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A JOURNAL ON RURAL DEVELOPMENT

Elite Academy For Education & Training Pvt. Ltd. Delhi

e-Governance

ELITE IAS

(A PREMIER INSTITUTE FOR CIVIL SERVICES PREPARATION)

CSAT

CIVIL SERVICES APTITUDE TEST 2023

SYLLABUS BRIEFING

Paper II CSAT officially known as **General Studies Paper - 2** contains totally **80** questions – each being 2.5 marks. It is most loved as well as hated section of IAS exam by different groups for different reasons.

While people who have a "strong" mathematical / English analytical background might find it a cakewalk. People who perceive the lack of same almost have a phobia of this paper.

We have tried to deconstruct some of the myths and provide insights into various aspects of the "dreaded / loved" paper. CSAT paper II tests your basic language skills, logical abilities and common sense at Class X/XII level

There is provision for negative marking (1/3rd of total marks allotted to each question for each wrong answer).

The exam duration is of **2 hours** – held from 2.30 - 4.30 PM in the second session.

In this section we have breakdown the syllabus and touched upon only the basic elements.

Syllabus

Note: The text in bold is the syllabus as verbatim mentioned in the CSAT notification. The sub-categories have been elaborated for your information & understanding. Examples from each sub-category will be given in the **"Detailed Strategy"** Section.

It includes:

Comprehension

- English/Hindi Paragraph Comprehension

Interpersonal skills including communication skills

- Analogies
- Critical Reasoning

Logical Reasoning and Analytical ability

- Logical Reasoning based on Arrangement
- Logical Reasoning based on Ranking
- Team Formations
- Quantitative Reasoning
- Sequences and Series
- Blood Relation
- Direction Test
- Puzzle Test

Decision-making and problem-solving

- Hypothetical questions based on ethical dilemmas
- Decoding facts logically into answers

General mental ability

- Syllogisms
- Logical Deductions
- Statement and Conclusions
- Statement and Assumptions
- Assertion and Reason
- Statement Courses of Action
- Set Theory and Venn Diagrams
- Network Diagrams
- Verbal Reasoning Based on Binary Logic

Basic numeracy (numbers and their relations, orders of magnitude, etc.) (Class X level),

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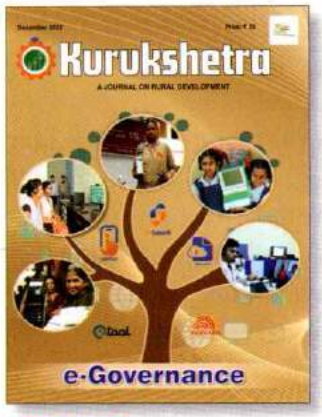

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Editorial

To usher in a new era of e-Governance, the government has taken a large number of initiatives. e-Governance is a mechanism through which public services are made available and accessible to the common man at their doorstep at ease, through common services delivery outlets. It further ensures services' efficiency, transparency, and reliability at affordable prices. e-Governance is ICT-friendly which establishes connections between providers and users of government services.

e-Governance in the country has evolved steadily from computerisation of Government Departments to initiatives that encapsulate the finer points of Governance, such as citizen centricity, service orientation and transparency. Lessons from previous e-Governance initiatives have played an important role in shaping the progressive e-Governance strategy of the country.

According to the Ministry of Electronics and Information Technology, the National e-Governance Plan (NeGP), takes a holistic view of e-Governance initiatives across the country, integrating them into a collective vision, a shared cause.

Launch of the innovative platform, 'MyGov' is an important milestone towards e-governance as it is ensuring citizens' engagement in the decision-making process as they can share their views/opinions on this platform. Seeing the growth and development and promotion of e-Governance for several activities, this month theme of our journal is e-Governance. The issue is carrying a total of eight articles covering different aspects of e-Governance.

The lead article- Bridging Digital Divide talks about the all levels of government need to be transformed by e-governance, but local governments should receive special attention because they are the ones closest to the public and serve as the primary point of contact for many.

The author of the article-Post Office Services at the Doorsteps writes that rendering of postal services at the doorsteps of citizens has revolutionised delivery of financial and citizen centric services in the rural areas. The author also writes that India Post is aspiring to emerge as an important player in the rural e-Commerce sector, by not only acting as the deliverer of choice for e-Commerce items meant for delivery in villages, but also as the order fulfilment entity for merchandise emanating from villages.

Technology will be integral in developing lifelong learners who have a growth mind-set, innate curiosity, drive to explore and firm belief in ongoing, voluntary, and self-motivated pursuit of knowledge says the article Technology Integration for Quality Education.

We hope that through different article, our valuable readers will get desired information regarding the happenings related to e-Governance and its important dimensions.

Happy reading.

Elite Academy For Education & Training Pvt. Ltd. Delhi

Bridging the Digital Divide

Avinash Mishra
Madhubanti Dutta

Technology is one of the principal factors and the most effective tool for social change and advancement in today's world. The term "digital gap" has received significant attention in the last ten years, and a wide range of public discussion over its potential economic, social, and political implications has been generated. The most effective forces that may propel any developing country towards development and prosperity are information and communication technologies. The young workforce can acquire the upgraded skills necessary to engage in more meaningful work. In so doing, we can bridge the digital divide, prepare the under-skilled for the workforce of the future, and ensure that everyone has the opportunity to prosper. India essentially requires a public institution structure that makes use of the advantages offered by digital technology. India needs a system of digital education that integrates the use of technology into all facets of daily life and is contextually appropriate. Last-mile connectivity is crucial for schooling in rural India, where 2G speed is still a problem. So a paradigm shift in strategic thinking, law, and regulation is necessary to bring in the digital revolution which will create a digitally integrated ecosystem in rural areas with a community wireless network, with facets for leapfrogging for economic development.

India is one of the most populated, diversified, and large countries in terms of its landscape. Implementing e-governance to empower its population and promote general economic growth, especially in rural areas, provides a significant challenge. The integration of technology-enabled communication and data-driven governance are two significant advantages of e-government in India. The internet and mobile technology have made it possible to rapidly transfer large volumes of data, which is the foundation of efficient governance. The use of e-governance increases the transparency of all operational processes. Digital inequality has been a significant concern in contemporary societies. These variances are a result of differential levels of access to, actual utilisation of, and efficiency in the application of digital resources. Digital resources, especially cutting-edge technology like business analytics, big data, and artificial intelligence, are crucial for communities to make the transition to sustainability. Digital inequality needs to be decreased for digitalised societies to be long-lasting. All forms of digital inequity are collectively referred to as "digital disparities." Digital gaps are still a worrying trend. Globally, three billion people lack Internet connectivity, with those in developing and least-developed countries more likely to be without it than those in industrialised countries. A nation must enable everyone to participate in the global digital economy and eliminate technological barriers in order to significantly benefit from it. The issue of bridging the

digital gap calls for technological, infrastructure, and social-economic solutions that address accessibility, affordability, and digital literacy. Existing technology can be used to create solutions that offer high-quality, dependable, and secure internet connection, enabling unrestricted participation in the digital economy.

Along with financial, gender, and ethnic disparities, there are growing gaps between rural and urban areas, as well as gaps for those with impairments. Poor local infrastructure can make the Internet slow and expensive in locations with access, thus placing it out of many people's grasp. In contrast, Internet outages can leave whole nations in the dark. The digital world has grown and developed primarily as a result of technological change; pillars of the information society now include e-learning, e-libraries, e-health, and e-governance. The availability of information is not universal, and there has always been a gap between those individuals and groups who can effectively use IT and those who cannot, creating a digital divide that is of the utmost concern to governments in developing nations.

Building Infrastructure to Overcome the Digital Divide

The potential for internet technology to revolutionise civilisation calls for action. In order to bridge the digital gap and provide people with inexpensive, all-inclusive access to information, nations must prioritise the development of their communications and IT infrastructure. There remains a lot to be done, particularly in rural and distant places, even though the IT infrastructure and notably the usage of IT have improved. Technologies related to the internet have the potential to alter the social environment. Access to internet knowledge is essential for learning and human development. By lowering prices, boosting efficiency, and raising labour productivity, the internet may help the economy. The internet could be an important instrument in aiding India to reach its goals by preserving stability, boosting viability for the future, and taking accountability. However, the evidence suggests that the advantages of internet technologies are not equally distributed and that differences between and within nations are widening. Those who are brighter, more connected, and more skilled have disproportionately profited from the internet revolution. Internet connectivity at slower speeds costs more for subscribers in underdeveloped nations. Some countries' economic development has been hampered by sector-specific levies and tariffs. There is a demand suppression effect brought on by the inability to host or provide material locally due to slow rates and high content costs. To convince potential internet users of the value of the technology, local language materials, and culturally appropriate services are needed. A lot of people, particularly women, claim they don't use the internet because they lack the requisite skills.

Achieving an Affordable, Inclusive Internet for All

The crucial internet access infrastructure has been the focus of policies during the last ten years. While there is still much work to be done, there have been notable successes. Currently, a mobile internet signal may be found within range of 70 percent of the world's population (Internet Society 2016). To help establish an inclusive and inexpensive internet that increases prospects for innovation, empowerment, and development, policymakers urgently need to broaden their horizons. The following parameters are significant in the way of achieving an affordable, inclusive internet for all.

- **Importance of Infrastructure-** In developing nations, mobile access is crucial to inclusiveness and creativity. Governments and the business sector must collaborate to encourage network sharing and the installation of fiber optic cables to construct other types of infrastructure, such as roads and power lines. To facilitate access, promote innovation, and advance development, governments and regulators must create rules that stimulate competition and boost network investment. To develop and test a full-scale design, installation, and services package for a turnkey broadband network, infrastructure has to be highly developed. Access to public broadband is just the beginning of building a digitally developed country that closes technical divides between citizens and attracts new businesses and development prospects.
- **Pricing-** The facilitation of inexpensive and widespread Internet access at a fair price is the responsibility of policymakers. Eventually, governments can encourage a commercial and regulatory environment that is friendly to digital technology for the private sector. This might enable finance and expedite infrastructure development. Economic development is

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facilitated by accessible broadband connectivity. 40 percent of Chinese e-commerce sales unlock incremental consumption rather than replacing offline transactions (McKinsey Global Institute 2013b). However, just 15 percent of people worldwide can afford to use broadband internet (World Bank 2016). Lack of affordability can disproportionately negatively impact women because they typically earn less money and have less influence over their purchasing. Mobile market competition has sparked creative pricing strategies. Specific packages, referred to as "zero-rated content," permit unlimited access to certain content or services. While some contend that zero-rated content can increase internet accessibility, others (including the Indian Telecommunications Regulator and TRAI) have expressed concerns about the potential impact on competition. Sector-specific taxes, such as those for SIM card registration, can raise costs, stifle demand, and lower returns to public coffers by reducing volume.

- **Digital Inclusion and Building Human Capacity-** Language is a barrier to access. A lesser propensity to own a computer or use the internet is associated with poorer levels of English reading and writing (Quast 2016). Nevertheless, English makes up more than half of web content, and the lack of widespread acceptance has lowered the demand for internationalised domain names (IDNs) (EURid, UNESCO 2016).
- People are less likely to go online if there is no helpful content available in a language they can understand. Lack of technical literacy and confidence are two major obstacles for women to go online. Governments and other stakeholders must support the ability of SMEs and women to produce locally relevant content. Education and digital literacy programs are essential to equip tomorrow's software developers, local content creators, and policymakers with the abilities they need to contribute to and profit from the information society as creators rather than just consumers.
- **Measuring Access-** For determining effective policy responses, having a current, high-quality information is essential. Making informed decisions about how to solve digital disparities can benefit all stakeholders. Knowing how many people are connected, how they are clicking, and the effects of being connected can help. National statistical organisations should systematically gather data on Internet access by gender. To create uniform measures, governments should allocate more funds and collaborate with the relevant parties.

e-Government Development Index (EGDI) serves as a benchmarking and development tool for countries to learn from each other, identify areas of strength and challenges in e-government and shape their policies and strategies in this area. The table below shows India's rank as per the United Nations e-government Survey, where the Number of participating countries was 193.

Table 1

Year	Rank	EGDI Composite Score
2022	105th	0.5883
2020	100th	0.5964
2018	96th	0.5669
2016	107th	0.4637
2014	118th	0.3834

Source: https://publicadministration.un.org/egovkb/en-us/Reports/ UN-E-Government-Survey-2022

The government of India is implementing the "Digital India" programme to transform India into a knowledge-based society and economy. The Ministry of Electronics and Information Technology (MeitY), Government of India, launched the 'Digital India' programme with the vision to transform India into a digitally empowered society and knowledge-based economy by ensuring digital access, digital inclusion, and empowerment, bridging the digital divide. In summary, our mission is to ensure that digital technologies improve the life of every citizen, expand India's digital economy, and create investment and employment opportunities and global digital technological capabilities in the country. A broad effort called "Digital India" includes several government Ministries and Departments. e-Kranti Electronic delivery of services envisages the provisioning of various e-Governance services in the country. The goal of e-Kranti is to revolutionize e-Government services by growing the portfolio of Mission Mode Projects (MMPs) in e-Government under various government departments, implementing Government

Process Reengineering (GPR), automating workflows, introducing cutting-edge technologies including Cloud and mobile platforms, and emphasising the integration of services. Various other projects/schemes are being implemented under Digital India: MyGov aims to establish a link between the Government and citizens toward meeting the goal of good governance.

According to a PIB press release, Digital India has dramatically reduced the distance between Government and citizens significantly. Further, Digital India has also helped deliver substantial services directly to the beneficiary transparent and corruption-freely. India has become one of the pre-eminent nations of the world to use technology to transform the lives of citizens. Digital India is an umbrella program covering multiple projects of Central Ministries/Departments and States/UTs. Some of the significant initiatives related to public service delivery are as follows:

- **Common Services Centres** – Through Village Level Entrepreneurs, CSCs provide digital government and commercial services to rural communities (VLEs). This CSCs provide more than 400 digital services. 5.31 lakh CSCs are currently operational nationwide (in urban and rural areas), 4.20 lakh of which are at the Gram Panchayat level.
- **Unified Mobile Applicationfor New-age Governance (UMANG)** – for giving citizens access to government services via mobile. At UMANG, you can access over 22,000 bill payment services as well as over 1,570 government services.
- **e-District Mission Mode Project (MMP)** – the e-District project has been implemented at district and sub-district levels of all States/ UTs, benefitting all citizens by delivering various e-Services such as Certificates (Birth, Caste, Death, Income, and Local Resident), Pension (Old Age, Disability and Widow), Electoral, Consumer Court, Revenue Court, Land Record and services of various departments such as Commercial Tax, Agriculture, Labour, Employment Training and Skill Development, etc. Presently 4,671 e-services have been launched in 709 districts across India.
- **DigiLocker** – It is facilitating the paperless availability of public documents. Digital Locker has more than 11.7 crore users and more than 532 crore documents are made available through DigiLocker from 2,167 issuer organisations.
- **Unified Payment Interface (UPI)** – is the leading digital payment platform. It is integrated with 330 banks and facilitated over 586 crore monthly transactions worth over Rs 10 lakh crore has been facilitated for the month of June 2022.
- **CO-WIN** – It is an open platform for the management of registration, appointment scheduling & managing vaccination certificates for Covid-19. More than 203 crore vaccination doses and 110 crore registrations have been facilitated by co-win.
- **MyGov** – It is a citizen engagement platform that is developed to facilitate participatory governance. More than 2.48 crore users are actively using MyGov.
- **MeriPehchaan** – National Single Sign-on platform called Meri Pehchaan has been launched in July 2022 to facilitate/provide citizens ease of access to government portals.
- **MyScheme** – This platform has been launched in July 2022 to facilitate citizens to avail of eligibility-based services.
- **Direct Benefit Transfers** – 315 Schemes across 53 Ministries are offering Aadhaar-enabled

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direct benefit transfers to citizens. So far, Rs 24.3 lakh crore has been disbursed through the DBT platform.

- **Diksha** – Diksha is a national-level educational platform that helps students and teachers to participate, contribute and leverage a common platform to achieve learning goals at scale for the country. As on 27th July 2022, 7,633 courses are available and more than 15 crore enrolments have been done.

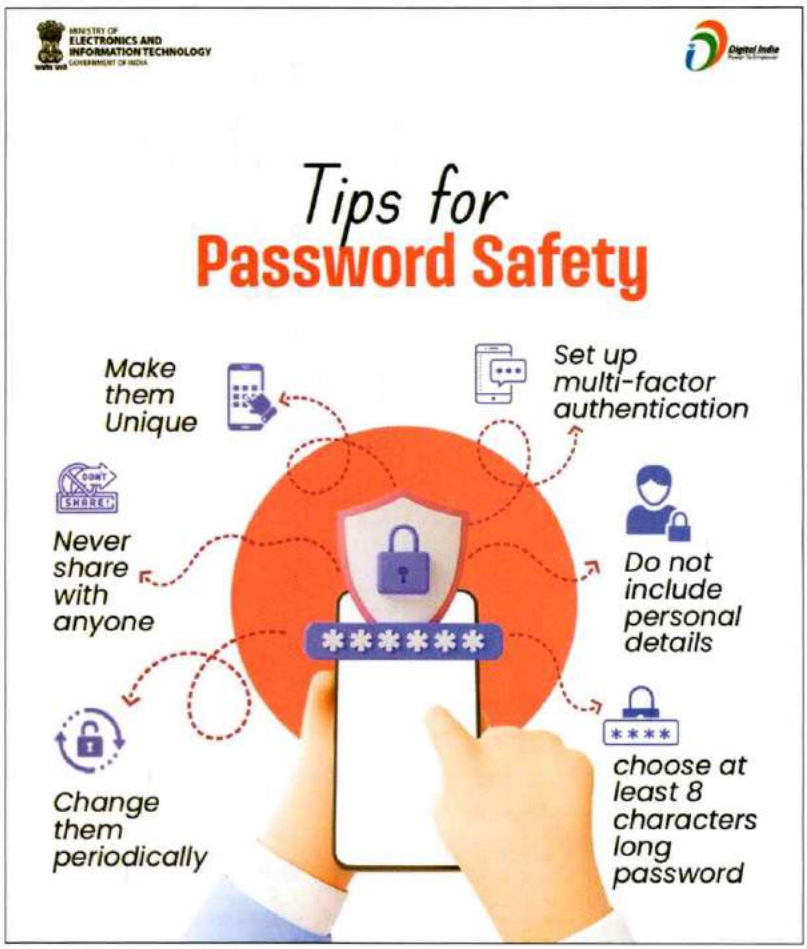
The government has made the following moves in the direction of data governance for the nation's socioeconomic development. Here are some quick details:

- **Open Government Data** - A platform for open government data has been created in order to facilitate data exchange and encourage innovation with regard to non-personal data. Over 5.65 lakh datasets are released over more than 12,800 catalogs. The platform has made 93.5 lakh downloads possible.
- **API Setu** - A platform called API Setu has been created to make data interchange across systems easier. More than 2100 APIs and 1000+ user organizations are available on the platform. The proposed National Data Governance Framework Policy was created by MeitY with the intention of realizing the full potential of India's vision for its digital government, enhancing the effectiveness of data-led governance & public service delivery, and fostering data-based research and innovation. The proposed policy is still being refined. On May 26, 2022, MeitY made the Draft National Data Governance Framework Policy available for public comment.

Concluding remarks

All levels of government need to be transformed by e-governance, but local governments should receive special attention because they are the ones closest to the public and serve as the primary point of contact for many. Better internet connectivity should go hand in hand with improving digital infrastructure, especially in rural regions. For countries like India, whose citizens come from many linguistic origins, e-government through regional languages is highly beneficial. There are many successful projects currently underway in the nation, but very few of them are on a national scale. It's important to reproduce and upgrade effective models uniformly across the nation. It is important to address the inconsistent nature of the numerous applications created by different states, their integration to provide a single view, and their use of data mining and analytical approaches for decision-making. It is clear that consistent growth across all states and services is important for the successful adoption of e-governance in the nation.

A paradigm shift in how societies run themselves will be necessary to transform the globe and achieve sustainable development objectives by 2030. It will necessitate reevaluating how a government



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manages the public affairs of a nation and attends to the demands of its citizens, as well as how it engages with civil society and the business sector. No one will be left behind in the pursuit of sustainable development, thanks to ICTs and e-government. Global interconnection and the growth of information and communications technology have the potential to accelerate human progress, close the digital divide, and create knowledge societies that foster innovation across a variety of industries.

To prevent the hazards of new and greater digital divides, scientific information, technology, and know-how produced by the digital era must be carefully managed. Governments should collaborate with the business sector in research and development, particularly in solving the broadband connectivity gap, in order to have a major societal impact when adopting new technology.

The digital revolution will include technological advancements, but it will also require a comprehensive approach that offers clients dependable, rapid, accessible, and customized services. The public sectors of many countries are not prepared for this change. Traditional methods may not apply, so a paradigm shift in strategic thinking, law, and regulation may be necessary. While e-government focuses on creating online services, the future will center on how digital government may change governance by harnessing societal creativity and resilience to advance Sustainable Development Goals.

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Post Office Services at the Doorsteps

Aman Sharma

Rendering of postal services at the doorsteps of citizens has revolutionised delivery of financial and citizen centric services in the rural areas. India Post is aspiring to emerge as an important player in the rural e-Commerce sector, by not only acting as the deliverer of choice for e-Commerce items meant for delivery in villages, but also as the order fulfilment entity for merchandise emanating from villages. Both these services are sought to be delivered at doorsteps using the physical infrastructure of India Post, bolstered by the IT backbone.

India Post is a 158 years old organisation with an expanding network of 1.59 lakh post offices situated in every nook and corner of our vast country. China with about 54,000 physical outlet comes a distant second. Today, India Post is a vibrant organisation which is rendering not only postal but also several diverse services such as banking, insurance, passport, aadhar and evensale of Gangajal and Prasadam of important shrines. The common thread running through all these services is their IT enablement for ensuring easy and cost effective availability.

India Post is the only institution of the Central Government which is present in the entire country. The network is primarily rural centric, with more than 90 percent of the post offices being situated in villages. The 1.4 lakh village post offices cover more than 7 lakh villages of the country viz on an average, each village Post office covers close to 5 villages. Till recently, the village post office was primarily a fixed brick and mortar entity where citizens from these 5 villages had to physically pay a visit to avail the postal services. This not only created issues of service delivery deficiency, but also made it expensive for rural citizens to spend time and money to visit the Post office.

This situation has undergone a drastic change since the roll out of the Rs 4909 Cr IT modernisation

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project 1.0 in the Department of Posts. This project, which, though, approved in 2012 and had not seen much traction, was put on fast track in 2014. It was ensured that all 1.59 lakh POs were networked and all the services rendered by the post offices are made online. Today, all the services rendered by Post Offices are online and NEFT, RTGS is also available to POSB customers. The village postmasters and postman are all equipped with a hand held DARPAN device as well as smart phones, enabling them to render multiple services at the door steps of citizens. The DARPAN device is a 'Made in India' rugged handheld device with mobile connectivity and having a built in biometric scanner, card reader and a blue-tooth thermal printer, which enables the postmaster to render postal as well as financial services, after proper biometric authentication of citizens, at their doorsteps, or at their farms. Since, June 2016, DARPAN devices have been used for 86.39 crore transactions, involving an amount of about Rs. 1.22 lakh Crore. Most of these transactions have been done in the field and not within the four-walls of the village post office. Today, it is a common sight to see a village postmaster in the agricultural fields or MGNREGA work sites, delivering cash to villagers, be it their DBT or money order payment.

Rendering of postal services at the doorsteps of citizens has revolutionised delivery of financial and citizen centric services in the rural areas. Studies have indicated that for a rural citizen to withdraw cash from a bank or ATM, he/she needs to spend around Rs. 100-200 per trip. For a senior citizen to spend this amount, all for withdrawing a pension of Rs. 1000, defeats the very purpose of direct benefit transfer for such social welfare schemes. It remains a fact that, despite the enormous success of the UPI, consumption related rural transactions are still cash heavy. Door-step delivery of cash by the postmasters in rural areas, therefore, has huge socio-economic benefits.

In this march towards door-step delivery of financial services, India Post Payments Bank (IPPB), launched by the Prime Minister on 1 September 2018 has proved to be another major milestone. Within a short span of time, IPPB has established itself as a credible Payments Bank rendering paperless financial services through a tech enabled platform, riding on the brick and mortar infrastructure of the post offices. IPPB has provided over 1.5 lakh Android Smart phones to Postmen and village Postmasters, which have enabled delivery of doorstep banking services. Despite restricted banking allowed to Payments Banks by RBI, IPPB has opened over 5.9 crore accounts, more than 48 percent of which belong to women, almost 90 percent of which have been opened at doorsteps of such women. So far, IPPB has clocked 2.36 crore transactions, involving Rs. 1.57 lakh crore, and more than 70 percent of which have been done by women in rural areas. Aaadhaar Enabled Payments System (AePS) which is the most popular service of IPPB, has enabled the postmen to make withdrawal from any Bank (both public and private) account which has been linked to Aadhar, after biometric authentication of the account holder. So far, more than Rs. 25000 crore withdrawals from 8.76 crore bank accounts, have been done by IPPB using AePS. During COVID-19 pandemic, AePS enabled the postmen to deliver more than Rs. 12,000 crore cash at the doorsteps of customer; this has proved to be a life-saver for so many distressed citizens during lockdown, when most of the ATMs were dry and bank branches closed.

In addition to banking services, IPPB also renders insurance (life, medical and accidental) services, Aadhaar services (mobile number updation) and Digital Life certificate to pensioners. Aadhaar services have been the most successful, clocking more than 5 crore transactions in about three years, and all delivered at doorsteps. The Digital Life Certificate (DLC) services rendered by IPPB through the postmen at doorsteps of pensioners are also very popular and have saved senior citizens from visiting their Bank branch or Post office, once every year, to register their alive status. Use of technology has therefore enabled optimum utilisation of the pan-India service delivery network of India Post. Lives of numerous citizens have been transformed through use of digital technology.

The impact of technology has been felt in the area of G2C services such as passport services as well. Though not yet rendered at doorsteps, registration for passports has been made available at post offices. The post office Passport Seva Kendra's, 429 of which are operational, have totally transformed the access of citizens to passports. Now, citizens need not spend money and time to travel to RPOs located generally in State HQs; for applying for a passport, they can simply book an online appointment to visit

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their nearest POPSK, which are available in most of the district HQ's and are being further expanded. Similarly, over 13,000 Post Office Aadhaar Centers have made it easy for citizens to register for Aadhaar as well as amend their address / telephone details in Aadhaar. More than 6.29 Cr citizens have used these Aadhaar services in post offices; 1.73 crore being in the State of Uttar Pradesh alone. Additionally, more than 70 G2C and B2C services have been made available through about 1.19 lakh Post Office Citizen Service Centers. These services are being rendered at doorsteps using the smart phones available with village postmasters.

Road Ahead

With the advent of cutting edge technology which is simplifying the user Interface of complex applications, more and more customers are expected to shift to self-servicing using internet/ mobile banking, self-servicing kiosks for booking and delivery of packets etc. However, in a country like India, where a large population in rural areas is still not educated enough to go for self-servicing options, the role of Post office is expected to remain important for the next 15-20 years. Although the present Government is leading a huge thrust on making brick and mortar Banks/Post offices available within a 5 kms radius of every village, the most effective way to ensure financial inclusion would be to equip the village Postmasters/Postmen with a robust and easy to use technology, thereby, enabling them to render banking, G2C and B2C services on demand, at the doorsteps.

In 2021, the Government of India had approved the IT modernisation 2.0 project for India Post, with an outlay of Rs. 5785 crore. Considering the longer gestation period for large scale and complex IT projects, the Government has approved this project for a period of 8 years, instead of the usual five years which corresponds with the term of the Finance Commission. IT 2.0 project of India Post shall serve to not only upgrade the WAN (network), but also build micro-services based platform for rendering almost all the current and future services delivered by India Post, through the mobile devices. The IT 2.0 project of Department shall have the following important features:

- IT 2.0 will provide last mile technology ecosystem for any Government organization to utilise the robust IT system on one hand and doorstep delivery of services on the other.
- The agile scalable central ecosystem will enable any Government department / organisation to integrate their services / products with India Post. By using mobile based apps, India Post will provide physical delivery of digital services.
- Similarly, by creating open platform, various other delivery departments / private agencies can plug and play into last mile delivery system of India Post.
- Every scheme of the government can be given priority for its delivery to every section and geography of the country, using India Post IT enabled prioritisation application.
- With the last mile network of 1.59 lakhs post offices having mobile based service delivery application connected to all the applications of central / state governments, these IT enabled mobile delivery staff will enhance the reach of the Government. All post offices and delivery staff will be connected using a mesh of high speed Internet connectivity utilising open network.
- India Post will deploy Artificial Intelligence, machine learning, and big data analytics for faster delivery, and will provide real time visibility to ensure supply chain operational efficiencies that help keep costs to Government down and deliveries affordable.

Moreover, with the roll-out of 5G services by all the telecom service providers in the country, it would soon become easy to host even data heavy

applications on any smartphone and help the rural citizens avail almost all services currently available to urban customers or through brick and mortar establishments only, at their doorsteps. The rural network of India Post is therefore all set to play an important role in delivery of G2C and B2C services in villages.

It is being observed that both Central and State Governments are increasingly relying on doorstep service delivery of Government services in order to deal with the delivery gap that exists especially in the rural areas. Even ration and medicines are being considered for doorstep delivery by some State Governments. As aspirations and expectations of the citizens grow and a suitable technological backbone becomes available with a Government agency, a large percentage of Government services are going to get online and Post office shall play an important role in providing the physical network, to make such services available at the doorsteps of rural citizens who cannot self-service. Realising the immense potential of this hitherto under-utilised postal network in the country, Government of India is therefore ready to entrust India Post with the delivery of more and more services ranging from DBT to Railway ticket booking to even census enumeration. In the recently concluded HarGharTiranga campaign under Azadi Ka Amrut Mahotsav (AKAM), India Post not only set a record of sorts by selling 1.34 crore national flags through its vast network of over 1.5 post offices, at a very nominal price of Rs. 25, but for the first time such flags were also sold through the ePost Office e-commerce portal of India Post; no delivery charges were taken for the door-step delivery of flags ordered online. More than 2.5 national flags were sold online by India Post during the 16-day campaign. More than 30 percent of such online orders emanated from rural areas. This small initiative of India Post has reconfirmed the forecast that the next wave of e-Commerce boom is going to emanate from rural areas and DoP is among the very few entities that can fulfill this demand for e-Commerce.

The post office is all set to play an important role in the Open Network for Digital Commerce (ONDC) and One District One Product (ODOP) initiatives of the Government by making available its network for order fulfilment by the MSMEs, after they have received an online order. India Post is working

closely with Department for Promotion of Industry and Internal Trade (DPIIT) of Government of India and Uttar Pradesh Government, in this direction.

In addition, India Post has signed an MoU with Government eMarketplace (GeM) for providing order fulfilment services to MSME sellers registered on GeM. So far, more than 1000 GeM sellers have been on boarded and more than 3000 orders have been packaged, booked and delivered to GeM buyers using India Post parcel services. A similar arrangement with TRIFED has also been worked out and India Post is currently providing order fulfilment services at 15 warehouses of TRIFED, spread across the country.

Going ahead, India Post is aspiring to emerge as an important player in the rural e-Commerce sector, by not only acting as the deliverer of choice for e-Commerce items meant for delivery in villages, but also as the order fulfilment entity for merchandise emanating from villages. Both these services are sought to be delivered at doorsteps using the physical infrastructure of India Post, bolstered by the IT backbone. All such tie-ups in the field of e-Commerce would not be possible without India Post providing APIs to all such customers, thereby allowing for seamless flow of data.

For these reasons, the successful implementation of IT 2.0 project by India Post assumes utmost priority as it would help create a brick and mortar entity backed by state-of-the-art IT back-bone, and capable of rendering any kind of service in purely digital or purely analog or hybrid mode. The possibilities of using this state-of-the-art resource would be immense. Even services such as Aadhaar registration and updation, submitting an application for passport, which are currently

available only through at the Post office counters, can all be made available at doorsteps by using postman mobile devices. This will not only enhance the ease of availing these services, but would also improve citizen compliance. Another initiative of India Post which is expected to have far reaching consequences on door step delivery of services, is the Digital Address Code (DAC) project. Under this project, each address of the country is proposed to be geo-tagged and assigned a unique alpha-numeric code. DAC is expected to make door-step service delivery easier for not only Government agencies, especially the essential and emergency services, but also for private entities which are involved in home delivery, such as food delivery, e-Commerce delivery, couriers etc. The existing entry barrier faced by start-ups, on account of a credible data deficiency can also be moderated to a great extent through DAC.

To sum up, e-Commerce has already revolutionised the delivery of goods in urban and semi-urban areas of the country. Rural hinterland is soon going to follow suit as India Post and other private players strengthen and build their rural network. The service delivery sector is going to see a similar revolution and as the expectation of the citizens, especially in rural areas rise, both Central and State Governments shall be forced to rise up to such expectations. The Post office which is the largest postal network in the world has accepted this challenge and is further strengthening its IT infrastructure to render all postal, G2C and several B2C services at the door-steps of citizens, especially in the rural areas, where citizens still find it difficult to self-service. By 2024, when the major portion of IT 2.0 project of India Post shall be nearing completion, the village Postman shall be rendering, on demand, a plethora of G2C and B2C services at the door-steps of citizens.

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Technology Integration for Quality Education

Rashi Sharma
Purabi Pattanayak

As per the National Education Policy 2020, "Given the explosive pace of technological development allied with the sheer creativity of tech-savvy teachers and entrepreneurs including student entrepreneurs, it is certain that technology will impact education in multiple ways, only some of which can be foreseen at the present time. New technologies involving artificial intelligence, machine learning, block chains, smart boards, handheld computing devices, adaptive computer testing for student development, and other forms of educational software and hardware will not just change what students learn in the classroom but how they learn, and thus these areas and beyond will require extensive research both on the technological as well as educational fronts." Therefore, the future of the educational system will be determined by the expansion and integration of technology which will serve the purpose of bringing efficiency in educational systems and transformative reforms in the academic sphere.

Technology is the predominant driver of the 21st century which is affecting each and every sphere of human life. The impact of technology is such that the lines between the physical, digital and biological spheres are increasingly blurring and is rapidly changing the way people live, work and communicate. The word governance and e-governance have no longer a clear distinction in terms of policies, institutions, and implementation strategies. With the evolution of digital technologies, both administrations and institutions across the globe have been conclusively transformed structurally and in terms of the relationship between the Governments and citizens. These observations are also drawn from two decades of analytical research and the monitoring of trends within the framework of the United Nations E-Government Survey. While nearly every country is engaged in the process of digitalisation, not all have achieved the same level of development, and while institutions at all levels are committed to modernisation and digital transformation, approaches and outcomes vary greatly. The COVID-19 pandemic has further exposed digital divides between and within countries and various social groups. One of the key lessons learned during the pandemic is that the future is hybrid and not digital. In fact, the primary objective of technology is to recognie and foster human potential and support sustainable human development through digitalisation.

The UNESCO definition (www.unesco.org) of e-governance is stated as "E-governance is the public sector's use of information and communication technologies with the aim of improving information and service delivery, encouraging citizen participation in the decision-making process and making government more accountable, transparent and effective. E-governance involves new styles of leadership, new ways of debating and deciding policy and investment, new ways of accessing education, new ways of listening to citizens and new ways of organising and delivering information and services. E-governance is generally considered as a wider concept than e-Government, since it can bring a change in the way citizens relate to Government eco system. E-governance can bring forth new concepts of citizenship, both in terms of citizen needs and responsibilities. Its objective is to engage, enable and empower the citizen." The pandemic amplified the importance of e-government and digital technologies as essential tools for communication and collaboration between policy makers, private sectors and societies across the globe. E-governance has become the cornerstone for building effective, accountable, resilient and inclusive institutions at all levels, as called for in Sustainable Development Goal (SDG) 16, and for strengthening the implementation of Goal 17 (UN E-Government Survey, 2022).

With such revolutionary impact of technology, education sector could not be left untouched and during the COVID-19 pandemic, the pace of integration of technology in teaching learning processes has increased exponentially. During the pandemic, digital technology played an indispensable role in holding the civil society together by supporting the provision of basic-fundamental services in the field of health, education, and service sector. National Education Policy (NEP) 2020 gives utmost importance to technology and states that "The thrust of technological interventions will be for the purposes of improving teaching-learning and evaluation processes, supporting teacher professional development, enhancing educational access, and streamlining educational planning, management, and administration etc. It also recognises and addresses the issue of digital divide and elucidates that "the benefits of online/digital education cannot be leveraged unless the digital divide is eliminated through concerted efforts, such as the Digital India campaign and the availability of affordable computing devices. It is important that the use of technology for online and digital education adequately addresses concerns of equity."

In the school education sector of India, technology has been used both in governance processes to improve the efficiency and effectiveness of schooling system and also for enhancing quality of education. Various governance related technological interventions have been initiated and undertaken by the Government which are given below:

(i) **UDISE**+(https://dashboard.udiseplus.gov.in): It is a well-known fact that timely and accurate data is the basis of sound and effective planning and decision-making. Realising the need of this, Ministry of Education (MoE) had initiated Unified District Information System for Education (UDISE) in 2012-13 integrating DISE for elementary and secondary education which is one of the largest Management Information Systems for School Education covering more than 1.5 million schools, 9.6 million teachers and 264 million children.

UDISE+ is an updated and improved version of UDISE. This is now online and has been collecting data in real-time since 2018-19. UDISE+ provides robust, real-time, and credible information for an objective evaluation of the system, which can be used for designing evidence based specific interventions for improvement in the school education sector.

Further, UDISE+ has a mandate of collecting information from all recognised and unrecognised schools which are imparting formal education from Pre-primary to XII. UDISE+, collects information through an online Data Collection Form (DCF) on parameters ranging from students, schools, teachers, infrastructure, enrolments, examination results etc. Ever since its introduction, UDISE+ has acquired the status of the official database of the MoE and is now operational in all the districts of the country.

(ii) **Performance Grading Index(PGI)** (https://pgi.udiseplus.gov.in): The PGI is a tool to provide insights on the status of school education and to catalyse transformational change in the

States/UTs on the basis of key indicators that drive their performance and critical areas for improvement.It grades all States/UTs on their performance across 77 indicators on school education and helps identify gaps thereby enabling all States/UTs to design appropriate interventions to bridge them. This was introduced from 2018-19.

In addition to the State PGI, around 83 indicators have been developed for Districtsto grade the performance in school education. Combined report for the years 2018-19 & 2019-20 can be accessed at https://pgi.udiseplus.gov.in/#/home.

The exercise envisages that the index will propel the States/UTs towards undertaking multi-pronged interventions that will bring about the much-desired optimal education outcomes. The purpose of this PGI therefore is to help the States/UTs to pinpoint the gaps and accordingly prioritise areas for intervention to ensure that the school education system is robust at every level.

(iii) Online survey platform for National Curriculum Framework (NCF): With the arrival of NEP 2020, the focus of education has move towards learning about how to think critically, solve problems, how to be creative and multidisciplinary, and how to innovate, adapt, and absorb new material in changing fields. Pedagogy is expected to evolve to make education more experiential, holistic, integrated, inquiry-driven, discovery-oriented, learner-centred, flexible, andenjoyable. To make the above expectations a reality, a new NCF is being developed by the NCERT. The development of this framework is unique in many ways as it is adopting a 'bottom-up' approach in which suggestions are invited from all stakeholders on the basis of which new NCF will be developed and on 29 July 2022, a mobile/online survey for NCF was launched.

In addition, drawing insights from citizen-centric process of development of NEP 2020, this framework has also been made consultative. To ensure participation of each and every citizen of the country in this curriculum development process, a citizen-centric Digital Survey for National Curriculum - DiSanc has been launched. Under this survey, suggestions and feedback has been collected from the public at large for the formulation of the NCFs.

(iv) NDEAR (National Digital Education Architecture) (https://www.ndear.gov.in) **and Vidya Samiksha Kendra:**

NDEAR has been launched with a larger vision to create a unifying national digital infrastructure to energise and catalyse the education ecosystem. NDEAR has been conceived as a unifying National Digital infrastructure to energise and catalyse the education ecosystem. The core idea of NDEAR is to facilitate achieving the goals laid down by NEP 2020, through a digital infrastructure for innovations in the education ecosystem, ensuring autonomy and participation of all the relevant stakeholders. NDEAR will enable a common set of principles and approaches to be followed in building, using, and re-using technology for education. Further, Vidya Samiksha Kendra (VSK) has been set-up at national level at NCERT and is aimed at leveraging data and technology to bring a big leap in learning outcomes. VSK will include Student, Teacher and School registry which will bring synergy to the work being done in the ecosystem by integrating data from different datasets and empowers students, teachers, and parents to bridge the gap. This will cover the entire data of school eco-system and will analyse by using big data analysis, artificial intelligence and machine learning in order to enhance the overall monitoring of the education system and thereby improving learning outcomes. All States and UTs have been provided financial support under Samagra Shiksha scheme for setting up VSKs.

(v) PRABANDH (http://samagrashiksha.in): Department of School Education and Literacy had launched PRABANDH - Project Appraisal, Budgeting Achievements and Data Handling System in 2020. This System has been developed under Samagra Shiksha as a significant step towards leveraging technology to enhance efficiency and manage the implementation of the Centrally Sponsored Integrated Scheme

for School Education. PRABANDH System can be accessed at www.samagrashiksha.in. It has more than 10 lakh activated users and can be accessed from the School, Block, District and State Level.

A data visualisation dashboard has been created in the PRABANDH System for display of monthly status of physical and financial progress under the major interventions of Samagra Shiksha such as text books, uniforms, transport allowance, status of civil works, teaching learning materials etc.

Technology integration has also been an integral part of enhancing quality of education. Various initiatives have been undertaken to tackle this challenging situation which are as follows:

(i) **PM e-Vidya** (https://pmevidya.education.gov.in): The COVID-19 pandemic presented a catastrophe for human civilisation but at the same time it became catalytic in bringing out various new strategies and accelerating the pace of technology intervention. PM e-vidya launched during the time of pandemic is one such comprehensive initiative which ensures coherent access to digital education through multimodal approach. The digital platform of MoE 'DIKSHA' has been declared as 'One Nation, One Digital Platform'. DIKSHA can be accessed by learners and teachers across the country and currently supports 30 Indian languages. Each State/UT leverages this platform in its own way, as it has the freedom and choice to use the varied capabilities and solutions of the platform to design and run programs for teachers, learners and administrators. DIKSHA policies and tools make it possible for the education ecosystem (educationist, experts, organisations, institutions - government, autonomous institutions, non-government and private organisations) to participate, contribute and leverage a common platform to achieve learning goals at scale for the country. In the times of COVID-19 pandemic, the platform has experienced unprecedented rise in access by learners and teachers across the country. There have been more than 5 billion learning sessions, 59 billion learning minutes, 22 billion-page hits. DIKSHA could smoothly handle such traffic owing to its robust tech-stack, futuristic design, and dedicated groups of manpower.

DIKSHA currently hosts over 6,500 textbooks energised with QR codes, including 359 NCERT textbooks and also called Energised Textbooks (ETBs). There are more than 3.01 lakh digital content on DIKSHA which include audio-visual content, reading and practice material, interactive resources and lesson plans. For digital content to aid in the teaching and learning processes, a rich repository of varied resources was contributed by Schools/individual teachers, content partners, NGOs, corporates under CSR under VidyaDaan against the various content requirements of NCERT/CBSE/States/UTs. As on date, more than 40,000 content pieces have been contributed under VidyaDaan. Further, NCERT has recently entered into an MoU with ISLRTC under which sign language videos are being developed jointly. More than 3000 ISL videos have been recorded and about 600 videos have been uploaded on DIKSHA. For Children with Special Needs, 2970 Indian Sign language (ISL) based content, Mukta Vidya Vani, an audio streaming podcast and Radio Vahini, with 24x7 broadcast and talking books (in Daisy format) for learners with Blindness and Low Vision have been prepared and also a total of 3424 Audio Books have been developed. 10,000ISL dictionary words, have been uploaded on DIKSHA.

At present, 12 PM eVIDYA DTH TV channels (One Class, One Channel from classes I to XII), are functioning that delivers class-wise contents on 24x7 basis are linked to DIKSHA through QR codes. A Podcast called Shiksha Vani of the CBSE is also being effectively used by learners of grades 9 to 12.

(ii) **Capacity Building of Teachers through NISHTHA online** (https://itpd.ncert.gov.in): The NEP 2020 clearly focuses on empowering teachers by spelling out the role at different levels of expertise/ stage and competencies required. The policy has stated that each teacher will be expected to participate in at least 50 hours of Continuous Professional Development (CPD) program every year for their own professional development, driven by their own interests. CPD will systematically cover the latest pedagogies regarding foundational literacy and numeracy, assessment, competency-based learning, experiential learning, arts-integrated, sports-integrated, and storytelling-based approaches, etc. National Initiative for School Heads' and Teachers' Holistic Advancement (NISHTHA), an integrated training programme was initiated covering all the recommended areas and aims at holistic development of teachers. Under NISHTHA face-to- face training during 2019-20, 23,137 SRGs and 17,74,728 teachers and head teachers working in schools run by States/UTs were covered from 33 States/UTs.During the pandemic, NISHTHA was launched online at DIKSHA to ensure Under NISHTHA 1.0, about 24 lakh school teachers and head teachers at elementary education level (Classes 1-8) across 34 States/UTs and 8 Autonomous Bodies under MoE, Ministry of Defense (MoD) and Ministry of Tribal Affairs (MoTA) had completed training and were certified. Subsequently, NISHTHA 2.0 for Secondary teachers, NISHTHA 3.0 for Foundational stage teachers, and NISHTHA 4.0 for training of master trainers of ECCE have been launched for building capacities of teachers at all levels. Around 7.5 lakh secondary teachers and 12 lakh pre-primary and primary teachers have completed NISHTHA 2.0 and NISHTHA 3.0 training respectively.

Realising the need of digital education during COVID-19, the Government decided that the impetus for the education for 2022-23 would be on digital mode of learning to reverse the learning loss caused by the academic disruption due to the COVID pandemic situation. The following initiatives have been announced in Budget 2022-23 to expand the scale and scope of digital technology and to ensure learning for all, with equity, to cover all students at all levels of education, keeping in view India's scale, diversity, complexity and device penetration.

(i) **200 TV Channels:** Due to learning gaps caused by the pandemic-induced closure of schools, the need to impart supplementary teaching and to build a resilient mechanism for education delivery. For this purpose, the 'one class-one TV channel' program of PM e-VIDYA will be expanded from 12 to 200 TV channels. This will enable all states to provide supplementary education in regional languages for classes 1-12.

(ii) **Virtual Labs:** NEP 2020 recommends creating virtual laboratories so that all students have equal access to quality practical, critical thinking and hands-on experience for teaching-learning of Science, Mathematics and Vocational Skills. To support this around 750 virtual labs in science and mathematics, and 75 skilling e-labs for the simulated learning environment, will be set up in 2022-23.

(iii) **High Quality E-Content:** High-Quality e-content in all spoken languages will be developed for delivery via internet, mobile phones, TV, and radio through Digital Teachers.

(iv) **Competitive Mechanism For E-Content:** A competitive mechanism for the development of quality e-content by the teachers will be set up to empower and equip them with digital tools of teaching and facilitate better learning outcomes.

Conclusion

The NEP 2020 calls for investment in digital infrastructure, online teaching platforms and tools, virtual labs, digital repositories, online assessments, technology and pedagogy for online teaching-

learning etc., with the promotion of multilingualism and the power of language in teaching and learning through innovative and experiential methods, including through gamification and apps, by weaving in the cultural aspects of the languages - such as films, theatre, storytelling, poetry, and music - and by drawing connections with various relevant subjects and with real-life experiences.

Technology will be integral in developing lifelong learners who have a growth mind-set, innate curiosity, drive to explore and firm belief in ongoing, voluntary, and self-motivated pursuit of knowledge. An inclusive, equitable, affordable and integrated digital ecosystem is needed to facilitate and sustain lifelong learning and to reap the benefits of inclusive technology development so that no one is left behind.

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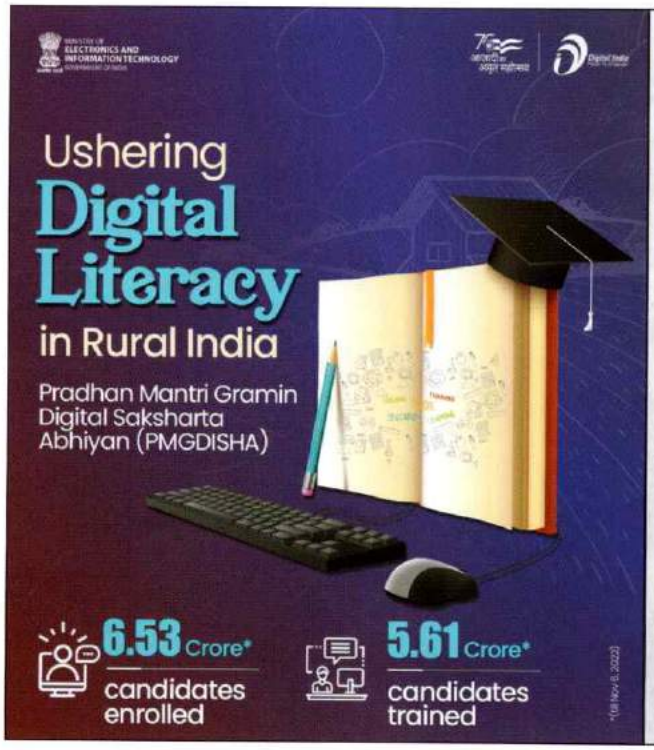

Mobile Governance

Balendu Sharma Dadhich

M-Governance, in simplest terms, is E-Governance delivered through the mobile devices, especially the smartphone. An Internet-connected mobile device is the answer to some of the most intriguing challenges and problems we face in delivering government services to the people. India is the best candidate for a successful implementation of M-Governance because of the phenomenal growth of a nation-wide mobile-eco system on one hand, and the challenges faced by the E-governance mechanism on the other.

Over the years, we, the citizens of India, have been utilising E-Governance services almost on a day-to-day basis. The communication technologies, especially the Internet, and digital-electronic devices such as computers and mobile phones have paved way for building an effective and convenient interface to connect the government with its citizens for various reasons. This is E-Governance. However, with the growth of smartphone adoption and easy access to mobile data connectivity across the country, M-Governance has started playing an increasingly effective and prudent role in bridging the distance between the two stakeholders of governance; the government and the people. M-Governance, which is a subset of E-Governance, has emerged as an effective vehicle to realise the government's vision to reach out to every doorstep in the country. The impressive success of fintech in the country is an example of how the mobile phone device, in collaboration with the amazing power of Internet, can play a powerful and impactful role in making our E-Governance ambitions a reality.

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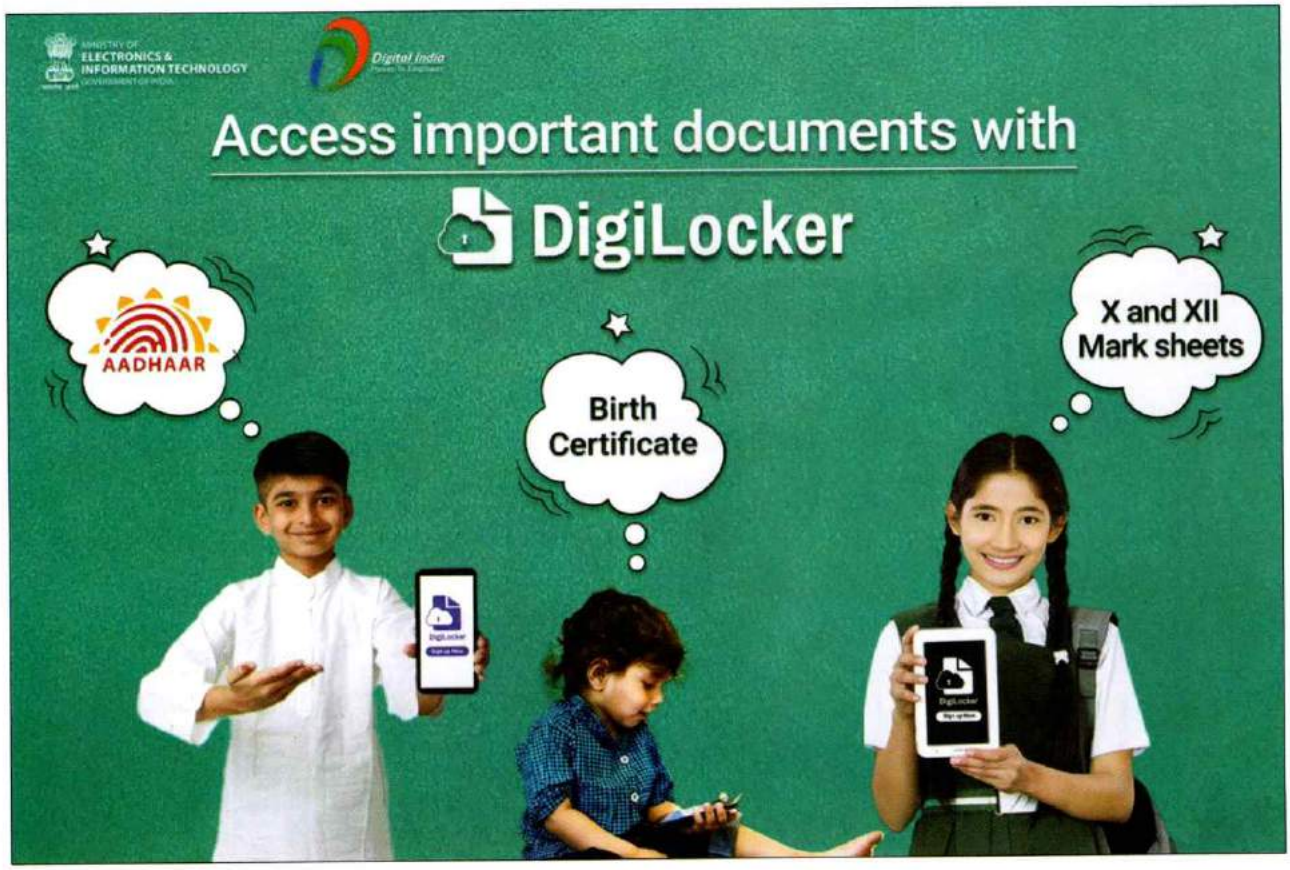


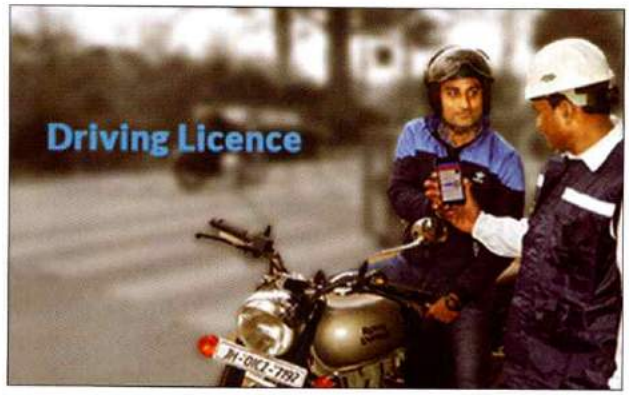
delivering government services to the people. India is the best candidate for a successful implementation of M-Governance because of the phenomenal growth of a nation-wide mobile-eco system on one hand, and the challenges faced by the E-governance mechanism on the other. Low PC penetration across the country, challenges related with broadband Internet connectivity, limitations of physical infrastructure (including constant power supply) and a large rural population are some of them. However, things may change if we get a little innovative, and leverage the internet-connected mobile devices as an alternative to Internet-connected PCs and kiosks. This is exactly what makes M-Governance so important for India.

Infrastructure at Service

While we will continue to work to strengthen our conventional infrastructure, nothing on earth stops us from utilising the excellent mesh of mobile networks and devices that the country already has in place, for the purpose. As of August 2022, India had 1.17 billion telecom connections, of which 98 per cent were mobile phone connections, and an estimated 65 percent of these devices were smartphones, according to government and industry figures. The country has a tele-density of more than 85 per cent and has more than 82.5 crore Internet subscribers. These figures are music to the ears of our policy makers and planners since they reflect the existence of a robust and dependable mobile and Internet infrastructure in the country. A vast digital infrastructure is ready to be explored and utilised.

To deliver government services over digital devices, we need good mobile download speed as well and presently the median speed on our mobile devices is around 13.5 megabits per second (Mbps). With the launch of 5G, we are looking at significant improvements on this front as well. The cost of internet connectivity has come down to levels affordable for the commonest man. On top of it all, we already have a strong country-wide telecom infrastructure, including in the rural India. The leadership of the country recognises its significance.

In year 2015, within months of assuming office during his first term as the Prime Minister, Shri Narendra Modi had underlined the importance of M-Governance, jokingly clarifying that it is not about 'Modi Governance' but 'Mobile Governance'. During



his address at the 18th National Conference on e-Governance, he said that in order 'to successfully implement e-governance, the country must think about 'mobiles first' and give importance to mobile governance. Addressing the government and industry, he said: "I urge you to explore ways to provide as many services as possible through mobiles. Let us bring the world into our mobile phones!" After seven years since he delivered his speech, the country has made significant progress in putting an effective M-Governance structure in place.

Shining Examples of Success

There are clear advantages of M-Governance including cost savings, proficiency, transformation/ modernisation of public sector organisations, added convenience and flexibility, better services to the citizens and easy interaction. There are four major M-Governance models, namely:

1. G2C (Government to Citizens): The government interacts with citizens and vise versa
2. G2E (Government to Employees): The government provides information and services to the employees
3. G2G (Government to Government): Electronic sharing of data among various constituents of the government
4. G2B (Government to Business): Making government systems more transparent and accessible to businesses

In many sectors and domains including education and agriculture, performance and effectiveness of existing services may be improved by the use of M-Governance. We are already witnessing a quite revolution taking place in India in terms of making government services easily accessible.

I would like to share a personal example here. Recently, while I was scheduled to travel to New Delhi from Kolkata, I was stopped by a policeman at the entrance of the Netaji Subhas Chandra Bose International Airport, who said the personal ID I was carrying (my driving license) had already expired. I was not in posession of any other ID in its original form at the time though I had PDF copies of my Aadhaar card and voter's card stored on my mobile phone. The policeman refused to accept them and rightly so because they expected to validate a passenger's identity by examining a valid, original proof of identity. At this, I downloaded the Digi Locker app and was happy to find therein a copy of my Aadhaar card which was happily accepted by the policeman. So, a perceivable change can be witnessed and experienced in accessing government services today, thanks to M-Governance.

Some Incredible Services and Apps Provided by the Government Over Mobile Phones

- AarogyaSetu App
- DigiLocker App
- ePathshala App
- GST Rate Finder App
- Indian Police at Your Call App
- mAadhaar App
- MADAD App
- mParivahan App
- mPassport Seva App
- MyGov App
- PMO India App

I will discuss a couple more in the next few paragraphs.

'Mobile First' and Digital India

Mobile-Governance and E-Governance are not different things from different worlds but they originate from the same source, which is the government's vision to make services accessible to its citizens. M-Governance is not independent from E-Governance, but it's only a component, subset or sub-domain of E-Governance. Primary objective of M-Governance is to help deliver personalised

and localised information and services anywhere, anytime, using different kinds of wireless and mobile technologies. The government stresses on the "One Web" approach, which means making, as far as possible, the same information and services available to users, irrespective of the device or the browser they are using. This implies that all Government websites should be compliant with mobile devices to enable users of such devices to access the same information and services (to the extent possible) as available, say, over the internet through computers.

At a time when responsive design has almost become a standard, technology has been able to address issues related with differences in form-factors, screen sizes, content delivery modes (even sound is used to deliver content through some digital devices today), internet speeds and even skill-levels of users. Mobile devices have become so powerful that they can be used to carry out a majority of activities we have traditionally been using PCs for. Until a decade ago, it was felt that these small devices cannot handle the task of transferring large amounts of information, especially complex forms of information. However, the new devices are packed with enough computing power and software prowess to serve as a competent conduit for a majority of information and services. In addition to this, they are convenient to use and are almost always available. Things will continue to get even better on this front.

Mobile devices have an important role in the government's vision for Digital India as

well. Among the nine pillars of the Digital India programme, aimed at transforming India into a digitally empowered society and a knowledge economy, is e-Kranti which focuses on transforming E-Governance services. This has a clear connection with M-Governance as the government is targeting technologies such as the Cloud and mobile platform for effective implementation of e-Kranti. The key principles of e-Kranti include Mobile First, meaning all applications are designed/ redesigned to enable delivery of services through mobile. Fintech is a fantastic example of how this can be done.

Fintech Revolution and M-Governance

The country has made impressive progress in use of mobile technologies, especially in the government departments such as agriculture, health care, financial services, retail trading, utilities, communications, manufacturing, transportation and services. As mentioned earlier, fintech has seen exponential growth in the country thanks to the delivery of financial services over mobile devices. The government rolled out Unified Payments Interface (UPI) in April 2016 and within six years of its launch it has become a phenomenal success. Mobile devices have played a decisive role here. For reference, the Unified Payments Interface is an instant real-time payment system developed by the National Payments Corporation of India. The interface facilitates inter-bank peer-to-peer and person-to-merchant transactions. It is used on mobile devices to instantly transfer funds between two bank accounts.

Not just the government sector and banks but many players in the IT industry including a few startups have taken advantage of the same to offer their own, customized services which are mostly delivered through the mobile devices. Notable among these are PhonePe, Paytm, RazorPay, MobiKwik, Google pay, Amazon Pay, Bajaj FinServe, CRED, Uber and even WhatsApp. This has virtually revolutionised the entire banking and financial services industry in India.

RBI has recently come up with 'UPI for feature phones' which is an important addition to the existing services and is bound to help users who have less advanced mobile phones or slow internet connections. One no longer needs to essentially have a smartphone and an internet connection to carry out financial transactions over mobile devices. Using the new service, the feature phone users will now be able to undertake a host of transactions, such as payments to friends and family, payment of utility bills, recharging of vehicle FAST Tags, payment of mobile bills, and checking their account balances.

The Framework and the Master Application

About a decade back, the Ministry of Electronics and Information Technology had developed and notified the framework of Mobile Governance. This was followed by the launch of 'Mobile Seva' which provides an integrated platform for delivery of government services to citizen over mobile devices using SMS, USSD, IVRS, CBS, LBS or mobile applications installed on the mobile phones.

For its organised, well-structured and effective implementation, the Mobile Services Delivery Gateway (MSDG) was launched to enable delivery of public services over mobile devices. The Gateway provided a system to deliver services through various mobile based channels, such as Short Message Service (SMS), Unstructured Supplementary Service Data (USSD), Interactive Voice Response System (IVRS), Cell Broadcasting Services (CBS), Location Based Services (LBS), Mobile Payment Services and mobile applications. The Gateway is constantly evolving and will continue to add new channels and functionalities in future.

While we have explored a few successful examples above, any discussion on M-Governance

in India cannot be complete without the Umang initiative which represents a far expansive and far-sighted vision of the government of India. According to the Ministry of Electronics and IT, the UMANG (Unified Mobile Application for New-Age Governance) is one of the key initiatives under the Digital India program to develop a common, unified platform and mobile app to facilitate a single point of access to all government services. It is envisaged to act as a master application, which will integrate major government services from various sectors such Agriculture, Education, Health and Housing among others. The application will enable users to access e-Government services from the central Government, the State Governments, local bodies and their agencies.

UMANG is conceptualised to bring governance on the fingertips of individuals through 'mobile first' strategy. This multi-lingual app is developed and operated by National e-Governance Division (NeGD) of the Ministry of Electronics and Information Technology (MeitY) to fast-track Mobile Governance in India. Its primary aim is to abridge inconvenience faced by users in managing multiple mobile apps and facilitate a one-stop-solution to avail varied government services. Thus, downloading one mobile app will aid convergence of various efforts, carried out separately, to reach out to the individuals via mobile phones. This will greatly simplify the access to government services and take us towards a new era of M-Governance in India.

Challenges to Address

While we have made steady progress in our journey towards a successful and effective implementation and availability of M-Governance eco-system in India, we still have challenges which need to be addressed in order to make India realise its full potential. A large number of independently working applications and services is one such challenge. A common Indian citizen, who has limited understanding of digital technologies, finds it difficult to install, manage and access a significant number of applications to carry out a variety of tasks and access services from different stakeholders. The UMANG approach is praiseworthy and welcome from this standpoint. We can take better advantage of technology if it is available in a simpler form, especially if it is meant to reach out to every household including in rural India.

Another important challenge is the limited awareness and readiness and lack of necessary skills among the common users to access these services through a mobile device. Many of them rather prefer to visit government service delivery kiosks where they are helped by others. Low levels of digital literacy too is to blame for this. The government often runs awareness campaigns to encourage citizens to develop digital skills and enhance their understanding of the internet and communication technologies (ICTs) and things will continue to get better with the passage of time. Access to good smartphones is still a luxury to many and it will take time before every household has access to one. The government's efforts have already resulted in a host of smartphone manufacturing companies making base in India. Hopefully, India-made, cost-effective smartphones will help address this gap in some time.

India is a country with incredible diversity and we cannot imagine India without its vibrant local languages. These languages are an important factor from M-Governance perspective. While many of our services are available in multiple Indian languages (and English) we will need to make the entire M-Governance eco-system linguistically inclusive and accessible, to ensure maximum impact.

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e-Governance in Health Services Delivery

Urvashi Prasad

Over the last few years, India has announced several policy measures to usher in a new era of technology-enabled healthcare delivery. It is noteworthy that India's health sector is characterised by a multiplicity of providers. In fact, it is estimated that nearly 98 percent of the country's health facilities employ 10 people or less. Technology can be a game-changer for governance and research. For instance, clean, structured and annotated data made available to AI researchers at the aggregate level can accelerate research efforts and catalyse breakthroughs in the treatment of diseases like tuberculosis and cancer.

e-Governance is the application of Information and Communication Technology to promote 'Simple, Moral, Accountable, Responsive and Transparent (SMART)' governance according to the Ministry of Electronics and Information Technology, Government of India. The Government has launched various health related online services. For instance, the National Health Portal serves as a single point of access to health-related information for citizens. Similarly, the e-Hospital Management System tracks the delivery of patient care and diagnostic services. The Mera Aspataal initiative captures patient feedback for the services received by them in hospitals. Several mobile applications have also been launched. For instance, the TB Missed Call initiative is a mobile service for providing treatment and counselling to TB patients. Through the Kilkari application, the Government delivers free messages every week pertaining to pregnancy and child care between the second trimester of pregnancy until the child is one year old. Further, the M-Cessation

application encourages people to quit tobacco use.

Numerous platforms have also been launched by the Government for tracking service delivery. These include the Nikshay platform for tracking TB patients, the Mother and Child Tracking System for monitoring pregnant women and children under five years of age and the Ayushman Bharat – Health and Wellness Centre portal for overseeing the delivery of comprehensive primary healthcare services through Health and Wellness centres across the country.

Over the last few years, India has announced several policy measures to usher in a new era of technology-enabled healthcare delivery. National Health Policy, 2017 envisions a digital health ecosystem and recognises the integral role of technologies such as eHealth, mHealth, Internet of Things (IoT), wearables and cloud, among others, in the delivery of health services. In 2018, NITI Aayog released a proposal on National Health Stack with the objective of providing a framework for the country's futuristic digital health system.

In his address to the nation on India's 74th Independence Day, the Prime Minister had announced the launch of the National Digital Health Mission (NDHM). The mission aims to create a management mechanism to process digital health data and facilitate its seamless exchange; develop registries of public and private facilities, health service providers, laboratories and pharmacies; and to support clinical decision-making as well as offer services like telemedicine. The NDHM has the potential to make the health system more evidence based, transparent and efficient.

It is noteworthy that India's health sector is characterised by a multiplicity of providers. In fact, it is estimated that nearly 98 percent of the country's health facilities employ 10 people or less. There are various levels of care in the public sector, including primary health centres, community health centres, health and wellness centres, district hospitals and super specialty tertiary centres, among others. Similarly, several types of establishments exist in the private sector, including nursing homes, clinics, corporate hospitals, informal providers and chemists.

Despite being information-intensive, India's health sector has hitherto remained somewhat impermeable to digitisation. While considerable progress has been made in leveraging technology for developing customised information systems, these systems do not interact with each other, leading to the formation of multiple disconnected clusters of healthcare information. Moreover, one of the consequences of health provider fragmentation is that patient records are scattered across disparate manual or IT systems with limited or no possibility of interoperability. This is a direct consequence of the lack of shared standards for health records as well as the absence of a common healthcare taxonomy and consistent design principles.

Operationalising a single health ID and profile for every citizen, as envisaged under the NDHM, is an important reform for optimising health information systems. This unique and easy-to remember health ID can carry details of their health and treatment history. The latter can minimize the need for repeat investigations and facilitate more informed decision-making by doctors. Digital health records can also enable data analytics at the population level to identify treatments which are likely to evoke a better response from patients.

From a policy perspective, a system-wide electronic health profile can enable monitoring of diseases and efficient analysis of patient data, thus enabling quicker decision-making. It can also facilitate geographical, demographical and risk-factor based monitoring of health, followed by the design of targeted interventions. For instance, in the fight against COVID-19, if we had access to comprehensive digital health profiles of a substantial part of the population, it could give us a head start in identifying people with comorbidities and implementing preventive health interventions expeditiously. Further, an effective IT infrastructure linking public and private healthcare establishments, through information exchanges, will ensure data consistency across systems, eliminate duplication and minimize the reporting burden.

Patients will not only be able to share their health profiles with providers for treatment and monitoring purposes, but also access accurate information about the credentials and pricing of services offered by various health facilities, providers and diagnostic laboratories. Inclusion of telemedicine in the NDHM's digital suite will connect patients with doctors and specialists for consultations in a broad range of areas.

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For researchers, access to this health data goldmine can facilitate the evaluation of programme and policy effectiveness as well as accelerate innovation. The use of technologies like Artificial Intelligence (AI) for anonymised, aggregated health data can pave the way for predicting the likelihood of a patient falling sick. Of course, the success of the NDHM will depend greatly on ensuring that its product offering is understood by and useful for all stakeholders. There is potential for a vast amount of health data to be generated once the mission is fully operationalised, and it is vital that there is clarity amongst stakeholders with respect to why the data is being collected, for whom and what purpose it will serve. Knowledge and skills of healthcare staff at every level will need to be upgraded to equip them to function effectively within the new digital health ecosystem.

Much like human resources, digital health too is a critical enabler for accelerating our progress towards universal health coverage. This is especially true because we find ourselves in a highly paradoxical situation. While on the one hand, India is one of the most data-rich countries in the world, fragmentation, duplication, inconsistency and — perhaps most crucially — the absence of a systemic approach has hitherto limited data availability for policymakers, researchers, providers and patients alike. Given this context, the launch of the highly ambitious NDHM has come not a moment too soon. It is anticipated that over the next 10 years, an incremental economic value of over USD 200 Billion can be unlocked for the health sector through rigorous implementation of the NDHM. Three major shifts can enable this: greater demand for health services, especially seeking early care for NCDs; improvement in quality of care enabled by digital health (shift from volume-based to value-based healthcare) and streamlining of multi-stakeholder processes and interactions through use of an integrated health data system. All of these elements together will lead to greater efficiency, cost savings and ultimately improve health outcomes and productivity.

The World Bank estimates that India will require 2 million doctors by 2030. While efforts are being made to increase the number of doctors, it is equally critical to enhance their productivity and quality of service delivery. One of the ways in which technology can enable this is by deploying voice- or chat-based bots in hospitals for creating a summary of the patient's symptoms and medical history prior toconsultation with a doctor. Bots can also be trained on infectious disease triaging protocols to segregate patients appropriately within a hospital and minimise infection spread. AI-based decision support systems can significantly aid doctors in carrying out many of their clinical tasks. This would be especially helpful in far flung and underserved areas. Technology can also facilitate the remote management of vulnerable patients, monitoring of chronic conditions like diabetes as well as proactive identification of health problems. As part of remote patient monitoring, mobile medical devices can be used to track vitals. This will not only enable doctors to analyse data in real-time but will also be cost-effective as well as beneficial for treating chronic ailments and providing geriatric care.

Another important role that technology can play in the health sector is to improve operational efficiencies by strengthening supply chain performance and enabling skilling of health professionals at scale. The medical supply chain, for instance, involves multiple stakeholders including manufacturers, drug purchasing authorities at the state level, state drug stores, primary health centres, community health centres and sub centres, among others. Currently, there are drug stock outs in several places which in turn results in many patients going un-served. Conversely, in other places, there is an excess of medicines. Sensors enabled by IoT can help optimise supply chain management and performance by capturing data related to drugs and patient adherence in real-time. For skilling and up-skilling health professionals as well as delivering continuing medical education, digital education platforms can enable dissemination of information pertaining to the latest advancements in the field along with training modules for specific diseases and disaster management.

Finally, technology can be a game-changer for governance and research. For instance, clean, structured and annotated data made available to AI researchers at the aggregate level can accelerate research efforts and catalyse breakthroughs in the treatment of diseases like tuberculosis and cancer. Integration of various health information systems with standardized data collection formats, interoperability features and unique identifiers for

patients and providers can minimise duplication of efforts, data redundancy as well as allow for more targeted planning of programmes, optimisation of resources and monitoring of outcomes. The health sector is information intensive. While technology is not a magic bullet solution, its adoption at scale can certainly accelerate the transition of India's health sector from data rich to data intelligent, ultimately improving equity, access, efficiency and quality of health service delivery. To ensure successful deployment of technology-driven initiatives in health, due attention needs to be paid to informed consent, data privacy and security, digital infrastructure as well as training and buy-in from stakeholders at all levels of the implementation chain.

With social distancing as the new norm and hospital visits becoming riskier; telemedicine solutions are fast emerging as a convenient alternative. In 2020, many hospitals, individuals, corporates, and e-pharmacies in India adopted telehealth. A convenient way to evaluate and treat a patient without being exposed to infection, the telemedicine segment is expected to significantly rise in the market post the lockdown period as well.

The market size for telemedicine in India was around USD 830 Million in 2019. It is projected to increase to USD 5.5 Billion by 2025 growing at a CAGR of 31 percent during 2020-25.

The Telemedicine Practice Guidelines were released jointly by Ministry of Health and Family Welfare and NITI Aayog in March 2020 to ensure that access to medical advice does not become challenging due to social distancing norms enforced following the COVID-19 outbreak. The guidelines provide norms and protocols relating to the physician-patient relationship; issues of liability and negligence; evaluation, management and treatment; informed consent; continuity of care; referrals for emergency services; medical records; privacy and security of the patient records and exchange of information; prescribing; and reimbursement; health education and counselling. They also provide information on various aspects of telemedicine including information pertaining to technology platforms and tools available to medical practitioners for integrating these technologies to deliver health care.

The guidelines, coupled with the Government's tele-consultation services, e-Sanjeevani and e-Sanjeevani OPD, have leveraged information communication technologies to enable diagnosis, treatment and management of diseases. By early December 2020, over 1 million tele-consultations had taken place through e-Sanjeevani across 550 districts in India. According to data released by Practo, a doctor consultation application, over 50 million Indians accessed healthcare through telemedicine during a three-month lockdown period in 2020, of which 80 percent were first-time users.

A coalition of over 100 healthcare specialists in the private sector came together to launch Swasth, a first-of-its-kind, made in India telemedicine application which aims to deliver equitable and affordable healthcare to all Indians, by cutting across geographical and income barriers. It is an open-source platform built with inter-operability principles that comply with the Government's National Digital Health Mission. The application facilitates seamless, remote interaction between registered medical practitioners and patients through multiple modes of video and telephony. It also deploys Artificial Intelligence based triaging to determine the care required, culminating in a digitally signed prescription and treatment advice. Along with free consultations, Swasth also provides services like home quarantine assistance; access to diagnostic laboratories and pharmacies as well as hospital bed discovery and booking assistance at a subsidised cost.

Inclusion of telemedicine in the NDHM's digital suite will further help connect patients with doctors and specialists. A low presence of doctors in semi-urban, rural and remote areas has resulted in limited access to healthcare facilities for large numbers of people. Telemedicine and e-Health are considered to be potential solutions for addressing this lack of access, on account of the extensive smartphone penetration in India and improving mobile connectivity. A timely 5-minute consultation enabled by telemedicine can save lives and avoid huge downstream costs.

While most of the services availed during that period were related to COVID-19, the scope of telemedicine services is being expanded to cover a range of other health problems in the post-COVID-19 era. Efforts are also being made to extend the coverage of telemedicine to rural and remote areas, beyond the urban centres.

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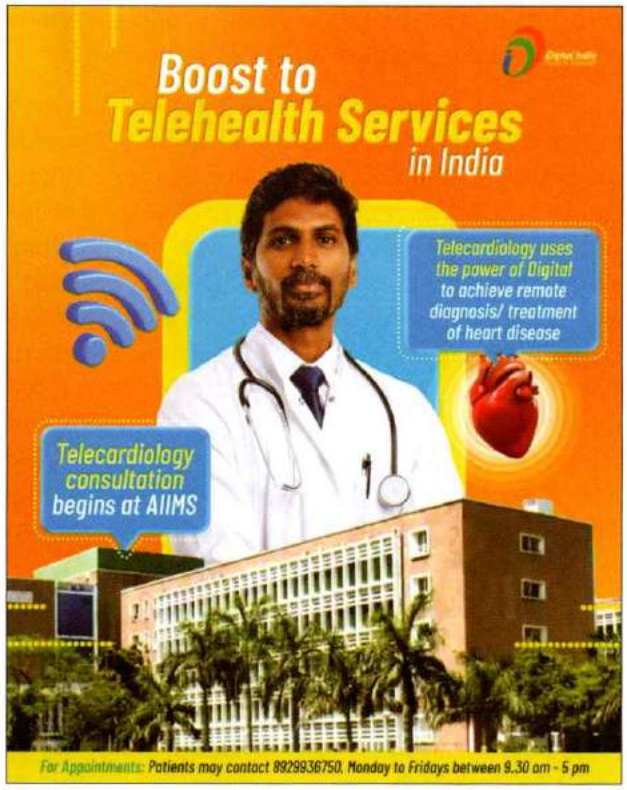
Tele-radiology is also an emerging area with several foreign hospitals now active in this space. These hospitals consult Indian experts for providing opinions to patients. Many hospitals have adopted the Public-Private Partnership (PPP) route to render services through telemedicine, especially during the COVID-19 pandemic. A developed telemedicine market also has potential for future export of healthcare services. Affordable and quality healthcare can be enabled by Artificial Intelligence, wearables and other mobile technologies as well as Internet of Things. Digital health can especially improve outcomes for people suffering from multiple co-morbid conditions because of the possibility of remote monitoring of health status and delivery of virtual care services through smartphones and artificial data solutions. This, in fact, could prove to be the next major booming industry in India.

Prior to COVID-19, the health-tech industry was primarily focused on developing wearable gadgets, diagnostics and medicine delivery solutions; facilitating early diagnosis of genetic conditions; treating lifestyle-linked problems like stress and anxiety through remote therapy as well as post-procedure pain alleviation. Post the pandemic, new opportunities are likely to emerge in the health-tech space, including development of tools for facilitating emergency care, and improvements to medical infrastructure through technology-based optimisation. For instance, the scope of wearable devices could be expanded to track health conditions. Patient-facing mobile health applications could also be developed, along with enabling greater integration of AI, robots, and blockchain technologies e.g., surgical robots, sensors, remote diagnostics, electronic records and monitoring systems. It is envisaged that the fundamental approach to medicine could change drastically in the years to come with the entire human biology getting represented as data and patterns. Doctors will increasingly be assisted by machine intelligence and eventually, a large number of cases could possibly be handled largely by machines, with only more complicated cases requiring doctor consultations.

Given that India has a shortage of qualified doctors, AI Doctor could be a long-term solution, especially in rural and remote areas. A leading NATHEALTH provider engaged with a State Government in a PPP project covering 182 Electronic



Urban Primary Healthcare centres (E-UPHCs). With a footfall of 12,000 on a daily basis, the program has touched 5.2 million lives over two years and has brought quality healthcare within the reach of all citizens, by significantly leveraging technology. This model can be replicated in other rural areas with private players. E-ICUs can also be set up in semi-urban and rural areas and connected to a central monitoring hub.

To facilitate effective contact tracing, Government of India launched the AarogyaSetu application which allows people to assess their risk of contracting the infection based on their location and interactions with others. The CoWIN application is a repository of COVID vaccination data - every citizen getting a COVID vaccine shot feeds their name and cell number as well as their Aadhaar number into the system, which then captures and stores the data. That the citizen has taken their second dose too is also added to the database. Therefore, this database contains information that is verifiable. This digital system has enabled the Government to significantly scale up the vaccination drive - clocking a record 22 million plus vaccine doses in a single day, 10 million plus doses on several days, and reaching the 1 billion doses landmark. The digital system also allows people to download the vaccine completion certificate and

carry it with them and show it to anybody when they travel, including authorities in India and overseas.

One of the most significant trends observed during the pandemic is that care is moving towards patients in Tier-2 and Tier-3 cities. Earlier patients from these cities would come to Tier-I cities for treatment; with COVID-19 that was not possible. What is happening now is that Tier-2 and Tier-3 cities are building capacity to treat patients with diagnosis being done by experts in Tier-1 cities. Much of this is happening through the internet and often manifests itself in the form of e-consultations and telemedicine. This is the concept of connected care where eICUs, neonatal ICUs and Remote Operating Centres can be monitored by experts who are not present in the same geographic location.

Another trend being observed on account of digitisation during COVID-19 is online training and education of medical professionals. eLearning and the use of simulators is far more prevalent and acceptable nowadays. New technologies in simulation like haptic feedback are enabling realistic online training. With haptic feedback, trainees can get an experience of touch to realistically simulate the jerks and vibrations which would otherwise be experienced by a surgeon during surgery.

What is clear from these trends is that we are moving towards the digital transformation of healthcare. We are looking at a future where connected care becomes the norm and patients are no longer constrained by geography when it comes to accessing care. In such a scenario, doctors and hospitals will be well equipped to deliver accurate diagnosis and treatment to patients using the latest technologies.

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Citizen Participation and Rural Well-being

Dr. Amiya Kumar Mohapatra
Dr. Deepankar Chakrabarti

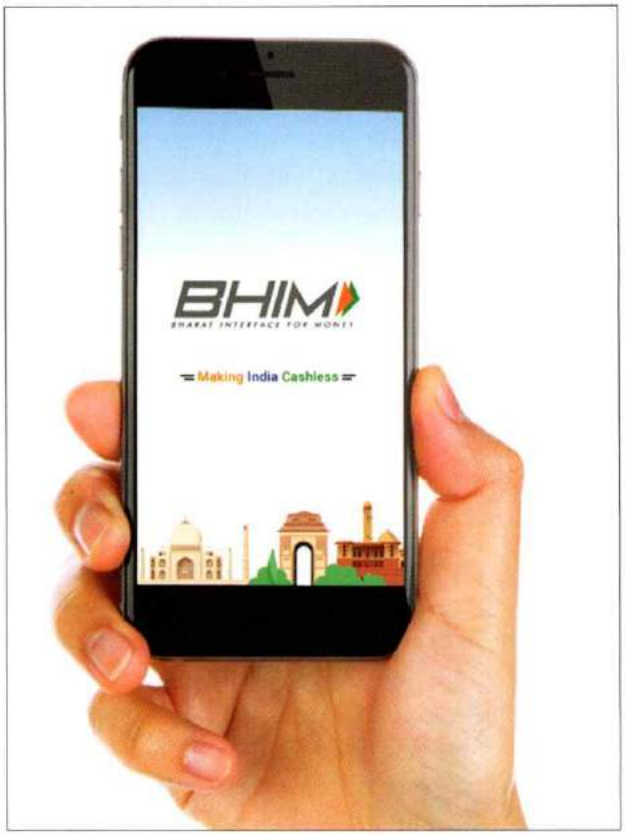
Bringing individuals, institutions, corporates, and governments together is the key mandate of inclusiveness and sets the agenda for e-governance. The collaborative approach of policy-making emphasises more on citizen participation and ownership of actions. This will surely reduce socio-economic stress, minimize deprivation, and help overall development.

Enlargement of people's choices and capabilities is the cornerstone of all kinds of governance and a prerequisite for a nation's overall growth and inclusive development. India is the world's largest democracy; its democratic freedom and expression lie with citizen participation in every sphere of public policy-making. The building blocks of good governance are citizen participation and civic engagement, and e-governance is the critical component of good governance. Regarding rural development, it is essential to focus on sustainable governance, considering its contribution to national income (nearly 50 percent) and about 70 percent workforce residing in rural areas. The rural sector is more of an agri-based economy and contributes to the rural livelihood; and hence it deserves better facilities, including health, education, drinking water, sanitation, housing, employment opportunities, and an overall better standard of living.

In this regard, the Government of India has taken various initiatives. More recent development focuses on governance using digital technology and ICT to contribute, catalyse, and energise rural development initiatives in meeting the needs of the rural development sector. Several digital initiatives have been taken, including digital-first and other ICT application services, to improve public service delivery through improved digital connectivity. The importance of 'good governance' got a considerable impetus due to the growing participation of NGOs/private sectors in providing public services, information and communications technology (ICT), and the internet, which connects people in real-time. A paradigm shift in the e-governance process and implementation brings much-needed improvements in the governance framework.

e-Governance and Rural Economy

e-Governance is a mechanism through which public services are made available and accessible to the common man at their doorstep at ease, through common services delivery outlets. It further ensures services' efficiency, transparency, and reliability at affordable prices. e-Governance is ICT-friendly which establishes connections between providers and users of government services. In the changing governance landscape and digitalisation, the Government of India implemented National e-Governance Plan in 2006, especially for the rural areas by providing services including birth and death certificates, land registration, employment opportunities, market-related information, farming, and veterinary services, education and matrimonial along with a special effort to capture the information about the people below the poverty line.



It represents a paradigm shift in the provision of essential public services, moving from a human to a technological interface. Some of the popular of initiatives include e-Panchayat, e-Gram, and Priasoft; furthermore, an initiative like e-District added significant value to the governance process. It is further supported by other initiatives which are contributing significantly in the e-governance process: e-Choupal, e-Shakti, TARA haat, e-Health, e-Education, e-Sanjeevani, e-Hospital, e-Pathshala, e-RaktKosh, Bhoomi, Gyandoot, e-Suvidha, e-NAM, e-Sewa, etc.

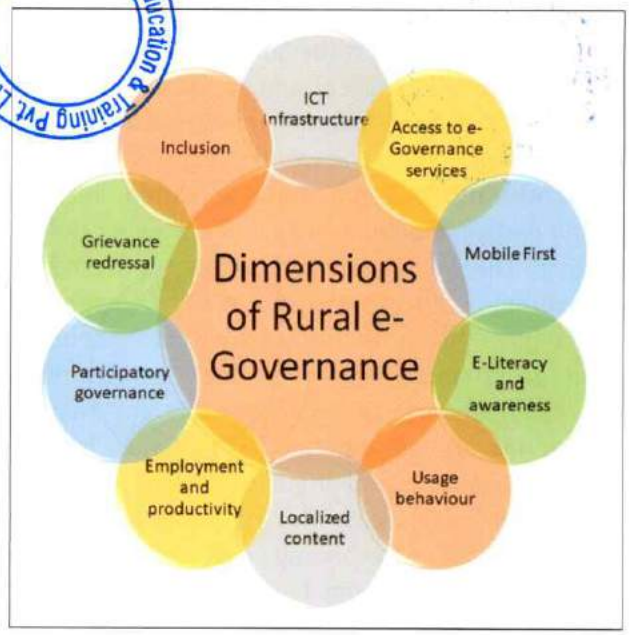
The government of India has already launched an innovative platform, 'MyGov', to ensure citizens' engagement in the decision-making process; citizens can share their views/opinions directly with the Prime Minister of India. The primary focus of these initiatives is to contribute to '*Surajya*' and encourage citizens to '*discuss and do*'. It includes various projects: Clean Ganga, Green India, Job Creation, Girl Child Education, Skill Deployment, Digital India, and Swachh Bharat, through which it is expected to bring qualitative changes in policy-making through people's participation.

Despite all such efforts and initiatives, the success was not up to the expectations, sometimes, it failed to meet the needs and expectations of rural citizens, and it was found-out that a few of the ICT-based initiatives are not only unsuccessful but have undesirable outcomes. It is found that many projects are facing difficulties at the time of implementation. Although India has achieved phenomenal growth in the last two decades in implementing e-governance initiatives/ projects, its success depends upon citizen participation and their involvement during the formulation and implementation of public policy. e-Governance and its success rest on improving the quality of public services and delivery and that needs to be more inclusive in terms of citizen participation and engagement.

Dimensions of Rural e-Governance

Rural e-governance is the core of the socio-economic development of the rural economy and so also the Indian economy. The effectiveness and impact of rural e-governance is measured through various dimensions. The various dimensions of e-governance in the rural sector are: ICT infrastructure, access to e-government services, mobile first, e-literacy, usage behaviour, localised content, employment and productivity, participatory governance, grievance redressal, and inclusion. Precisely speaking, the role and importance of 'participatory governance and citizen participation' played a vital role in the e-governance dimensions mapping process. Over all, these dimensions are required to be strengthened and rebooted to get the best outcome and optimisation of public policy, designed for developing the rural economy.

Elite Academy for Education & Training Pvt. Ltd. Delhi



Source: National Informatics Centre, GoI.

e-Governance and Citizen Participation

The success of any governance is based on citizen participation and engagement. India is a country of diversity in language, culture, employment opportunities, and livelihood patterns which vary from region to region and state to state. So, designing any program should be able to address all the issues/needs and expectations of people in those areas. Further, to enhance e-governance projects' efficiency, understanding of social-cultural factors is essential, along with people's expectations. To design a suitable governance initiative in rural areas, diverse needs and people's capabilities should be considered during the policy formulation. Hence, there is a need to design customised e-governance initiatives which are the need of the hour. Factors that affect customised e-governance are: the needs and expectations of people, socio-economic dynamics, contextual reality, ease and simplified design and structure of the policy, feedback mechanism, outcome analysis, etc.

In the process of reform and formulation of governance, citizen involvement and their feedback are essential. The spirit of *'we the people of India'* embedded in the Preamble, Fundamental Rights and Duties, and the Directive Principles of State Policy envisages empowering democratic participation and ownership of citizens. The ultimate process is to empower people by making them part of citizen governance; to translate the mandate of sovereignty into reality and to make it part of the people and their life. Citizen governance and civic engagement are two important pillars in strengthening valued-citizen participation. Citizen governance is a valued-based proposition, helps in removing gaps and differences between governments and citizens. On the other hand, civic engagement processes in which active participation and collaboration among individuals, institutions, communities, and governments are essential and helps in shaping public policy. It opens-up the windows for citizens to participate and take an interest in public affairs and public policy meetings.

Citizen Participation and Governance

Citizen participation is essential in all public policy-making, especially in e-governance, designed for rural areas. Citizen participation has a significant role in shaping and transforming *'governance into good governance'*, which is the need of the hour.

a) **Citizen as a customer:** Citizen is considered as a valued customer as public services are meant for public use and consumption. Hence as a consumer, citizen participation and their feedback is very essential in designing public services and ensuring quality service delivery at an affordable cost.

b) **Citizen as an owner:** In a democratic set-up, citizens are the real owners of public services and even they are considered as investors in public services as they contribute through taxes, etc. As an owner, citizen involvement is essential, and he/she must seek information about public services and delivery.

c) **Citizen as a co-producer:** Citizens are often asked to play the role of co-producer in providing public services. Citizens are expected to act as a partner; hence their involvement and participation will improve the quality and timely delivery of services.

d) **Citizen as a quality evaluator:** Being the co-producer and consumer, the citizen can become the evaluator of the public services quality and their delivery effectiveness. Thereby he/she can contribute the government in designing better e-governance facilities and suitable public policy.

Citizen Participation and Framework

A customised framework should be carefully thought-out and planned to ensure meaningful engagement with citizens. All stakeholders must be able to voice their contributions and concerns, and a suitable feedback mechanism must be in place to close the deficiencies and leakages. The key components needed to enable successful and meaningful citizen involvement in e-governance projects are: 'need analysis, degree of engagement,

creation of engagement team, engagement activities, analysis of outcome, feedback analysis and institutionalisation of engagement'.

Besides, citizen participation can be viewed from three different perspectives; firstly, at what stages there is a need for participation; secondly, at what levels and thirdly, what are the tools through which participation can become more meaningful and effective (*Table 1*).

Table 1: Nature of Citizen Participation & Engagement

Stages	Levels	Tools
Issue/Problem Identification	Resistance	Citizen Panels
Analysis of Problem	Opposition	Community Participation
Policy Formulation	Information	Forums
Policy Design	Consultation	Public Hearings
Implementation	Consensus-building	Community Outreach
Evaluation	Partnership	Citizen Committees
Feedback and Follow-up	Self-management	Joint Projects

Source: Compiled by authors, from Docs of Centre for Good Governance.

To appreciate the value and nature of participation in the governance process, understanding the 'propose and techniques' of people's participation is vital. Table 2 presents a quick overview of the public participation spectrum.

Table 2: Citizen Participation & Engagement Spectrum

No.	Purposes	Tools & Techniques
1	Inform	Mass Media, Print, TV, Radio, Citizen Charters, Bulletins Boards, Newsletters, Social Media, Websites & Portals, and Face-to-Face Meetings
2	Consult	Focus Groups, Surveys, Expert Panels, Delphi Methods, Open Meetings, Debate & Discussion
3	Involve	Citizen Outreach, Workshops, Qualitative Interview
4	Collaborate	Social Networking, Crowd Sourcing, Participatory Planning
5	Empower	Stakeholder's Dialogue, Participatory Learning & Actions, Matrix Scoring Ranking

Source: Compiled by authors, from IAP 2 (2007).

Citizen participation in public policy will surely improve the quality of services and delivery mechanism and will help in maximising the governance outcome. It is evident from various studies and extant literature on public policy that citizen participation and engagement foster maximum governance. Citizen participation ranges from just information receiving/sharing to being highly responsible in managing the process with accountability. The higher is the citizen participation, the better is the governance and its effect on the socio-economic outcome and well-being.

Benefits of Citizen Participation

e-Governance is the need of the hour and that helps in providing the basic facilities to the rural sector at low-cost and with least time. The benefits of e-governance can be reached to the last mile with the help of people's participation and rural empowerment. Overall awareness, accountability and ownership of actions, and a sense of voluntarism among the citizens will strengthen the public policy process and will set the ground for good governance. Active participation in policy-making will open-up array of benefits:

- Citizen participation helps in the smooth formulation and implementation of public policy. It helps in transparency and makes citizens more accountable and responsible.
- Citizen participation in e-governance will enhance the projects' efficiency and efficacy.
- It develops a sense of belongingness and upholds ownership. Engaging the public in creating policy directly impact them is one method to assure accountability.
- Participation and contribution of various stakeholders, individuals, communities, political parties, and government agencies will reduce the conflicts and confusion and make it more coherent. Thereby, it will become more people-driven, participatory, and meaningful.
- It will lessen the political will-based e-governance and help in bringing more inclusiveness and positive outcomes.
- It will help in improving the political positioning of marginalised and vulnerable groups, those are often neglected or not taken into consideration.

- It will help in developing long-term sustainable e-governance and outcome-focused initiatives.
- It will help in community empowerment, leading to better awareness and superior monitoring.

Way Forward

e-Governance initiatives have been recognised to have a transformational effect on the digital landscape in providing public services. Their deliveries to the masses are especially effective in rural India. It remains the key enabler in the realisation of government mandate. Thereby helping ease the life and living standard of people and bridging the digital divide. It is expected that outcome of e-governance will be optimised through active citizen participation. The vision to transform India into a digitally empowered society and knowledge economy can be accomplished only through citizen participation and engagement. Citizen participation includes the participation of all types, including political, policy, and social participation. Bringing individuals, institutions, corporates, and governments together is the key mandate of inclusiveness and sets the agenda for e-governance. The collaborative approach of policy-making emphasises more on citizen participation and ownership of actions. This will surely reduce socio-economic stress, minimise deprivation, and help overall development. A variety of services can be delivered in rural areas with collaborations with all the stakeholders, with maximum citizen participation.

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New Age Technology

Harshit Mishra
Piyush Prakash

Governance is fundamental and technology is instrumental. There is a natural complementarity between good governance and technology. The Indian E-Governance evolution reflects the fact that good governance is not lost amidst the growing technological disruptions but instead has been strengthened by it. E-Kranti and Digital India have been instrumental in leveraging latest technologies such as blockchain, AI, Machine Learning which have improved public service delivery and made doing business in India much easier while making the government more accountable and transparent.

Massive digitisation and modern day data capture and analytics tools have empowered the governments across the globe with, hitherto, unprecedented and powerful insights to deliver high quality public services and manage them in real time. India has pole-vaulted herself to emerge as a torch-bearer in e-governance and technology has been instrumental in this journey. Be it the famous JAM (Jan Dhan-Aadhaar-Mobile) trinity or the Common Services Centres (CSCs) or e-file systems or real-time monitoring of schemes, the Indian e-governance paradigm is based on the solid foundations of good governance. As the Digital India program captures that e-governance is instrumental while good governance is fundamental, this spirit has been the backbone of the Indian technological transformation of governance. This article captures the foundations of good governance and what do they mean for e-governance with case studies in the field of education. The article also captures the evolution of e-governance in India, its transformation and the integration of new-age technologies in governance and the catalytic role being played by the Government of India.

Good Governance to E-Governance

As per the second Administrative Reforms Commission, good governance aims at providing an environment in which all citizens irrespective of class, caste and gender can develop to their full potential. In addition, good governance also aims at providing public services effectively, efficiently and equitably to the citizens. The 4 pillars on which the edifice of good governance rests, in essence are: a) Ethos (of service to the citizen), b) Ethics (honesty,

integrity and transparency), c) Equity (treating all citizens alike with empathy for the weaker sections), and d) Efficiency (speedy and effective delivery of service without harassment).

Source: Second ARC Fig. Attributes of Good Governance

Citizens are thus at the core of good governance. Essentially, the role of the government has been gravitating towards an enabler in line with the principle of minimum government and maximum governance. The Government of India has taken several efforts over the years to minimising the interface with the government and maximise the transparent, efficient, timely and accountable delivery of public services such as healthcare facilities, pensions, education, mid-day meals, rations, land records etc.

Technology in governance is a natural choice as it mimics nearly all the principles of good governance – it brings transparency, minimises interface between government and public, is unbiased and can accelerate service delivery while fixing accountability. The World Bank has been at the forefront of pushing the principles of good governance as well as e-governance. As perthe World Bank, "E-Government refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/ or cost reductions."

The above definition captures the rationale, means, scope and possible impact of e-governance on the society, businesses and the transformation in government operations.

Scope of E-Governance

The scope of the e-governance span the relationships between government-to-government agencies, government-to-business, government-to-citizen and government-to-employees as discussed below.

- **Government-to-Government (G2G) :** E-Governance aims to transform the practices within the government as well. Be it intra or inter ministries/department or central or state, information flow and decision making process have often found to be slow and marred with red-tapism. Such practices result in unfair practices and rent seeking attitude within the officials and are a major source of corruption. A simple e-governance solution of electronic files or popularly known as e-files has improved the efficiency in the system. Earlier, a pensioner used to wander from one department or officer to other but would not find a solution to her problem (something which was quite pervasive across public services and well captured in the satirical television show Office Office). E-file ensures that every movement of file is time-stamped and it also creates a log of delays and time taken to take decisions and hence is used by government officials to keep track of inefficiencies and malpractices within various departments. The system has also helped in faster information flows within the department and between various departments and thus pushing efficiency while creating an onus on each link of the department through the use of timestamps. Such small and incremental improvements has resulted in better working of government offices. Another example is that of an Aadhar linked biometric attendance which is linked to the salary and performance reports of employees and thus ensuring high professional standards within the employees. Various other innovations have been introduced to transform government practices and day-to-day operations.

E-Governance: Ease of Doing Business Case Study

In the World Bank's Doing Business Report of 2014 (DBR 2015), India stood at a grim 142nd position amongst 190 economies. In a short span of six years India ranked 63 in the World Bank's Doing Business Report 2020, a meteoric rise of 79 ranks from 142 in 2014. In addition to many regulatory reforms, lots of digital interfaces were also created to improve the experiences of businesses in doing business in India. Some of the reforms are:

- Introduction of SPICe+ and AGILE PRO form by Ministry of Corporate Affairs (MCA) saves time and effort required for a nascent Company Incorporation. This form combines various services like PAN/TAN/Director Identification Number/GSTN etc.
- Online Single Window System: An Online Single Window System for all construction permits - Online Building Permission System
- NoCs and other certificates are issued through Online Building Permission System
- All inspections of various agencies like Fire, Water, Sewerage are carried out jointly on the same day
- E-Courts Service Portal: Dedicated Commercial Courts have been established in Delhi and Mumbai dealing exclusively with commercial cases. Adoption of technology for case management by lawyers and judicial officers is leading tospeedier dispute resolution.

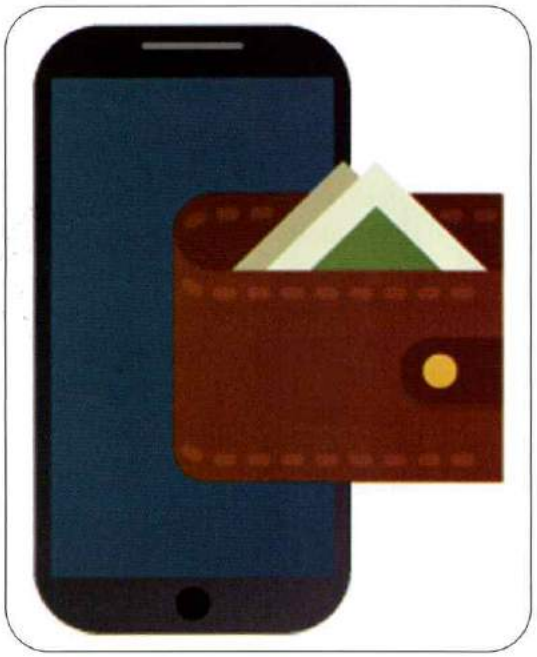
- **Government-to-Citizens (G2C)** : This is the most widely used e-governance interaction where the government has created an interface using technology between the government and citizens which enables the citizens to benefit from efficient delivery of a large range of public services. Social pension schemes, scholarships, benefits of pregnancy schemes, subsidy for gas cylinders, uniform money, textbook money etc are transferred directly into the accounts of the beneficiaries and thus eliminating any middle man. The JAM trinity has further strengthened the public service delivery with digital means.
- **Government to Employees (G2E)** : Government is by far the biggest employer and like any organisation, it has to interact with its employees on a regular basis. This interaction is a two-way process between the organisation and the employee. Use of ICT tools helps in making these interactions fast and efficient on the one hand and increase satisfaction levels of employees on the other.
- **Government to Business (G2B)** : Government has put many policies and check and balances for hassle free operations of businesses. From licence Raj to the policies of liberalisation, privatisation and globalisation, the government improved many processes and policies. But, the real change came with the IT boom. And, government implemented many technological solutions to ease the burden on businesses and allow them to thrive and add value to the economy and create jobs. But in the recent years the thrust on G2B has grown manifold and Indian has consistently improved its global rankings in 'Ease of Doing Business'. A major reason for such a transformation is e-governance.

Government Initiatives and Roadmap for e-Governance

The e-governance agenda of the government got momentum after the formulation of the National e-Governance Plan by the Government of India. The Government approved the National e-Governance Plan (NeGP), comprising of 27 Mission Mode Projects and 8 components, on May 18, 2006. In order to promote e-Governance in a holistic manner, various policy initiatives and projects have been undertaken to develop core and support infrastructure. The major core infrastructure components are State Data

Centres (SDCs), State Wide Area Networks (S.W.A.N), Common Services Centres (CSCs) and middleware gateways i.e National e-Governance Service Delivery Gateway (NSDG), State e-Governance Service Delivery Gateway (SSDG), and Mobile e-Governance Service Delivery Gateway (MSDG). The important support components include Core policies and guidelines on Security, HR, Citizen Engagement, Social Media as well as Standards related to Metadata, Interoperability, Enterprise Architecture, Information Security etc.

While these initiatives formed the backbone of the new age E-governance, the real thrust came with the ambitious Digital India Mission in 2015. Considering the shortcomings in National e-Governance Plan that included lack of integration amongst Government applications and databases, low degree of government process re-engineering, scope for leveraging emerging technologies like mobile and cloud etc., the Government of India approved e-Kranti programme in 2015 with the vision of "Transforming e-Governance for Transforming Governance". The portfolio of Mission Mode Projects has increased from 31 to 44 MMPs. Many new social sector projects namely Women and Child Development, Social Benefits, Financial Inclusion, Urban Governance eBhasha etc., have been added as new MMPs under e-Kranti. Thrust areas of e-Kranti outlined in Digital India



- Technology for Education – e-Education - All schools will be connected to broadband. Free WiFi will be provided in all secondary and higher secondary schools (coverage would be around 250,000 schools). A programme on digital literacy would be taken up at the national level. Massive Online Open Courses (MOOCs) shall be developed and leveraged for e-Education.
- Technology for Health – e-Healthcare - e-Healthcare would cover online medical consultation, online medical records, online medicine supply, pan-India exchange for patient information, etc.
- Technology for Farmers - This would facilitate farmers to get real-time price information, online ordering of inputs and online cash, loan, and relief payment with mobile banking.
- Technology for Security - Mobile based emergency services and disaster-related services would be provided to citizens on a real-time basis so as to take precautionary measures well in time and minimise loss of lives and properties.
- Technology for Financial Inclusion - Financial inclusion shall be strengthened using mobile banking, Micro-ATM program and CSCs/ Post Offices.
- Technology for Justice - Interoperable Criminal Justice System shall be strengthened by leveraging several related applications, i.e. e-Courts, e-Police, e-Jails and e-Prosecution.
- Technology for Planning - National GIS Mission Mode Project would be implemented to facilitate GIS based decision making for project planning, conceptualization, design and development.
- Technology for Cyber Security - National Cyber Security Co-ordination Centre would be set up to ensure safe and secure cyber-space within the country.

New Age Analytics, AI and Machine Learning in E-Governance

The E-governance in India has evolved with new technologies. Many smart dashboards have been created across the departments which are

powered by analytics and show real time data on many government schemes, present comparative statistics between states and districts. And, all these data points are out in the public domain for public scrutiny. As a result it gives power in the hands of the citizens to hold the government accountable. For instance, the Champions of Change Dashboard developed by NITI Aayog ranks all 112 Aspirational Districts in India across several developmental indicators (Education, Health, Agriculture, Skills, Water Resources etc). Based on the performance on these indicators, the districts are ranked. This dynamic ranking of the districts is visible to the Chief Ministers, Department Heads and the District Collectors as well as the elected officials and the common public. This information empowers the elective officials to hold the executives accountable and thus improves public service delivery.

Similarly, many innovations in the field of real time and transparent inspections for providing recognition to colleges and universities has been started. For instance, All India Council of Technical Education (AICTE) has started a live real time video conferencing based inspection mechanism where everything is recorded and time stamped. There is complete objectivity and transparency because of this new system of inspection. Hence, the ills of corruption and collusion between corrupt officials and bogus institutions have been curtailed. With the advent of 5G technology such experiences will further improve and become more robust. And, even random inspections could be carried out any time to ensure that the educational institutions maintain high quality throughout the year.

Another G2C innovations in the education sector is the career platforms built by the Government of India for career readiness through training in demand technologies and areas. These platforms are built using the power of artificial intelligence. They recommend courses to the student based on the interests and existing knowledge and skills of the students i.e. these platforms adapt themselves according to the students' levels and personalise the learning for students. Another interesting innovation which is worth mentioning is from school education. The Government of Andhra Pradesh in collaboration with Microsoft has deployed a combination of artificial intelligence and machine learning to predict the possible drop-outs in schools. The algorithm helps in identifying students who are likely to drop-outs and immediate interventions in the form of governmental support, counselling, academic support etc are offered to stop the drop-outs.

Other technologies such as Blockchain has been successfully utilised in the states of Telangana and Tamil Nadu for digitising land records. Land records are controversial issues and often it is found that with collusion between field officials and adversaries lead to long court cases and disputes. Blockchain as a technology solves this problem easily. Blockchain is a shared, immutable ledger that facilitates the process of recording transactions and tracking assets in a business network. An asset can be tangible (a house, car, cash, land) or intangible (intellectual property, patents, copyrights, branding). Since the ledger is immutable there are no chances of disputes as no one can alter the records in an unlawful way.

The National Informatics centre, Government of India has set up Centre of Excellence (CoE) in Blockchain Technology with an objective to promote its use and facilitate rapid adoption & on-boarding of Blockchain based solutions. The CoE will foster stronger collaboration between the government, public and private sectors to ensure that the latest technological tools and frameworks are available for use in different dimensions of governance.

Conclusion

The latest Indian Mobile Congress displayed the growing prowess of India's digital capabilities and the future that it holds for e-governance. With high speed and low latency 5G facilities, AR/VR, real time recognition systems and IOT etc will become seamless and grow in leaps and bounds. These has transformative implications for healthcare, education, reducing crime and making buildings/homes energy efficient. E-Governance is at an inflection point in India and with new disruptive technologies, right usage could propel Indian economy and services for citizens and businesses. At the same time there is also a need to put in place proper governing principles for these technologies ensuring that they are equitable, accessible and fair. With such checks in places, India would become a major force to reckon with in digital governance for social impact.

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E-Governance in Tourism

Dr. Suyash Yadav

The application of ICTs (Information Communication Technologies) for governance is covered under the umbrella term of e-Governance. This write up will focus upon various aspects of the tourism sector in India where initiatives of e-Governance are acting as catalysts for the growth of the sector. Overall liveability conditions of tourist destinations, that house tourist attractions, is getting improved by ICT interventions like, Aadhaar, Digi Locker, MCA21, SMART cities, e-Hospital, SVAMITVA scheme etc. Accessibility in tourism is facilitated by e-GCA programme of civil aviation sector of India. FASTag implementation has made toll collection seamless, which helps tourist movement on roads. IRCTC has been a pioneer in e-Governance, in the area of travel intermediation. Electronic Travel Authorisation and Passport Seva Programme have created a significant ease in travel documentation by use of ICT.

Application of ICT i.e. information and communication technology, for information exchange, to provide government services, in transactions, can be understood as e-Governance. The 'e' in e-Governance stands for 'electronic'. There are 4 kinds of interactions in e-Governance, namely: G2C (Government to Citizens), G2B (Government to Business), G2G (Government to Government), and G2E (Government to Employees). As India aspires to become a fully developed economy, it would require, involving extensive adoption of technology, in all areas of economy. Digital India aims to empower citizens, to avail services with more ease and to conveniently interact with the government. E-Governance is about transforming government mechanisms to make them simple, automated and efficient. E-Governance is expected to maximise citizen satisfaction, by improving responsiveness of public service delivery processes and by augmenting citizens' participation in governance.

Research conducted by the World Travel and Tourism Council (WTTC) has revealed the travel and tourism sector's contribution to the Indian economy could surpass pre-pandemic levels, by the end of 2022. The forecast from WTTC's latest economic impact report, shows the sector's contribution to the nation's economy could reach almost ₹15.9

trillion in 2022, 1 percent above 2019 levels. The research further says that the outlook for the next decade is looking very positive with India accounting for one in five, of all new travel and tourism jobs globally. Travel simply means *movement* from one place to another. It is an age old phenomenon, being practiced right from the time, when early man made an advent on this planet earth. Movement has been integral to the existence of human beings, be it for food, water or shelter.

Tourism is comparatively a new concept which inherently has travel embedded in it. It has economic connotations. Since the 1960's, definitions of tourism were being propounded by the academicians of various disciplines. According to the definition of tourism given by United Nations World Tourism Organisation, tourism is an act of moving from a place of origin to a destination, where the individual undertaking that journey, should stay at least 24 hours, at the destination and should not stay more than 365 days at the destination. This journey can be done for a variety of purposes. During this journey, the person should not be involved in a remunerative activity.

Tourism begins with an attraction, which simply can be 'anything' that motivates a person to visit a particular destination. Once an attraction is decided, accessibility comes into picture where a mode of transportation has to be chosen to reach the attraction. Since a minimum duration of stay is an important prerequisite to qualify a journey for tourism, this brings into picture the hospitality sector, which provides the accommodation where an individual stays at the destination. It has to be understood that supportive infrastructure is the spine which facilitates the growth of tourism. Once an individual decides to undertake tourism, arrangement of all the travel related services becomes an important task. These services are either booked directly, or with the intervention of travel intermediaries. Last but not the least, certain travel documents are issued by the government which are a must for international tourism.

This write up will focus upon prominent aspects related to attraction, accessibility, supportive infrastructure, travel intermediaries and travel documentation, where initiatives of e-governance are acting as catalysts for the tourism sector. Let us correlate tourism and e-governance:

Attraction

Tourist destinations (majority of them are urban centres) house tourist attractions (TajMahal is a cultural attraction located in the destination Agra). Prof. JafarJarfi, a profound scholar of tourism, in the foreword of a book 'Critical Debates in Tourism', mentions that, today more is expected of tourism; that it should alsocontribute to the quality of life of the host community, a proposition which I recently developed into a conference talk, '*A Nice Place to Live is a Nice Place to Visit*' (Singh 2012). It is important to mention that, in terms of destination development, from the point of view of tourism growth, converting its tourism resources into tourism products becomes very crucial, e-governance can help in this transformation. If, at a destination, the conditions of liveability improve, that in turn benefits the tourism prospects of that destination.

National e-Governance Plan 2.0, initiated in 2015, aimed at, e-Education where all secondary and higher secondary schools were to be connected to broadband and Massive Online Open Courses (MOOCs) were introduced for leveraging e-Education. Financial inclusion was to be strengthened with the use of mobile banking, micro-ATM program etc. e-Courts, e-Police, e-Jails and e-Prosecution were aimed at improving the judicial eco-system through ICT usage. Other major e-Governance initiatives that impact the liveability conditions of destinations across India are, e-Hospital which is an online registration framework aimed to facilitate the patients to take online OPD appointments with government hospitals.

MCA21 aims to provide electronic services to the companies registered under the Companies Act. It may facilitate entrepreneurial zeal in the tourism sector. Aadhaar, is a unique identification number issued by UIDAI. DigiLocker serves as a platform to enable citizens to securely store and share their documents with service providers, who can directly access them electronically. Aadhaar and DigiLocker can be used at multiple steps in the entire journey of tourist. SVAMITVA Scheme is a step towards establishment of clear ownership of property in rural inhabited areas. It can act as a facilitator in rural tourism development.

A majority of India lives in villages, rural tourism in India can open up a myriad of indigenous

opportunities for tourism, despite that, at present; tourism is an *urban phenomenon* in India. SMART cities mission and the Atal Mission for Rejuvenation and Urban Transformation (AMRUT), are two flagship schemes of Government of India (GoI) to drive urban transformation. *Geospatial technology* uses tools like Geographic Information System, Global Positioning System and Remote Sensing for geographic mapping and analysis, may help in the implementation of SMART cities mission and AMRUT scheme. Schemes like Gati Shakti (national master plan for multi-modal connectivity) aimed at coordinated planning and execution of infrastructure projects to bring down logistics costs, banks upon geospatial technology.

Accessibility

The role that airlines and airports have played in opening up new destinations has been massive, with speed of travel being airlines biggest USP. According to a 2018 'International Air Transport Association' report on India's aviation, in 2010, 79 million people travelled to/from/or within India. By 2017 that doubled to 158 million. That number is expected to treble to 520 million by 2037. Aviation in India supports 7.5 million jobs (directly and indirect). Aviation contributes some US$30 billion annually to India's GDP. The report further stresses upon continued improvement in the ease of business index rankings for sustainable growth of aviation. E-Governance interventions in the aviation sector hold the key for this improvement.

In the year 2021, the Ministry of Civil Aviation, GoI, launched e-GCA i.e. e-Governance for civil aviation, with an aim of bringing about ease of doing business, enhance transparency and automation of the processes and functions ofthe civil aviation regulator in India i.e. DGCA (Directorate General of Civil Aviation). It is a single window platform launched to eliminate operational inefficiencies, improve regulatory reporting and increase productivity. The e-GCAproject has been implemented with Tata Consultancy Services as service provider and Pricewaterhouse Coopers Pvt. Ltd. as project management consultant.

The project aims at automation of the processes and functions of DGCA. The services provided to various DGCA stakeholders such as pilots, aircraft maintenance engineers, air traffic controllers, air operators, airport operators, flying training organisations, maintenance and design organisations etc. will be made available on the e-GCA online. The applicants would now be able to apply for various services and upload their documents online. The applications would be processed by DGCA officials, and approvals and licenses would be issued online.

Supportive Infrastructure

Infrastructure is an umbrella term that covers all the structural elements constituting the framework on which different activities can take place: it includes transport platforms (such as roads, railway lines, airports etc.) as well as utility systems (such as water and electricity provision, sewage systems etc.). Infrastructure can be of dual use, but in some instances it is developed primarily for tourists' use (Lomine and Edmunds 2007). Let us delimit ourselves to road infrastructure in this section. Roads provide last mile connectivity in the field of tourism. They complement other modes of transport. In order to decrease the traffic at toll booths and also to enable more digital transactions in the country, FASTag (initiative of e-Governance) was rolled out in 2016. It is a reloadable tag that allows automatic deduction of toll without having to stop for carrying out the cash transaction. Once active, the tag uses radio frequency identification technology and is fixed on the windscreen of the vehicle. This mechanism facilitates the seamless movement on roads for tourists.

Travel Intermediation

Fundamental role of intermediaries is to bring buyers (tourists/travellers) and sellers (principal service providers like airline companies, hotels, railways etc.) together. For travel and tourism, intermediation comes about, through tour operators who assemble the components of the tourist trip (accommodation, transport, excursions and entertainment) into a tour package and retail it through travel agents, who deal directly with the public (Fletcher et al. 2018). Intermediaries are integral to tourism distribution network.

Though the facility to book a railway ticket in India, by visiting the ticketing counter, in person, is prevalent even today, in the year 1999, foreseeing the future, the Ministry of Railways, GoI, decided to open a vertical named IRCTC (Indian Railway Catering and Tourism Corporation Ltd), whose multiple objectives included establishing an ICT enabled eco-system

to book railway tickets. This development can be traced as one of the most pioneering interventions of e-Governance by the GoI which is related to the field of travel and tourism. Over a period of time, the basket of services offered by IRCTC has expanded considerably. It works as an arm of Indian Railways that offers tourism related products/services, like tour packages to various destinations, both for destinations in India and abroad.

A majority of intermediaries in the tourism sector of India are private companies (Eg. Make My Trip, Yatra.com, Thomas Cook etc.); However IRCTC, which is a public sector undertaking (PSU), also operates as a travel and tourism intermediary in one of its multiple roles. IRCTC is a Mini Ratna Category-I (conferred in 2008) PSU which is wholly-owned by and is under the administrative control of the Ministry of Railways. The firm currently operates in 4 business segments, namely, internet ticketing, catering, packaging drinking water, and travel and tourism. IRCTC has a monopoly in issuing online tickets for the Railways which accounts for a major chunk of its profits.

According to the definition given by Ministry of Tourism, GoI, Online Travel Aggregator *is an intermediary/agent, selling travel products and services such as the airlines, car rental, cruise lines, hotels / accommodation, railways, vacation packages etc. on behalf of suppliers, using internet as a medium*. Entrepreneurial ventures like 'Travel Khana' tracks the train in real time (refer the role of NTES mentioned below) and makes sure that fresh food is made available to the passenger through vast variety of restaurants on the Indian railway network. Following PSU's of Indian railways are a part of the digital ecosystem which enables e-Governance:

1. **CRIS i.e. Centre for Railway Information Systems:** It develops and manages the information technology applications of the Indian Railways.National Train Enquiry System (NTES) was developed by CRIS that gives us real time accurate train running information which helps passengers to conveniently plan their arrival at the stations.

2. **Rail Tel:** RailTel Corporation is ICT infrastructure provider and one of the largest neutral telecom infrastructure providers in the country, owning a pan-India optic fibre network on exclusive right of way (ROW) along railway tracks. In this year itself, Prime Minister Wi-Fi Access Network Interface (PM-WANI) scheme has been launched by RailTel, through which access to RailTel's free public WiFi services will be provided in 100 Indian railway stations across the country.

Travel Documentation

As per the data of the Ministry of Tourism, GoI (India Statistics 2021), share of India in international tourist arrivals stood at a meager 1.57 percent. The pre-pandemic rank of India in terms of world tourism arrivals stood at 24th place. Countries far smaller in size than India, which are in no way parallel to the vast variety of tourism resources in India (Eg. Thailand, Malaysia etc.), feature above India in the international tourist arrival rankings. These statistics show that, as a country, we need to work pretty hard to increase the inbound tourism numbers to India. This becomes even more important as inbound tourism can fetch us foreign exchange, which acts as a cushion, in case, there is a balance of payment crisis. The recent Sri Lankan Crisis and the role of almost no inbound tourism happening in Sri Lanka, due to covid pandemic, is an important international development to emphasise upon the importance of tourism in the GDP of a country.

Enhancing the inbound tourism numbers is easier said than done. Out of the various ways that can contribute in the growth of inbound tourism,

creating an ease in the manner of granting visa, can act as a motivator, for prospective foreign tourists eying India as a destination. The India e-Visa is an electronic authorisation to travel to India for following categories: tourist, business, conference, medical, and medical attendant. Under this arrangement, a foreigner can apply online, four days prior to travel, from his/her home country, without visiting the Indian Mission, and also pay the visa fee online. After the details are verified, an e-mail i.e. Electronic Travel Authorisation (ETA) is generated, which has to be presented at the immigration check post on arrival. Entry through e-visas is allowed only at 28 designated international airports and 5 major seaports in India. ETA is an e-Governance innovation introduced by the GoI in 2014. The facility was expanded in 2017-2018. In the 2010, Tourist Visa on Arrival (TVOA) scheme was started for Japan, Singapore, Finland, Luxembourg and New Zealand. The government merged the TVOA with ETA, thereby creating the e-visa.

The Ministry of External Affairs (MEA), early this year, signed an agreement for second phase of the Passport Seva Programme (PSP-V2.0) with Tata Consultancy Services Limited, appointing them as the Service Provider for the project. The PSP-V2.0 is a continuation and enhancement of PSP-V1.0, an e-Governance instrument, which introduced unprecedented transformation in delivery of passport related services to citizens. The focus was on timely, transparent, more accessible and reliable platform, accessed by citizens in a comfortable environment through streamlined processes; and a committed, trained and motivated workforce. The number of public dealing offices has increased across the country. MEA is working towards opening of a Seva Kendra in every Lok Sabha constituency where there is no Passport Seva Kendra (PSK) or Post Office Passport Seva Kendra (POPSK). As per current data, 93 PSKs, 428 POPSKs and 36 Passport Offices are operational. The programme has recently been connected to more than 176 Indian Missions / Posts through Global Passport Seva Programme (GPSP), providing seamless delivery of passport services to Indian diaspora.

Conclusion

The demographic profile of India and the geographical diversity makes the application of e-Governance even more important to empower its citizens and for overall economic development. India is characterised with the availability of telecom data at some of the lowest tariffs in the entire world and access to smart phones is also witnessing an upward growth trajectory. Advantages of e-Governance from an Indian perspective include, effectiveness in governance as it will be driven by data, it will also help in reducing the cost that government incurs on buying stationery, and it will make the functioning of the government transparent, this in turn will make the government officials more accountable for their actions.

Challenges associated with e-Governance in India include, linguistic diversity of the country, due to which, for effective outcomes, e-Governance initiatives need to be implemented in local languages. Integration of e-Governance services of the central and various state governments also needs to be focussed. A big chunk of Indian population is still digitally illiterate and lacks technical awareness, this

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lacuna has to be mended. In addition to this, internet connectivity and availability of electricity in many rural parts of the country is still a day dream. As they say, '*Data is the New Oil*', therefore enforcing strict data protection protocols and privacy concerns of e-Governance transactions are also issues to ponder about.

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