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A Survey onChallenges to IT Sector in Digital India Program

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ABSTRACT: Digital India is an initiative with a vision to digitally empower all Indians. The project aims at widening the digital accessibility to citizens and assuring that government's functions and services are available over the internet to the citizens by launching a number of health, education and governance initiatives digitally in an attempt to deliver the essential services to all citizens even in far-flung areas. In its scope and vision it seeks to take the country from the present state of digitally constrained economy to that of an advanced digital economy. This would result in quantum leap in GDP, thereby explaining employment opportunities and new chances. The resultant "Digital India" would throw up many challenges for the establishments in various fields as they will have to engage themselves with reinvigorate innovation with a well-informed citizenry and businesses that would determine their performance in comparison with other similarly placed nations. Also while implementing there would be hiccups not related only to technology and its application, but for completely different factors such as cultural and societal, sharpened by the swing back action of those who see their role and influence diminishing as the process of digitization gets underway.

KEYWORDS: Digital India, Broadband, PPP, smartphones, digital literacy.

I. INTRODUCTION

Digital India is a mega umbrella plan of the NarendraModi-led government that intends to transform India into a digitally-empowered knowledge economy by 2018 with a focus on citizen-centric programs such as universal access to broadband, mobile connectivity, electronic delivery of services and centralized digital system. Digital refers to an electronic technology that engenders, stores and processes data, so that it is stored in a virtual central repository and is easy to access anytime, anywhere, through established protocols which create a translucent environment. India with this program will transform into a digitally empowered society and knowledge economy. The idea is to provide people with a 'cradle to grave identity' that is "unique, lifelong and online."

The overall scope of this program is to prepare India to have the requisite knowledge to be equipped for the future and make technology the centre that enables change as conveyed by the authorities. It envisions becoming the umbrella program across sectors [5]. Digital India is initiated with a vision to drive technology revolution across the country. It aims at building a nation, where broadband is widely accessed; digital literacy is prevalent, and solutions that are relevant for the diverse lifestyles, cultures, and values across India are easily available. These challenges are difficult to face but if smart steps are taken to address the problems, then these can be easily tackled. The entire programme is designed as a top level model on the technological front. There is hardly any guidance on how to implement the same on the ground level to make it successful. To be precise, most of the nine pillars of the programme are directly related to high-end consumers and not for 70% (almost, according to 2013 – 2014 survey) of the rural population in India. Some of the cardinal challenges in Digital India initiative are access to high-speed internet as a core utility, Cradle-to-grave digital identity which should be unique, lifelong, online, and authenticable. Other worth noticing challenges are mobile phone and bank account accessibility to every citizen along with easy access to a Common Service Centre with shareable private space on a public cloud which is safe and secure.

II. BROADBAND AFFORDABILITY AND PENETRATION

Globally, the telecom sector is transforming from a voice oriented market to a data driven market. For a developing country like India connectivity is a key driver required for rising. Every day people and machines produce immense amount of data, which needs to be transmitted in real time with very high accuracy [4]. New services like HD (High-

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definition) media streaming, video conferencing, cloud computing and consolidating the data and telephony networks also require high speed broadband. Hence, Broadband is critical for India's comprehensive growth in financial, healthcare and education sector, among others.Broadband can be a promoter of e-Commerce, telemedicine, e-Learning and other services which are not listed above and eliminate the supply-demand gap in the rural areas that lack the basic infrastructure. Further, Broadband can also help in moving to decentralized workstations thus decreasing energy demands, noise pollution, vehicle emissions, and other forms of pollution.However, in India, The fixed broadband penetration is 1.1% and the mobile broadband penetration is 4.9%.This overall low broadband perforation has resulted in the absence of an ecosystem (content, applications, service models and device categories), which can attend to the mass market requirement.Broadband network can be categorized into 3 parts i.e. core network (backbone), backhaul and the access network. In order to provide high-speed broadband network, all the 3 links should be in synchronization with each other. If there is not sufficient backhaul link then high speed cannot be reached regardless of any access network.Access network in India is mainly based on copper loops, co-axial cables and microwave. Currently 70% of the broadband connections are on DSL technology using copper lines and 3.9% on cable modem. xDSL technology is also finite to line speeds of up to 24 Mbps and a channel on the cable can have a bit rate of 30 Mbps or more. These networks also need valuable investments to enhance them to provide high speed broadband as traditional copper networks would need conditioning to make them fit for DSL access and most of the cable TV networks in India are one way. In addition, the spectrum allocated in India for 4G and 3G services is not enough to procure to the growing demand for data services in the urban areas and the accustomed future demand of the rural communities. Fiber based broadband could help in enlightening the social, economic, infrastructure and sustainability problems faced today and the emerging challenges arising from the digital economy.Following broadband network architecture is suggested for India. In the short span of time (1-3 years), copper local loop and microwave platforms can be used to facilitate broadband services across the country. In the medium term (3-5 years), optic fiber deployment can be done intrudingly across the country to reach partly till the street cabinets, thus serving the last mile on copper loops. In the long term, undeniably, FTTH will be the only way to furnish the prospering demands of data services. Capabilities should be built side by side for in-building solutions prescribed at each stage to provide flawless experience while on the go and in the innermost corners.

A. *Public-private partnerships*

PPPs make it viable to implement projects with the relevant scope and increased time scales, ensuring public funds are used in the most effective and valuable manner while encouraging as much private sector involvement and exclusive risk sharing as possible. The private cooperation will not only bring efficiency into the processes but also help in pious and competitive pricing of high speed digital service.

Different types of PPP models that can be employed are:

1) Private Design Build and Operate (DBO) model:

Private sector organization receives public funding to assist it in deploying a network and in offering open wholesale access. The public sector has no role in the ownership or running of the network.

2) Public outsourcing model:

The whole process is deployed to a private sector organization to build and maintain. The public sector preserves the ownership and usage.

3) Joint venture (partnering) model:

Both the public and private sectors share the ownership. Deployment and work of the network are undertaken by a private sector organization.

4) Public DBO model:

All the work is done by the public sector from financing, building and maintenance. A network company is formed by the authority, and proposes wholesale and (sometimes retail) services.

B. *Supply side challenges and solutions*

Lack of nationwide optic fiber backhaul is the primary hurdle in adoption of high speed broadband in the country. Although 100% FDI is granted in telecom, entangled regulatory environment and lack of clarity results in shortage of investor confidence. Also there is shortage of rural PC kiosks or tele-centers, which can convey governance and other services. Solutions to the above challenges include Encouraging public- private partnership model to fascinate higher

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private investments, dynamic utilization of spectrum resources through spectrum sharing, trading and merging and encouraging the use of cloud computing model and green technologies.

C. *Demand side challenges and solutions*

Even though India being the IT hub of the world, the computer literacy rate is only 6.5%. In addition to this, most of the available content is in English but the English literacy rate is just 7% in India. The PC perforation in India is limited to 9 million rural households whereas 14 million can incur computers as they are above the predicted affordability level of 0.5 million annual family income. The above stated challenges can be handled by Promoting consumption of information, developing new services, stimulating the development and industrialization of cost-effective smart devices, boosting the advancement of local and regional digital content and creative feature-rich applications and intensifying the skill development efforts for training and nurturing technical professionals and other talent

III. DIGITAL LITERACY

Digital Literacy is the biggest challenge and the hurdle which needs to be overcome to successfully implement Digital India program in India. Digital Literacy is the attitude, awareness and ability of individuals to properly use digital tools, applications and facilities. Digital literacy is a hidden problem in India because there are scads of people who are not aware of the way how internet, mobile phones and other digital applications should be used. So, this task becomes of paramount importance to educate citizens about the way digital applications can be used and the importance of digitalization. It is important to educate each and every citizen about what digitalization is and about the technological advancements in the country [3]. Ameliorating IT literacy is very important because the entire mass who is using internet and technical gadgets should know how to secure his/her online data.

Providing proper usability guidance of protection from Malwares along with the information on Anti-Virus software and its role in securing the records should happen simultaneously. Every citizen of India would have all the personal details online which may include sensitive data like bank details, Asset details, PAN details, Income tax details, which might be vulnerable and projected to threats if not secured properly. In case this is breached, then any person would lose the confidentiality of the data and would be compromised. As the online world becomes increasingly complex, digital literacy will remain an important issue for technicians and other stakeholders concerned with ensuring equitable access to electronic information. New technology devices, gadgets, applications and web services will demand new proficiencies, while foundational competencies related to basic literacy and the ability to effectively evaluate and use information will continue to be crucial for full engagement in the global information economy.

IV. SMARTPHONES ACCESSIBILITY

Smartphone availability is a fundamental stumbling block when it comes to success of Digital India plan. There are lots of people in India who are still deprived of access to smartphones [1]. Along with the availability one issue is that people are oblivious to the knowledge of using smartphones. It may be argued that the smart phones do come in equipped with accessibility features that should make it easy to use them. However, there are a range of issues from excessive time loss in exploring the features and functions by touch to difficulty in sending and receiving messages due to the immense time consumed in navigating and understanding keys on the soft keyboard to difficulties faced in swiping on the indicated lines to answer or reject calls make it difficult for people with no knowledge of using smartphones to use the current generation smartphones with the same level of ease and comfort as the older feature phones. Another issue with mobile phones is the network [2]. This focuses on mobile network penetration, with a plan to fill the gaps in connectivity in India by 2018.

Although mobile networks have reached most populated parts of India, the last mile is a long one: 42,300 villages still exist outside the reach of a mobile signal. "Universal access" does not, however, guarantee a working network. Even in its major cities, India's mobile network is so stressed that many say it's still broken, with call failures and drops a repeated complaint. An intense paucity of spectrum has driven up prices and driven down the service quality for India's telecom industry [6]. This has led to problems of dropped calls. But the problem is much bigger than dropped calls. The thing is 85% of India's 100 million broadband users are mobile. As users' ramp up multimedia use and the next 100 million mobile broadband users come on board, networks will not be able to keep up. Digital India needs more spectrums. Today, we are facing a very big problem. The entire usable spectrum has been allocated, but the explosive growth of smartphones and other wireless devices are creating rapid growth in the demand for bandwidth [7].

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Thus, need for spectrum to accommodate increasing mobile broadband demands is a challenge confronting India and countries worldwide. Efforts are underway y to meet mobile broadband spectrum needs.

V. CONCLUSION

Digital India is an initiative by the Government of India to ensure that Government services are made available to citizens electronically by improving online infrastructure and by increasing Internet connectivity. In this paper, we have discussed about the three major issues that India is digitally facing today which includes broadband affordability and penetration, digital literacy and smartphones accessibility and their solutions. We have tried to project solutions that are feasible and efficient. Solving the existing issues will require some time but initiatives if implemented would put India in the top list of developed nations.

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