

## **PERFORMANCE OF INDIA'S ELECTRONICS & COMPUTER SOFTWARE SERVICES INDUSTRY**

**G. V. Vijayasri**

Research Scholar, Department of Economics, Andhra University, Visakhapatnam,  
Andhra Pradesh, India  
Email: vijayasreeau@gmail.com

### **ABSTRACT**

*India has emerged as an 'IT Super power', especially in the field of computer software (or simply software) and related services export. . The Electronics and Computer Software Services exports have been widely studied. This paper also examines the trends, production of Electronics and Computer Software Services, Changes in the direction of Electronics and Computer Software Services and also studies the stately wise Exports of Electronic and Computer Software Services. To assess the status of the Exports, relevant data and information have been collected from secondary sources. It is shown that the software and service sector not only contributes significantly to export earnings and GDP but also emerges as a major source of employment generation in the country. Besides, the information technology (IT) sector has served as a fertile ground for the growth of a new entrepreneurial class with innovative corporate practices and has been instrumental in reversing the brain drain, raising India's brand equity and attracting foreign direct investment (FDI) leading to other associated benefits. . While the Electronic sector in India is currently small, there are several advantages that India offers that can be effectively leveraged to achieve higher growth.*

**Keywords:** Electronic Hardware, Computer Software, Exports, Information Technology.

### **INTRODUCTION**

The Information Technology (IT) industry has shaped up as a major success story in India's economy. The liberalised policy initiatives of the Government of India in the last decade have propelled the Indian IT industry on to a path of development and prosperity. Over the last decade, the India IT industry has been growing by leaps and bounds. Electronics and Information Technology is proving to be the growth engine in the current day economies of the world.

The Electronics Hardware and Computer Software/ Services industry, a comparatively new entrant in India's export horizon, has emerged as a fore-runner among all industries and has been consistently trading on a high growth path in recent years. While computer jargon can

be hard to get to grips with, two terms that pop up extremely often in any computer discussion are the words "software" and "hardware". These two terms refer to the most fundamental parts of computer systems. Both of them are vital for any computer to operate, and they are also dependent on one another hardware is **electronic equipment** within a computer that allows it to process and store information. Software is written programming that allows a user to interact with a computer's various programs

## OBJECTIVES

- To examine the Major items of export of India's Electronics and Computer Software/Services Industry.
- To examine the trends and production of Electronics and Computer Software/Services of India.
- To examine the changes in the direction of India's Electronics and Computer Software/Services Exports.
- To analyse the selected state wise exports of Electronics and Computer Software/Services of India.

A multi-pronged approach has been adopted for the study on Electronics and Computer Software Services Exports of India. To assess the status of the Exports, relevant data and information have been collected from secondary sources. This secondary data was collected from Electronics and Computer Software Export Promotion Council of India (ESC). This paper makes an attempt to delineate various dimensions of Electronics and Computer Software Services exports from India.

## The Indian Electronics Industry

India is the fifth largest economy in the world and has the second largest GDP among emerging economies. . In fact, the liberalization of the economy in 1991 has led to rapid growth. The electronics industry, in particular, is emerging as one of the most important industry in the Indian market.

The electronics industry in India dates back to the early 1960s. Electronics was initially restricted to the development and maintenance of fundamental communication systems including radio-broadcasting, telephonic and telegraphic communication, and augmentation of defense capabilities. Until 1984, the electronics sector was primarily government owned. The late 1980s witnessed a rapid growth of the electronics industry due to sweeping economic changes, resulting in the liberalization and globalization of the economy. The economic transformation was motivated by two compelling factors - the determination to boost economic growth, and to accelerate the development of export-oriented industries, like the electronics industry.

The electronics industry has recorded very high growth in subsequent years. By 1991, private investments - both foreign and domestic - were encouraged. The easing of foreign investment norms, allowance of 100 percent foreign equity, reduction in custom tariffs, and delicensing of several consumer electronic products attracted remarkable amount of foreign collaboration and investment. The domestic industry also responded favourably to the politic policies of the government. Despite commendable achievements in the sphere of electronics,

considerable infrastructural improvements remain a priority. Water, power, tele-communications, and transportation sectors must still be augmented so that high economic growth can be sustained.

The total Electronics Equipment Production of the world during the year 2009-10 is estimated to be US\$ 1800 billion. The maximum production is that of Computer Systems and Peripherals (30.2 per cent) followed by communication equipment (23.5 per cent), Consumer Electronics (11.80 per cent), Equipment for Government / Military (9.40 per cent) and industrial equipment (9.20 per cent).

India's total electronics hardware production estimated at 20.59 billion during the year 2008-09 accounts for a share of 1.21 percent in world electronic equipment production. India's total electronics hardware production estimated at US\$ 23.17 billion during the year 2009-10 accounts for a share of 1.36 percent in world electronic equipment production. India's total electronics hardware production estimated at US\$ 27.61 billion during the year 2010-11 accounts for a share of 1.54 percent in world electronic equipment production. Japan dominates world's production of electronic equipment with a share of 20 percent followed by China with a share of 18 percent. Europe and North America each accounts for a share of 15 percent.

Electronics deals with electrical circuits that involve active electrical components such as vacuum tubes, transistors, diodes and integrated circuits, and associated passive interconnection technologies. The nonlinear behaviour of active components and their ability to control electron flows makes amplification of weak signals possible and electronics is widely used in information processing, telecommunications, and signal processing. The ability of electronic devices to act as switches makes digital information processing possible. Interconnection technologies such as circuit boards, electronics packaging technology, and other varied forms of communication infrastructure complete circuit functionality and transform the mixed components into a regular working system.

Today, most electronic devices use semiconductor components to perform electron control. The study of semiconductor devices and related technology is considered a branch of solid state physics, whereas the design and construction of electronic circuits to solve practical problems come under electronics engineering.

## **Computer Software Industry in India**

‘The rapid growth of ITES-BPO and the IT industry as a whole has made a deep impact on the socio-economic dynamics of the country. The total IT Software and Services employment has grown from 284,000 in 1999-2000 to 1.63 million in 2006-07 and expected to reach 2.0 million marks in 2007- 08 (excluding employment in Hardware sector). The indirect employment attributed by the sector is estimated to about 8.0 million in the year 2007-08. Hence, Indian Software industry can continue to have manpower led growth creating large scale employment.

It is a well known fact that export oriented software and service sector is indeed the driving force of Indian IT industry and it is widely held as the engine of growth and earner of foreign exchange. Its share in total software industry has increased from 34.69 per cent in 1985-86 to 77.51 per cent in 2007- 08. ‘At an annual growth rate of 50 per cent over the last decade

(1990-00), the Indian software and service sector has expanded faster than in any other Countries of the world of comparable size' (Raghavan and Nair, 2001).

Software is a knowledge driven industry. It requires a team of highly skilled professionals for its success. Today, the Indian IT Services and ITES sector employs over 25 lakh knowledge professionals during the past five years. Almost all major IT players in the world have set up subsidiaries or collaborations in India. The major attraction being an "abundance of technically qualified and cheap software manpower". This may have been the case before the start of the growth phase, but now there is, in fact, an acute shortage of qualified and trained manpower. This is getting reflected in the spiralling salaries (one of the highest average starting salary today), and more importantly, a frequent job-hopping culture. India, today have 7 Indian Institute of Technologies (IITs) and over 300 other Regional Engineering colleges / private colleges imparting IT education. As per a study approximately 5, 00,000 people are needed every year to meet the growth targets of the software industry. However, the total production from education and training institutions today is only about a third of this.

Thus, India has established a definite superiority in software services production. Recognizing the enormous significance of the Indian IT sector especially software export,

### **Export Segments under Electronics and Computer Software/Services Sector**

1. Computer Software and related services
2. ITeS /BPO
3. Computer Hardware
4. Electronics Components
5. Electronic instruments which includes
  - a. Industrial equipments,
  - b. Medical equipments,
  - c. Office equipments,
  - d. Strategic, Electronics equipments
6. Consumer Electronics
7. Telecommunication Hardware and related services.

### **India's Electronics and Computer Software/Services Industry**

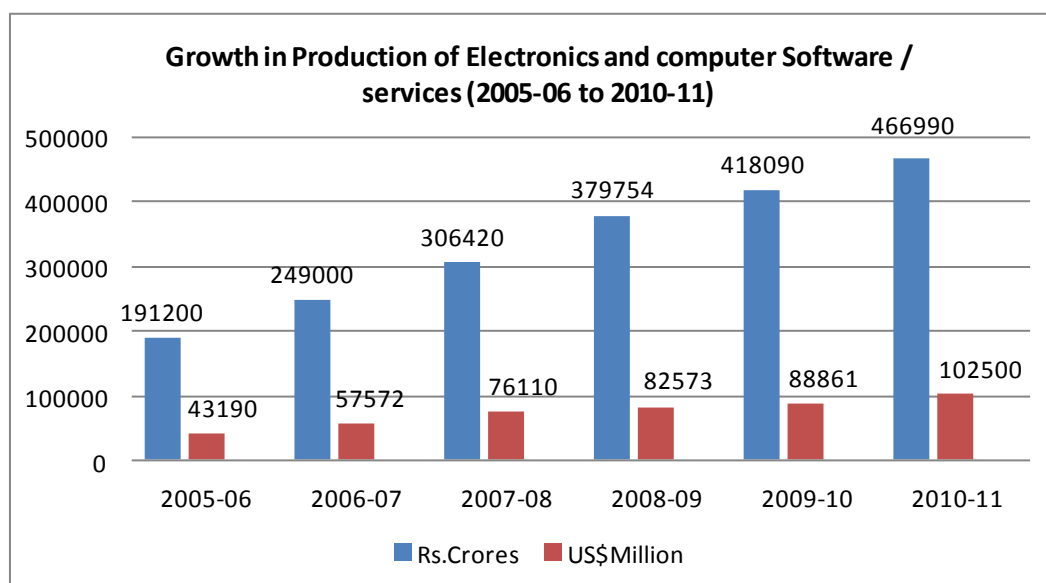
The following table represents India's Electronics and Computer Software / Services industry is estimated to be Rs.379754 crores (US\$ 82.57 billion) during the year 2008-09. The share of Electronics Hardware Industry is estimated to be Rs. 94690 crores (US\$ 20.58 billion) and that of computer / services sector is Rs. 285064 crores (US\$ 61.98 billion). In percentage share terms, production of Electronics Hardware accounts for a share of 24.93 percent and Software / Services accounts for 75.07 percent. Production of Electronics and Computer Software / Services sector during the year 2008-09 registered a growth of 23.93 percent (8.49

percent in US\$ terms) over the year 2007-08 when the total production of Electronics, Computer Software / Services was estimated to be Rs. 306420crores(US\$76.11billion).

**Table 1.** Growth in Production of Electronics and computer / services (2005-06 to 2010-11)

Year	Rs Crores	US \$ Million
2005-06	191200	43190
2006-07	249000	57572
2007-08	306420	76110
2008-09	379754	82573
2009-10	418090	88861
2010-11	466990	102500

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



India's Electronics and Computer Software / Services industry is estimated to be Rs. 466990 crore (US\$ 10.25 billion) during the year 2010-11. The share of Electronics Hardware Industry is estimated to be Rs. 125790 crores (US\$ 27.61 billion) and that of computer / services sector is Rs. 341200 crores (US\$ 74.89 billion). Production of Electronics and computer / services sector during the year 2010-11 registered growth of 12 percent (16 percent in US\$ terms) over the year 2009-10 when the total production of Electronics, computer / services was estimated to be Rs. 418090 crores (US\$ 88.13 billion).

### Share of Electronics and Computer Software/Services Industry in India's GDP

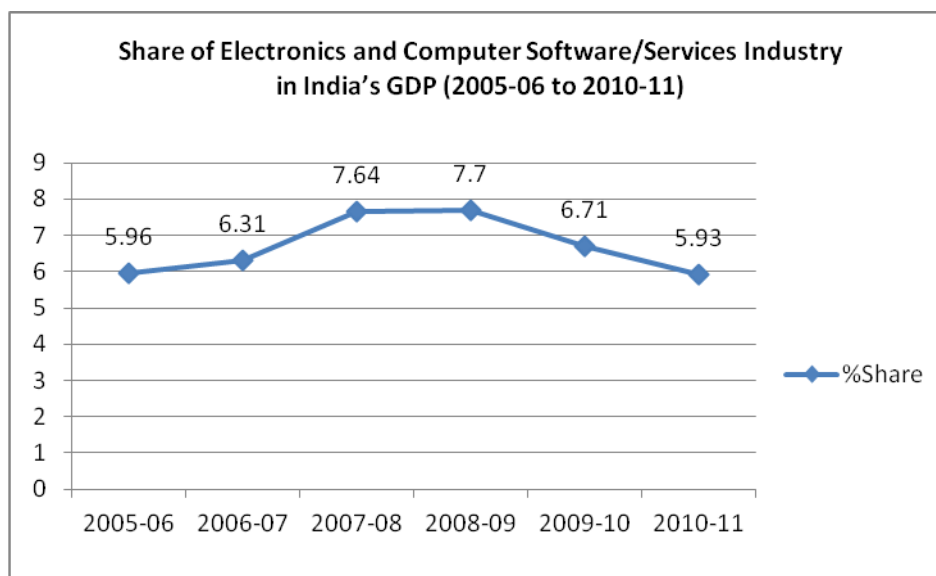
The production of Electronics and Computer Software / Services estimated at Rs. 379754 crore (US\$ 82573 million) accounts for a share of 7.70 percent in India's GDP at current

prices during 2008-09. This is slightly higher than the share of this sector in India's GDP in 2007-08 estimated at 7.64 percent.

**Table 2.** Share of Electronics and Computer Software/Services Industry in India's GDP (2005-06 to 2010-11)

Year	%Share
2005-06	5.96
2006-07	6.31
2007-08	7.64
2008-09	7.70
2009-10	6.71
2010-11	5.93

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



The production of Electronics and Computer Software / Services estimated at Rs. 466990 crore (US\$ 102500 million) accounts for a share of 5.93 percent in India's GDP at current prices during 2010-11. This is slightly higher than the share of this sector in India's GDP in 2009-10 estimated at 6.71 percent. The share of Electronics and Computer Software / Services Industry in India's GDP is continuously increasing as it can be seen from the graph above.

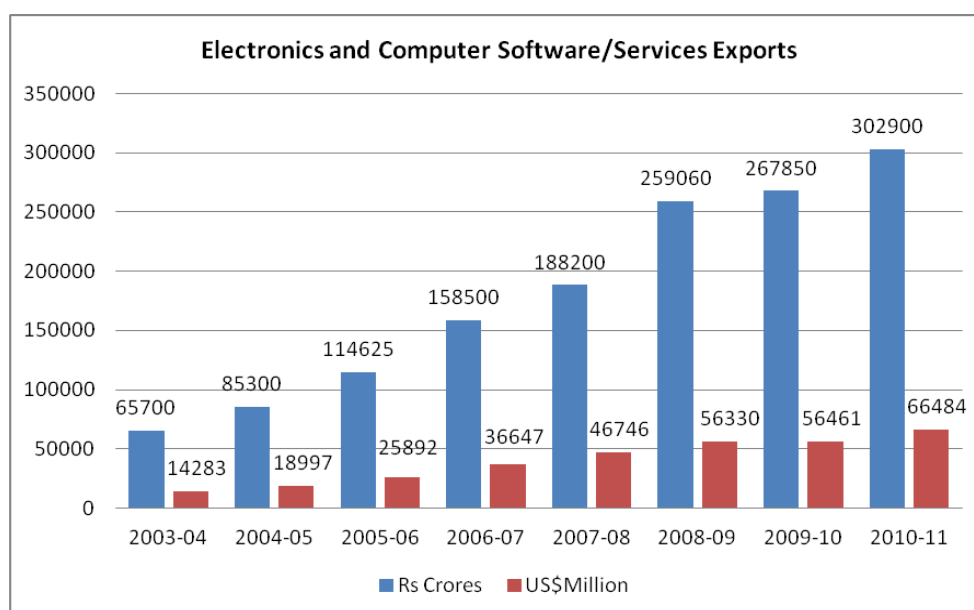
### Electronics and Computer Software/Services Exports:

The table 3 indicates that the Export of Electronics, Computer Software/Services sector has been maintaining an outstanding annual average growth rate of 21.45 per cent (20.75 percent in US\$ terms during the period 2005 to 2010-11)

**Table 3.** Electronics and Computer Software/Services Exports (2003-04 to 2010-11)

Year	Rs Crores	US \$ Million
2003-04	65700	14283
2004-05	85300	18997
2005-06	114625	25892
2006-07	158500	36647
2007-08	188200	46746
2008-09	259060	56330
2009-10	267850	56461
2010-11	302900	66484

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



India's Electronics and Computer Software / Services export registered a growth of 38 percent (21 percent in US\$ terms) during 2008-09 over the year 2007-08. In value terms, export of Electronics and Computer Software / Services during the year 2008-09 is estimated to be Rs. 259060 crore (US\$ 56.33 billion) up from Rs. 188200 crore (US\$ 46.74 billion) estimated in the year 2007-08. Export of Electronics, Computer Software / Services sector has been maintaining an outstanding annual average growth rate of 31.57 percent (31.57 percent in US\$ terms) during the period 2003-04 to 2008-09.

Electronics and Computer Software which includes IT Enabled Services (KPO/BPO) has emerged as a very strong export sector from India with an estimated export of Rs. US\$ 302900 crore (US \$66484 million) during the year 2010-11. Providing employment to over 3 million professionals, this sector has become most important sector to India's economy.

Software and ITeS export accounts for Rs. 262500 Crore (US\$ 57616 million) and Electronic Hardware Export is estimated to be around Rs. 40400 crore (US\$ 8867 million).

The effect of global melt down was felt during the year 2009-10 when export of Computer Software/Services could register small growth of 5.29% (2.95% in US \$terms) and Export of Electronics Hardware registered a steep decline 17%(19.59%in US \$terms).

With a signs of revival in global economy, export of computer hardware and Computer Software/Services from India are back to the growth trajectory. During the year 2010-11 export of Electronics and Computer Software/ Services registered a growth of 13 percent (17.75 per cent in US\$ terms).

### **Share of Electronics and Computer Software/Services Export India's Total Export**

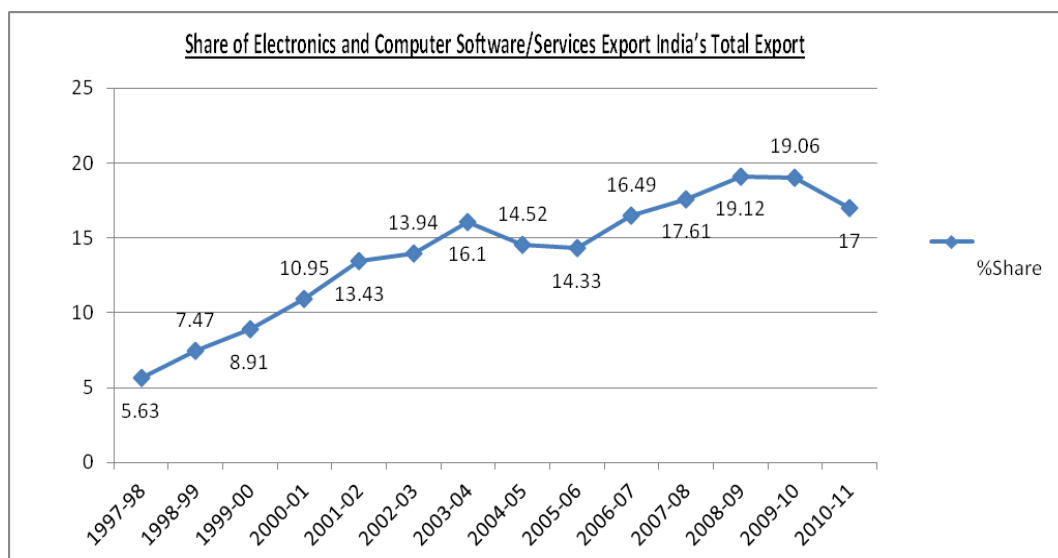
India's Electronics and Computer Software / Services export valued at Rs. 114625Cr (US\$ 25.89billion) accounts for a share of 14.52 percent in India's over all export duringtheyear2008-09. India's overall export during the year 2008-09 is estimated to be Rs. 1355049 crore (US\$ 294.64 billion). India's Electronics and Computer Software / Services export valued at Rs. 259060 Cr (US\$ 56.33 billion) accounts for a share of 19.12 percent in India's over all export duringtheyear2008-09.

**Table 4.** Share of Electronics and Computer Software/Services Export India's Total Export

<b>Year</b>	<b>%Share</b>
1997-98	5.63
1998-99	7.47
1999-00	8.91
2000-01	10.95
2001-02	13.43
2002-03	13.94
2003-04	16.10
2004-05	14.52
2005-06	14.33
2006-07	16.49
2007-08	17.61
2008-09	19.12
2009-10	19.06
2010-11	17

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





India's overall export during the year 2010-11 is estimated to be Rs.1779443 crore (US\$ 390.57 billion). India's Electronics and Computer Software / Services export valued at Rs.302900 Cr (US\$ 66.48 billion) accounts for a share of 17percent in India's over all export during the year 2010-11.

### Export Vis-A-Vis Production

During the year 2005-06, out of the total production of Rs. 191200 crore (US\$ 82.57 billion) 59.95 percent was exported to -various countries of the world. During the year 2008-09, out of the total production of Rs. 379754 crore (US\$ 82.57 billion) 68.22 percent was exported to various countries of the world. During the year 2010-11, out of the total production of Rs. 466990 crore (US \$ 102.50 billion) 64.86 per cent was exported to various countries of the world. The share of export content in India's Electronics and Computer Software/Services production has been significant last several years.

**Table 5.** %Share of Export in Production of Electronics and Computer Software/Services (2003-04 to 2010-11)

Year	%Share
2003-04	55.65
2004-05	57.04
2005-06	59.95
2006-07	63.65
2007-08	61.42
2008-09	68.22
2009-10	64.07
2010-11	64.86

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

## World Electronics and Computer Software/Services Market and India's Share

The world production of Electronics and Computer Software / Services during the year 2008-09 is estimated to be US\$ 2640 billion. The world Electronics Hardware production is estimated to be US\$ 1700 billion and IT Services market is estimated to be US\$ 940 billion. India's total production of Electronics and Computer Software / Services estimated at US\$ 82.57 billion accounts for a share of 3.13 percent in the world production.

The world production of Electronics and Computer Software / Services during the year 2010-11 is estimated to be US\$ 2760 billion. The world Electronics Hardware production is estimated to be US\$ 1800 billion and IT Services market is estimated to be US\$ 960 billion. India's total production of Electronics and Computer Software / Services estimated at US\$ 10.25 billion accounts for a share of 3.71 percent in the world production.

## Major Items of Export under Electronics and Computer Software/ Services sector

The following table represents the Computer Software / Services valued at Rs. 164828 crore (US\$ 35.84 billion) is the top item of export in this sector during the year 2008-09. ITeS / BPO valued at Rs. 63006 crore (US\$ 13.70 billion) is the second top item of export. Followed by are the items under the electronics hardware category. Telephone sets which include mobile telephones are the top items of export under the Electronic goods during the year 2008-09. In value terms, export of telephone sets during 2008-09 is estimated to be Rs. 11142 crore (US\$ 2.42 billion). Solar Cells which were at the 6th position in the year 2007-08 registered a high growth of 149 per cent (118 per cent in US\$ terms) and has become the 2nd top item of export under Electronics hardware during the year 2008-09. The other major items of export during 2008-09 are Parts of switches, rectifiers, recorded video tapes of educational nature and news/views, Televisions etc.

Computer Software and Services including ITeS valued at Rs. 262500 (US \$ 57.61 billion) is the top item of export during 2010-11 as well. Mobile phone remains the 2<sup>nd</sup> top item of export followed by Printed Circuit boards as the 3<sup>rd</sup> top item of export during 2010-11. The other major items of export are distribution panels, Solar Cells, Parts of Telephones, X-Ray Equipments', Rectifier, Television Reception apparatus and Parts of PC's.

**Table 6.** Top items of Electronics & Computer Software/Services (2007-08 to 2009-10)

Items	2007-08	2008-09	% Age Growth during 2008-09 Over 2007-08 (Rs. Term)	Items	2009-10	2010-11	% Age Growth during 2010-11 Over 2009-10 (Rs. Term)
	Export (Rs.Lacs)	Export (Rs.Lacs)			Export (Rs.Lacs)	Export (Rs.Lacs)	
1.Computer Software/Services	1255000	16482800	31.34	1.Computer Software and ITES	24195000	26250000	8.49
2.ITeS/BPO	4950000	6300600	27.28	2.Mobile Phones	611497	1199599	96.17
3.Telephone Sets/Mobile Phones	12088	114211	9117.40	3.Printed Circuits	44648	451159	910.48
4.Solar Cells	104716.71	260563	148.83	4.Distribution Panels	215421	356882	65.67
5.Parts of Switches	14090.72	233630	65.80	5.Solar Cells	151912	249868	64.48

**Table 6.** Top items of Electronics & Computer Software/Services (2007-08 to 2009-10)

Items	2007-08	2008-09	% Age Growth during 2008-09 Over 2007-08 (Rs. Term)	Items	2009-10	2010-11	% Age Growth during 2010-11 Over 2009-10 (Rs. Term)
	Export (Rs.Lacs)	Export (Rs.Lacs)			Export (Rs.Lacs)	Export (Rs.Lacs)	
6.Rectifiers	98631.27	126642	28.40	6.Parts of Telephones	77388	169284	118.75
7.Television	30669	113877	271.31	7.X-Ray Equipment	81384	125770	54.54
8.Recorded video tapes of educational nature and news/views	81.08	109565	135032.24	8.Rectifiers	100336	116060	15.67
9.Parts of Computer	73053.37	74698	2.25	9.Television Reception Apparatus	81663	99893	22.32
10.Other(For Communication Jamming Equipment)	59378.74	59995	1.04	10.Parts of PC	27012	70399	160.62

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

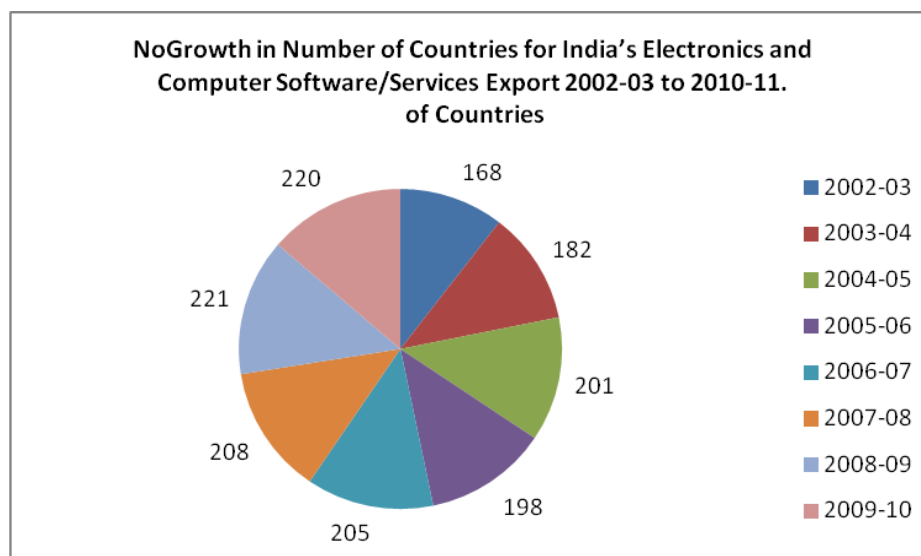
The above table indicates that the Export

During the year 2010-11, India exported its various commodities to over 256 countries of the world. India's export of Electronics and Computer Software/Services during the year 2010-11 was destined to 217 countries.

**Table 7.** Growth in Number of Countries for India's Electronics and Computer Software/Services Export 2002-03 to 2010-11

Year	No of countries
2002-03	168
2003-04	182
2004-05	201
2005-06	198
2006-07	205
2007-08	208
2008-09	221
2009-10	220
2010-11	217

**Source:** Electronics and Software Export Promotion Council (ESC), Statistical Year book.



India's export of Electronics and Computer Software / Services during the year 2008-09 was destined to 221 countries. During the year 2010-11, India exported its various commodities to over 256 countries of the world. India's export of Electronics and Computer Software/Services during the year 2010-11 was destined to 217 countries.

### **Destinations for India's Electronics and Computer Software/Services Export**

North America maintains the top position for India's Export of Electronics and Computer Software / Services during the year 2008-09. This Region accounts for 53.09 percent of the total exports of Electronics and Computer Software / Services from India. Export to North America during 2008-09 is estimated to be Rs. 137547.12 crore (US\$ 29908 million) up from Rs. 110496 crore (US\$ 27446 million) estimated in 2007-08 registering a growth of 24.48 percent (8.97 percent in US\$ terms). Export to EU Countries remains second top destination for export of Electronics and Computer Software Services during the year 2008-09 as well. Export to this region registered a growth of 52.39 percent (33.40 percent in US\$ terms) during the year 2008-09 over the year 2007-08. In value terms, export of Electronics and Computer Software / Services to EU Countries increased from Rs. 50493 crore (US\$ 12542 million) estimated in 2007-08 to Rs. 76947 crore (US\$ 16731 million) during the year 2008-09.

**Table 8.** Changes in the direction of Electronics & Computer Software Services Exports  
(Rs Crores)

<u>Destination</u>	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Singapore, Hongkong & other South Asian Countries 14762	3116.51 (5.98)	3775.5 (5.74)	4307.6 (5.04)	4999.87 (5.66)	7140.86 (4.505)	9322.44 (4.95)	14269.17 (5.51)	14049.9 (5.25)	14762 (4.87)
Europe (EU countries)	12065.11 (23.16)	16552.5 (25.19)	23106 (27.08)	29339.44 (33.25)	42607.82 (26.88)	50493.23 (26.83)	76947.17 (29.7)	81447.7 (30.41)	95278 (31.46)
North America	30986.58 (59.47)	37622.7 (57.26)	49246.3 (57.73)	67882.61 (76.94)	93520.41 (59)	110496.3 (58.71)	137547.1 (53.09)	140729 (52.54)	152730 (50.42)
Middle East countries	1328.98 (2.55)	1665.18 (2.53)	2273.12 (2.66)	2383.43 (2.70)	3620.27 (2.28)	3947.01 (2.1)	11459.92 (4.42)	10203.5 (3.81)	13678 (4.52)
Japan Korea & other Far East Countries Australia & Other Ocean Countries	2472.28 (4.75)	3650.68 (5.55)	3072.19 (3.60)	3750.31 (4.25)	4024.39 (2.54)	5607.15 (2.98)	3835.01 (1.48)	4981.3 (1.86)	5251 (1.73)
African countries	777.61 (1.49)	841.93 (1.28)	1564.37 (1.83)	2570.2 (2.91)	1222.42 (0.77)	1757.24 (0.93)	6253.74 (2.41)	5418.1 (2.02)	7092 (2.34)
Russia and C.I.S countries	56.17 (0.107)	86.34 (0.13)	109.03 (0.13)	140 (0.15)	367.36 (0.23)	236.95 (0.13)	345.27 (0.13)	509.28 (0.53)	1606 (0.19)
Australia & Other Ocean Countries	698.48 (1.340)	828.68 (1.3)	1171.53 (1.37)	512.05 (0.58)	2551.33 (1.61)	3061.13 (1.63)	4028.18 (1.55)	4320.55 (1.61)	4777 (1.58)
Latin America	71.31 (0.136)	110.41 (0.17)	128.24 (0.15)	494.12 (0.56)	565.21 (0.36)	980.37 (0.52)	805.25 (0.31)	2685.99 (1)	3630 (1.2)
Europe (Non EU Countries)	526.94 (1.01)	566.02 (0.86)	321.77 (0.38)	2552.98 (2.89)	2879.89 (1.82)	2298.22 (1.22)	3568.67 (1.38)	3504.68 (1.31)	4096 (1.35)
<b>Total</b>	<b>52099.97</b>	<b>65699.94</b>	<b>85300.15</b>	<b>88219.51</b>	<b>158500</b>	<b>188200</b>	<b>259059.5</b>	<b>267850</b>	<b>302900</b>

**Note:** Figures in brackets show the Percentage of Sectoral Total

**Source:** Electronics and Software Export Promotion Council (ESC), Statistical Year book, different Years

Singapore, Hong Kong and other South Asian countries, remains at the 3rd position for India's export of Electronics and Computer Software / Services during the year 2008-09. There has been a growth of 53 percent (34 percent in US\$ terms) to this region during 2008-09. Export to Middle East countries registered a very high growth Electronics and Software Exports. Export to African countries also registered a high growth of 256percent (212 percent in (US\$ terms). Export to Japan, Korea & other Far East countries and Latin American countries registered decline during the year 2008-09 over the year 2007-08.

North America remains top destination for India's export of Electronics and Computer Software during the year 2010-11 as well. All though there has been a growth in export of though there has been a growth in export of 8.53 percent (13 percent in US\$ terms) to this region, the %ages share of export to this region has come down by from 52.54% in 2009-10

to 50.42% in 2010-11. In value terms export to this region during the year 2010-11 is estimated to be Rs. 152730 crore (US\$ 33523 million) estimated in 2009-10.

## State wise Export of Electronics & Computer Software Services

**Table 9.** Selected state wise export of Electronics and Computer Software Services

States	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
<b>East Region</b>									
1. West Bengal	1394.20 (2.68)	1705 (2.59)	2160 (2.53)	2721.84 (2.37)	3625 (2.29)	4135 (2.19)	5710 (2.20)	6700 (2.5)	8735 (2.88)
2. Orissa	301.42 (0.59)	325 (0.49)	419.73 (0.49)	466 (0.41)	732 (0.46)	850 (0.45)	1230 (0.47)	1390 (0.52)	1400 (0.46)
3. Bihar	0 (0)	1 (0.02)	0.72 (0.001)	4.22 (0.003)	6.43 (0.004)	7 (0.004)	9 (0.003)	8 (0.003)	15 (0.005)
<b>North Region</b>									
4. Haryana	3564.49 (6.84)	5143 (7.83)	6610 (7.75)	8410.25 (7.34)	12540 (7.92)	12115 (6.43)	14775 (5.7)	18150 (6.78)	15900 (5.25)
5. Uttar Pradesh	3400.62 (6.53)	4226 (6.43)	5915 (6.93)	8455.3 (7.38)	8670 (5.47)	13214 (7.02)	15500 (5.98)	18900 (7.06)	17500 (5.78)
6. Punjab	74.65 (0.14)	190.75 (0.29)	500 (0.58)	265.28 (0.23)	620 (0.39)	315 (0.17)	435 (0.17)	500 (0.19)	535 (0.18)
7. Rajasthan	84.66 (0.16)	225 (0.34)	285 (0.33)	459.17 (0.4)	407 (0.26)	425 (0.22)	775 (0.299)	1142 (0.42)	950 (0.31)
8. Madhya Pradesh	108.56 (0.21)	106.23 (0.16)	270 (0.32)	201.98 (0.18)	300 (0.19)	253 (0.13)	350 (0.13)	549 (0.20)	248 (0.08)
9. Himachal Pradesh	8.37 (0.02)	11 (0.02)	26 (0.03)	12.5 (0.01)	9.27 (0.006)	42 (0.02)	152 (0.06)	178 (0.07)	291 (0.09)
<b>South Region</b>									
10. Kamataka	16880.27 (32.39)	21398 (32.57)	30400 (35.64)	41429.94 (36.14)	52175 (32.91)	58464 (31.06)	79350 (30.63)	82350 (30.74)	84270 (27.82)
11. Tamil Nadu	8495.65 (16.31)	8255 (12.56)	11460 (13.43)	14573.96 (12.71)	21325 (13.45)	28940 (15.38)	46000 (17.76)	38300 (14.29)	62884 (20.76)
12. Andhra Pradesh	4515.34 (8.67)	5695 (8.66)	8730 (10.23)	12620.32 (11.0)	19140 (12.06)	26075 (13.85)	32610 (12.59)	32780 (12.24)	35476 (11.71)
13. Kerala	283.16 (0.54)	480 (0.73)	650 (0.76)	852.89 (0.74)	1400 (0.88)	1575 (0.84)	3065 (1.18)	3360 (1.25)	3520 (1.16)
<b>West Region</b>									
14. Maharashtra	8500 (16.31)	12107 (18.42)	14645 (17.17)	19644.79 (17.14)	32100 (20.25)	35500 (18.86)	50600 (19.53)	53700 (20.05)	63766 (21.05)
15. Gujarat	289.08 (0.55)	280 (0.42)	295 (0.34)	443.12 (0.39)	763.61 (0.48)	850 (0.45)	1725 (0.66)	1900 (0.71)	3571 (1.18)
<b>Total(Above States)</b>	<b>47900.47</b>	<b>60147.98</b>	<b>7450.45</b>	<b>110561.6</b>	<b>142527.3</b>	<b>182760</b>	<b>252286</b>	<b>259907</b>	<b>299061</b>
<b>Total (India: Including all States)</b>	<b>52100</b>	<b>65700.78</b>	<b>85300</b>	<b>114625</b>	<b>158500</b>	<b>188200</b>	<b>259059.5</b>	<b>267850</b>	<b>302900</b>

**Note:** Figures in brackets show the States wise Export Percentage of India's Total.

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

I selected only 15 states from total states of Electronics and Computer Software/Services exports of India. The Table represents the Karnataka is the top export state, Maharashtra is the 2<sup>nd</sup> export state, Tamil Nadu is the 3<sup>rd</sup> export state and Andhra Pradesh is the 4<sup>th</sup> exports state in all the years.

In value terms export of Electronics and Computer Software/Services from Karnataka is estimated to be Rs.84270 crore during 2010-11 up from Rs.16880.27 crore estimated in the year 2002-03. The percentage share of total exports of Karnataka is decreased from 32.39 to 27.82 percent during the years 2002-03 to 2010-11.

In the 2010-11 Maharashtra percentage share of total was decreased compare with before years.. The percentage share of the total exports of Maharashtra is estimated to be 16.31 percent in 2002-03 and 21.05 percent in 2010-11. This indicates that the Maharashtra percentage share of total was continuously increased. In value terms export of Electronics and Computer Software/Services from Maharashtra is estimated to be Rs. 63766 crore estimated in the year 2010-11 up from Rs.8500 crore estimated in the year 2002-03.

The other top export states are Haryana, Uttar Pradesh, West Bengal, Gujarat, Orissa, Punjab etc. The Electronics and Computer Software/Services exported a small growth form these states.

## RECOMMENDATIONS

A few of the Recommendations emanating from the study are:

1. It is recommended that the government should promote modernization of units through a special scheme with fiscal incentives and minimum import duties. Depending on the needs and performance of existing manufacturers, special loans may be granted for technology up gradation, infrastructure building or expansion of business.
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. Development of technical institutes according to the requirement of Industry will ensure proper skill development and would help in solving the problem of unavailability of technical manpower.
4. Overcoming infrastructural bottlenecks like uninterrupted power supply, communication facilities are the need of the hour. Broader basening of our overseas software market, concentration on high end software products, more regional diversification of software industry, diffusion of the information technology to the domestic market etc. are the need of the hour.
5. More private participation, both domestic and foreign, is crucial for providing high quality power supply and communication facilities like high band width. Efforts must be paid to tap the best talents of Indian software experts for promoting the original software like Windows by investing more on Research and Development (R&D), providing facilities of international standards and by paying attractive salary.
6. Last but not least, making available cheap hardware by reducing excise duty, sales tax can go a long way to provide a growth spurt to the Industry.

## CONCLUSION

From the foregoing analysis, it is clear that software is an area which will work as a catalyst to make India a 'Global IT Super Power'. Over the years Software has been growing at high rate of over 45 per cent. The share of software export in total export as well as its contribution to GDP has steadily increased over the years. That software sector has emerged as a foreign exchange earner and generator of large scale employment opportunities. The Indian electronics industry has displayed upward trend in the 11<sup>th</sup> Five Year Plan, rising from Rs. 54 million during the fiscal 2007-08 to Rs. 79.48 billion during 2011-12. India's production constitutes only about 1.3% of the global electronics Hardware Production of \$1.7 trillion. So the Electronic Hardware and Computer Software Sectors are very important for development of Indian Economy.

## REFERENCES

1. Arora, A. and S. Athreya (2002) 'The Software Industry and India's Economic Development', *Information Economics and Policy*, 14(2): 252-273.
2. Electronics and Software Export Promotion Council (ESC), Statistical Year book, different Years.
3. Eleventh Five Year Plan (2002-07), Information Technology Sector.
4. Heeks R., (1996) India's software industry, state policy, liberalization and industrial Development. New Delhi: Sage Publications.
5. Joseph, K.J. (2005), "Strategic Approach to Strengthening the International Competitiveness in Knowledge Based Industries: Electronics Industry" RIS-P#88/2005 RIS, New Delhi.
6. K J Joseph "India's Software Industry in Transition", May 2012, A Background Paper Prepared for the Information Economy Report 2012.
7. Kumar (2006), "World Electronic Component Production Scenario: An Indian Perspective" *Electronics Information and Planning*, Vol 33, 3 -4, Dec2005-Jan-2006, Dept.of IT, Government of India.
8. A Brief Report on "Electronics Industry in India", Corporate Catalyst India, August 2012.