

Digital India – A Roadmap to Sustainability

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Abstract—It is obvious that the countries embracing technology for the benefit of citizens have recorded a radical change in all aspects which triggers GDP growth and leads to high national and per capita income. It is the obligation of the government to improve the living standards of citizen through initiating programmes which accelerates the economic growth. The Digitalization was propelled by the force 'Technology', which was the crucial part in 'Digital India Programme'. India has emerged as one of the country whereby government have initiated this development programme to stimulate economic development as well as to provide employment to young generations. The main objective was to provide all services to every citizen on the web portals or electronically for making the transactions smooth and transparent. To eliminate black money and corruption from public life, government is investing more in technology. India had started experiencing the digital transformation, it takes some time to feel the full impact of this change. Through this initiative India will achieve the United Nations Sustainable Goals Agenda by 2030. This research helps to understand the impact of Digital India in economy and to know how far its missions are accomplished and for developing a model to achieve Sustainable Development Goals with the pillars of digital India.

Index Term - Digital India, Technology, Internet, Sustainable Development Goals

I.INTRODUCTION

It was in 1986, India went online for the first time. Back then, the Internet was only meant for the use of educational, research communities and defence purposes. During 1995, the VSNL opened the internet access to public by using modem. Now the game has changed most of the Indians have mobile phones which have internet access. In 2017, India had 331.77 million internet users and the figure is expected to grow 511.89 million internet users by 2022. Without considering the untapped potential, India is the second-largest online market worldwide after China. (STATISTICS PORTAL, n.d.). The internet usage have increased because of decline in the smartphone prices over the past couple of years and the fall in Internet data prices, which was certainly spurred by the arrival of Reliance Jio in 2016. (report, n.d.) India is the fastest growing economy in the world with a 6th rank in Nominal GDP and 3rd rank in Real GDP. India's economy is growing at 8.2 per cent in the first quarter of 2018-19.. The European Union has taken a lead in amending the existing data protection laws through the implementation of General Data Protection Regulation (GDPR). This will pave way for Digital India programmes success and every initiatives comes under this is concerned on security and transparency.

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Digitalisation is a strategic means to achieve good governance and also it helps to improve access to the market, health, education and to eradicate poverty to a certain extent. (Cecchini and Scott, 2003). Even though India was known as the powerhouse of software, the availability of electronic government services to citizens was comparatively low. The recent move towards monetization accelerated the adoption of digital modes for financial transactions at a faster pace compared to other countries in the world. After the game changer, people have started banks accounts and increase in the use of banking facilities. The unique identity for every citizen of India issued by the UIDAI (Unique Identification Authority of India) will eliminate the fake identities with the help of biometric information. Now everything comes under one roof by linking 12 digit Aadhaar number with bank account, mobile phone connection, PAN. This will promote transparency and good governance. Aadhaar identity platform was a most important pillar in Digital India, which made people to think of a transformation for the benefit of them. Through this the government will have a database of all citizen in India and ensuring much security to an individual's data. As per the report by Government of India, 122, 79, 24, 858 Aadhaar cards were generated as on January 2019. (government of India, n.d.)

Technological advancements have played a critical role in shifting customers from the traditional brick and mortar markets to the digital ones. In essence, the digital age is now characterized by buyers and sellers conducting their activities online. However, despite, there is obvious disadvantages that physical business premises have against their online counterparts, it is interesting to note the former have been able to survive the digital age. This research will focus on impact of digital India in economic development and growth. Technological revolutions are gradually altering different trends in the contemporary world. The advancement in technology has seen most consumers shift to online shopping due to its ease and convenience. On this account, companies must implement good strategic planning which will enhance their digital presence through utilizing online advertising and social media and availing their commodities on the online platform which would grant their consumers an opportunity to purchase commodities at their convenience (Kumar &Kumar, 2017). Most businesses that have failed to embrace the use of different digital platforms to avail their commodities to the customer are slowly becoming irrelevant an instance that increases their probability to liquidate Technology has enabled us to perceive information differently from its real sense. First, technology has made it possible to have information on the developments that are far beyond our reach hence we are able to know what is happening in a certain place without our presence. The only limitation is that we get the information but we do not get that experience or feeling (Keeble &Wilkinson, 2017).

Technology has also made people to view multiple screens at once and these changes the way we view and perceive things including the way we get information. When we view multiple screens, we only get bits of information and the different ways that the same topic is handled in different media may confuse us and make us perceive wrongly. Our knowledge and understanding of the information we get affect our identities. The different means of communication and socialization make us express ourselves differently. Technology alters our identity from revolving around internal grounds to external grounds (Nielsen & Sen, 2016). A good example is about advertisements in mass media which are used in the creation of different self-identity. People create different impressions in society about themselves. This is evident in popular culture of nowadays where through social media channels; people create acceptance, status, self-esteem, and popularity.

II. DIGITAL INDIA

During 1st July 2015 Modi government's flagship programme 'Digital India' was introduced. This programme is to transform the entire ecosystem of public services through the use of information technology. The services are provided to the people with the help of mobile phones, personal computers, laptops, tablets, televisions, radios and internet. The vision is to transform India into a digitally empowered society and knowledge economy electronically (McKinsey Global Institute 2017). It really focusses on making the government administration accessible to every citizens electronically by reducing paper work. This programme aims to remove the gap between the rural and urban people. This initiative consists of plans to connect rural areas with high speed internet networks. The Digital India programme covers agricultural, industrial, service sectors which constitutes the growth of the economy. It focusses on three core areas: digital infrastructure a utility to every citizen, digital empowerment of citizens, governance and services on demand. The project purposes to connect the 2.5 lakh villages across India through broadband highways, public internet access, universal access to mobile connectivity, e-governance, e-kranti, information services for all, a sturdy electronic manufacturing regime, early harvest programs, and IT for jobs—conferred as the nine pillars of Digital India. This big initiative came up with big investments in the technology sector with Rs 1.13 lakh crore which help in creating a participative, transparent and responsive government. It will push the usage of technology to connect and empower people in areas relating to health, education, labour and employment, commerce, etc. The programme creates employment opportunities in the country and thereby increases the GDP, per capita income and improve the lifestyle of the people. Digital India attracted more than 4 lakh crore investment and generated more than eighteen lakh job opportunities at its launch. The introduction of Reliance Jio was a catalyst to the Digital India programme. After its launch, mobile data consumption in the country had gone up from 20 crore of GB per month to nearly 370 crore GB per month. Introduction of Jio 4G sim and phones was a mile stone to the Digital India initiative, where in people was able use the data at free of cost. This made people to think not to shift from the particular brand since the company provided them free data for more than one year. Thereby the number of internet

users have increased and people become more digitally literate. Through this programme, more than twelve thousand post offices have been connected digitally and it's anticipated that payment banking would be facilitated under same programme. Furthermore, the government has intended to make digital village' across the country via linking all schemes with modern technology. Villages and rural areas would be connected with solar energy, LED lighting, e-services, skill development and e-education. According to government website, electronic transaction accounted for more than 3.53 billion transactions in 2014 but in 2015, the transaction recorded were 6.95 billion. Digital India programme will boost GDP up to \$1 trillion by 2025 thus acting as key role in macro and micro economic factors such as employment generation, GDP growth, growth in number and labour productivity of businesses and revenue leakages for the government. Based on World Bank report, if mobile and broadband penetration increases by 10%, the per capita will increase by 0.81% and GDP by 1.38% respectively. There is huge economic opportunity at India since the tele-density in rural regions is at 45% implying that more than 65% of the population lives in digitalized communities. Future growth of telecommunication industry in terms of number of subscribers is expected to come from rural areas as urban areas are saturated with a tele-density of more than 160%.

III. SUSTAINABLE DEVELOPMENTAL GOALS

The Sustainable Development goals agenda put forward by United Nations is to be fulfilled by 2030. All member nations of UN have to achieve the 17 goals which are necessary for becoming a sustainable nation. This address the global challenges including those related to poverty, climate, inequality, prosperity, environmental problems, hunger, clean water and sanitation, peace and justice. The definition given for sustainable development by Brundtland Commission, 1987 was "meeting the needs of the present generation without compromising the ability of future generation to meet their own needs". The 4-P model (private-public-panchayat partnership) was the sustainable economic model developed by a project called Grammarg. Earlier 3P's was there, panchayat was added which is the crux of the model enabling local participation and regional needs being met. (Sarbani Banerjee Belur).

IV. RESEARCH METHODOLOGY

This is a descriptive research which helps to understand about the Digital India campaign and its effects so far and to develop a model to achieve Sustainable Development Goals with the pillars of Digital India. The type of data used is secondary data obtained from sources such as research papers, newspaper, journals and magazine articles, media reports, government official sites, etc.

A CONCEPTUAL FRAMEWORK OF DIGITAL INDIA AND SUSTAINABILITY DEVELOPMENT GOALS



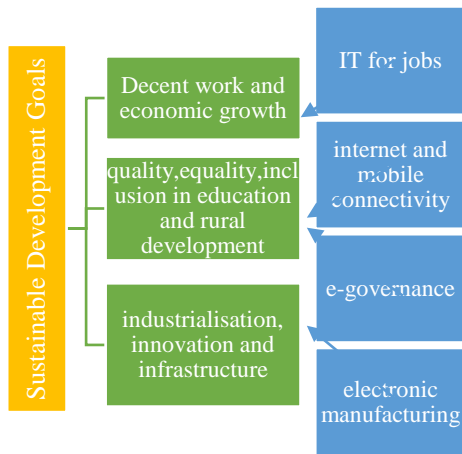


Figure 1

The Digital India campaign have nine key pillars, of these four pillars are contributing more to make India into a Sustainable nation by achieving the UN Sustainable Goals by 2030. IT for jobs helps citizens of India to get employment in IT/ITES sector by training them. This will reduce the unemployment rate, increase the quality of work, eradicating poverty and finally stimulate the economy by not harming the environment. Through internet penetration and mobile connectivity most of the citizen have access to government information via My Gov.in. This e-governance platform facilitates transparency, accountability and reduced paper works. Reduced paper works focusing on protecting the environment. The internet penetration eliminated the gap between urban and rural people, thus shows equality and improved the educational system in rural areas. The electronic manufacturing will promote net zero imports and thus promotes economic development and employment. It is necessary to focus on innovation and develop high tech products.

V. Discussions on Nine pillars of digital India campaign and its effects

1. Broadband highways

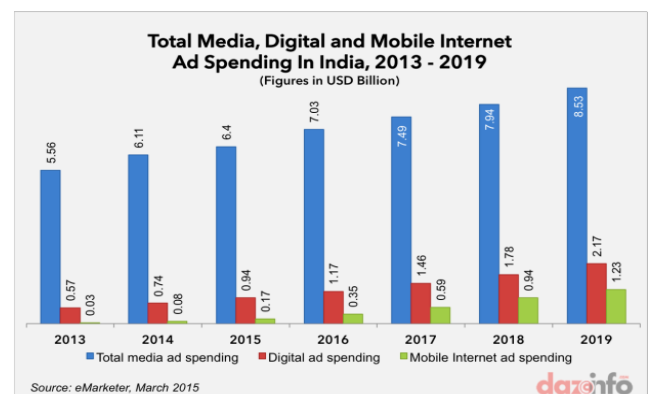
Internet access is crucial in developing countries since it helps to share information from one person to another. The number of internet subscribers in India stands at more than 500 million while Paytm has around 20 million active users. Mobile broadband services have seen significant increase at compound annual growth rate of 17% between 2015 and 2017. According to report by McKinsey Global Institute (2017), number of subscribers has increased from 210 million in 2013 to 270 million in 2015 and 350 million in 2018. The number of users with 3 GB and 4 GB broadband increased from 330 million to 750 million thus improving efficiency and faster delivery of information (Medianama.com, 2019). As a result, customers are able to communicate and transact effectively over the internet leading to high sales revenues. Fiber optic network has emerged as the most used network within the region with speed ranging from 20-50 mpbs. This enables subscribers to download and share documents over the internet within shortest period. As evidenced from research by World Bank

(2018.), the number of fiber-ready households within India was 13 noholds are equipped with mobile broadband highways thus enabling citizens to share information easily. For instance, availability of internet has improved learning process in higher education institution. Students are able to embrace digital learning from their convenient households thus cultivating spirit of entrepreneurship in the country. High literacy rates help to reduce poverty within region thus improving living standards and economic development at large.

2. Public internet access

India telecommunications market is currently the second-largest in the world due to largest number of users. A recent report by World Bank revealed that over 41% of the world’s population is connected through the use of the Internet. Year after year, India is steadily rising in terms of internet user base whereby its digital population is estimated to reach 636 million by 2021. Currently, internet penetration rate in India has risen from 7.5 % in 2010 to 29.55% in 2016. This is attributable to increase in smartphone penetration and installation of Wi-Fi hotspots. According to report by Statista.com (2018), Indian mobile services market share touched US\$37 billion in 2018, registering a compound annual growth rate (CAGR) of 5.2% between 2014 and 2018. The government of India has installed Wi-Fi hotspot in most hotels, railway station and airports to create digital cities. Through this initiative, citizens have been able to get tickets online thus reducing queuing time. Furthermore, higher education institutions have been enquired with fiber optic networks which are fast in browsing and sharing of information. Internet coverage in remote areas has enabled entrepreneurs to search market trends in terms of prices thus enabling them to sell their products when market rates are favorable. As result, they are able to improve sales revenue leading to better living standards. Internet coverage has resulted to e-commerce where businesses have started to operate through websites and social media. Through online platforms, jobs are created such as online support representatives and administrators. As result, individuals are able to secure employment leading to high gross domestic product as well as per capita income. This further leads to economic growth and development.

Figure 1



(source :statista.com,2018)

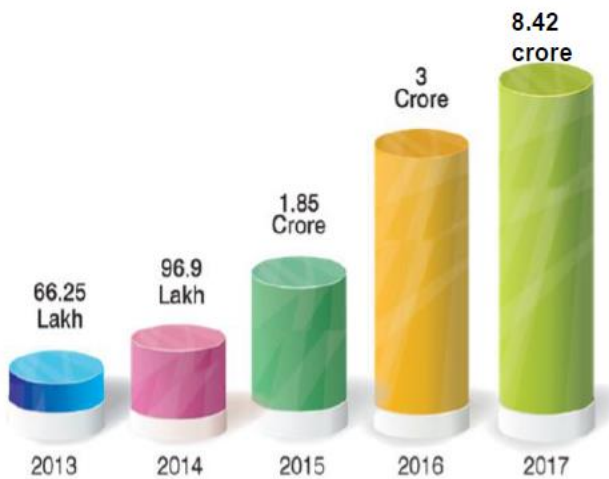


3. e-governance

It refers to application of information communication technology to transform the effectiveness, transparency, efficiency and accountability of exchange information between government agencies and citizens. According to report by United Nations (2016), India was ranked position 107 on e-Government Development Index. This goes tremendous improvement since it was ranked 118 in 2014. This has been attributed by creation of online portals where government public and communicates vital information with citizens. For instance, individual identification cards and voters card are stored online thus enabling easy retrieval incase of need. Furthermore, the government has developed portals where they publicize current achievement and completed projects for citizens to evaluate (Gurumurthy, Chami& Thomas, 2016). Through e-governance, India has improved its economy since citizens are able to evaluate and track progress of achievement thus closing loopholes for corruption in long run. There is a huge growth in the e-governance transactions can be understood from the Figure 3 from the year 2013 to 2017.

Figure 2

e-governance transactions



(Source- Ministry of Electronics and Information Technology)

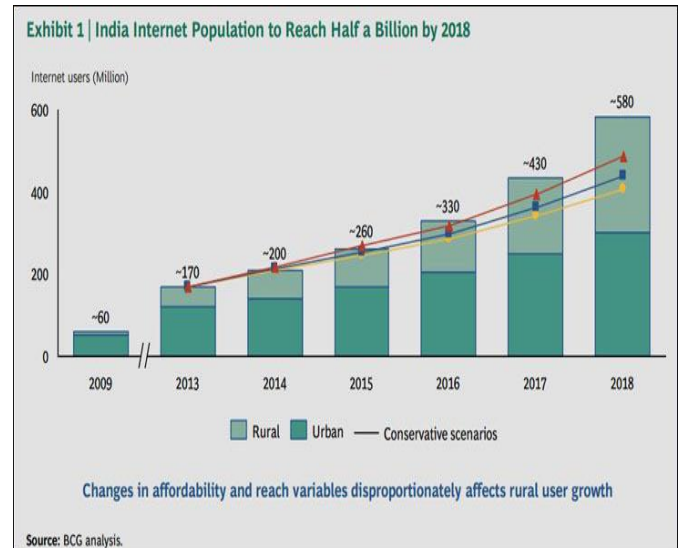
4. Information for all

Information technology is central to determining the performance and the undertaking of the productive activities in contemporary world. In particular, information technology enhances the transfer of information from consumers regarding satisfaction levels from the services and products provided by manufactures. At the same time, information technology enables businesses to obtain data about the competition requirements and market gaps that are newly established in the global market. Apart from communication, information technologies are also essential in increasing brand quality. At India, government has ensured public can access vital information through mass media, press conference and government portals. This entails list of registered and licensed institution, public events and constitution. This will facilitate easy and open access to information related to government schemes

through MyGov.in. Citizens can actively engage through Social Media which helps them to exchange ideas/suggestions with government. The people will feel that the government is taking their consideration too. Information for all initiatives has enhanced accountability, transparency thus leading to improved productions in the economy. As result, there is steady income to finance economic development in the country.

The BCG report [India@Digital.Bharat](#) says that India is headed towards an Internet economy worth \$200 billion by 2020. Thus contributes to 5 percent of the GDP growing at 23% compared to overall 13 percent.

Figure 3



(Source: Satrajit Sen,2015)

5. Electronic manufacturing

Currently, electronics industry is among major contributorstoIndia’s merchandise imports after petroleum product. It is forecasted that by 2030, Indians private consumer market would have reached \$9.6 trillion which accounts for 47% of its GDP (Telecomlead.com,2018).Indian government is anticipating to reach 100% electronic manufacturing within its territories in order to reduce importing cost as well as create employment to its youthful generation. This initiative was expected to boost growth by 7.9% in 2016-17 and eight percent during 2017-18. According to report by United Nations, this initiative stood at US\$ 167 billion FY18. Further, demand for electronic was projected to grow with Compound Annual Growth Rate of 41% during 2017 to touch anticipated value of US\$ 400 billion by 2020. Currently,the government has offered subsidy and other incentives to attract investors to specialize in electronic manufacturing.this will lead to increased exports and reduced imports thus providing adequate liquidity for supporting economic growth. As per the data the government started 113 new mobile manufacturing units started in last 3 years and this created one lakh direct job and three lakhs indirect job in India.



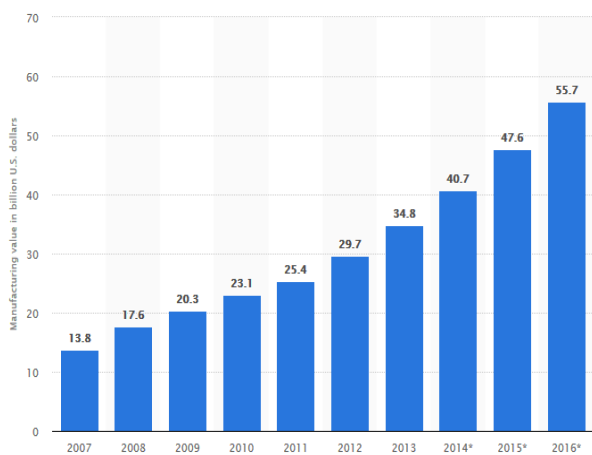


Figure 5. Manufacturing value in Billion

(Source: statista.com, 2016)

6. IT for job

This initiative aims at training youths about online jobs to reduce unemployment rates within the country. Most targeted groups are entrepreneurs and graduate students who have completed their studies. This initiative was anticipated to transform the way business is done in India. The Indian e-commerce market is forecasted to grow to US\$ 200 billion by the year 2026 from US\$ 38.5 billion 2017 (Chadha, Rai & Dugar, 2016). Most companies have embraced online sales due to increasing internet and Smartphone penetration. High internet use has triggered creation of application whereby customers can use to make orders and get products from their convenient destinations. The ongoing digital transformation in the country has increased India's total internet user base to 829 million in 2018 from 560.01 million during 2017. According to Kedar (2015), India has been creating at least 10000 jobs every month to fight unemployment rates within the region. This triggers generation of income leading to improved living standards as well as GDP rates in the country. As result, finances for supporting social amenities and infrastructure are available. According to the report by Nasscom, the formal IT-BPM sector currently stands at \$167 billion with exports reaching \$126 billion. It has added 600000 jobs in the last three years, employing 3.97 million people directly and almost 10 million people indirectly. Even in the situation of global slowdown, this sector continued to expand in India and added almost 1,00,000 jobs in financial year 2017-18.

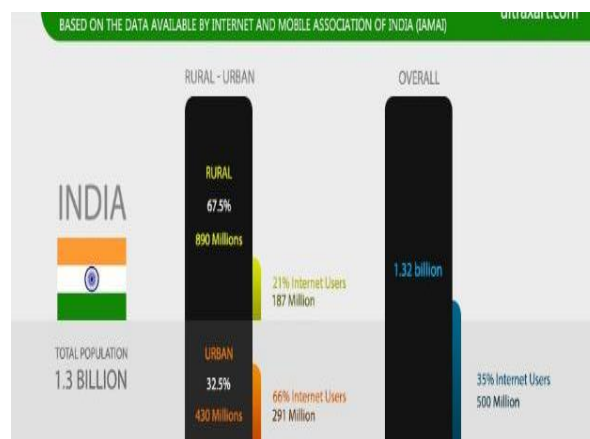
7. Early harvest programme

This programs consists projects which government is anticipated to complete within short time frames. They include biometric attendance, equipping all universities with Wi-Fi, IT platform for message and government greetings to greetings. For instance, Wi-Fi to all university initiative was anticipated to be completed by 2018. According to report by Agrawal and Sen (2017), almost 90% of India universities are equipped with internet facilities. In addition, government has created database to store citizen data online to avoid distortion or data loss. This initiative ensures that government has updated data for decision making.

8. Mobile connectivity

India has total of 5, 97,618 villages and out this, only 43,088 are not covered with internet connectivity. India is fastest growing smartphone market and ranked in second position after China. It has close to 1200 million mobile subscribers thus accounting for almost 1170 million. In addition, country's tele-communication density has crossed 90% during 2017. According to report by Gyana (2019) all union territories are covered with mobile connectivity. From an evidenced data, Madhya Pradesh and Odisha states have the maximum number villages which are not yet connected with mobile services. For example, out of 51,929 inhabited villages in Madhya Pradesh, 5558 villages are not connected with mobile while out of 47,677 inhabited villages Odisha, 9940 villages do not have access to mobile phones. To achieve objectives of this pillar, Indian government has strengthened connectivity within Andaman and Nicobar Islands by initiating 2164.23 km of Submarine Optical Fiber Cable. The internet penetration in India as on 2018 is shown in the figure 6, based on the report by IAMAI.

Figure 4



(Source-the power of internet and online in India by eMarket Edu)

The number of internet users in India as of June 2017 is 420 million which is higher than US total population. According to Kantar IMRB report in 2018, the total population in India is 132.42 crores in which 43 crores lives in cities or urban areas and rest 89.42 crores lives in rural area or villages. The growth rate of internet penetration in 2009 was 4%, in 2016 it was 27% and in 2018 it was 35% including both rural urban users.

9. e-kranti

e-kranti is national e-governance plan which falls under the category of the Digital India Programme. This pillar is considered vital for enhancing delivery of good governance, e-governance and easy governance in the country. The initiative was formulated by head of Electronics and Information Technology to facilitate electronic delivery of services via through a selection of Mission Mode Projects (Indiafilings.com, 2019). This pillar has performed substantially since citizens are able to access information from government electronically.



Despite that, this programme has experienced serious challenges like digital divide, lack of last mile connectivity, lack of technology and infrastructure and poor identification of beneficiary. Such challenges have made this initiative not to achieve its objective by 2018.

Digital India by numbers

Initiatives	Statistics
Digital Identity(AADHAR)	1.2 billion
Internet users	450 million
Mobile phone users	1.18 billion
Smartphone users	468 million connections
Social media users	250 million
Ration cards	100% digitized
GovtMarket place	263,731 products by 105,889 sellers listed, with 22,598 buyer

Source – digitalindia.gov.in (Ministry of Electronics & Information Technology, Government of India)

VI.CONCLUSION

Technological advancement is necessary for developing nations. India is aspiring to be a leader in different global technology platforms in order to fulfil that it is vital for digital technologies to be used to improve public services, deliver financial inclusion, etc. India has understood this secret and they have embraced digital India campaign to enhance effective communication between citizen and government while providing essential services with easiness. So far, digital India campaign is successful since it has assisted India dramatically by creation of job opportunities, improving literacy rates, eliminating corruption, technological advancements as well as boosting gross domestic product. It also improved the social and economic condition of people living in rural areas through development of non-agricultural economic activities apart from providing access to education, health and financial services. This further triggers economic development since finances to support social amenities and other public infrastructures are readily available. . With these initiatives by the government will help India to achieve the Sustainable Development Goals of UN within 2030. E-governance is contributing more to achieve sustainability which provides transparency in every transaction, reliability, reducing paper works, etc. The Digital India programme is in the infant stage, it takes some time to witness the impact on the economy. “In this Digital age, we have an opportunity to transform lives of people in ways that was hard to imagine a couple of decades ago”- Narendra Modi.

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