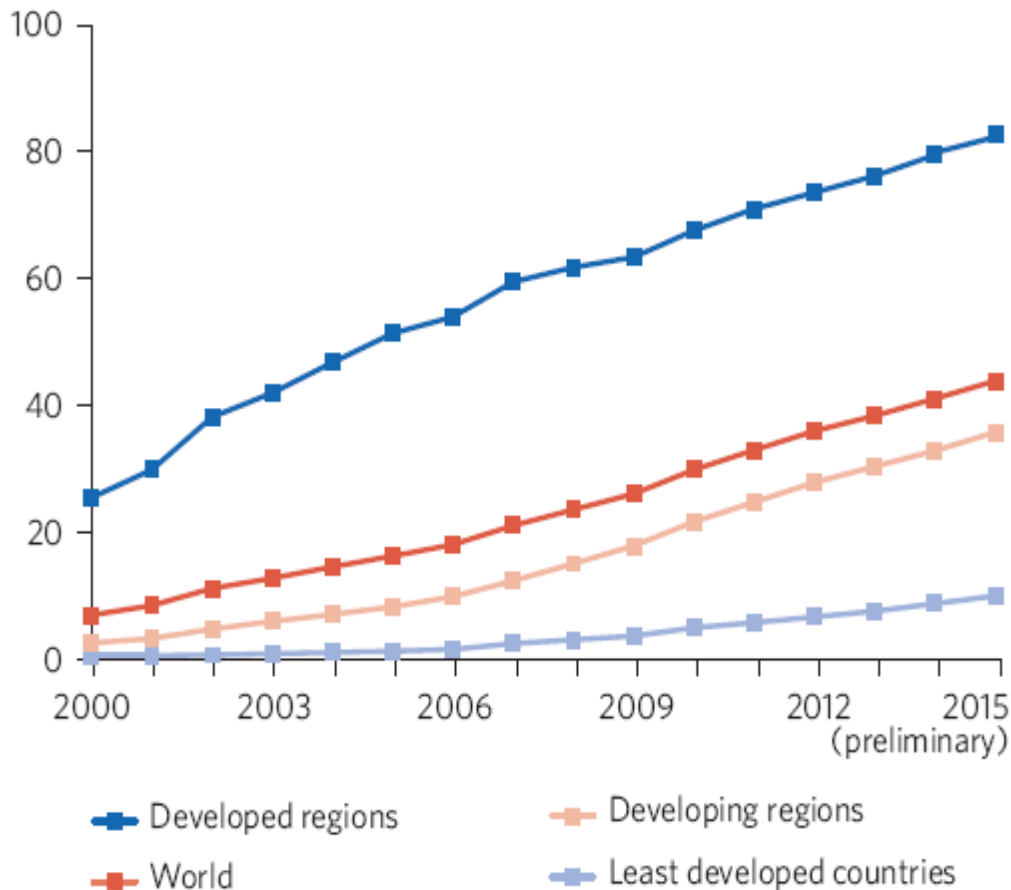
Internet / Broadband Subscribers (As on 31.03.2015)	
Total Internet Subscribers	302.35 Million
Narrowband subscribers	203.15 Million
Broadband subscribers	99.20 Million
Wired Internet Subscribers	19.07 Million
Wireless Internet Subscribers	283.29 Million
Total Internet Subscribers per 100 population	24.09

Source: Telecom Regulatory Authority of India

13.8 It is also worth mentioning have that private sector has contributed significantly towards encouraging better telecom connectivity. The share of private sector which was just 35.44% in 2003 tended to increase to 90.5% in 2014. Private Sector plays a predominant role in wireless telecom sector, while Public sector PSUs are the major players in wire line sector, as per Telephone Regulatory Authority of India.

13.9 Information and Communication Technology (ICT) access and use are unequally distributed across countries, as clear from UNDP report on MDG, s 2015.

Number of Internet users per 100 inhabitants, 2000–2015



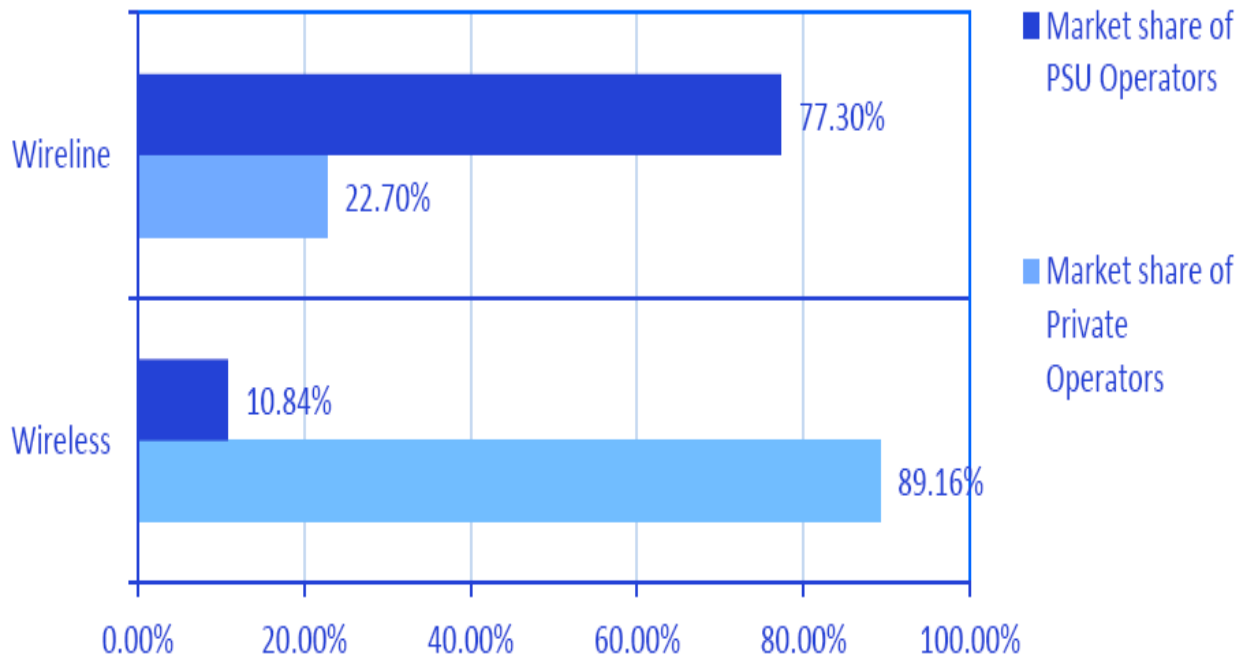
Source: - UNDP Report on MDG, s 2015.

The digital divide is particularly pronounced with respect to internet use and quality of access. For instance, just over one third of the population in developing countries uses the internet, compared to 82% in developed countries. The contrast is even more dramatic in sub-Saharan Africa, where less than 21% of the population uses the internet, and in Least Developed Countries (LDCs) for which the figure is less than 10%.

Internet bandwidth and national backbone capacities are important building blocks for providing affordable high speed internet access. They remain major challenges in many lower income countries, particularly small island and landlocked developing states. There are also major inequalities across countries in terms of costs of ICT services, availability of ICT skills and availability of relevant and local content.

Also where the global mobile cellular penetration rate was 97% in 2015, it reached only 64% in LDCs. An estimated 450 million people living in rural areas still live out of reach of a mobile signal.

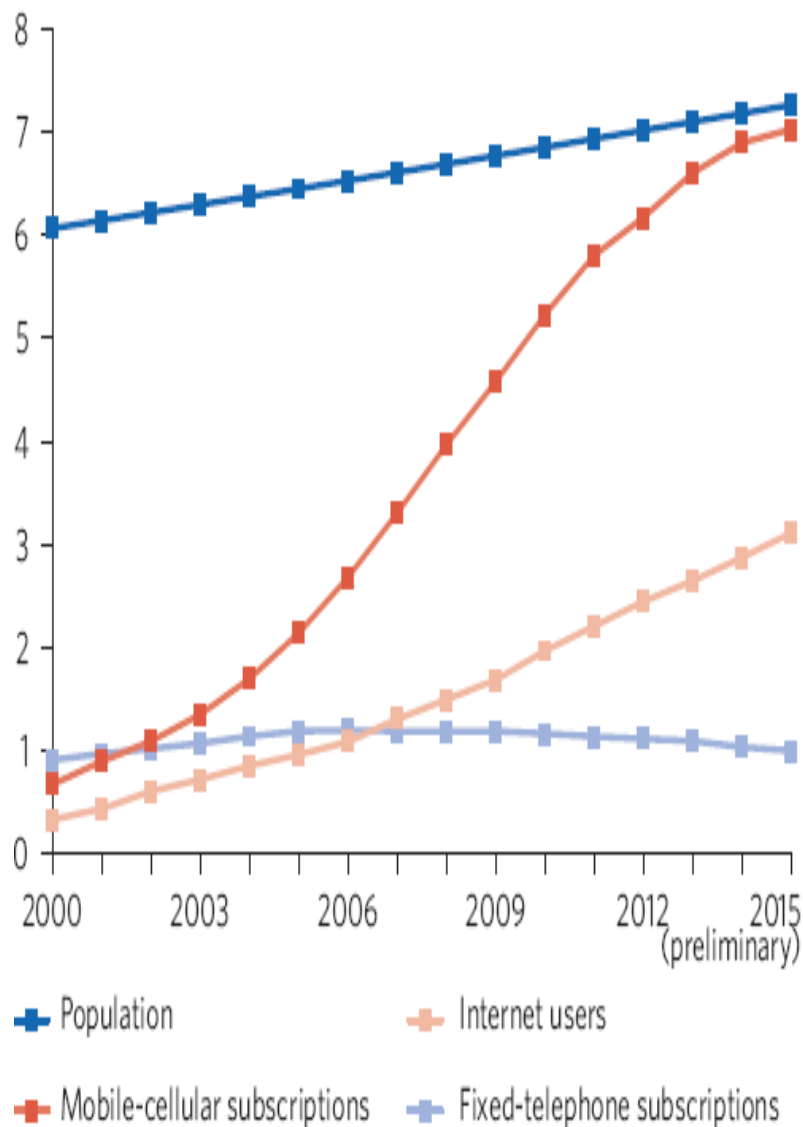
Market share of Private Operators and PSU operators in telecom Setor



Source: Telecom Regulatory Authority of India

13.10 As per the World Millennium Development Goals Report 2015. The numbers of users of Modern information and communications technology continues to grow as clear from the graph given below. Estimated number of mobile-cellular subscriptions, Internet users and fixed –telephone subscriptions ,2000-2015 (Billions) in the World.

Estimated number of mobile-cellular subscriptions, Internet users and fixed-telephone subscription, 2000-2015 (Billions) in the World.



Information and communication technologies (ICTs) have completely transformed the way people live, work and communicate. Their role and importance continue to expand thanks to technological progress, expanding networks, falling prices and growth in applications and content. For instance, the proportion of the population covered by a 2G mobile-cellular network grew from 58 per cent in 2001 to 95 per cent in 2015. The number of mobile-cellular subscriptions has grown almost tenfold in the last 15 years, from 738 million in 2000 to over 7 billion in 2015. Since 2002, the number of mobile-cellular subscriptions has exceeded the number of fixed-telephone subscriptions. Internet penetration has grown from just over 6 per cent of the world's population in 2000 to 43 per cent in 2015. As a result, 3.2 billion people are linked to a global network of content and applications, including user-generated content and social media. Rapid advances in fixed- and mobile-broadband technologies are continuously improving the type and quality of services available. Mobile broadband has overcome infrastructure challenges, enabling more areas to connect to the Internet. Its penetration rate increased fourfold between 2010 and 2015, reaching 47 per cent

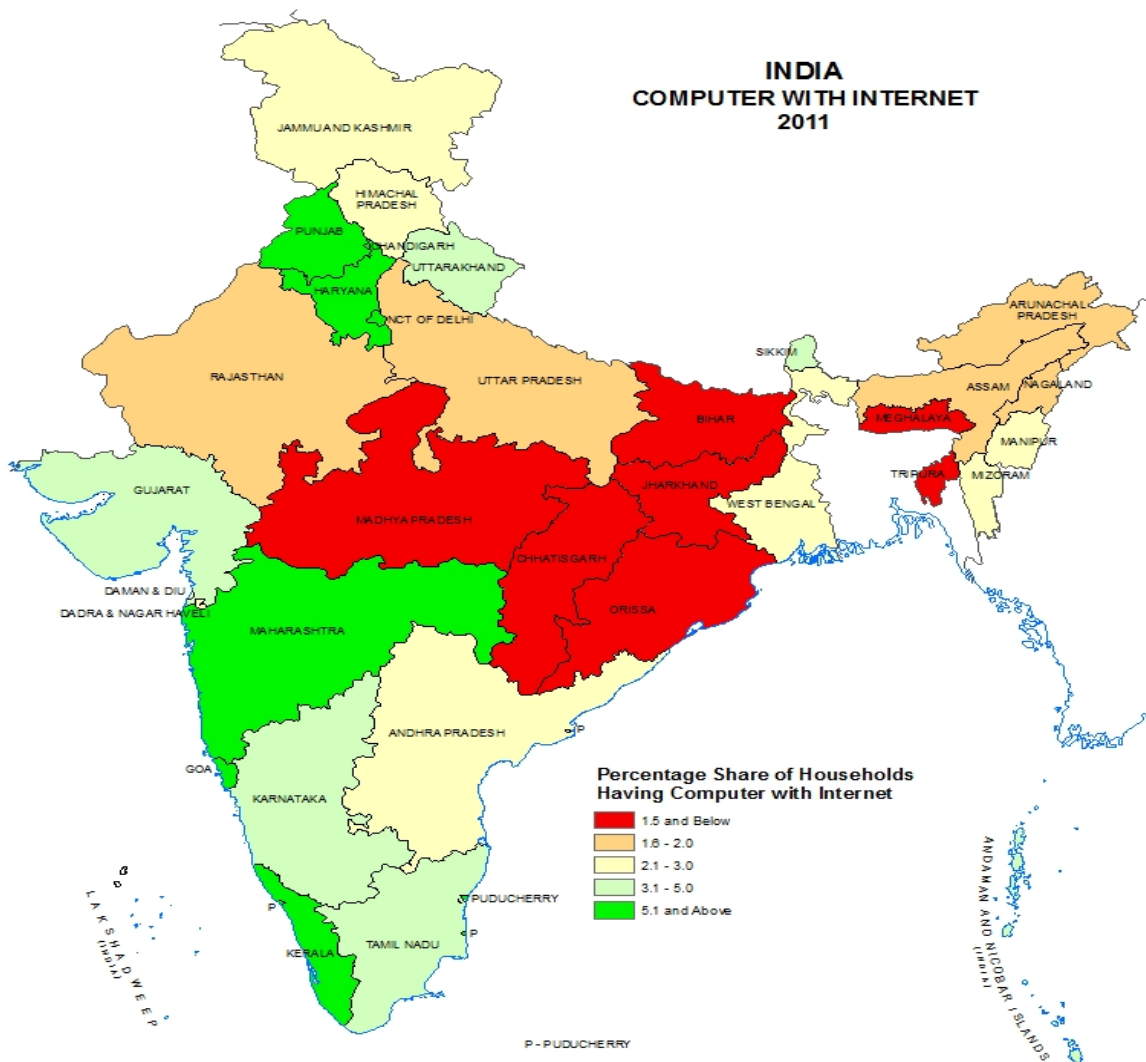
Source: UNDP Report on MDG,s 2015.

13.11 As per **Census 2011**, about 20 per cent households, out of total of 246,692,667 households, in urban areas and 5 per cent households in rural areas had computers/laptops.

(Households in percent)

Assets	Total	Rural	Urban
Computer:	9.5	5.2	18.7
Computer/Laptop - With Internet	3.1	0.7	8.3
Computer/Laptop - Without Internet	6.4	4.5	10.4

13.12 State wise distribution of the households having computers with internet facility , as per Census 2011 , shows that Kerala, Maharashtra, Haryana & Punjab have highest penetration with more than 5 percent of households having the facility. On the other hand, amongst the major states, Madhya Pradesh, Chhatisgarh, Jharkhand, Odisha & Bihar have lowest penetration with less than 1.5 per cent of households having computers with internet facility.



13.13 The information technology-information technology enabled services (IT-ITeS) industry has become one of the significant growth catalysts for India. India continues to maintain a leadership position in global sourcing, accounting for above 55 Per cent of the total global sourcing market (excluding engineering services and R&D) in 2014 as compared to 45 per cent in 2009. According to NASSCOM, during 2014, India's share in global IT services out sourcing and Business process management (BPM) has reached upto 67% and 38% respectively. The Indian information technology /Information technology Enabled services (IT/ITES) sector has registered tremendous growth over the past decade achieving a reputation for reliable and cost effective delivery of services. Today India is recognised as outsourcing destination of choice in the World.

Overall Growth Performance of the IT-BPM Sector

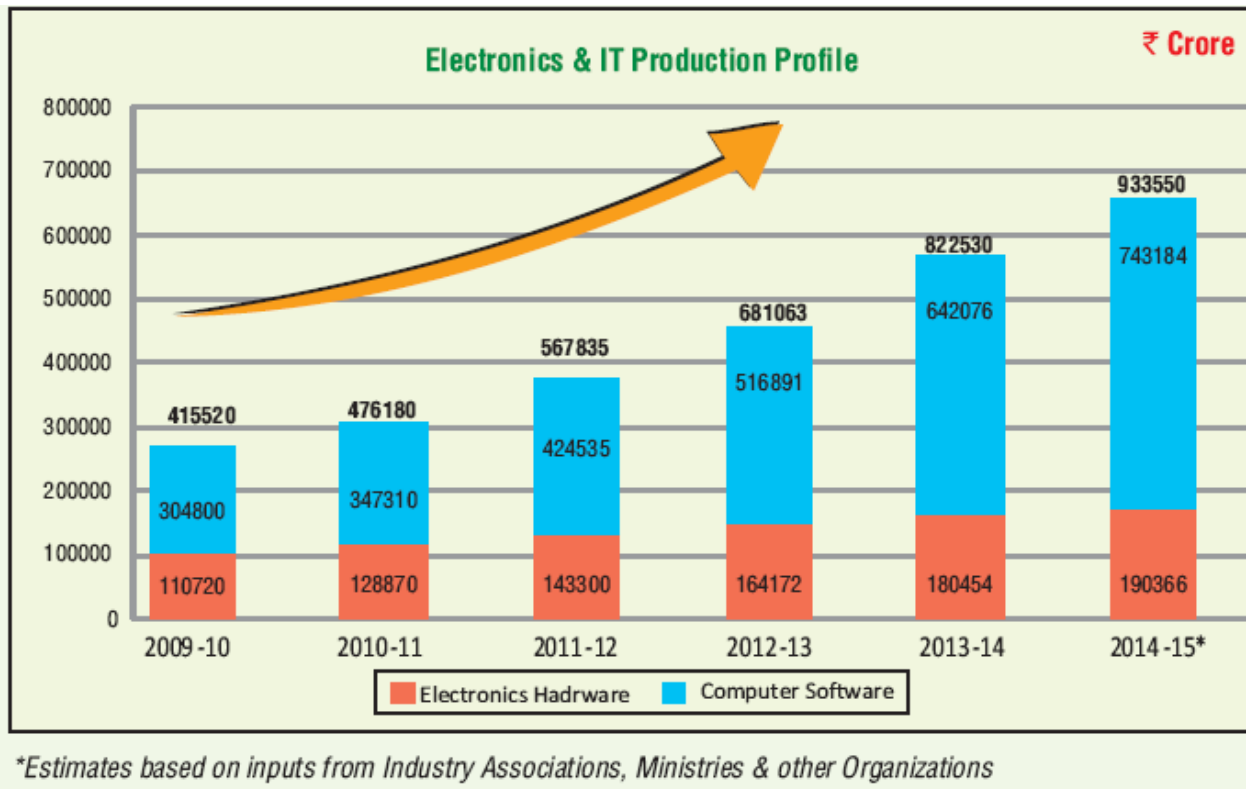
	Value (in US\$ billion)					Growth rate (per cent)		
	2008-09	2010-11	2012-13	2013-14E	2014-15 P	2012-13	2013-14E	2014-15 P
IT-BPM service Revenues	59.9	76.3	95.2	105.0	118-123	8.6	10.3	12
Exports	47.1	59.0	76.1	86.0	97-100	10.6	13.0	13-15
Domestic	12.8	17.3	19.2	19.0	21-23	1.1	-1.0	9-12
Employment (in million)	2.2	2.5	3.0	3.1	—	6.9	5.6	—

Source : NASSCOM.

Note : E—Estimate, P—Projections (revenue is excluding hardware services).

13.14 As per **Annual Report 2014-15 of Department of Electronics & Information Technology**, total production of electronics and IT-ITeS Industry was estimated to be around Rs 933550 Cr with a likely growth of 13.49 % during 2014-15 as against around Rs 822530 Cr during the previous year having a growth of about 20.77 per cent . The production & growth of Electronics and IT-ITeS since 2008-09 is given below:

	Production (Rs Cr)	Growth(%)		Production (Rs Cr)	Growth (%)
2008-09	372,450	25.9	2012-13	681,063	19.4
2009-10	415,520	11.6	2013-14	822530	20.77
2010-11	476,180	14.6	2014-15	933550	13.49
2011-12	567,835	19.2			

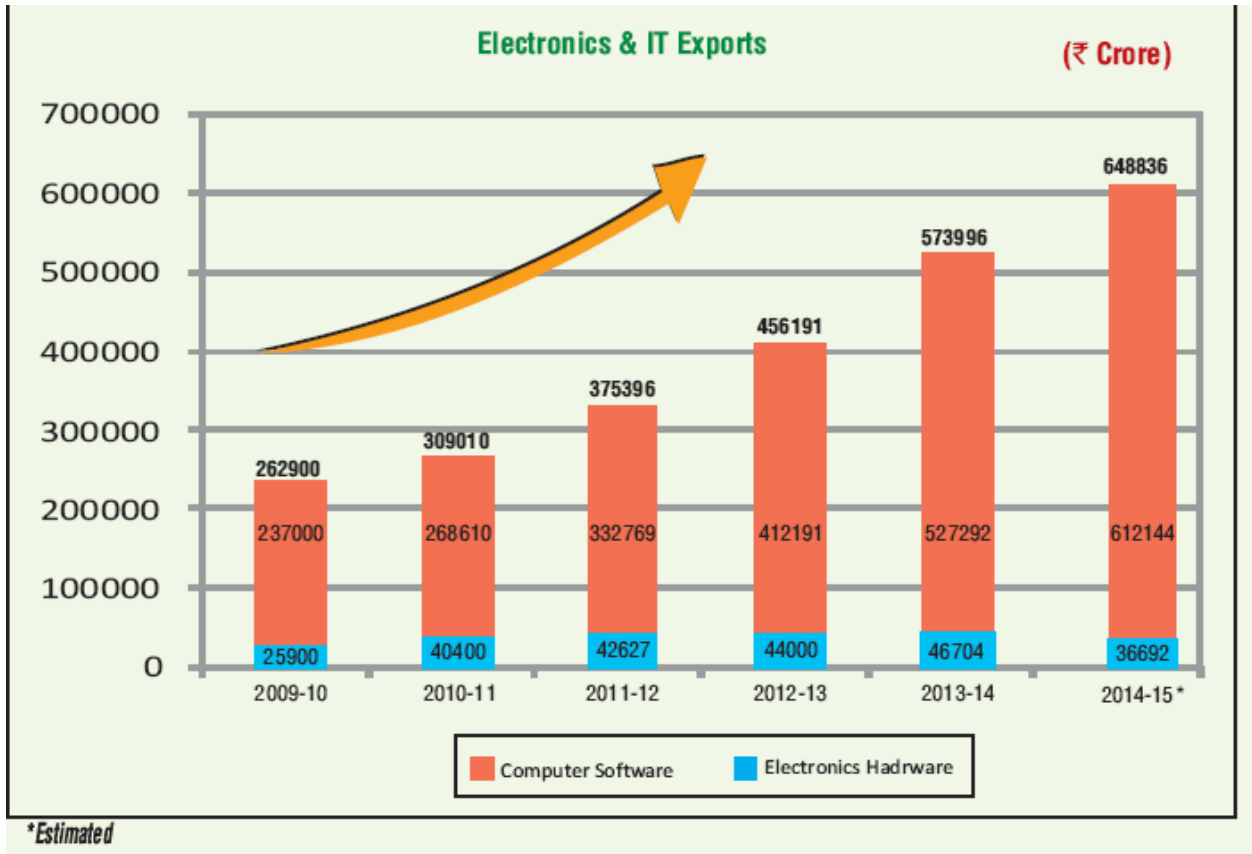


Export Performance:

13.15 The revenue aggregate of IT-ITES industry is expected to grow by about 12.0% and reach US\$119.1 billion in 2014-15 as compared to US\$ 106.3 billion in 2013-14. (Rs.743184 Crores in 2014-15 as compared to Rs.642076 Crores in 2013-14 with a growth of 15.75% in INR). The Indian software and services exports including ITES/BPO are estimated at US\$ 98.1 billion in year 2014-15 as compared to US\$87.3 billion in year 2013-14, a 12.4% growth in dollar terms. (Rs.612144 Crores in 2014-15 as compared to Rs.527292 Crores in 2013-14 with a growth of 16.09%).

13.16 IT Services is the fastest growing segment within the Indian IT-ITES sector. This segment is estimated to grow at 12.6% and to generate exports revenues of the order of US\$ 55.4 billion in year 2014-15 as compared to US\$49.2 billion in year 2013-14. (Rs.345696 Crores in 2014-15 as compared to Rs.297168 Crores in 2013-14 with a growth of 16.33%).

13.17 ITES/BPO segment has been reinventing itself in the past few years and is expected to grow at 11.3% and generate export revenue of the order of US\$22.7 Billion in year 2014-15 as compared to US\$20.4 Billion in year 2013-14. (Rs.141648 Crores in 2014-15 as compared to Rs.123216 Crores in year 2013-14 with a growth of 14.96%).



13.18 Challenges Faced by IT & ITeS Sector : Some of the challenges faced by the IT and ITeS Sector in India include increasing competition from other countries with incentivized low costs, rising costs in India with wage-push inflation, increasing costs of relevant talent and skilled personnel, infrastructure constraints with over 90 per cent of total revenue generated from seven Tier-1 locations, risks like currency fluctuations and security, both physical and data related, and rising protectionist sentiments in key markets.

Government Initiatives:

National Knowledge Network

13.19 The National Knowledge Network is being implemented by Department of Information Technology to bring together all the stakeholders in Science, Technology, Higher Education, Research & Development and Governance. The application areas envisaged under the National Knowledge Network cover Agriculture, Education, Health, e-governance and Grid Computing (High Performance Computing). The output of the National Knowledge Network project will be a high capacity countrywide Infrastructure at education & research Institute level, to support education and research applications, and other application as envisaged by these institutions which require very high bandwidth. A high speed data communication network would be established, which would interconnect Institutions of higher learning.

13.20 Government of India has approved the **National e-Governance Plan (NeGP)** in pursuance of its policy of introducing e-Governance on a massive scale. The NeGP vision is 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 to realize the basic needs of the common man". Capacity Building Scheme for an outlay of Rs 313 Crores for all the States/UTs for taking National e-Governance Plan (NeGP) forward across the country has been approved by the Cabinet Committee on Economic Affairs (CCEA) on 10th January 2008. The scheme is mainly for providing technical & professional support to State level policy & decision-making bodies and to develop specialized skills for e-governance.

State Wide Area Network (SWAN)

13.21 Wide Area Network is an advanced telecommunication infrastructure, which is used now-a-days extensively, for exchange of data and other types of information between two or more locations, separated by significant geographical distances. The medium of connectivity can be copper, optical fibre cable or wireless, as may be found feasible. Such wide area networks, in a way, create a highway for electronic transfer of information in the form of voice, video and data. Department of IT in Government of India is implementing an approved Scheme known as State Wide Area Network (SWAN) Scheme, envisaged to create such a connectivity in each State / UT, to bring speed, efficiency, reliability and accountability in overall system of Government-to-Government (G2G) functioning. When fully implemented, SWAN would work as a converged backbone network for voice, video and data communications across States / UTs. SWAN is designed to cater to the governance information and communication requirements of all the State / UT Departments. When fully implemented, SWANs across the country are expected to cover at least 50000 departmental offices through 1 million (10 lacs) route kilometres of communication links. Implementation of the SWAN Scheme is in full swing in 34 States/ UTs. (Twenty Six) States/UTs have been integrated using National Knowledge Network (NKN). (Twenty Nine) States /UTs are utilizing more than 60% of band width of the existing link capacity.

13.22 The **National Policy on Information Technology 2012** seeks to bring ICT within the reach of the whole of India while at the same time harnessing the immense human resource potential in the country to enable it to emerge as the global hub and destination for IT-ITeS Services by 2020. The principal objective of the Policy is to optimally leverage our existing and evolving ICT infrastructure and capabilities to meet the growing need for high quality social sector services like education, health skill development , economic services like banking, insurance , transportation etc and other societal needs like communication, information dissemination etc. The NeGP comprises mission mode projects (MMPs) and core e-infrastructure. Significant progress has been made in laying down core e-infrastructure. More than 97,000 common service centres (CSCs) have been established across the country as web enabled service access points for making public services available to citizens on anytime, anywhere basis. Initiatives under the NeGP also include online services related to income tax, Ministry of Corporate Affairs (MCA) 21, passports, and central excise. The government has also initiated new e-Governance projects for education, health, public distribution system and postal services. This will ensure the common man access to quality education, cost efficient and quality health care and postal services at affordable costs. Further, basic banking services, i.e. cash withdrawal, cash deposit, balance inquiry, and transfer of money from one account to another, will be extended to every panchayat through the CSCs and money transfer facility to every village by December , leveraging ICT and mobile technology. This will help make financial inclusion a reality with the help of IT.

13.23 Sources of information for IT Sector: Certain data, in particular, data on the telecommunication sector, the IT industry and business process outsourcing (BPO) and

data on the information society at large, are produced on a regular basis. A significant amount of data exists on the IT service industry, collected by **National Association of Software and Services Companies (NASSCOM)**, reflecting their members' data. In India, the indicators related to workforce, value added, imports & exports respectively are not strictly measured as per the International Standard Industrial Classification (ISIC). However, the information related to workforce & exports for this sector is maintained in National Association of Software and Services Companies (NASSCOM) for the IT-BPO sector. Similarly, data on IT manufacturing is captured by another private body, the Communication and Manufacturing Association of India (CMAI).

13.24 NASSCOM is a premier trade body as well as the Chamber of Commerce of IT-BPO sector in India. It is a not-for-profit organization and has emerged as an authentic voice of this industry in India. It publishes an annual edition of its strategic review to disseminate the latest status of the industry based on the survey of large companies of this sector.

13.25 The data related to production, exports and imports of this sector is also maintained by the **Ministry of Communication and Technology**.

13.26 Telecom Regulatory Authority of India (TRAI) maintains information on teledensity , number of internet subscribers etc.

13.27 Office of Registrar General of India, Ministry of Home Affairs (MHA) also collects some information on availability of computers/laptops with/without internet connection, telephone connection etc. as a part of household amenities in households all over India during its **decennial Census** exercise.

References:

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- World Millennium Development Goals Report , 2015, UNDP
- Annual Report 2014-15 of Department of Electronics & Information Technology
- Census of India 2011 “Indian Telecom Services Performance Indicator Report” for the Quarter ending March, 2015. Telecom Regulatory Authority Of India