UTILISATION OF INNOVATIVE TECHNOLOGY TOWARDS A HUMAN-CENTRED FUTURE SOCIETY

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India views technology and digitisation as essential tools to advance towards a scenario in which citizens and the challenges they encounter are placed at the centre of technological innovation, solution development, and service delivery. With a firm foundation of digital infrastructure and expanded digital access through Digital India Programme, India is now poised for the next phase of growth, creating tremendous economic value and empowering citizens as new technological applications permeate every sector. India has successfully leveraged the amalgamation of various platforms, such as PMJDY, AADHAAR, mobile phones (Mobile) and their links with public cloud (Meghraj), Digilocker, UPI/BHIM, AEPS, JAM. In addition, digital transformation in India has successfully bridged the gender divide by increasing women inclusion in employment, school enrolment for girls, admission in BPO training programmes and in supporting women entrepreneurs and self-help groups for showcasing their products and services, therefore catalysing numerous opportunities for women. This article sheds light on such initiatives and their benefits and discusses overall utilisation of innovative technology towards a human-centred future society.

Keywords: Innovative technology, Human-centred future society, Digital India, BPO, Digital infrastructure Jan-Dhan-Aadhar-mobile (JAM)

Introduction

A human-centred society is one that balances economic advancement with the resolution of social problems by a system that integrates cyberspace and physical space. We are now in a new era, one in which innovation driven by enabling technologies such as Internet of Things (IoT), Artificial Intelligence (AI) and robotics are bringing significant changes to the economy and society. Frontier technologies such as AI, blockchain, machine learning are gathering traction as penetration of the internet and smartphones is increasing. They are seen as essential tools to bridge gaps in the existing social service delivery mechanisms and thus improve the quality of life for citizens. Leveraging these technologies will provide advanced solutions to some of the biggest global challenges.

Artificial Intelligence for Human-Centred Future Society

The Artificial Intelligence (AI) is a way of making a computer, a computer-controlled robot, or a software think intelligently, in a similar manner that humans think. AI is accomplished by studying how human brain thinks, and how humans learn, decide, and work while trying to solve a problem, and then using the outcomes of this study as a basis of developing intelligent software and systems. Innovative technology relating to AI such as Machine Learning, Data Analytics, etc., are evolving and they can be very useful to improve services delivery in government and private sectors. An essential requirement for development of such technologies is availability of large volume of data on which the AI engines can work and thereafter develop applications.

India's national strategy for AI, titled **#AIforAll,** prioritises the development of AI solutions to solve challenges faced in social sectors such as agriculture, education, health, mobility' and infrastructure. The strategy addresses the present gaps in research and development in AI' by proposing the establishment of domain specific Centres of Research Excellences (COREs) and International Centres for Transformation (ICTAIs) for foundational research and development of market ready AI solutions in these sectors. The ICTAIs are proposed to facilitate the close interaction of AI experts with social sectors domain experts, and industry to create market ready products to solve societal challenges.

One of the significant recommendations of the strategy is the **'AI for ALL' Alliance** – a global platform for collaboration to promote inclusive AI and follow joint projects in the AI. This multi-disciplinary multi-national research collaboration has garnered special interest internationally. The Alliance is expected to pursue pushing the technology frontier (viz., explainable AI, addressing biases) and democratising the application of AI, i.e., change the narrative from autonomous vehicles to solving access, affordability and availability of eminent healthcare, education, sanitation and essential resources. The Government of India is keen on exploring collaborations with like-minded countries as founding partners for the AI for All Alliance.

Blockchain Technology

With data collection and analysis, audit trail mechanisms are concerned about data security and privacy. The conventional solution to have a centralised, trusted party to host the data on behalf of data providers is not always practical. The data providers do not encourage replication of data that not only raises trust concerns but also adds to costing and control issues. A more effective method to address these concerns is a decentralised data marketplace that is based on blockchain technology.

The research projects are being undertaken by the Government of India to explore the efficiency and effectiveness of blockchain technology. There are varied uses of the blockchain technology such as it can be used in land registry system which expedite land and property registrations and enable a corruption and middlemen-free system of smart transactions. In healthcare, research is being done to explore if block chain can be implemented in supply chain management to trace drugs protecting citizens from fraudulent drugs. In agriculture, blockchain based supply chain system is being explored to allow audit trails for fertiliser sale to farmers authenticating the supply in a secure manner. The research in blockchain technology provides a decentralised and transparent environment resolving mistrust issues. The blockchain technology is being explored in a variety of sectors such as healthcare, agriculture and infrastructure.

Initiatives towards a Technologically Enabled Society in India

It is now globally accepted that in the 21st century digitalisation has emerged as an important driver for socio-economic growth impacting all significant economic sectors. For India, digitalisation provides an unprecedented opportunity to meet the aspirations of more than 1.2 billion citizens in a transparent, inclusive, sustainable, efficient and cost effective manner. In India, digital

economy is projected to reach US$ 1 trillion by 2025.

Digital India Programme: An Approach towards Human-centred Future Society

The Digital India programme of the Government of India is an umbrella programme that is intended to transform India into a knowledge-based economy and a technologically empowered society by ensuring digital services, digital access, bridging the digital divide, digital inclusion and digital empowerment. Such an aim is sought to be achieved with the power of technology that is affordable, developmental and inclusive.

The Digital India architecture has been significantly using innovative technology. It has transformed governance processes for delivery of services. The Digital India weaves together a large number of ideas and thoughts into a single comprehensive vision to ensure that benefits of development reach each and every citizen of the country in equal measure along with the need for faster and timely service delivery. This dream is centred on Digital Identity, Digital Infrastructure, Digital Literacy and Skilling, Digital Delivery of Services, Digital Payment, Digital Entrepreneurship and Industry and Cyber security. One of the key dream areas of the Digital India Programme is ensuring Digital Infrastructure as a centre utility to every citizen. Recognising that robust digital infrastructure from the foundation of Digital India, various specific initiatives have been undertaken towards the development of Digital Infrastructure in the country such as Jan dhan-Aadhaar-Mobile (JAM) trinity, Bharat Net, NKN, MeghRaj, Common Service Centres, etc.

The rapid stride taken in digitalising administration during last five years have brought India to a stage where outside world is keen to learn from our experience. More than 2300 services are already available on digital platform. The Government of India has taken numerous initiatives in this direction to utilise innovative technology. The government simultaneously deploys technology for improving governance and make growth more inclusive and sustainable. In India, the initiatives in this direction should be seen beyond IT and governance aimed at empowering ordinary people with an objective to make people use digitally innovative technology with the target of bridging of rural-urban gaps. It is also ensuring that the national efforts to bring about transparency in governance are reached.

India's Experience with Digital Platforms

India's national digital platforms are founded on four core principles: that digital services should be capable of being authenticated from anywhere, 'paperless' or reliant on digital records, 'cashless' or truly universalising the access and usage of digital payments, and 'consent-based' or allowing secure movement of data authenticated by its owners. It is based on the realisation that digital technologies have the potential to impact all sectors of economy, be it education, health, agriculture or infrastructure. Platform based digital technologies are. Transformative and are able to deliver desired outcomes at a pace unimaginable. Traditionally, while ushering in larger transparency in governance, and promoting economic and social inclusion.

India has successfully leveraged the amalgamation of various platforms such

as digitally enabled bank accounts *Pradhan Mantri Jan Dhan Yojana* (PMJDY), which is the world's largest financial inclusion programme, unique digital identity (AADHAAR), mobile phones (Mobile) and their links with public cloud (Meghraj), document exchange platform (Digilocker), Unified Payment Interface/Bharat Interface for Money (UPI/ BHIM), Aadhaar Enabled Payment Systems (AEPS), *Jandhan-Aadhaar-Mobile* (JAM), etc. More prominently, such free and open infrastructure service is available to even the smallest entrepreneurs. It has opened up a window of opportunities to innovate and fulfil demands of the demographically diverse Indians. It ushered a new social revolution in India. It has provided the enabling ecosystem to transform governance through a model that is unique globally in terms of sheer size, scale and innovation. Further, from inclusion perspective, as part of *PradhanMantri Jan DhanYojna*: PMJDY (Prime Minister's Peoples' Wealth Scheme), 373 million beneficiaries were provided bank accounts, enabling the beneficiaries to receive various social security benefits directly into their bank accounts. Thus, it is ensuring efficiency and transparency.

India is set to leapfrog in digital payments bypassing the era of cards. Net banking which is reflected through number of such transactions growing by more than 100 per cent in last one year. One of the building blocks of the payments ecosystem in India, Unified Payments Interface (UPI) powers multiple bank accounts into a single mobile application (of any participating bank), merging several banking features, seamless fund routing and merchant payments into one hood. Based on UPI, India has built Bharat Interface for Money (BHIM) application, which allows users to directly perform payment transfers to other users or merchants with an easy to use interface. The transactions on BHIM-UPI have grown exponentially. The BHIM has been downloaded 51.59 million times since its launch in December 2016. The number of transactions on BHIM-UPI platforms (BHIM and BHIM-UPI family Apps) with 31.83 million per day, has reached US$23.07 billion and 955 million (by volume) upto September 2019. While the overall digital transactions have reached nearly 30.13 billion in the financial year 2018–19 with annual growth of 51 per cent by volume and 19 per cent by value.

For a digitally inclusive society, more than 3,63,980 Common Service Centres (CSCs) as Digital kiosks have been set up in over 2,62,654 Gram Panchayats. Digital kiosks have created entrepreneurial opportunities for one million village-level entrepreneurs, including 37,144 women entrepreneurs with a view to provide more than 350+ different services to citizens in urban as well as rural areas as on 30 September, 2019. Basic computerisation of land records has also been completed in majority of States. It paves the way for a more digitised, transparent, and efficient property-related services.

A Government e-Marketplace (GeM) has been set up to facilitate online procurement of common use goods and services required by various government departments/ organisations/PSUs. The GeM aims to enhance transparency, efficiency and speed in public procurement. It provides the tools of e-bidding, reverse e-auction and demand aggregation to facilitate the government users, achieve the best value for their money. The GeM attempts to address price inefficiencies in public procurement by

increasing transparency through an online platform for sourcing. A similar initiative, the e-NAM (e-National Agriculture Market) now brings more farmers closer to the market obviating the need for middlemen.

In India, the digital transformation has successfully bridged the digital gender divide. In addition to 37,144 functional women village level entrepreneurs (VLEs), the Information Technology Enabled Services (IT-ITES) industry in our country employs around 4.14 million workers of which 30 per cent are women. A three-year awareness programme in rural India on the opportunities in the BPO industry enhanced women's enrolment in Business Process Outsourcing (BPO) training programmes. It also increased school enrolment among young girls by 3-5 per cent. Numerous other initiatives of the Government of India like Mahila E-HAAT, a bilingual direct online marketing platform leveraging technology for supporting women entrepreneurs and self-help groups for showcasing their products and services, has leveraged numerous opportunities and gainful employment for women.

Through Aadhaar, the Government of India has provided digital identity to 1.24 billion residents of the country with 99 per cent coverage of adult population as on date. Earlier, a substantial percentage of population, especially the economically poor and the rural segment, women and children, did not have an identity card by which they could access a service. Aadhaar has given individuals a government issued ID card which can be authenticated any time anywhere. Aadhaar combined with Digital Locker, eSign, and various forms of digital payments have paved the way for common men getting services on their mobile instead of having to run to multiple offices.

The direct employment in the IT services and BPO/ITeS segment is expected to grow over 4.3 per cent and add around 1,72,000 employees during the year 2018–19 reaching a total of 4.14 million, which is an important achievement for the sector. The skills profile in the industry is set to undergo a rapid change as demand for skills around digital technologies grows exponentially in the wake of new technologies and digitisation initiatives of the Government of India.

India continues its thrust of being one of the most vibrant landscape for start-ups, strengthening its position as the second largest startup ecosystem across the globe. In 2018, adding over 1,800 technology start-ups, India is witnessing a rapid rise in the tech start-ups, reaching more than 8,000 focused on verticals like healthcare, fintech, and e-commerce/aggregators. The Government of India has taken a number of steps to boosting startup ecosystem. Startup India is a flagship initiative of the Government of India. It intended to build a strong eco-system for nurturing innovation and startups in the country that will drive sustainable economic growth. It also generates large scale employment opportunities. The Ministry of Electronics and Information Technology (MeitY) has also taken various initiatives to improve innovation-led ecosystem with a technology incubation. The initiatives also include Technology Incubation and Development of Entrepreneurs (TIDE) scheme, Centres of Excellence in IoT/ FinTech space, technology and theme based incubation centres and programmes to support researchers, start-ups and Micro,

Small and Medium Enterprises (MSMEs) protect IPRs nationally and internationally. The MeitY is going to launch an enhanced version of TIDE, i.e., TIDE 2.0 scheme to promote technology incubation.

In order to facilitate government's dream of promoting technology innovation, start-ups and creation of Intellectual Properties, a nodal entity called 'MeitY Start-up Hub' (MSH) has been setup under its aegis. The MSH will act as a national coordination, facilitation and monitoring centre that will integrate all the incubation centres, start-ups and innovation related activities of MeitY. Our government has also approved the National Policy on Software Products, 2019. It will incentivise industry to move up the value chain, from services to products. It partly reduces the risk in such product development as India's digital consumer base is the second largest in the globe and growing at the second-fastest rate amongst major economies. India's inclusive digital model is narrowing the digital divide within the country. It brings benefits of technology to all segments of people of the country.

Conclusion

Human-centred future society goals at a super smart society which keeps digitisation at its centre and leverages innovative technology to its fullest in the service of the people.Initiatives under the Digital India programme focusing towards digital inclusion, bridging the gender divide by increasing women inclusion in employment, thus increasing the landscape of ICT to impact 1.2 billion Indians. It has now started showing resonance among the common masses. India's success in utilisation of digital technology and platforms is a model for other developing nations to emulate. It helps to move towards sustainable and inclusive human-centred society.

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