

# Digital India programme and impact of digitalisation on Indian economy

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## Abstract

**Objectives:** To introduce the Digital India Campaign and Indian Economy. To know about the pillars for the implementation of the programme. To study the impact of digitalisation on various sectors of Indian economy. To find out about the challenges faced in the implementation of the Programme.

**Methodology:** The methodology used in this research work is secondary data analysis. This paper covers Digital India Programme and the Impact of digitalisation on Indian Economy, which has PAN India coverage. Only secondary data from some authentic government sources and research papers of eminent researchers are used.

**Findings:** A digitally knowledgeable and empowered population can transform the whole economy. The automation of the economic sectors will lead to better performance and growth of the sectors, which in turn impact the growth rate of the economy. Digitalisation will lead to cost savings, increased output, better employment, enhanced productivity & literacy, etc. In the agricultural sector and in Industrial sector, digitalisation will help in betterment of all the processes, be it, purchasing, selling, inventory control, trade relations, employment, product innovation & development, etc. Automation of Service Sector will help in growth of the sector by increasing the ease in access to and rendering of the services. Wider customer reach and customization of services according to customer's requirements also boost the demand for services. A digitally empowered economy develops much faster, effectively and efficiently due to better utilisation of its capital as well as human resources. And India being a country with such huge manpower resources, if utilised properly, can achieve unprecedented growth rate and put the country in top position along with the developed economies.

**Improvements:** The Digital India Programme has just started off fresh, and therefore not much data is available regarding the impact of the programme itself. Further improvements can be affected by keeping in view the impact of the programme on the economy.

**Keywords:** Digitalisation, Indian Economy, Agriculture, Industry, Services.

## 1. Introduction

*Digital India programme* is one of the foundation programmes of Indian Government, and was launched by the Government of India on July 1<sup>st</sup>, 2015. This campaign focusses on digital development of the country by providing the citizens with such facilities and services so that they are all connected to each other virtually and electronically. The aim is to provide the citizens with such digitally and electronically advanced means so that the rural areas are connected to the urban areas through network devices and services. The programme is designed to ensure that the government services are accessible even to the poor and downtrodden people, through electronic means, thereby, fastening the rendering of services and improving the quality of life of even the lowest stratum of society. To accomplish the vision, steps are being taken to improve the digital infrastructure in the country and to increase the access to network devices through increased band width and advanced digital technologies. Initiatives are also being taken to increase the digital literacy of the population so that the majority of citizens become capable of operating digital gadgets and equipment. This will boost the generation and growth of employment opportunities in the country. To connect the whole country virtually, major innovations and advancements need to be done in technological field so that the country moves towards being a digitally empowered economy.

Indian economy is growing at a fast pace. It is ranked among the top fast developing economies in the world. The Indian economy takes 7<sup>th</sup> place among the largest economies when measured through nominal GDP and 3<sup>rd</sup> place when measured on the basis of PPP (Purchasing Power Parity). Due to the growing industrialisation in the country, it is considered one among the major G-20 economies. The average growth rate of the economy has been around 7% for the last two decades. In [1] The Indian economy has piqued the interest of the world because of the increased

rate of development due to industrialisation & automation, increasing customer base due to population explosion and increase in ease of trade due to reduction in regulation & entry barriers. The Indian economy has been divided into 3 major parts, namely, agriculture sector, industry sector and service sector.

The Digital India programme is designed in a three components structure [2]. These are:

- Creation of digital infrastructure
- Digital delivery of government services.
- Increasing Digital literacy

The Digital India Programme aims at overall and all-inclusive growth of the Indian Economy, be it agriculture, industry (manufacturing) or services. This programme will help in creating employment opportunities in the country so that the GDP and per capita income increases, and the life style of people can be improved. It circulates around three key areas. These are- Developing digital infrastructure, e-governance and digitally empowering the citizens. Some of the facilities provided under this programme are, digital locker, e-mandi, e-education, e-hospitals, e-banking, e-government, e-sign, etc.

### **Digital India programme**

The government of India has been providing its citizens with e-governance services on a broad scale since mid-90s. The approach to e-governance is citizen centric and service oriented. The aim is to increase transparency and efficiency in government departments. The early initiatives taken to digitalised government did not cause any significant on the economy. So, the government came up with the National e-Governance Plan (NeGP) in 2006 to accomplish the task of digitalising various government sectors, but the improvement has not been very significant. In order to remove the hindrances in the path and to speed up the process of digitalising the government came up with the Digital India Programme in 2015 [3].

To transform the whole economy into techno-driven economy, the government need to develop the information technology, digitally empowered infrastructure and digital literacy & knowledge. The programme aims at providing:

### **Digital infrastructure as a utility to every citizen [4]**

- Provide High speed internet connections to deliver services to citizens.
- One person one identity approach. A unique identity for every citizen that stays with him for whole life and is a proof of his authenticity.
- Increasing participation of citizens in digital and financial economy through mobile technologies and bank accounts.
- Providing easy access to citizens to common service centres.
- Providing such private space on public clouds that can be shared with others.
- Cyber safety and security.

### **Governance & services on demand [4]**

- Integrating various government departments to provide seamless services to citizens.
- Real-time services to citizens through online and mobile applications.
- Availability and portability of all citizen entitlements on e-clouds.
- Transforming services digitally to increase the ease of operating businesses.
- Promoting e-payments and cashless economy.
- Leveraging Geospatial Information Systems (GIS) for decision support systems & development.

### **Digital empowerment of citizens [4]**

- Increasing digital literacy to enhance digitalisation.
- Accessibility to digital resources and infrastructure.
- Designing digital resources/services compatible with Indian languages.
- Increasing participation in government by collaborating digital platforms to include citizenry.
- No requirement for physical submission of documents or certificates. Encouraging virtual submissions.

### How digital India will be realized: pillars of digital India

Digital India programme is an all-inclusive programme of government of India that covers various ministries and departments of the government. The programme has to be implemented with mutual co-ordination and co-operation among these departments and ministries with the help of Department of Electronics and Information Technology (Deity).

The Digital India Programme is based on 9 pillars [5], which are:

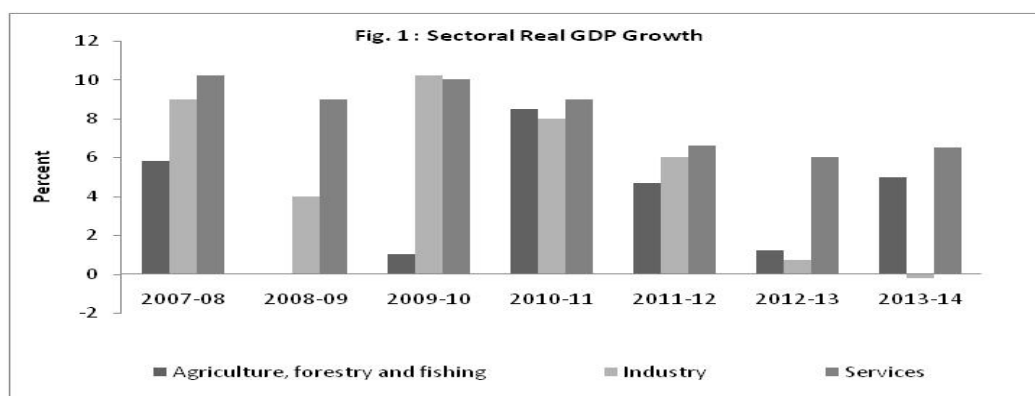
1. **Broadband highways** – All the three of Broadband for all – Rural, Broadband for all – Urban and National Information Infrastructure (NII) are covered in this.
2. **Universal access to mobile connectivity** – Providing access to all through penetration of networks and filling all the gaps existing in connectivity structures.
3. **Public internet access programme** – Common Service Centres (CSCs) and Post Offices providing multiple services are the two components that are covered under this.
4. **E-governance** – Government Process Re-engineering and restructuring by using technical and IT tools, so that efficiency and transparency can be improved in governance. It is essential to fasten and simplify the government processes to transform governmental sectors technologically advanced and efficient.
5. **E-kranti** – Efforts have to be made at all the levels of governance to enhance the efficiency of delivering and ease of accessing of government services by people by providing online access to services. The aim is to move government and citizenry closer and within reach of each other.
6. **Information for all** – Information must be available for everyone through electronic means or network based resources. Regular interactions of government with citizens are essential through social media sites or web based programmes, for good e-governance.
7. **Electronics manufacturing** – Electronic equipment's are the basic requirement for the programme to be implemented successfully. Manufacturing indigenous technology is important to attract investment in the sector and to reduce imports.
8. **IT for jobs** – Providing training to youth in IT sector to enhance their employability skills and improving their prospects in securing a good job in today's digitally changing environment.
9. **Early harvest programmes** – These programmes are those which run with a deadline within which they have to be completed. The timespan for these programmes consist of a short time period, i.e., within 3 years. Some of the projects included in it are biometric attendance, wi-fi in all universities, secure e-mail within government, school books to be e-books, National portal for lost and found children, etc.

The digital India programme focuses on timely, i.e., 3 years, completion of most of its projects, specifically the projects under information for all and early harvest programmes. The programme aims at restructuring, remodelling, revising and refocussing of existing schemes to enhance their effectiveness for implementation.

## 2. Impact of digitalisation on Indian economy

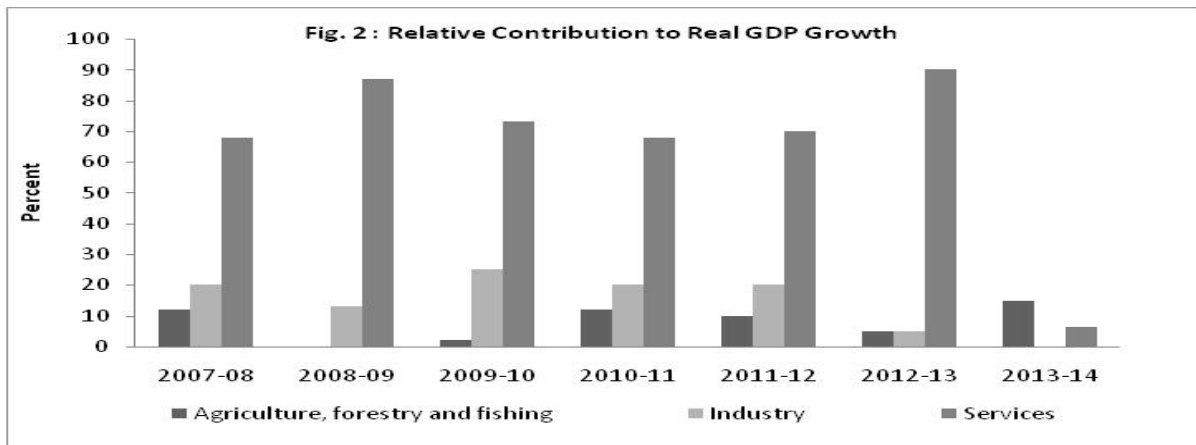
The division among various sectors, i.e., agriculture, industry and services; regarding contribution to the GDP of Indian Economy [6], [7], has been as shown in Figures 1-3.

Figure 1. Sectoral real GDP growth



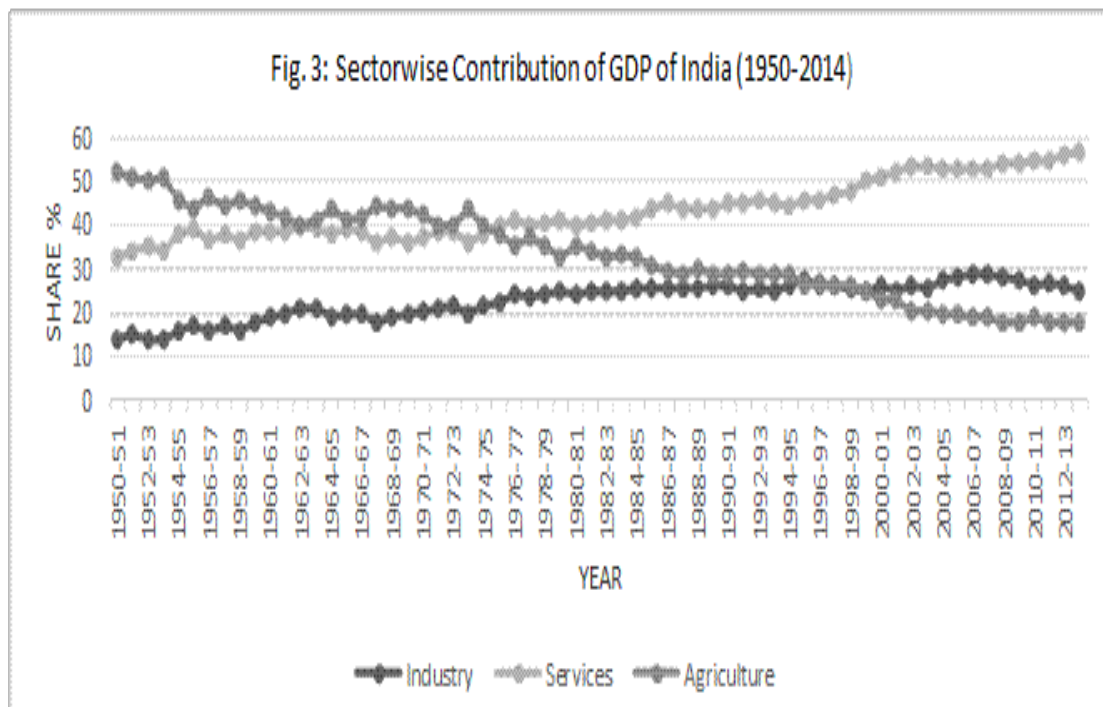
Source: Reserve Bank of India – Annual report, July 2013 – June 2014

Figure 2. Relative contribution to real GDP growth



Source: Reserve Bank of India – Annual report, July 2013 – June 2014

Figure 3. Sector wise contribution of GDP of India (1950-2014)



Source: Statistics times

### 3. Agriculture sector

India is an agriculturally dominated country; approximately 49% is engaged in agriculture and allied activities. The agricultural and allied activities output accounted for approximately 14% in 2014-15, calculated at the prices of 2004-05. India is placed at 2<sup>nd</sup> rank in the world in terms of agricultural output [1].

#### Highlights of agriculture sector:

1. World’s largest producer of milk, jute and pulses.
2. Comes 2<sup>nd</sup> in producing rice, wheat, sugarcane, cotton and groundnuts.
3. Also, number 2 in producing fruits and vegetables.
4. Holds 2<sup>nd</sup> rank in producing and 1<sup>st</sup> rank in consumption of silk.
5. Largest exporter of cashew kernels and cashew nut shell liquid in the world.

Though, more than half of the population is engaged in agricultural activities the share of the sector in GDP is decreasing continuously. Despite the falling share in GDP, agriculture sector is still very important being the largest employment provider in the country. For the overall development of the economy, agricultural performance is needed to be boosted through various measures, like, giving more importance in 5-year plans, improvements in infrastructure, technological advancements, providing with better quality inputs, agricultural subsidies and credit schemes, etc.

#### 4. Impact of digitalisation on agriculture sector:

Digitalisation will lead to the improvement of the sector's performance. Indian economy depends on the agriculture sector with it being one of the three wheels driving the economy. Automation can help in improving performance by:

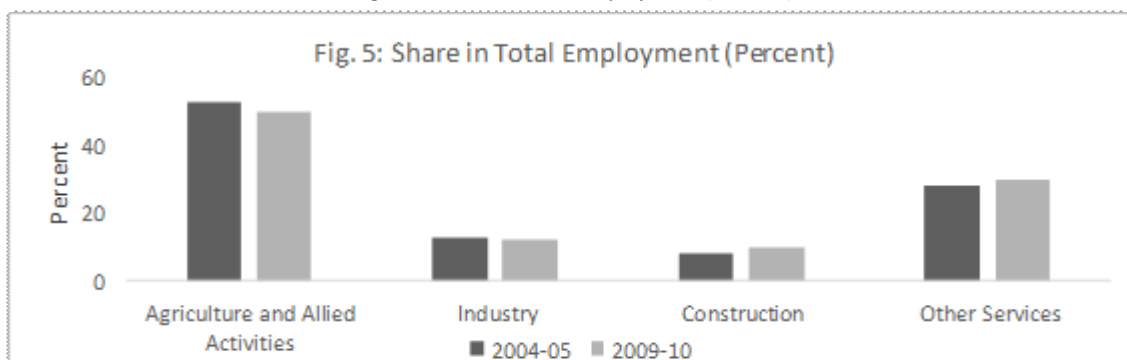
- 1. Availability of information** – Automation of the sector will lead to the availability of timely and accurate information. Timely and correct information about soil, fertility, seeds, weather conditions, other inputs, expert opinions, etc. Will help farmers in trading efficiently. Reliable information can be provided to the farmers due to improved effectiveness of **Agricultural research and development** [8].
- 2. Better employment** – Digitalisation will lead to better utilisation of human man power in the sector. There is over employment in agriculture and if the performance of the sector is improved as a whole then the same work can be done by less people and the remaining manpower can be employed in other productive activities thereby increasing GDP as a whole is shown in Figures 4-5.

Figure 4. Growth rate of employment (percent)



Source: Reserve Bank of India – Annual report, July 2011 to June 2012

Figure 5. Share in total employment (Percent)



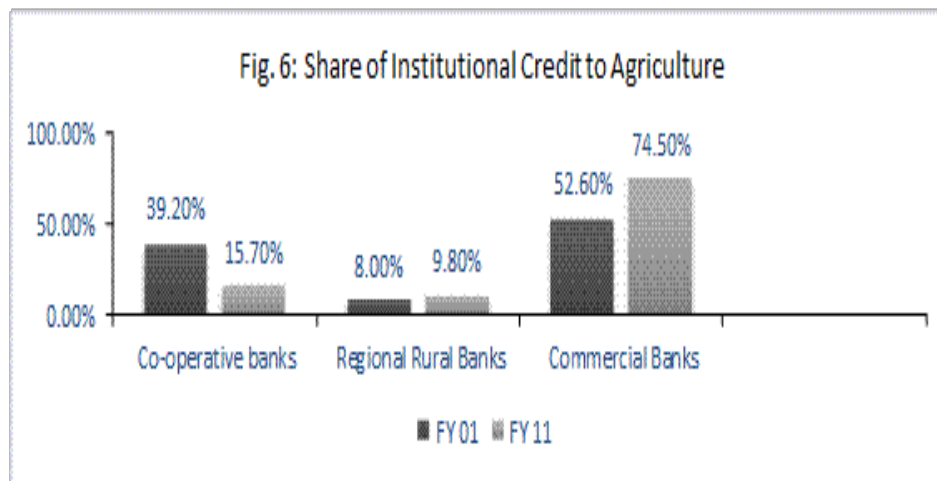
Source: Reserve Bank of India – Annual report, July 2011 to June 2012 [9]

- 3. Price control and cost cutting** – Timely and correct information about prices, inputs as well as outputs, in different markets, and cutting of costs due to better utilisation of resources, will lead to increased profits in the sector.
- 4. Infrastructural development and irrigational facilities** – Digitalisation will lead to better infrastructural facilities like warehouses, green houses, ease in transportation and storage of produce that will increase the life of the

produce. Indian agriculture depends a lot on monsoon. Digitalisation of the sector will provide farmers with better irrigation facilities and less dependence on monsoon.

- 5. **Increased returns and investment** – Better agricultural facilities will lead to increase agricultural produce there by increasing the returns of the sector. Good prospects for the sector will lead to increase in investment are shown in Figure 6.

Figure 6. Share of institutional credit to agriculture



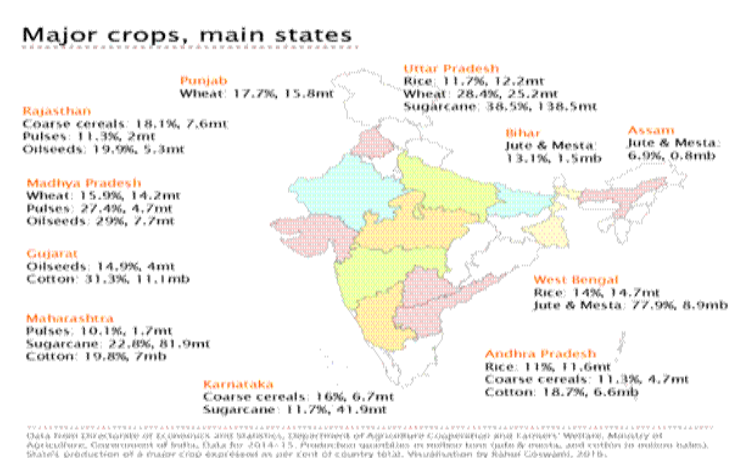
Source: IBEF: Agriculture sector report, August 2013 [10]

- 6. **Agricultural literacy** – With the help of automation, farmers have increased access to the information they require or any knowledge they want to acquire regarding farming. This increases the level of agricultural literacy in the country thereby improving the future prospects for agriculture.

To increase the contribution of agriculture sector in the economy and to motivate farmers to move towards better farming skills, Indian government is taking various initiatives like, kisan credit cards, soil health cards scheme, e-NAM (National Agriculture Market), My Village My Pride scheme, etc [11].

Some mobile applications and web portals have also been developed to help the farmers by automatizing some services. Like kisan suvidha, pusha krishi, India weather, m-kisan portal, crop insurance portal, e-mandi, etc [12]. The government has also renamed the Department of Agriculture and Cooperation, as the Department of Agriculture, Cooperation and Farmers Welfare, on Independence Day 2015, to this effect is shown in Figure 7.

Figure 7. Major crops of various states in India



Source: Word press – resources research [13]

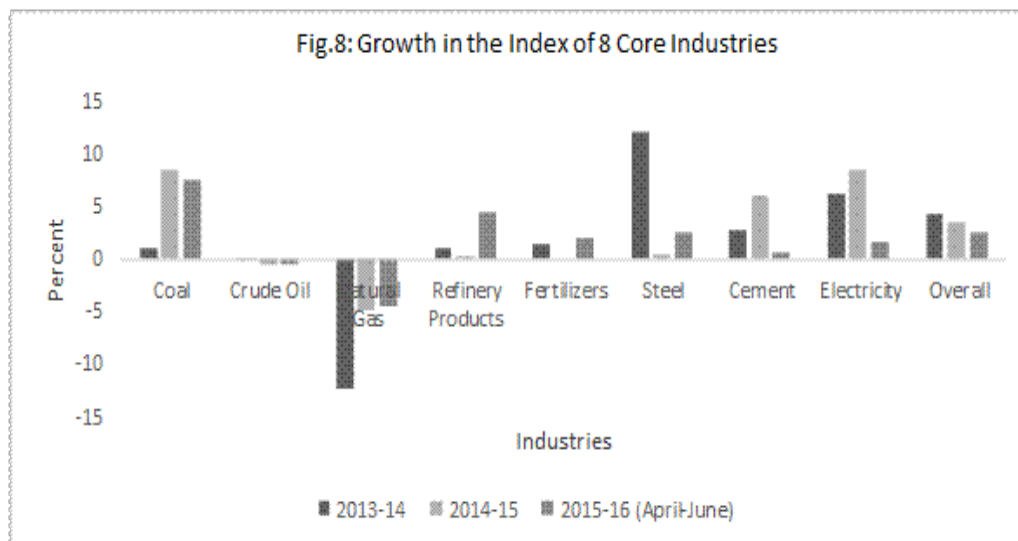
## 5. Industry sector

Industry sector stands for manufacturing sector in India. Industrial sector’s share in GDP has increased from approx. 15% in 1950-51 to approx. 25% in 2013-14. The sector employs around 22% of the total workforce in the country [1]. After industrial reforms in 1991 through LPG (Liberalisation, privatisation, Globalisation) movement, the economic growth of the country accelerated. The new industrial policy improved the scenario and future prospects for the industrial sector.

### Highlights of the sector:

1. 6<sup>th</sup> largest industrial output in the world for manufacturing (on current US Dollar basis).
2. 9<sup>th</sup> largest industrial output in the world for manufacturing (on inflation adjusted US Dollar basis, constant 2005) in 2015 is shown in Figure 8 [1].

Figure 8. Growth in the index of 8 core industries

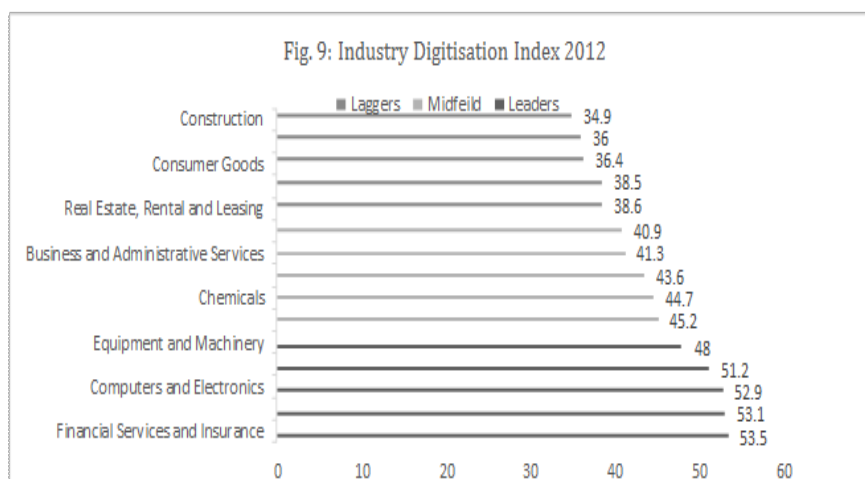


Source: Reserve Bank of India – Annual report, 2014-2015 [14]

## 6. Impact of digitalisation on industrial sector

The Government of India aims at digitalising the sector to improve sectoral performance, so as to increase the share of the sector in GDP and also the increasing returns in the sector will lead to increase in the overall growth rate of GDP and economy itself. As shown in Figure 9, the automation of the sector will lead to:

Figure 9. Industry digitisation index 2012



Source: 2012 Industry digitization study [15]



- Ease in purchase and inventory control** – The procurement of raw materials will become an easy and effective process by automation. One can procure the desired quantity and quality of materials at competitive prices. Systems like JIT (Just In Time) inventory system, ABC, EOQ (Economic Order Quantity) system, as well as automation of ordering, billing and payment systems, leads to better inventory control, thereby reducing inventory management costs. The **supply chain management** will function smoothly.
- Wider customer base and market reach** – Customer base for goods is increasing due to availability of products through various online sources like online shopping portals, i.e., myntra, jabong, snap deal, or company's web pages, i.e., reliance trends, woodland, pantaloons, Adidas etc. Due to the omnipresent nature of internet, the producers can reach their customers in every nook and corner of the world within seconds, thereby expanding the markets to no bounds.
- New product mix and product innovation** – The product mix of the industrial sector is undergoing changes as more preference is being given to the FMCG and technological products. New kind of products will also be introduced having both physical and digital characteristics. This will lead to a new era of product development [16].
- Trade relations and competition**– Supplier-producer, producer-customer, labour-management, intermediary relations as well as all other trade relations become cohesive due to increased transparency in trade. The competitive structure will change due to increased foreign competition after liberalisation, increased efficiency due to privatisation and opening of new markets due to globalisation. A healthy competition will result in better quality products at reasonable prices, benefitting the consumers.
- Employment variations** – The employment scenario will be dual impacted. On one hand, digitalisation will lead to unemployment because of machines replacing man power. And on the other hand, new jobs will be created as the sector will move towards growth and expansion. The job requirements and specifications will change with the changing scenario [17].

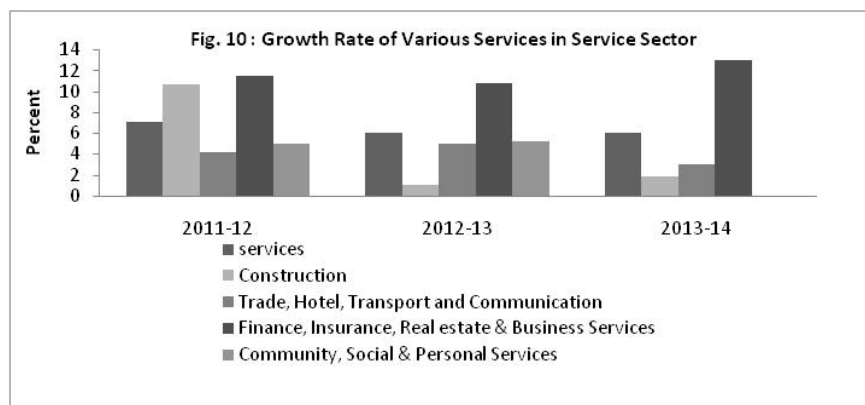
## 7. Service sector

The services sector occupies the largest share in GDP, about 58% in 2013-14, in India. The service sector has shown the highest rate of growth in India from approx. 34% in 1950-51 to approx. 58% in 2013-14. It provides 27% of the workforce with employment. IT (Information Technology) and BPO (Business Process Outsourcing) are two of the fastest growing services in services sector. [1] E-commerce and Banking are also picking pace these days with new online services and facilities available. Digitalisation of economy throws open huge opportunities for this sector to grow as this sector benefits the most by digitalisation movement is shown in Figure 10.

### Highlights of the sector:

- It holds 7<sup>th</sup> place in the world when measured on nominal GDP basis.
- And 3<sup>rd</sup> position when measured on the basis of Purchasing Power Parity.
- IT and BPO together are responsible for 33.6% growth rate of revenue from 1997-98 to 2002-03.
- These two also contributed about 25% in the total exports of the country in 2007-08. [1]

Figure 10. Growth rate of various services in service sector



Source: Reserve Bank of India – Annual report, July 2013 to June 2014 [6]

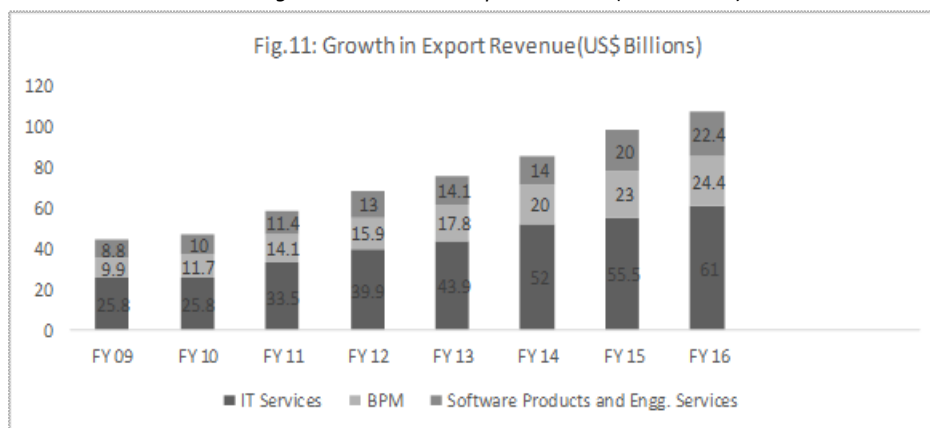


## 8. Impact of digitalisation on service sector

Services are invisible in nature. There is no physical product but services are rendered to people. Digitalisation has the most impact on service sector as digitalisation of services improves their effectiveness to a large extent. It fastens the processes and activities and leads to better satisfaction among customers due to increased ease in availing these services. The impact of digitalisation on some of the services in India is:

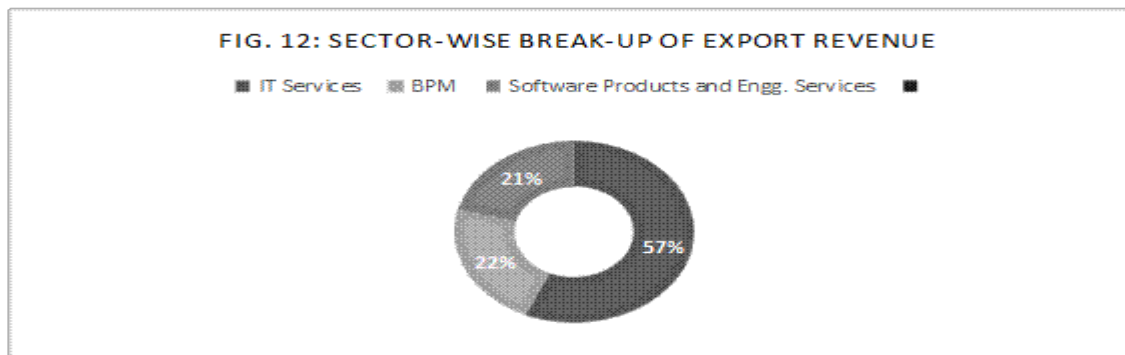
- 1. Information Technology and BPOs** – IT and BPO are the fastest growing services in the country. It is because of the increased exports of the services outside India. There are also huge employment opportunities in these. The automation of various processes increases the efficiency and effectiveness of these services are shown in Figures 11-12 [18].

Figure 11. Growth in export revenue (US\$ Billions)



Source: IBEF – IT and ITeS industry in India, March 2017 [19]

Figure 12. Sector – wise break-up of export revenue

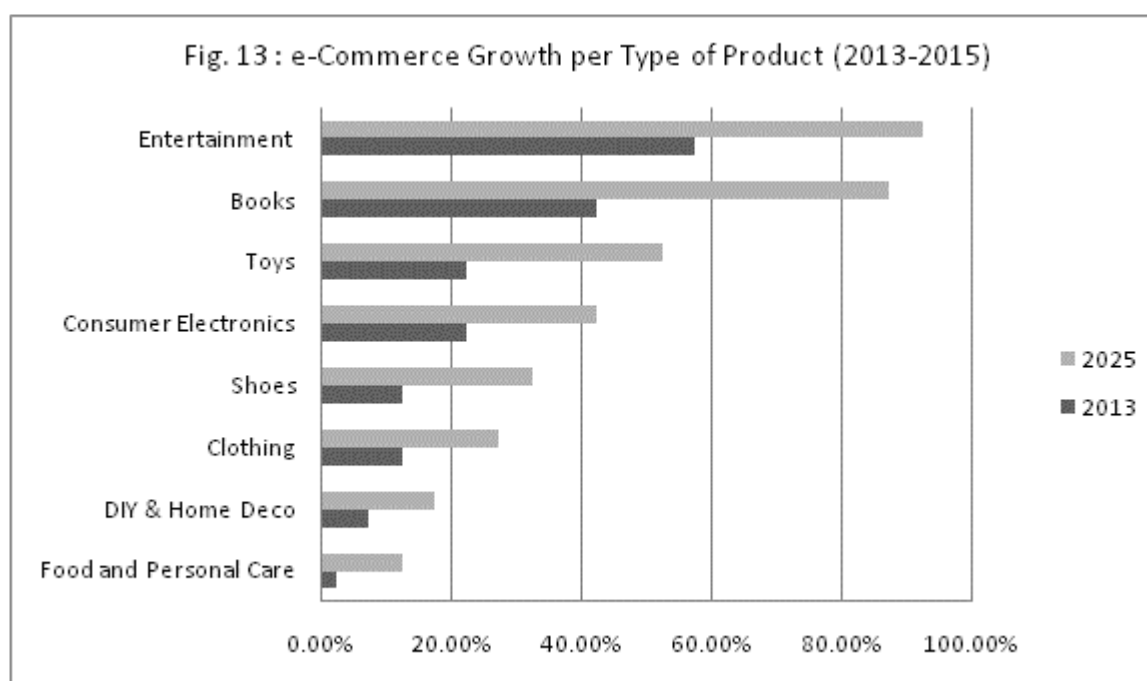


Source: IBEF – IT and ITeS industry in India, March 2017 [19]

- 2. Aviation** – The facilities like online booking of tickets, online passport application through Passport Seva Kendras, price discounts on advance bookings, FDIs, increased tourism due to online marketing of tour packages, reduced ticket costs due to increase in competition, etc., has led to an unforeseen growth in aviation sector.
- 3. Banking and finance** – The increased ease in performing banking activities and managing bank accounts due to numerous digitalised facilities provided by banks like, mobile banking, NEFT, online banking, etc. has improved the future growth prospects for the banking sector. Getting loans and financial assistance has also become easy and cost effective due to digitisation of the sector.
- 4. Retail** – Retail is growing after digitalisation of services like online bill payments by card swiping, online shopping sites and web pages, online marketing, cost discounts on some particular cards etc.
- 5. Electricity sector** – Online bill payment, refunds, automated meter readings, etc. has benefitted the electricity sector. It’s a relief for citizens to not stand in lines for bill payments.
- 6. Infrastructure** – Infrastructural developments pick up pace with the help of digitalisation. It saves a lot of paper work, man power, time and cost savings, etc. The infrastructural development of will develop the economy as a whole.

7. **Education** – Application of digital methods to education enhances the learning processes for students, teaching experience and ease for teachers and the overall learning procedures. Ease in availability of information and knowledge leads to a better educated society and enhances the standard of living in general.
8. **Entertainment industry** – The availability of all kind of entertainment media files online has on one hand given a boost to the industry and on the other hampered it by issues like piracy, hacking, leakages, etc.
9. **Telecommunications** – Telecommunication sector is growing speedily after the introduction of new technologies in the sector like, smartphones, tablets, i-pads, android systems, windows operated systems, etc., various online applications, availability of internet connectivity through phones, have enhanced the future opportunities for growth in the sector.
10. **E-commerce** – e-commerce sector is growing at a rapid rate as the whole thing is based on digital equipment, processes and techniques. Digital enhancement is the utmost requirement for e-commerce to grow. Availability of wide range of products from food to clothing to jewellery to electronics to home furnishing, etc., cash on delivery, easy returns, etc. has spiked the interest of shoppers in online shopping is shown in Figure 13.

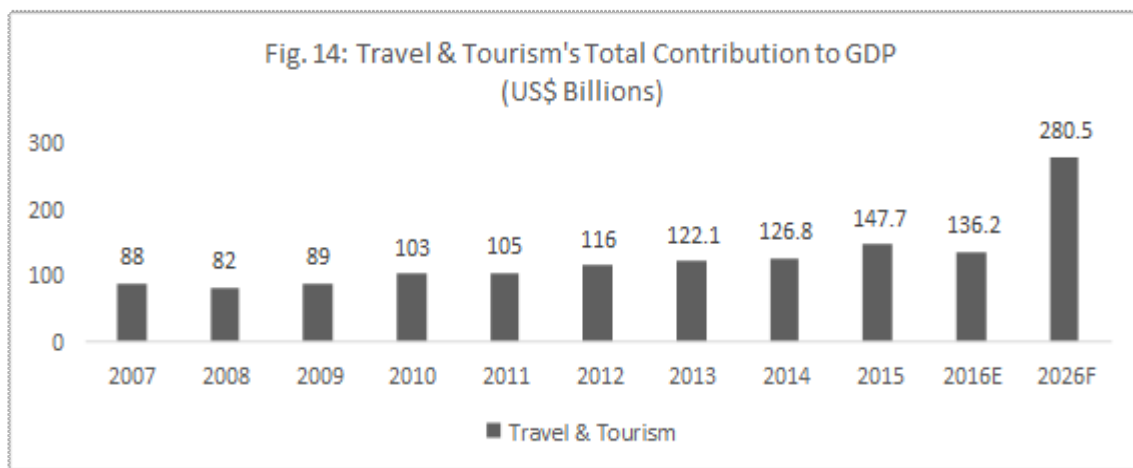
Figure 13. E-Commerce growth per type of product (2013-2015)



Source: Sia partners [20]

11. **Insurance** – People are becoming more and more aware of the advantages and benefits insurance provides and hence the sector is growing continuously. Also, digitalisation of services like premium payment, policy comparisons, availability of important information, etc., has made the process much simpler.
12. **Tourism** – Tourism is growing by various measures taken by government to make the stay pleasant for the tourists. Also, digitalisation of economy is resulting in increase in the tourists in the country because of the ease it brings are shown in Figure 14.
13. **Healthcare** – Healthcare industry benefits by digitalisation in the form of bill payments, keeping records of patients, tracking files, discussing cases with other doctors, getting treatments from far away situated doctors, availability and procurement of medicines online, free consultation services, etc. The service sector contributes the most in the overall GDP of the country, though the manpower employed in the sector is quite less compared to other sectors. If more efforts are put in the growth of the sector, the resulting development of the economy will also be huge, registering the country from the developing economies to developed economies.

Figure 14. Travel &amp; tourism's total contribution to GDP (US\$ Billions)



Source: IBEF – Indian tourism and hospitality industry analysis [21]

## 9. Challenges for digital India

Few of the challenges faced in the successful implementation of Digital India Programme are [22], [23]

- 1. Lack of education** – Majority of population in the country is still not qualified enough to use digital devices and technology. Most of people are not capable of using a simple mobile phone.
- 2. Lack of infrastructure and required technology** – The Digital India campaign needs high quality infrastructure to be implemented efficiently. India still lacks the basic infrastructure required to move digitally ahead. The technological infrastructure and technology required for the campaign is still not available that easily in the country. The conditions are even more inadequate in the rural areas. Further, the servers are overloaded due to pressure of work.
- 3. Financial and technical issues** – India is still a developing country. For a plan like this, huge financial resources are required and the country somehow lacks in that area. It requires financial assistance from other sources. Technical issues like appropriate band width, firewalls, filters, anti-virus software's, protection from hackers, buffering are some of the technical issues the country has to face.
- 4. Attitude of citizens as well as government personnel** – For successful implementation of the programme, a wholesome effort is required of both the citizens and the government personnel. But the devil may care attitude is the hindrance in the path. Moreover, the older generation is set in their ways and find the traditional methods of doing things easy and convenient. Indian political power structure and lack of inter-departmental co-ordination add to the problem.
- 5. Cyber-crimes and Lack of confidence** – Cyber safety is still not given as much importance as it should be given. People find it risky to make transactions online due to safety issues. Cyber laws are not paid that much heed too. Also, most of people still have lack of confidence on machines and prefer hand done things. Inept cyber services are also one of the reasons for this.
- 6. High costs** – The electronic devices and internet services are still by and large very costly for an average Indian citizen. When a lot of people don't have enough money for the basic life's necessities, spending on electronic devices get out of the picture.
- 7. Training needs** – The personnel who are working on this campaign, to transform various government departments from man managed to machine managed, require proper training to do that effectively and efficiently. It's a tedious task to train so many people of different calibres and interest into one common discipline. Most of the population lack the basic technical qualification required for the job.

## 10. Conclusion

Digitalisation improves effectiveness and efficiency of work being done. Digitalisation of governance activities, i.e., e-governance, enhances quality of life of its citizenry by increased transparency in Government departments and easing service delivery. It increases speed and reduces time duration requirements for performing various activities

and functions. Cutting of costs and increased market span enhances profit margins and hence can accentuate returns in the sectors. Automation of agricultural sector reduces uncertainties in the sector and better utilisation of available resources. Automation of industry leads to better product designs and increased profit margins thereby leading to healthy competition and growth of the sector. Digitalisation of services will lead to enhanced customer satisfaction and improved service quality by timely and wider reach of service delivery. Also, digitalisation of the service sector throws open wide scope and arenas for development and growth of the sector. Digitalisation also impacts the employment scenario in the country.

To shift Indian Economy from developing economies to developed economies, a lot of work need be done; enhancing and promoting digitalisation in the country is one step towards that goal. Various steps need to be taken to remove obstacles and hindrances from the path of digitalisation. Proper implementation of digital India programme will lead to better agricultural return per capita, better cost output ratio of industrial produce and better service quality. It enables transparency in all the systems and processes thereby improving quality of life.

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