

## THE ORIGIN AND PRODUCTION OF INDIAN IT INDUSTRY

G.V. Vijayasri\*

### ABSTRACT

The origin and production of Information Technology (IT) industry has been widely studied. The present study based on secondary sources Information Technology (IT) is the acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by a micro-electronics-based combination of computing and telecommunications. It also examined the trends in revenue of IT industry, IT production and composition of IT Production. The revenue contribution of this industry in country's GDP accounted for 7.5 per cent and in total exports 25.18 per cent in 2011-12. The export market, dominates the IT industry accounting for 65% of the revenue. The annual growth of IT production ranged between 10.09 per cent in 2009-10 to 30.23 per cent in 2006-07. Software products are among the most highly exported products from India. It has been observed that the IT sector is not only contributes significantly to export earnings and GDP but also emerges as a major source of employment generation in the country.

**KEY WORDS:** Information Technology (IT), GDP, Production, Hardware and Software.

---

\* Research Scholar, Department of Economics, Andhra University, Visakhapatnam, Andhra Pradesh, India.

## INTRODUCTION

Services the 'tertiary sector' of the economy covers a wide gamut of activities like trading, banking & finance, infotainment, real estate, transportation, security, management & technical consultancy among several others. The contribution from services sector today stands over 40 per cent of the total GDP in India. The sector currently employs close to 20 million people in India. The Technology Information, Forecasting and Assessment Council (TIFAC) study on Services covered nine select sub-sectors ranging from advertising, HRD services, testing & certification to Government administration. For all the aforesaid areas IT plays the prime role in information processing, storage & access with a view to providing improved services to the consumers.

Information technology (IT) has become one of the most robust industries in the world. It, more than any other industry or economic facet, has increased productivity, particularly in the developed world, and therefore is a key driver of global economic growth. Economies of scale and insatiable demand from both consumers and enterprises characterise this rapidly growing sector.

## OBJECTIVES

1. To evaluate the trends in revenue of IT industry in India.
2. To analyse the composition of IT Production in India.
3. To examine the proportion of IT Exports in total Production.

## DATA SOURCES

Data and information are collected from Statistical Year Books published by Electronics and Software Export Promotion Council (ESC), NASSCOM, Reserve Bank of India Bulletins published by RBI, IMF publications, publications of Ministry of Trade and Commerce, Ministry of Information Technology, Government of India and also from various web sites. Simple Statistical tools like percentages have been used wherever necessary. Hence, to examine the structure and production of Indian IT industry, the data collected is from 1997-98 to 2011-12. This paper makes an attempt to delineate various dimensions of IT industry of India.

## INFORMATION TECHNOLOGY (IT)

The Information Technology Association of America (ITAA) explains 'information technology' as encompassing all possible aspects of information systems based on computers. Both software development and the hardware involved in the IT industry include everything from computer systems to the design, implementation, study and development of IT and management systems.

Information Technology (IT) is the acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by a micro-electronics-based combination of computing and telecommunications. Information Technology (IT) is the industry, which through the use of computers and other supporting, equipment helps in the spread of knowledge. Information Technology for some time was synonyms to computers. But with the rapid and advancement in various information delivery system such as Radio, TV, Telephone, Newspapers, Fax and of course computers and computer Networks, information technology refers to the entire gamut of Media and devices used to transmit and process information for use by various target groups in the society. IT has, therefore been rights termed at information and communication Revolution.

## THE ORIGIN OF INFORMATION TECHNOLOGY IN INDIA

Indian Information Technology industry is one of the fastest growing industries in the country. The IT industry has built very valuable brand equity for itself in the global markets. The Indian IT Industry comprises of software industry and information technology enabled services (ITES), which even includes Business Process Outsourcing (BPO) industry. Indian IT Industry is considered as a pioneer in software development and a favourite destination for IT-enabled services. In the year 1974, the origin of IT industry in India can be traced, when the mainframe manufacturer, Burroughs asked its sales agent in India, Tata Consultancy Services (TCS) to export programmers for installing system software for a U.S. client.

The origin of Indian IT industry was under unfavourable conditions. During olden times local markets were absent and government policy toward private enterprise was hostile. The

Indian IT Industry was begun by Bombay based conglomerates that entered the business by supplying programmers to global IT firms located overseas. During 1970's the Indian economy was state controlled and remained hostile to the software industry. Even the Import tariffs were high like 135 per cent on hardware and 100 per cent on software and the exporters were ineligible for bank finance. In 1984 Rajiv Gandhi became Prime Minister and the Government policy towards IT sector changed. The New Computer Policy (NCP-1984) consisted of a package of reduced import tariffs on hardware and software to 60 per cent.

Even during this time the recognition of software exports as a "delicensed industry", was done so that banks were eligible for finance and freed from license permit raj, and permission for foreign firms to set up wholly owned subsidiaries. All such policies are reasons for the development of a world class Indian IT industry. Now, IT companies in India such as Tata Consultancy Services (TCS), Wipro, Infosys, HCL are well known in the global market for their IT competency.

Indian IT Industry's development and contribution to the world's information technology sector is of highest reputation. Metro Cities like Bangalore, Mumbai, Delhi, Chennai and Hyderabad have become the favorite destinations for all the big banners like HSBC, Dell, Microsoft, GE, Hewlett Packard, and several Indian multinational firms like Infosys Technologies, Wipro, and Microland have set up their offices in these cities. As the cities offer good infrastructure, with large floor space and great telecom facilities. This could be reason for the basis of the high growth statistics of India and the changing outlook of the companies towards India. The Indian IT Industry has grown up to US \$ 5.7 billion in 1999-2000, with the annual growth rate not sliding below 50 per cent since 1991.

## REVENUE OF INDIAN IT INDUSTRY

It is an important industry in the sense that, very highly productive and contribute 7.5 per cent of India's GDP and about 25.18 per cent of total exports in 2011-12.

Table 1 shows the contribution of IT industry to national income in India during the period of 1997-98 to 2011-12. It is clear from the Table that the share of IT sector in total revenue of the nation increased gradually during the study period. The revenue from IT sector increased from Rs.18, 750 crores in 1997-98 to Rs.4, 90, 900 crores in 2011-12. The percentage share of IT revenue in GDP increased from 1.22 per cent in 1997-98 to 7.5 per cent in 2011-12. Although the industry figures are not directly comparable with GDP as they are based on revenue rather than value added, they provide an indicator of growing importance of the IT sector in the country. IT sector revenue recorded manifold increase during the study period. This sector generated income domestically as well as through export market. During the study period the income from exports increased steadily and income from domestic market declined. For instance the percentage share of income from domestic market is 60 per cent in 1997-98 which declined to 32.45 per cent in 2011-12, whereas the income from exports increased from 40 per cent to 67.55 per cent during the same period.

Despite higher growth of exports, the domestic market still represents 32.45 per cent of industry receipts. The domestic IT services and software segment continued to lag behind the export segment on account of issues such as higher piracy levels, pressure on software prices, and low level of IT spending by domestic companies, however, demand from verticals such as banking, telecom, and BPO vendors. Domestic IT spending is expected to increase further due to increase in telecom and internet penetration, higher IT budget allocation by the governments, IT spending by verticals like BFSI (Banking, Financial Services and Insurance), manufacturing and engineering firms, automobile and retail sector, and greater focus on maintenance and security infrastructure by vendor firms.

**TABLE-1**  
**REVENUE OF INDIAN IT INDUSTRY**  
**(Rs.Crores)**

Years	Domestic Revenue	Export Revenue	IT sector Total Revenue
1	2	3	4
1997-98	11250 (60)	7500 (40)	18750 (1.22)
1998-99	14110 (55.74)	11205 (44.26)	25315 (1.45)
1999-00	18060	17200	35260

	(51.22)	(48.78)	(1.88)
2000-01	27140 (48.76)	28520 (51.24)	55660 (2.69)
2001-02	27666 (43.29)	36252 (56.71)	63918 (2.87)
2002-03	30500 (39.15)	47400 (60.85)	77900 (3.16)
2003-04	38200 (38.62)	60700 (61.38)	98900 (3.63)
2004-05	45800 (36.18)	80800 (63.82)	126600 (4.34)
2005-06	58400 (35.29)	107100 (64.71)	165500 (4.7)
2006-07	70100 (33.83)	137100 (66.17)	207200 (5.2)
2007-08	88600 (34.98)	164700 (65.02)	253300 (5.5)
2008-09	100700 (31.55)	218500 (68.45)	319200 (6.0)
2009-10	112900 (32.20)	237700 (67.80)	350600 (6.2)
2010-11	131200 (32.65)	270600 (67.35)	401800 (6.4)
2011-12	159300 (32.45)	331600 (67.55)	490900 (7.5)

**Source:** GDP. [www.adb.org](http://www.adb.org). IT sector: [www.nasscom.org](http://www.nasscom.org).

**Note:** GDP at market prices, Figures in brackets for column 4 is the proportion of IT revenue in India's GDP. Figures in brackets for 2 and 3 are proportions in Total IT Revenue.

## COMPOSITION OF INDIAN IT PRODUCTION

In total IT production the production of hardware and software in India during the study period is shown in Table-2 the value of production of hardware as well as software has been presented along with the percentage change over previous year. The exports of both hardware and software increased during the study period. It is noted that in terms of exports, software exports are higher than hardware exports during the study period. In terms of hardware production is higher in the initial year of the study where as the software production is higher in the final year of the study.

In total hardware production, the proportion of hardware exports increased from 12.72 per cent in 1997-98 to 29.75 per cent in 2011-12, domestic use declined to 70.25 per cent in 2011-12 from 87.28 per cent in 1997-98. In total software production the proportion of software increased from 68.21 per cent in 1997-98 to 78.06 per cent in 2011-12, domestic use declined to 21.4 per cent in 2011-12 from 31.7 per cent in 1997-98.

Hardware is the only segment of IT sector in India in which the size of the domestic market exceeds that of export. MNCs dominate the hardware segment occupying the top positions in key categories such as desktop PCs and notebooks, servers, and peripherals. The BFSI, government and telecom service providers continued to be the key contributors. BFSI alone accounts for one fourth of the total hardware spending in the domestic market. Although the size of the hardware domestic market still remains small, there is a huge potential for its growth. Currently, India is one of the fastest growing hardware markets in the world.

For the first time the year 1999, was a moment of great pride for Indian software industry as Satyam-InfoTech was listed in NASDAQ (a dream exchange of high tech companies). It has heightened the international recognition of Indian Software Companies.

**TABLE-2**  
**COMPOSITION OF INDIAN IT PRODUCTION**

(Rs. Crores)

Years	Hardware Exports	Domestic Hardware	Total Hardware	Software Exports	Domestic Software	Total Software	Total IT production
1	2	3	4	5	6	7	8
1997-98	2810 (12.72)	19290 (87.28)	22100 (68.92)	6800 (68.21)	3170 (31.79)	9970 (31.09)	32070
1998-99	2050 (8.12)	23200 (91.88)	25250 (59.13)	12500 (71.63)	4950 (28.37)	17450 (40.87)	42700
1999-00	2600 (9.25)	25500 (90.75)	28100 (53.42)	17300 (70.61)	7200 (29.39)	24500 (46.58)	52600
2000-01	4788 (15.40)	26312 (84.60)	31100 (45.74)	27500 (74.53)	9400 (25.47)	36900 (54.26)	68000

2001-02	5800 (17.74)	26900 (82.26)	32700 (40.84)	36500 (77.05)	10874 (22.95)	47374 (59.16)	80074
2002-03	5600 (14.93)	31900 (85.07)	37500 (38.50)	46500 (77.63)	12400 (22.37)	59900 (61.50)	97400
2003-04	7700 (17.58)	36100 (82.42)	43800 (37.10)	58000 (78.11)	16250 (21.89)	74250 (62.90)	118050
2004-05	8000 (15.84)	42500 (84.16)	50500 (33.77)	77300 (78.05)	21740 (21.95)	99040 (66.23)	149540
2005-06	9625 (17.01)	46975 (82.99)	56600 (29.60)	105000 (78.01)	29600 (21.99)	134600 (70.40)	191200
2006-07	12500 (18.94)	53500 (81.06)	66000 (26.51)	146000 (79.78)	37000 (20.22)	183000 (73.49)	249000
2007-08	13200 (15.64)	71210 (84.36)	84410 (27.55)	175000 (78.83)	47010 (21.17)	222010 (72.45)	306420
2008-09	31226 (32.98)	63464 (67.02)	94690 (24.93)	227834 (79.92)	57230 (20.28)	285064 (75.07)	379754
2009-10	25900 (23.56)	84040 (76.44)	109940 (26.30)	241950 (78.52)	66200 (21.48)	308150 (73.70)	418090
2010-11	40400 (32.12)	85390 (67.88)	125790 (26.94)	262500 (76.93)	78700 (23.07)	341200 (73.06)	466990
2011-12	42627 (29.75)	100673 (70.25)	143300 (25.52)	326500 (78.06)	91765 (21.94)	418265 (74.48)	561565

**Source:** Electronics and Software Export Promotion Council, Statistical Year book, Various Issues

**Note:** Figures in brackets for 4 & 7 columns are proportions in column 8.  
 Figures in brackets for 2 & 3 Columns are proportions in column 4.  
 Figures in brackets for 5 & 6 Columns are proportions in column 7.

## BIFURCATION OF INDIAN IT PRODUCTION

Table 3 presented total production of electronic hardware and computer software/services during the study period. It is clear from Table that the proportion of the production of electronic hardware in total production is higher than the software in 1997-98 which was reversed in 2011-12 as the proportion of production of computer software/services increased and electronic hardware decreased. For instance the proportion of the electronic hardware is 68.92 per cent in 1997-98 and only 25.52 per cent in 2011-12 and the proportion of computer software/services production is 31.08 per cent in 1997-98 and increased to 74.48 per cent in 2011-12.



The production of Electronic Hardware includes consumer electronics, telecom equipment, instrument office, medical equipment, electronic components and computer hardware. The production of computer software/services includes computer software and IT enabled services. It is not presented separately due to unavailability of data during the study period.

In 1997-98 the proportion of the production of consumer electronics is 34.39 per cent followed by electronic components 19.91 per cent, instruments/office, medical equipments 18.33 per cent, telecom equipment 14.71 per cent and computer hardware 12.67 per cent. Whereas in 2011-12 the proportion of the production of telecom equipment is 28.26 per cent followed by consumer electronics 23.94 per cent, instruments/office, medical equipments 18.98 per cent, electronic components 17.31 per cent and computer hardware 11.51 per cent.

### PROPORTION OF IT EXPORTS IN TOTAL IT PRODUCTION

Table 4 gives the proportion of IT exports in total IT production. It is clear from the Table Computer Software/Services are exported more than 70 per cent in all years of the study except in 1997-98.

**TABLE – 3**  
**BIFURCATION OF INDIAN IT PRODUCTION**

(Rs. Crores)

Years	A. Electronic Hardware						Computer Software /Services	Total IT Production
	Consumer Electronics	Telecom Equipment	Instrument s/ Office, Medical Equipment s	Electroni c Components	Comput er Hardwa re	Total		
1	2	3	4	5	6	7	8	9
1997-98	7600	3250	4050	4400	2800	22100	9970	32070

	(34.39)	(14.71)	(18.33)	(19.91)	(12.67)	(68.92)	(31.08)	
1998-99	9200 (36.44)	4400 (17.43)	4600 (18.22)	4750 (18.81)	2300 (9.11)	25250 (59.13)	17450 (40.87)	42700
1999-00	11200 (39.86)	4000 (14.23)	5200 (18.51)	5200 (18.51)	2500 (8.90)	28100 (53.42)	24500 (46.58)	52600
2000-01	11950 (38.42)	4500 (14.47)	5750 (18.49)	5500 (17.68)	3400 (10.93)	31100 (45.74)	36900 (54.26)	68000
2001-02	12700 (38.84)	4500 (13.76)	6300 (19.27)	5700 (17.43)	3500 (10.70)	32700 (40.84)	47374 (59.16)	80074
2002-03	13800 (36.80)	4800 (12.80)	8050 (21.47)	6600 (17.60)	4250 (11.33)	37500 (38.50)	59900 (61.50)	97400
2003-04	15200 (34.70)	5350 (12.21)	8850 (20.20)	7600 (17.35)	6800 (15.33)	43800 (37.10)	74250 (62.90)	118050
2004-05	16800 (33.27)	4800 (9.50)	11300 (22.38)	8800 (17.43)	8800 (17.43)	50500 (33.77)	99040 (66.23)	149540
2005-06	18000 (31.80)	7000 (12.37)	12000 (21.20)	8800 (15.55)	10800 (19.08)	56600 (29.60)	134600 (70.40)	191200
2006-07	20000 (30.30)	9500 (14.39)	14900 (22.58)	8800 (13.33)	12800 (19.39)	66000 (26.51)	183000 (73.49)	249000
2007-08	22600 (26.77)	18700 (22.15)	17610 (20.86)	9630 (11.41)	15870 (18.80)	84410 (27.55)	222010 (72.45)	306420
2008-09	25990 (27.45)	24630 (26.01)	19580 (20.68)	11000 (11.62)	13490 (14.25)	94690 (24.93)	285064 (75.07)	379754
2009-10	30150 (27.42)	31390 (28.55)	20610 (18.75)	13360 (12.15)	14430 (13.13)	109940 (26.30)	308150 (73.70)	418090
2010-11	33400 (26.55)	32550 (25.88)	25870 (20.57)	19000 (15.10)	14970 (11.90)	125790 (26.94)	341200 (73.06)	466990
2011-12	34300 (23.94)	40500 (28.26)	27200 (18.98)	24800 (17.31)	16500 (11.51)	143300 (25.52)	418265 (74.48)	561565

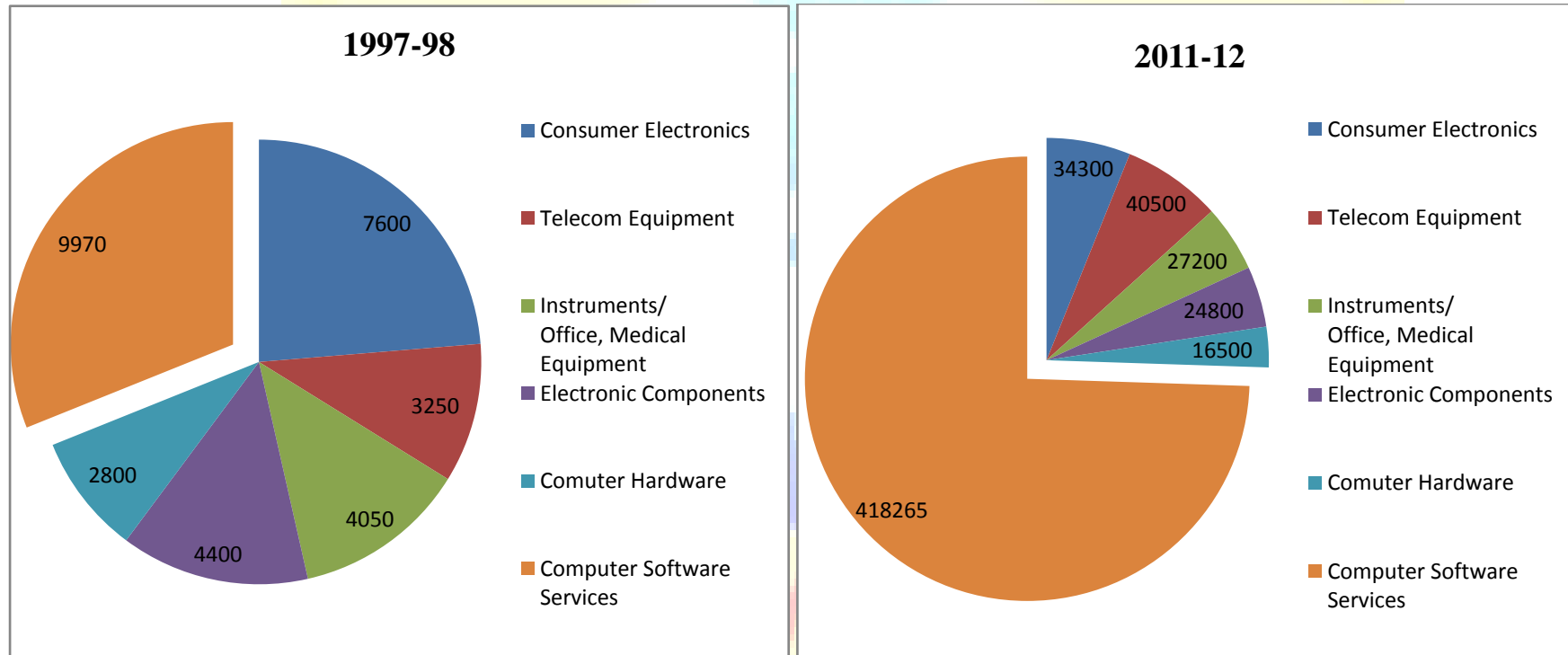
**Note:** Figures in brackets for 2, 3, 4, 5, 6 columns are proportions in column 7.

Figures in brackets for 7 & 8 Columns are proportions in column 9.

**Source:** Electronics and Software Export Promotion Council, Statistical Year book, different Years.

### BIFURCATION OF INDIAN IT PRODUCTION

(Rs. Crores)



**TABLE-4**  
**PROPORTION OF IT EXPORTS IN TOTAL IT PRODUCTION**

Years	A. Electronic Hardware					Sub Total A	B. Computer Software/S ervices	IT Exports in Total Production
	Consum er Electro nics	Teleco m Equipm ent	Instrumen ts/ Office, Medical Equipmen ts	Electroni c Compone nts	Comput er Hardwa re			
1997-98	4.87	9.23	5.93	18.18	39.29	12.71	68.20	29.97
1998-99	4.62	5.68	3.80	18.95	13.04	8.12	71.63	34.07
1999-00	4.02	4.50	3.27	23.08	24.00	9.25	70.61	37.83
2000-01	5.19	12.89	0.97	33.24	35.29	15.40	74.53	47.48
2001-02	5.51	3.33	15.08	38.60	51.43	17.74	77.05	52.83
2002-03	5.43	10.42	17.39	36.36	12.94	14.93	77.63	53.49
2003-04	5.43	3.08	17.12	49.41	21.18	17.58	78.11	55.65
2004-05	6.85	7.29	13.27	43.18	13.64	15.84	78.05	57.04
2005-06	11.11	7.14	19.17	43.18	9.49	17.01	78.01	59.95
2006-07	7.50	6.84	20.13	66.48	11.72	18.94	79.78	63.65
2007-08	7.08	3.34	22.06	63.34	6.24	15.64	78.83	61.42
2008-09	10.00	49.84	21.45	95.45	12.23	32.98	79.92	68.22
2009-10	9.95	24.85	16.98	72.60	13.17	23.56	78.52	64.07
2010-11	4.19	45.47	17.38	96.84	8.68	32.12	76.93	64.86
2011-12	3.58	44.94	20.59	62.50	12.73	29.75	78.06	65.73

**Note:** All figures are proportions of their total production.

**Source:** Electronics and Software Export Promotion Council, Statistical Year book,  
different Year

Whereas in case of electronic hardware the share of exports is less than 20 per cent in all years except from 2008-09 to 2011-12. It is inferred that in total production of electronic hardware more than 70 per cent is utilized domestically, while less than 30 per cent is used domestically in case of computer software. It may be observed from the Table that the exports of both electronic hardware and computer software/services increased gradually from 29.97 per cent in 1997-98 to 65.73 per cent in 2011-12.

## RECOMMENDATIONS

A few of the Recommendations emanating from the study are:

1. Since technology is critical to the sector, to develop electronics and IT hardware products built on latest available technology there needs to be continuous R& D leading to innovation and product differentiation based on technology. The right mix of unique and innovative products that are acceptable to the consumers is critical to sustain and augment profits in the long run. Government should strengthen Research and Development in Electronic Hardware sector especially the applied research like product development through special grants to leading Research Institutes /Universities and Technical Institutes like IITs.
2. The manufactures of IT hardware and Electronics products are generally dependent on imported raw material. Weak supply chain network and lack of vendor support also affects the quality, productivity and competitiveness of the products. Government should ensure hassle free import of raw material and components by streamlining the import policy and systems and through simplification of import procedures.
3. IT sector can be an important source of growth for India, if it converts its comparative advantage in providing certain kinds of IT products and services. In view of increasing revenue from IT exports government of India needs to take initiatives for the diversification of IT products by encouraging Research and Development through which innovation of new diversified products is possible.
4. Till now India mostly depended on low value goods and services. It is time to move towards high value goods and services by using IT.

5. The linkages between the industry and academic institutions should be established by developing interactive platforms like workshops, linked programmes and research partnerships, so that the IT skills to the newly trained are in tune with the industry requirements and making it easy for the job-seekers to fill the gap.

## CONCLUSION

IT industry was neglected by government prior to 1991. Afterwards it gained momentum by attracting the attention of government. Explicit policy announcements were made to promote IT industry. As a result IT industry placed India in International map as an important exporter of IT products both software success and hardware products. The revenue contribution of this industry in country's GDP accounted for 7.5 per cent and in total exports 25.18 per cent in 2011-12. IT exports of India comprises higher share of software services than hardware. While domestic consumption of the hardware products is higher than the software services.

## REFERENCES

1. A. Thilagaraj, S. Nattar (2010): "IT Industry Performance and Future", Market Survey, December, Facts For You, pp.32-35.
2. Economy Watch (2010): "Information Technology Industry", Date: 30 June. <http://economywatch.com/business-and-economy/information-technology-industry.html>
3. Leavitt, H. & Whisler, T (1958): "Management in the 1980's." Harvard Business Review, November-December, pp.41-48.
4. RuddarDatt and K.P.M. Sundaram (2008): Indian Economy, S. Chand and Company, 58<sup>th</sup> Revised Edition, ISBN: 81- 219-0298-3.
5. Kamdar, Mira (2006): "Indo -U.S. Relations, Cultural Exchanges in, Encyclopedia of India", (Vol. 2) edited by Stanley Wolpert, pp. 236-239, Thomson Gale, ISBN 0-684-31351-0.
6. Evolution of IT\Information technology in India - Wikipedia, the free encyclopedia.htm
7. Narasimhan, R. "Characterizing literacy: A study of Western and Indian literacy experience", ISBN 0-7619-9829-2 (US Pb), 2004.

8. Sharma, Jadish (2006), "Diaspora: History of and Global Distribution", Encyclopedia of India (vol. 1) edited by Stanley Wolpert, pp. 331–336, Thomson Gale, ISBN 0-684-31350-2.
9. K. J. Joseph (1997): "Industry under Economic Liberalization: The case of Indian Electronics", Sage Publication, Thousand Oaks, London.
10. Government of India (1986): "Policy on Computer Software Export Software Development and Training", Department of Electronics, New Delhi.

