

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. India accounts for around 28 per cent of IT and BPO talent among 28 low-cost countries. 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.

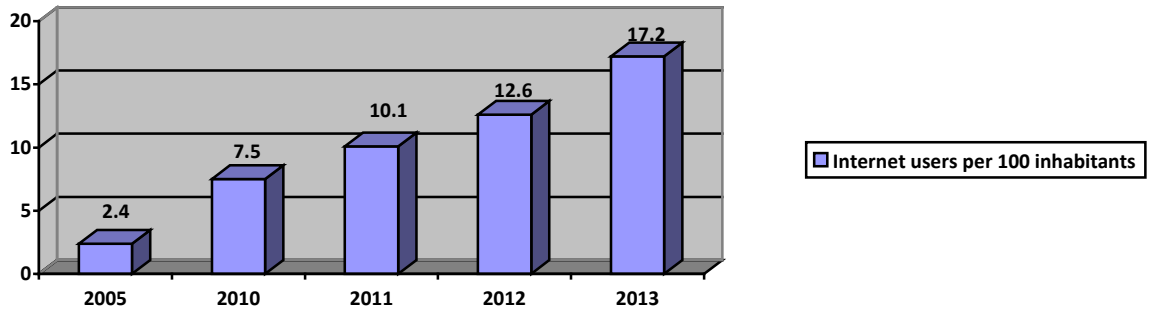
India's progress in ICT related indicators:

13.4 As per **Millennium Development Goals (MDGs), India Country Report 2011** 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 :

Indicator No.	Indicator Description
47	Telephone lines and cellular subscribers per 100 population
48A	Internet subscribers per 100 population

Indicator: Internet subscribers per 100 populations

13.5 Over the period, internet subscriber base has increased from 0.21 million in 1999 to a total number of 251.59 million Internet subscribers at the end of March 2014 and 259.14 million at the end of June 2014. Out of 259.14 million, 18.55 million were Wired Internet subscribers and 240.60 million were Wireless Internet subscribers. Number of Broadband Internet subscribers increased from 60.87 million at the end of March 2014 to 68.83 million at the end of June 2014.

Growth of Internet Subscribers – India

Internet / Broadband Subscribers	
Total Internet Subscribers	259.14 Million
Narrowband subscribers	190.31 Million
Broadband subscribers	68.83 Million
Wired Internet Subscribers	18.55 Million
Wireless Internet Subscribers	240.60 Million
Total Internet Subscribers per 100 population	20.83

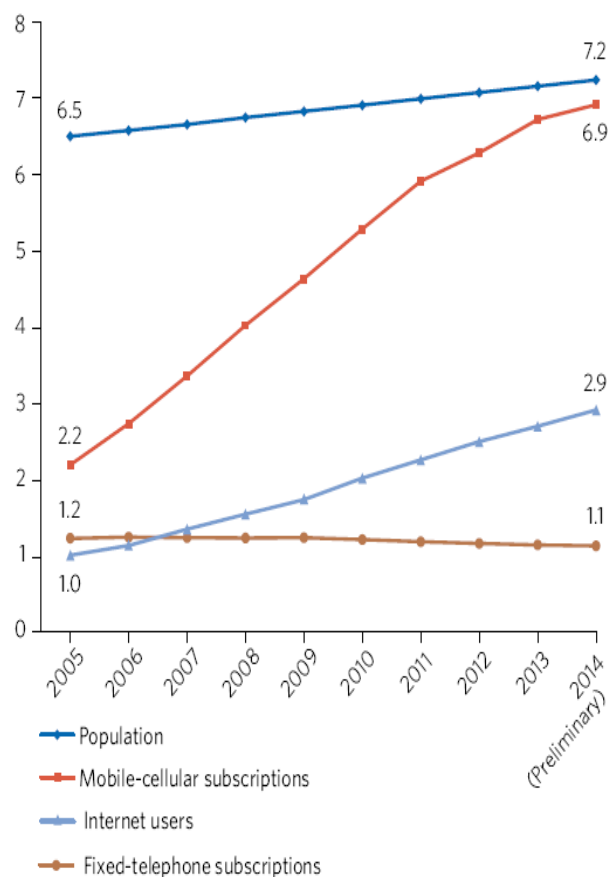
Source: Telecom Regulatory Authority of India

(Data As on 30th June, 2014)

13.6 Indicator: Personal computers Per 100 populations: Use of Personal Computers has also increased from 5.4 million PCs in 2001 to 19.6 million in 2006. Sale of Personal Computers recorded a growth of 12% in 2010-11 touching 9.7 million. The Notebook sales were estimated to be 3.5 million in 2010-11 against 2.5 million in 2009-10, registering a growth of 40%. This shows that Notebooks have caught the fancy of the consumers. Desktop sales were estimated as 6.2 million in 2010-11 against 5.5 million in 2009-10 with a growth of 12.7%.

13.7 As per the **World Millennium Development Goals Report 2014**, The use of modern information and communications technology continues to grow—with almost three billion people online and seven billion mobile-cellular subscriptions.

Estimated number of mobile-cellular subscriptions, Internet users and fixed-telephone subscriptions, 2005-2014 (Billions)



Two-thirds of the world's Internet users are in developing regions, where the number of Internet users doubled in just five years between 2009 and 2014. In Africa, almost 20 per cent of the population are online, up from 10 per cent in 2010. In 2014, Internet use penetration in developing countries had grown by 8.7 per cent, twice as fast as in the developed world, where its usage rose by 3.3 per cent. Still, less than one-third of the developing world population is online, compared to 78 per cent in the developed world. Young people play an important role in driving the information society, particularly in developing countries where they represent a relatively large group within the overall population. In 2012, there were around 363 million digital natives—persons aged 15–24 years with at least five years of online experience. This cohort corresponds to 30 per cent of the world's youth and 5 per cent of the total world population.

High-speed Internet access is soaring as broadband prices fall and mobile-broadband networks expand rapidly. Almost all countries in the world have launched at least third generation (3G) mobile-broadband services, and the number of subscriptions has been growing rapidly.

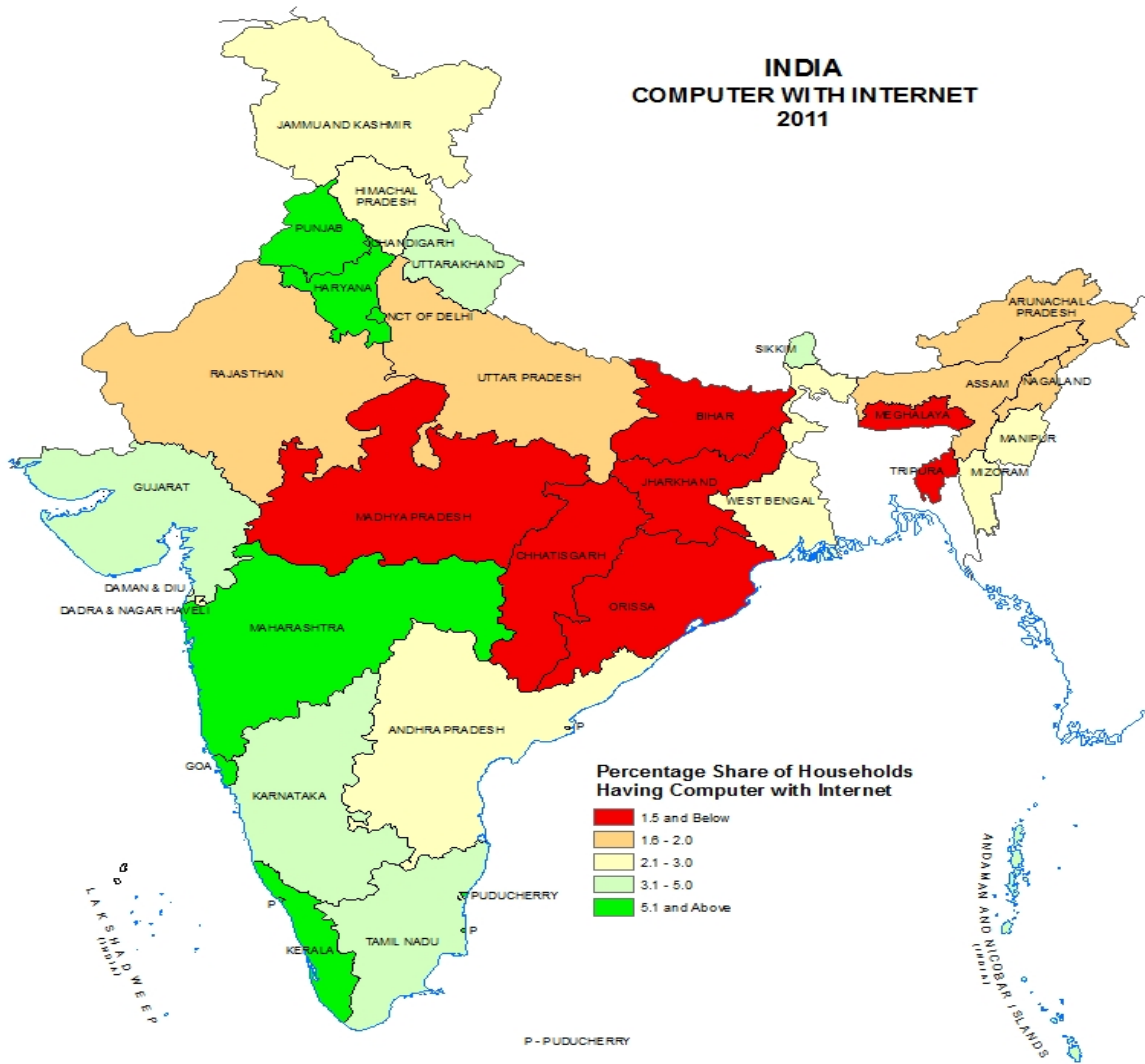
13.8 The penetration levels in the developing countries had increased to 26% by end of 2011. The penetration level in India, as revealed by Census 2011, however, was lower.

13.9 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

13.10 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.



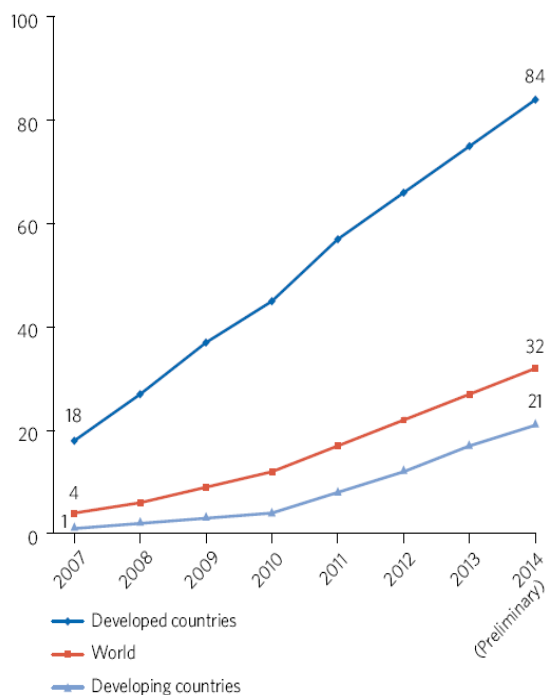
13.11 **Digital Divide** : Expansion in internet use and tele –connectivity depends on increase in PC penetration and wireless telephony, particularly in rural areas. The high rate of growth in the IT and Communication sector is still urban centric and highly

skewed over States. The problems in the backward States continue to remain in the back-burner, while real benefit of connectivity is required the most in these areas. Similar digital divide is visible between developed & developing countries as well.

Globally, more than four billion people are not yet using the Internet—90 per cent of whom are from the developing world—highlighting the need for improving the accessibility and affordability of Internet services. In developed regions, 82 per cent of youth are digital natives. In contrast, in developing countries, where many young people only came online more recently, only 23 per cent of youth are digital natives. However, within the next five years, the population of digital natives in developing countries will more than double, helping those countries to drive their digital adoption agendas. By the end of 2014, there will be 32 mobile-broadband subscriptions per 100 inhabitants, almost double the penetration rate in 2011. Mobile-broadband penetration will stand at almost 84 per cent in developed countries, compared with 21 per cent in developing countries. Fixed-broadband penetration has been growing at a slower rate than mobile-broadband but will reach almost 10 per cent globally by the end of 2014.

The price of broadband services has continued to drop. Globally, between 2008 and 2012, fixed-broadband prices fell by 82 per cent, with the biggest drop occurring in developing countries. Nevertheless, broadband services have been much more affordable in developed than developing countries, where they are out of reach for large parts of the population.

Number of active mobile-broadband subscriptions per 100 inhabitants, 2007-2014



Production, Earnings & Exports - ITS Sector:

13.12 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 2013 as compared to 52 per cent in 2012. The IT-business process management (BPM) sector (excluding hardware) is estimated to have grown by 10.3 per cent, reaching US\$ 105 billion in 2013-14. Of this, exports with a major share of 81.9 per cent grew by 13.0 per cent while domestic revenues fell by 1.0 per cent in dollar terms. Domestic revenue is estimated to have increased by 9.63 per cent in rupee terms. In 2014-15 higher growth is expected in both exports and domestic revenues.

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).

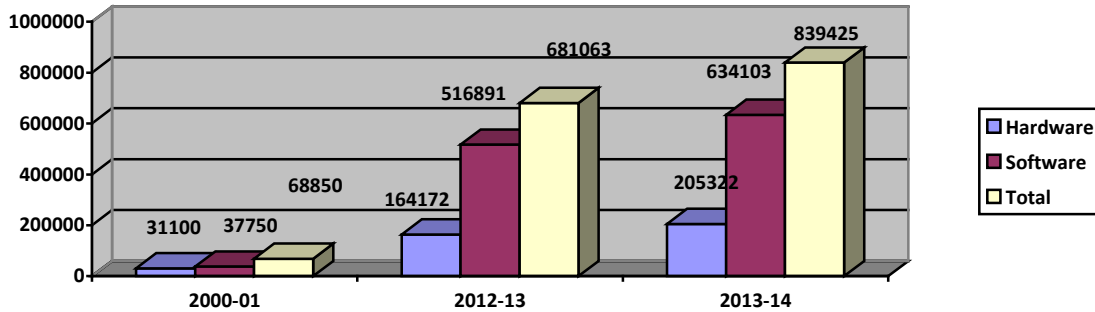
13.13 A gradual revival in consumer confidence leading to return of discretionary spending and increased demand from the US and Europe is helping drive exports. India continues to lead in cost competitiveness. Flat entry-level salaries, flattening employee pyramid, and fast career growth are helping India stay seven-eight times cheaper than source locations and 30 per cent cheaper than the next nearest low-cost country. However, challenges around protectionism, increased competition, currency volatility, wage inflation, and inconsistent levels of customer confidence have to be addressed.

13.14 This sector is also a big employment generator with direct employment in the IT services and business process outsourcing (BPO)/ITeS segment projected to grow by 5.6 per cent, reaching 3.1 million in 2013-14 with over 166,000 jobs being added during the year (of which 30 per cent are for women). Indirect job creation is projected at 10.0 million. The National Policy on Information Technology (NPIT) envisages revenues of the IT and ITeS industry expanding from US\$ 100 billion in 2011-12 to US\$ 300 billion by 2020 and exports from US\$ 69 billion in 2011-12 to US\$ 200 billion by 2020.

13.15 As per **Annual Report 2013-14 of Department of Electronics & Information Technology**, total production of electronics and IT-ITeS Industry was estimated to be around Rs 839,425 Cr with a likely growth of 23.2 % during 2013-14 as against around Rs 681,063 Cr during the previous year having a growth of about 19.4 per cent. This increase in growth may be attributed mainly to the accelerated growth of software and services industry, which is export driven and continues to dominate the Electronics & IT industry. In Rupee terms the production of electronics hardware is expected to be about Rs 205,322 Cr during 2013 -14 as compared to 164,172 Cr during 2012-13, i.e an estimated growth of 25%. However, Indian electronics production accounts for only around 1.3% of global production. In 2013-14, Indian software and services exports industry also witnessed similar growth over the previous year with production worth Rs 519,319 Cr against Rs 412,191 Cr in the previous Year, an increase of about 26 percent in rupee terms. The production & growth of Electronics and IT-ITeS since 2008-09 is given below:

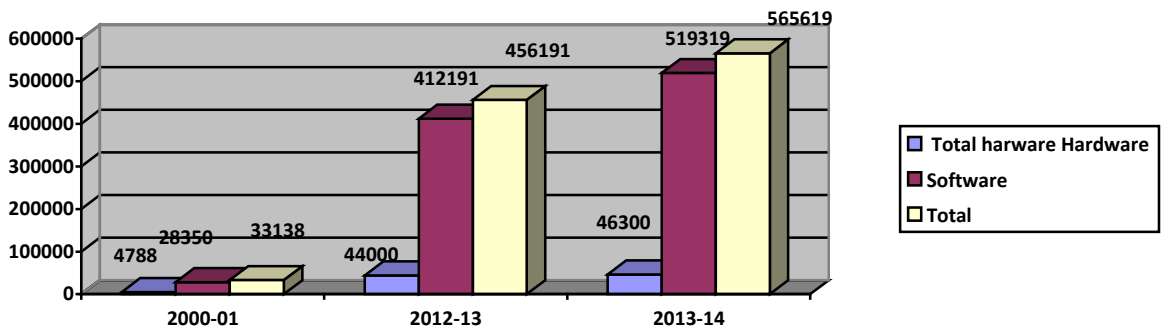
	Production (Rs Cr)	Growth(%)		Production (Rs Cr)	Growth (%)
2008-09	372,450	25.9	2011-12	567,835	19.2
2009-10	415,520	11.6	2012-13	681,063	19.4
2010-11	476,180	14.6	2013-14	839,425	23.2

Electronics & IT Production (Rs Crore)



13.16 The exports of IT & ITeS sector is poised for an average growth rate (y-o-y) of 14 % and the same has been helping in bridging Current Account Deficit for some years now. Exports revenue of IT software and service sector (excluding hardware) are estimated to be gross USD 86 billion in FY 2013-14 , growing by 13.1 % over previous year and contributing nearly 82 % of total IT- BPM (Business Process Management) revenues (excluding hardware). IT services exports was expected to be the fastest growing segment in FY 2013-14, generating exports of USD 52 billion whereas BPM exports were likely to be USD 19.9 billion industry by itself. While US continues to be the largest geographic market for India, accounting for 62 % of total IT-ITeS exports , the highlight of the year was revival of demand from Europe, which grew at 14 % in FY 2013-14.

Electronics & IT Exports (Rs Crore)



13.17 As proportion of national GDP , the sector revenues have grown from 1.2 % in FY 1997-98 to nearly 8.1 % in FY 2013-14.

13.18 **Challenges Faced by IT & ITeS Sector** : Some of the challenges faced by the IT and ITeS sector 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, 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 33 States/ UTs.

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 and in most of the MMPs. 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. The number of public services available to citizens in electronic mode will be expanded through the Electronic Delivery of Services (EDS) Bill, approved by the union cabinet on 20th December 2011. In order to leverage the rapid growth in penetration of mobile technology and connectivity and also to ensure accessibility to all services to the common man, public services under all eGovernance projects will be delivered through mobile devices like mobile phones and Aakash tablets. 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 2013, 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).

- 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.

- The data related to production, exports and imports of this sector is also maintained by the **Ministry of Communication and Technology**.
- **Telecom Regulatory Authority of India (TRAI)** maintains information on teledensity , number of internet subscribers etc.
- **National Sample Survey Office (NSSO)** of the Ministry of Statistics and Programme Implementation, which conducts multi-subject integrated sample surveys all over the country, will conduct survey on the basis of a 10 year time frame on the number of household using computers (HH5). NSSO has been conducting , **Annual Survey of Industries (ASI)**, regularly whereby information related to the use of ICT is also collected.
- Recently Govt. of India, **Ministry of Statistics and Programme Implementation (MOSPI)** has signed an MOU to participate in the project on “**Statistical Compilation of IT Sector and Policy Analysis**” undertaken by Orbicom, the network of UNESCO Chairs in Communication. In this project an attempt has been made to compile data on the contribution of IT sector to the Gross Domestic Product (GDP) and employment to the Indian economy following internationally accepted and harmonized definitions and concepts emerging from the OECD and United Nations. The value added has been compiled from the existing data holdings of the MOSPI.
- **Office of Registrar General of India**, 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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