

# GROWTH OF INDIAN IT INDUSTRY – A PRAGMATIC STUDY USING DATA ANALYTICS

Disha Gupta, Gujarat Forensic Sciences University, Gandhinagar, Gujarat, India  
Namrata Agrawal, NIFM, Faridabad, India

## ABSTRACT

*India is transforming from predominantly agrarian society to a digitally empowered knowledge economy. The Government's ambitious Digital India plan, is an umbrella initiative to digitally empower at least one person in every family. Today, the country holds a substantial position in global outsourcing and software product partnership projects. The young entrepreneurs of India have moved way ahead of the age old billionaires. Five 'Bansals' today control 85% of India's e-tailing industry (Flipkart, 6100 Cr, Sachin-32yrs, Binny-31yrs; Snapdeal, 3000Cr, Rohit-31yrs; Myntra, 1500 Cr, Mukesh-38yrs; Lenskart, 1000Cr, Piyush-30yrs). Cisco of US, Huawei of China, IDG Ventures of US have been in the news for heavy investments in India including startups and R&D. The share of CIS industry in India's GDP has increased from 1.28% in 2000-01 to 3.54% in 2012-13, thus making this industry as one of the fastest growing industry in India.*

*In July, 2016, the Government has made a new Ministry named as Ministry of Electronics and IT (MeitY). This has been done to enhance the global leadership of India in IT services with a vision to provide impetus to the electronics industry as well. The National Policy on Electronics, 2012 (NPE-2012) was approved with a special emphasis on ESDM (Electronic System Design and Manufacturing) in the country.*

*In the present paper, the crucial and the authentic data source as obtained from the Government of India's portal has been critically and exhaustively studied and analyzed on the various decisive parameters such as Electronic/Hardware Production in terms of its vital sub sectors such as production of hardware related to consumer electronics, industrial electronics, computer hardware, communication & broadcast equipments, strategic electronics, electronic components. The production rate of hardware and software in the country during the year 2007 to 2013 has been thoroughly studied and the findings have been reflected as graphs and trends. The overall growth comparison of select parameters in different years brings out the impact of government policy on the production outputs, expansion of manufacturing goals and the stimulus given to electronics manufacturing by the leadership in IT exports.*

*Further, the findings related to correlation between the projected growth in various sub sectors and the related research outcome can be gainfully utilised in policy formulation and regulation by the concerned body and authority. The research study has yielded several meaningful results concerning trends in production and exports vis-a-vis policy parameters and regulations.*

**Key words:** H/w (Hardware), S/w (Software), NPE (National Policy for Electronics)

## 1. Introduction:

India is transforming from predominantly agrarian society to a digitally empowered knowledge economy. The Government's ambitious Digital India plan, which is an umbrella initiative with an initial outlay of Rs. 1.13 lakh crores, covers nine programs that include broadband highways, 100 percent mobile density, electronic manufacturing, and e-Kranti or electronic delivery of services by the year 2018. The vision is to digitally empower at least one person in every family.

Today, the country holds a substantial position in global outsourcing and software product partnership projects. In the recent years, there has been significant progress in ICT service outsourcing due to technological advancements such as cloud computing and mobile computing. The young entrepreneurs of India have moved way ahead of the age old billionaires. Five 'Bansals' today control 85% of India's e-tailing industry (Flipkart, 6100 Cr, Sachin-32yrs, Binny-31yrs; Snapdeal, 3000Cr, Rohit-31yrs; Myntra, 1500 Cr, Mukesh-38yrs; Lenskart, 1000Cr, Piyush-30yrs). CISCO of US, HUAWAI of China, IDG Ventures of US have been in the news for heavy investments in India including startups and R&D. The share of CIS industry in India's GDP has increased from 1.28% in 2000-01 to 3.54% in 2012-13, thus making this industry as one of the fastest growing industry in India.

In last five years, an estimated export of USD 108 billion has been done including the employment opportunities to the tune of approximately 2.3 million to Indians. The National Policy of IT, 2012 was effected with an aim to strengthen and enhance the role of India as a global leader in IT outsourcing. The IT industry is being utilised as a vehicle for rapid, inclusive and sustainable agent for economic growth of the country.

In July, 2016, the Government has taken out the Department of Electronics and Information Technology (DeITY) from the remit of the Ministry of Communications and Information Technology, and has made it a new Ministry named as Ministry of Electronics and IT (MeitY). This has been done to enhance the global leadership of India in IT services with a vision to provide impetus to the electronics industry as well. The National Policy on Electronics, 2012 (NPE-2012) was approved by the Government of India with a special emphasis on ESDM (Electronic System Design and Manufacturing)

in the country. Special access to domestic manufactured goods, promoting R&D, developing the human resources and training, providing incentives and marketing is encouraged with the objective of enhancing the electronics industry in India.

In the present empirical study, the crucial and the authentic data source as obtained from the Government of India's portal has been critically and exhaustively studied and analyzed on the various decisive parameters such as Electronic/Hardware Production in terms of its vital sub sectors such as production of hardware related to consumer electronics, industrial electronics, computer hardware, communication & broadcast equipment, strategic electronics, electronic components. Further, the production rate of hardware and software in the country during the year 2007 to 2013 has been thoroughly studied and the findings have been reflected as graphs and trends. The overall growth comparison of select parameters in different years brings out the impact of government policy on the production outputs, expansion of manufacturing goals and the stimulus given to electronics manufacturing by the leadership in IT exports.

Further, the findings related to correlation between the projected growth in various sub sectors and the related research outcome can be gainfully utilised in policy formulation and regulation by the concerned body and authority. The research study has yielded several meaningful results concerning trends in production and exports vis-a vis policy parameters and regulations.

## **2. RESEARCH OBJECTIVES:**

The main objectives of the research is to study and critically analyse the production and export of software and hardware during the year 2007 to 2013 based on various crucial parameters using various analytical tools.

The data thus obtained has been standardised, studied and exhaustively analysed to study the following:

- (i) Comparison of growth rate of H/w & S/w during the year 2007 to 2013 in India
- (ii) Software Exports during the year 2007 to 2013
- (iii) Electronic/ Hardware Production during the year 2007 to 2013
  - (a) Consumer Electronics Production
  - (b) Industrial Electronics Production
  - (c) Computer Hardware Production
  - (d) Communication & Broadcast Equipment Production
  - (e) Strategic Electronics Production
  - (f) Electronic Components Production
- (iv) Electronic/ Hardware Exports during the year 2007 to 2013
- (v) Overall Growth comparison of selected parameters in different years

## **3. RESEARCH METHODOLOGY:**

The data has been sourced from Government Data Platform of India for the fulfilment of the above mentioned research objectives. The dataset comprises of vital parameters relating to production and exports of the hardware and software during the year 2007 to 2013. The data thus obtained has been standardised, exhaustively studied and analysed on various crucial parameters such as Electronic/Hardware Production in terms of its sub sectors such as production of hardware related to consumer electronics, industrial electronics, computer hardware, communication & broadcast equipment, strategic electronics, electronic components. Further, the production rate of hardware and software in the country during the year 2007 to 2013 has been comprehensively studied, analysed and the findings have been reflected as graphs.

Detailed study and analysis has been done regarding software and hardware export during the year 2007 to 2013. The source data has been further correlated with the annual report of Ministry of Electronics and IT (MeitY) for its gainful utilisation in policy formulation and regulation by the concerned body/authority.

## **4. DATA ANALYTICS AND OBSERVATIONS:**

### **(i) Comparison of growth rate of Hardware and Software during the year 2007 to 2013 in India:**

India's relative position in the changing leadership in Computer and Information Services (CIS) industry with reference to exports in the world is improving day by day. Leadership, measured in terms of export shares from countries appear to have moved from the United States, United Kingdom and Germany to Ireland and now to India. This has also been substantiated by the indicators such as Global Services Location Index, number of patents and the role of CIS industry in growth of GDP and emergence of new industry.

The observations and the outcomes as obtained after comprehensive study and analysis of the data as obtained from the authentic (Government of India) source is being elaborated as follows:

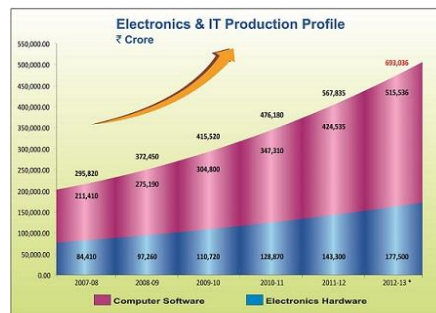


Fig.1 Electronics & IT Production Profile

- Generally, it is observed that there is steady rise in overall production figures of computer S/w and electronics H/w during the year 2007 to 2013. However, in absolute terms, the rate of production in computer S/w sector is much higher as compared to the Electronic H/w.
- Further, the annual growth rate of the computer S/w is between 21% and 31% whereas in case of electronic H/w, it is between 15% and 24% during the year 2007 to 2013. The share of computer S/w in yearly production is steadily rising as compared to previous years.
- Over the period of five years, with base year as 2007-08, the production of computer S/w has increased by 144% whereas the increase in electronics H/w is 110% only. Further, it is observed that the rate of growth is progressively increasing at faster pace in case of computer S/w as compared to electronic H/w.

**(II) SOFTWARE EXPORTS:**

There has been a healthy growth rate of software export in the year 2008-09 as compared to the previous year. However, over the next three years that is during the year 2008-2009 to 2010-2011, the trend is not encouraging. In the year 2011-12, the software exports has again picked up and this trend has continued in the next year also.

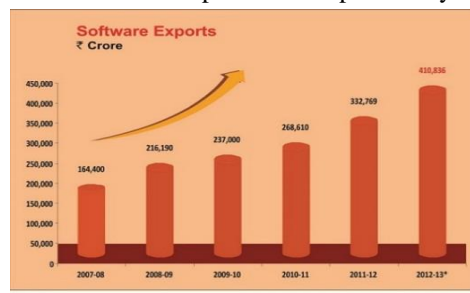


Fig.2 Software Export

The specific reasons for the appreciable jump in software exports in the year 2008-09 and 2011-12 may be institutionalised for sustained realisation of foreign exchange revenue. The emerging technologies like Cloud computing, Virtualisation, Internet of Things may be logically embraced in order to push the exports further. The share of Computer & Information Service industry in India's GDP has increased from 1.28% in 2000-01 to 3.54% in 2012-13, thus making this industry as one of the fastest growing industry in India.

**(III) ELECTRONIC/ HARDWARE PRODUCTION:**

The National Policy on Electronics, 2012 (NPE-2012) in incentivising production of electronic H/w for overall growth of production has yielded positive results and the same has been found and elaborated under various sub heads as follows:

**(a) CONSUMER ELECTRONICS:**

The following graph emphasises that in the year 2011-2012, the growth in the sector of consumer electronics does not commensurate with the past trend. However, during the year 2012-13, there has been a quantum leap by 20% as compared to the previous year (2011-12).

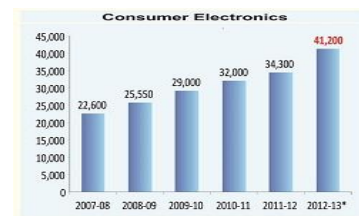


Fig.3 Consumer Electronics

Over a period of five years, the overall growth of around 82% is evident in the production of consumer electronic items.

**(b) INDUSTRIAL ELECTRONICS:**

Growth rate displayed is approximately an average value of 15 % only. During the initial years i.e. 2007-08 and 2008-09, the growth in this sub sector is quite dismal. There has been substantial growth in the production of industrial electronic items in the year 2012-13 as compared to previous years. This may be attributed to NPE-2012.

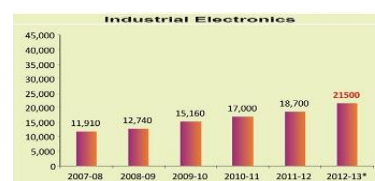


Fig.4 Industrial Electronics

**(c) COMPUTER HARDWARE:**

A dip in the production figures is noticed in the year 2008-09 as compared to its previous year. It is also observed that a steady growth rate of production of computer hardware could not be achieved in the year 2011-12. However, the results of implementation of NPE-2012 is evident in terms of sudden surge of 47% over the previous year 2011-12 in the production of computer H/w in the subsequent year.

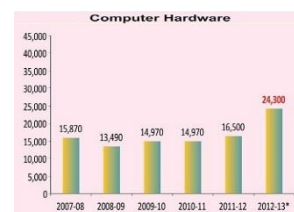


Fig.5 Computer Hardware

**(d) COMMUNICATION & BROADCAST EQUIPMENT:**

The graph of total production in five years preceding the year 2012-13 shows a steady rate of growth in this sub sector. However, the growth rate achieved in the year 2008-09 over 2007-08 could not sustain over the next four years. Specific policy initiative which gave impetus to the growth may be short listed and efforts be made to deploy the same in coming years for better results.

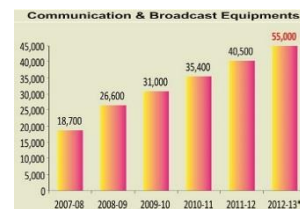


Fig.6 Communication & Broadcast Equipment

**(e) STRATEGIC ELECTRONICS:**

- The overall contribution of this subsector is the least in the total production. In terms of share, this translates to 6.75% in the year 2007-09 and only 5% in the year 2012-13. This establishes the fact that over the years there has been no progress in this sub sector or has remained neglected since 2007.
- Low percentage in this sub sector clearly indicates that there has been no incentive for production of such items right since 2007-08. The trend continued all through till the year 2012-13, which can be interpreted as the neglected area right since the year 2007.
- To ensure that the overall rate of production enhances at a faster pace and brings in valued foreign exchange, laggards in this sub sector needs pointed initiative in the form of incentives to bring in entrepreneurs to scale up the production.

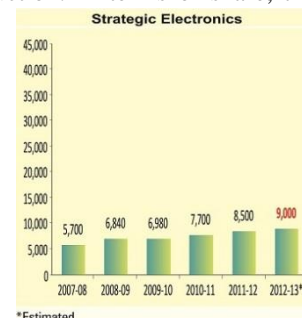


Fig.7 Strategic Electronics

**(f) ELECTRONIC COMPONENTS:**

The chart below depicts that the growth rate of previous year could not be maintained in the year 2009-10. However, in the ensuing year 2010-11, a sudden spike to the tune of 60% is being realized. Had the same growth rate been achieved, the overall share of this sub sector would have been enhanced in a big way. The Stimuli provided in the year 2010-11 which saw an unprecedented growth rate of 60% need to be highlighted and implemented with necessary modifications as this growth rate could not sustain in the years after 2010-11.

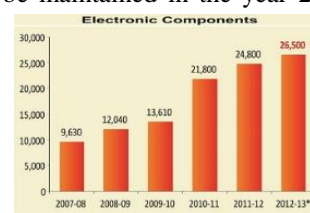


Fig.8 Electronic Components

**(iv) ELECTRONIC /HARDWARE EXPORT:**

The share of this sector is only 28% in 2007-08 w.r.t. to all other sub sectors. Though the production of electronic hardware has been significant, its share in exports continues to be miserably low.

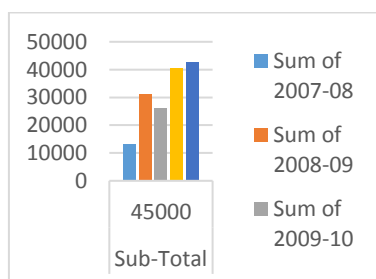


Fig.9 Hardware Export

**(v) OVERALL COMPARISON OF SELECT PARAMETERS IN DIFFERENT YEARS:**

The lion's share of India's GDP today is from Computer and Information Services (CIS) industry. The window of opportunity seized by India and emergence of its entrepreneurs contributed towards India moving up the ladder of leadership in CIS industry. The improvement in technological capability has attracted multinationals to set up their operations in India. These multinationals have been increasing their innovative activities in India as revealed through increased patenting.

India overtook China in terms of sale of investments in technology startups in 2014. Cisco's key Bengaluru unit has filed 800+ patents. Chinese telecom gear maker Huawei has launched a R&D campus in Bengaluru with an investment of \$ 170 million in 2015.

It is required to take advantage of the causes leading to noticeable surge in software exports of the country. The same may be institutionalize for continued realization of foreign exchange revenue for the country.

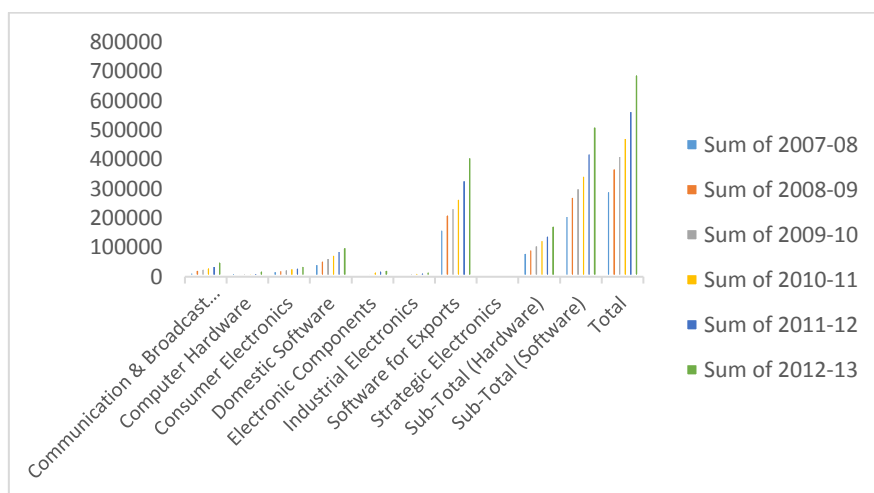


Fig.10 Overall comparison

Initiatives taken to boost production in the year 2012-13 in terms of NPE-2012 and National Policy for IT-2012 may be further reinforced for better results in hardware sector as well.

## 5. CONCLUSION:

Today, the nation is moving fast towards digital literacy. The currency demonetization in November 2016 was a step forward in this direction. 'IT + IT = IT' is the slogan given by PM (India's talent + Information Technology = India Tomorrow)".

The Minister of IT and Communication, Government of India declares the following: "The PM's digitizing India vision is one of the most exciting initiatives the country has embraced to leapfrog us in the 21<sup>st</sup> century. It can transform India from a predominantly agrarian society to a digitally empowered knowledge economy."

Today, the growth of IT and electronics sectors are major drivers of the Indian economy in the services and manufacturing sectors. The government policy on combining the departments of electronics with IT is aimed at enabling various interconnecting mechanisms of IT and manufacturing, i.e, computer hardware and electronics related with consumers, mobile and communication technology, strategic defence and industrial economics and ensuring positive growth in all these sectors.

The research study has yielded several meaningful results concerning trends in production and exports vis-a vis policy parameters and the related regulations. The research outcomes can be productively utilised in policy formulation and regulation by the concerned authorities.

## 6. RECOMMENDATIONS:

In order to achieve the above objectives, it is required to study the specific reasons for the appreciable jump in software exports in the year 2008-09 and 2011-12 to institutionalize the same for sustained realization of foreign exchange revenue for the country. The emerging technologies like Cloud computing, Virtualisation, Internet of Things may be logically embraced in order to push the software exports further.

Reasons for dip in production of computer H/w in the year 2008-09 may be examined to avoid the replication of the grounds which lead to sudden fall in computer hardware production. Initiatives taken to boost production in the year 2012-13 in terms of NPE-2012 may be further strengthened for better outcomes in future.

To ensure that the overall rate of production of strategic electronic items enhances at a faster pace and brings in valued foreign exchange, laggards in this sub sector needs pointed initiative in the form of incentives to bring in entrepreneurs to scale up the production.

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