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# Contribution of Smartphones to **DIGITAL GOVERNANCE IN INDIA**

A study by India Cellular & Electronics Association

July 2020





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रविशंकर प्रसाद  
RAVI SHANKAR PRASAD



सत्यमेव जयते

मंत्री  
संचार, विधि एवं न्याय  
एवं  
इलेक्ट्रॉनिकी और सूचना प्रौद्योगिकी  
भारत सरकार

Minister  
of  
Communications, Law & Justice and  
Electronics & Information Technology  
Government of India

## Foreword

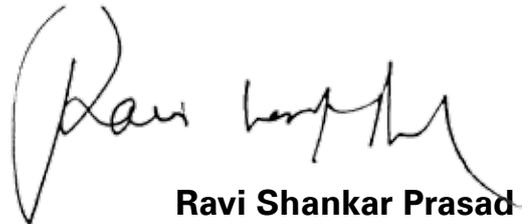
At the outset let me take this opportunity in congratulating ICEA for undertaking such an important study **“Contribution of Smart Phones to Digital Governance in India”**. Ever since the Government at the center has assumed charge under the leadership of the Hon'ble Prime Minister Shri. Narendra Modi around 6 years ago, the primordial focus has always been to rejuvenate, sustain and accelerate social and economic empowerment of citizens especially the marginalized sections of society through realizing the true potential of Digital Governance which was correctly been envisaged to be proliferated through the usage of Mobile Handsets.

It is heartening to witness that the penetration of Smart Phones in India has been increasing by leaps and bounds. While 500 million smartphone users were reported at the end of 2019 the user base is expected to swell to 820 million by 2022, which would translate that smartphones would reach every nook and corner of India and the penetration would go far beyond the urban areas.

Needless to mention, increase in penetration of Smart Phones amongst the marginalized and rural populace of the nation will serve as a bridge for Digital Governance to reach the unreached and this in turn can facilitate to be the quickest and most convenient means to carry Digital Governance as the most efficient Governance model to reach the masses optimally. Apart from increasing availability of affordable Smart Phones being one of the major reasons behind promotion of Digital Governance, especially amongst the marginalized sections and duly aided by availability of Open Eco-systems, another important contributing factor in India's growth towards digital governance has been increased access to and affordability of internet services and availability of internet services at very cheap rates.

The development of several applications both by the Government of India, State Governments and Private concerns and enabled by open operating systems have, no doubt, contributed towards implementation of service delivery mechanisms, assimilation of desired information and delivery of services to the citizens.

I have no doubt that in the coming days, increasing affordability and proliferation of smartphones coupled with cheaper data prices, development of contemporary applications etc. would provide a significant platform for the Government both at the Centre and the States to provide critical services in areas such as healthcare, financial inclusion, education etc.



Ravi Shankar Prasad



डा० आर एस शर्मा  
Dr. R S Sharma



सत्यमेव जयते

अध्यक्ष  
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Chairman  
TELECOM REGULATORY AUTHORITY OF INDIA

## Foreword



I would like to compliment Indian Cellular and Electronics Association (ICEA) for the development of this detailed study on "**Contribution of Smart Phones to Digital Governance in India**".

India has become the second largest smartphone market globally. This growth is fueled by increasing affordability of smartphones, adoption of internet and data services in urban and rural areas, rise of mobile applications in regional languages and various government services. This also aligns with the DoT's efforts to ensure mobile connectivity in all Indian villages.

Smartphone is the primary access point for internet in India and has become instrumental in its progress towards digitization. With smartphones becoming ubiquitous in the ecosystem, it is instrumental in bridging gap between the Government and the citizens. Smartphones have enabled the citizens to access various initiatives and programs rolled out by the Government leading to the far-reaching impact on the adoption. With increased flexibility and low development costs offered by Open Operating System, the Government can directly engage citizens and disseminate information.

The Government has been making strides in providing efficient e-governance, comprehensively covered in this report. This growth would further increase with increasing adoption of 4G technology and introduction of 5G, enabling digitally empowered citizens to communicate and participate with the Government effectively and realize India's vision of truly digital economy.

  
(R. S. Sharma)





सत्यमेव जयते

सचिव  
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AJAY SAWHNEY, I.A.S.

## Foreword

Smartphones and connectivity are the principal conduits towards reaching the citizens of India in a rapid and affordable way. I compliment Indian Cellular and Electronics Association (ICEA) for development of this study on "**Contribution of Smart Phones to Digital Governance in India**".

The Government of India is committed towards its vision of Digital India and has launched various digitization initiatives, encouraging adoption of digital services and providing E-Governance as part of Digital India programme. Smartphones with their reach in urban and rural areas have become instrumental in helping the Government reach the underserved and provide efficient services.

Programmes like Umang, Direct Benefit Transfer, E Kranti and others have made a significant impact on the digital delivery of services in India and the participation of citizens in the governance process. Smartphones are now an integral part of transforming the lives of Indian citizens, both urban and rural, through communication and assimilation of information. They are essential components for delivery and improving the effectiveness of e-governance initiatives.

This study covers all these aspects in detail and outlines key insights for the stakeholders to accelerate the adoption of e/m governance.

(Ajay Sawhney)

Place: New Delhi

Dated: 17<sup>th</sup> January, 2020



## Foreword - Pankaj Mohindroo



### Contribution of Smartphones to Digital Governance in India

It is indeed a proud moment for the nation to acknowledge and appreciate the fact that the mobile handset industry in India has shown a staggeringly appreciable growth rate during the past two decades leading to an increase in demand for smart phones and its enhanced penetration. This growth in the smartphone industry has created various avenues for Digital Governance, which the Government has capitalized on by creating over 300 core Government applications.

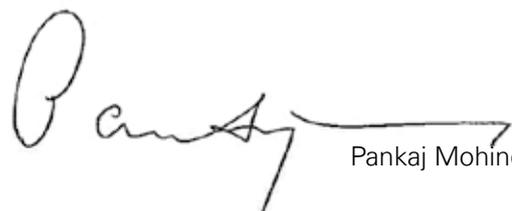
Starting from voice services support, mobile handsets have grown in versatility and complexities, making them the preferred mode of communication and internet access for a vast section of the Indian population.

The Government of India has recognized the potential of smartphones as the most effective tool to fulfill and advance various objectives and missions related to the socio-economic empowerment of citizens. Mobile handsets are an integral part of the Digital India Mission of the Government and this has led to rapid progressions made in various flagship programs related to e-Health, e-Education, e-Governance etc. which are largely focused on minimizing digital divide and providing basic amenities to all.

This momentum towards Digital Governance has various benefits such as increase in efficiency, reduction in processing time and most importantly access to citizens. More and more citizens are using the internet via smartphones to avail Government benefits and express their grievances. Thus, there is growing emphasis on availability of vernacular languages on all digitally available services. The prevalence of Open OS in smartphones has greatly facilitated the inclusion of vernacular languages and reduced the time taken to build supporting mobile applications. With the goal to digitally equip and connect every citizen in the coming years, India is utilizing smartphones and technologies such as open OS to stride towards a truly digital nation.

ICEA has undertaken this important study; "Contribution of Smartphones to Digital Governance in India" to understand the role of smartphones and Open OS in India's digital initiatives and overall delivery of public services. The report explores the phenomena of open eco-systems becoming an integral part of the overall Digital Governance initiative.

While we embark on this crucial journey with the vision to showcase tenets of Digital Governance, it would be interesting to observe the impact of Open OS eco-system on Digital Governance in India. I am confident that the report, through its vivid observations and recommendations, will go a long way to create a holistic regime for growth of the open eco-systems in the country to facilitate India's vision of becoming a digitally advanced country, in terms of governance.



Pankaj Mohindroo





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## Foreword

The smartphone boom in India has led to an unprecedented number of smartphone users, which is expected to reach 829 million users by 2022. This exponential increase can be attributed to growth in rural and vernacular users and the falling ASP of a smartphone. Open operating systems such as Android are the key contributor to reduced smartphone prices and increased functionality, including vernacular applications. Aided by government mandates and players such as Google who are continuously developing applications such as Gboard, Translate, Maps that operate on a variety of languages, smartphones have created the path for every citizen to be connected to the government.

In today's digital age, mobile devices are the primary mode of accessing the internet. Increased affordability and accessibility of smartphones and emergence of fusion feature phones has led to widespread internet usage. Recognizing this, the government has made meritorious strides in this regard, through digital infrastructure, assimilation of information, participative governance, and many more initiatives. Additionally, many states have developed their own programmes and schemes to enrich and empower their population, by leveraging smartphones as a means of economic growth.

Thus, smartphones have fostered an environment that enables the government to reach the masses. With more than 500 million Indians connected to the internet, primarily through smartphones, the impact of digital governance can be more direct and beneficial. A simple example of this can be seen in the success of the JAM trinity; Jan Dhan- Aadhar-Mobile and implementation of online systems.

Although currently at a nascent stage, paperless offices for government administration can become the norm as it increases efficiency by up to 80% and significantly reduces time taken to complete tasks. Powered majorly by smartphones, this improvement in public service is the first of many steps towards a Digital India.

This report brings to light the role played by smartphones, and hence open operating systems, in digital governance and its waterfall effect on India's digital journey. We hope you find the report an insightful read.

**Neeraj Verma**

Partner

Management Consulting

KPMG in India

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A man in a dark suit and striped tie is holding a black smartphone. He is looking at the screen with his right hand. The background shows a city skyline with tall buildings under a cloudy sky. A large purple circle is overlaid on the bottom right of the image.

# EXECUTIVE SUMMARY

## Digital Governance in India

India is at the forefront of a digital revolution. The Government's vision is to make India a digitally empowered society, and Digital governance is an essential part of the same. It refers to empowering citizens through robust digital infrastructure and digital delivery of services. It encompasses E-governance, which refers to online delivery of services and M-governance, which refers to mobile delivery of services. The adoption of technology in governance is key to serving the interests of the citizens and transforming their lives.

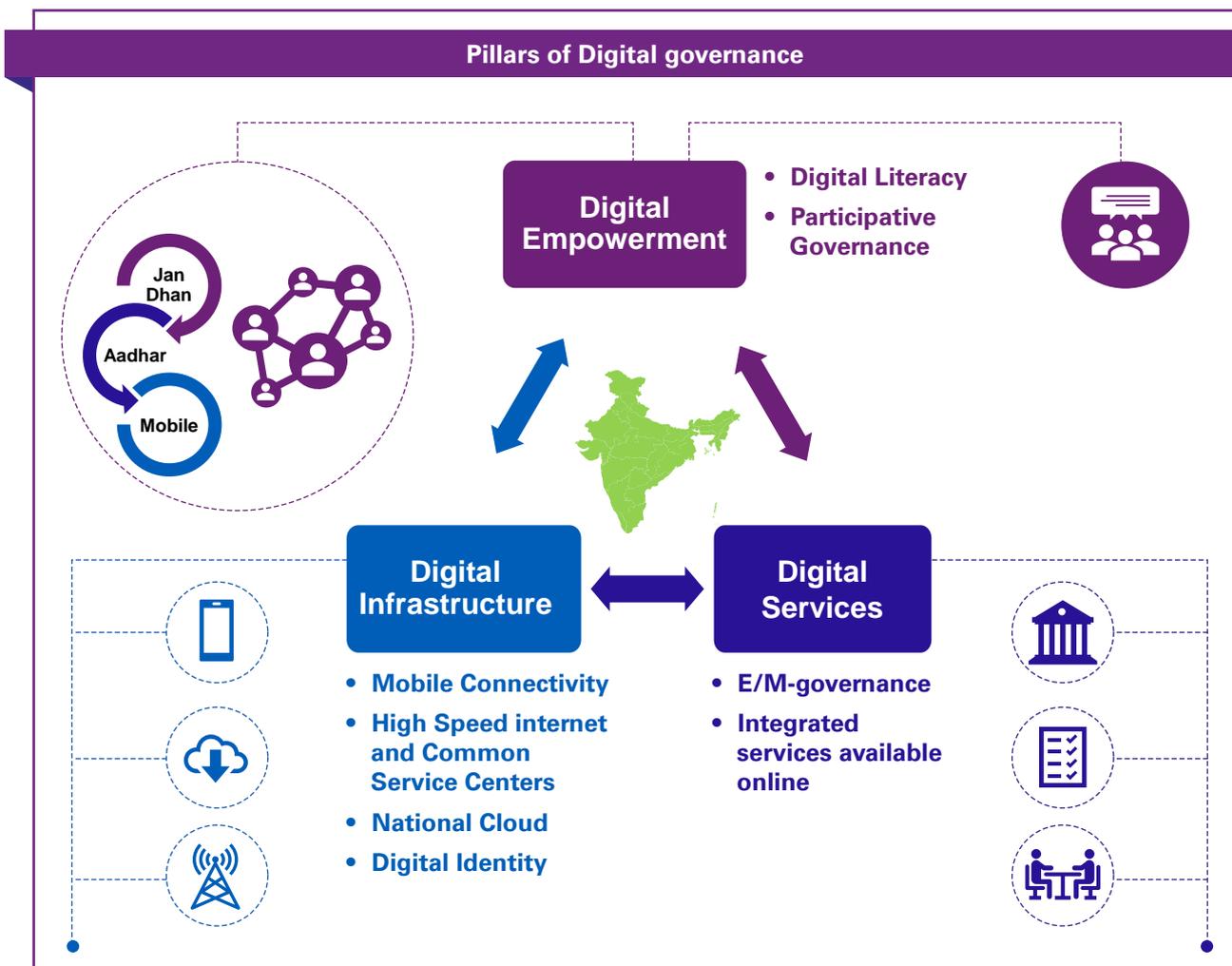
The smartphone has the potential to play a significant role in India's journey, along with other factors. Thus, the Government is aligned to using smartphones' potential and is committed to delivering services through mobile. It is essential to take a 'mobile first' approach and focus on both e-governance and m-governance.

## Role of smartphones

Open OS has led to rising affordability of smartphones which coupled with low mobile data rates, has led to widespread smartphone adoption. Thus, through smart and maximum utilization of smartphones, India can advance towards its vision of being a Digital nation.

By focusing on key sectors, and using mobile to reach both urban and rural citizens, the government can effectively provide services in a transparent manner. Smartphones also enable automation of workflow, execution and monitoring of services, enabling a more efficient process, and improving service delivery.

Keeping these benefits in mind, various schemes and programmes by the Government are helping to achieve digital governance, at state and national level.



Note: Digital Governance as referred to in this report includes both e-governance and m-governance.

## India's Digital governance journey

Starting with computerization in the 1980s, India has taken many steps to move towards digital governance. In 2019, India had approximately 500 million smartphone users. This combined with the country's young and diverse population, makes it well positioned to transition to m-governance.

Many state governments have already made significant strides in making their states ready for the smartphone revolution. States such as Andhra Pradesh, Kerala, Rajasthan, Tamil Nadu and Gujarat have emerged as the leading states in terms of digital readiness. This has prompted other states to undertake various initiatives such as Sanchar Kranti Yojna in Chhattisgarh and Digital Agriculture in Jharkhand.

Through this, citizens are becoming more and more familiar with digital services.

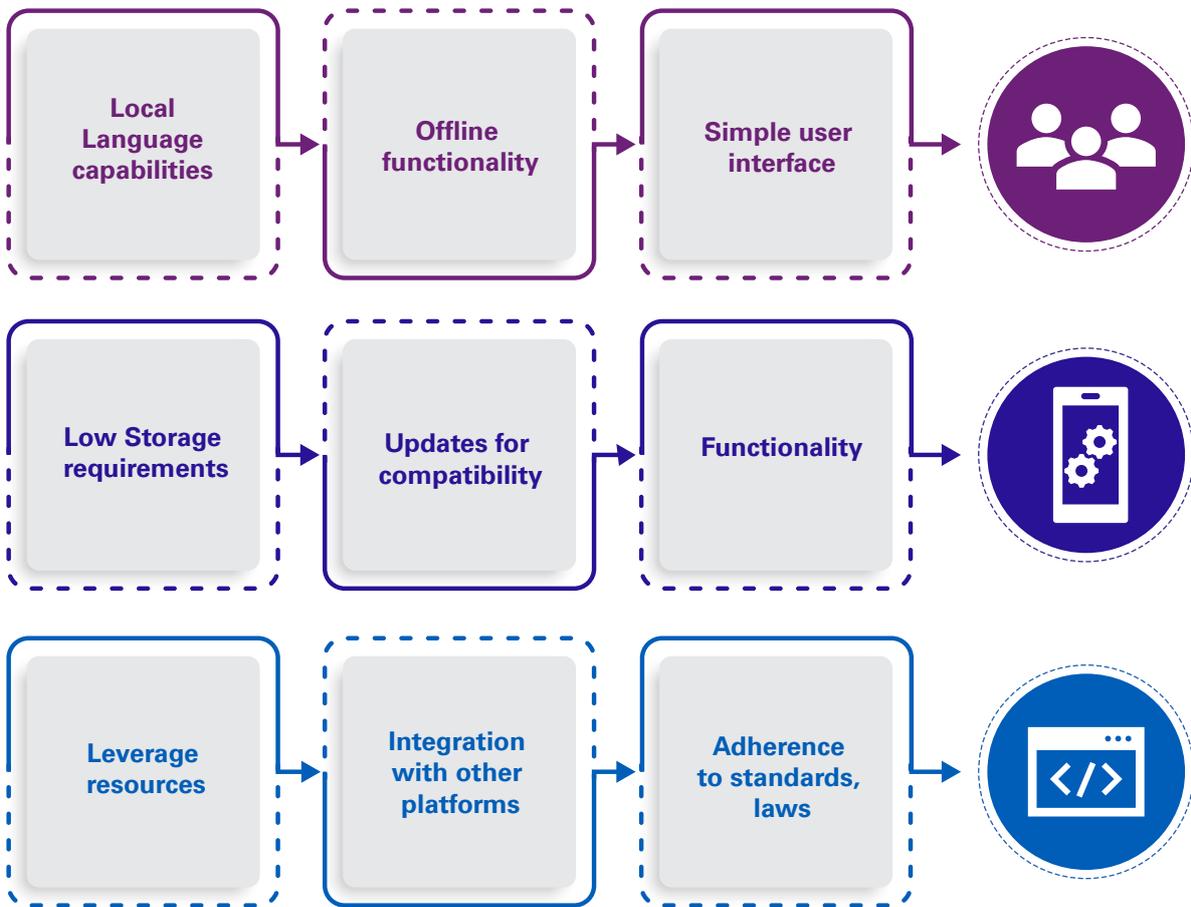
While the benefits of m-governance cascade down to business and government employees and departments, there is a clear focus on delivering citizen services.

## Growing appetite for mobile services

India is the fastest growing application market in the world and the # 1 market in terms of app downloads, as of 2019. Thus, the government has adapted its services to suit the growing consumer demand for mobile applications, which is fueled by advantages offered by Open OS such as Android.

Through Digital India, several web/mobile based initiatives have been implemented, and smartphones have played a prominent role in development of key sectors. Due to constraints such as language diversity, low digital literacy, and limited connectivity, several elements must be taken into account to develop governance portals.

### Ideal elements for Digital Governance portals and applications



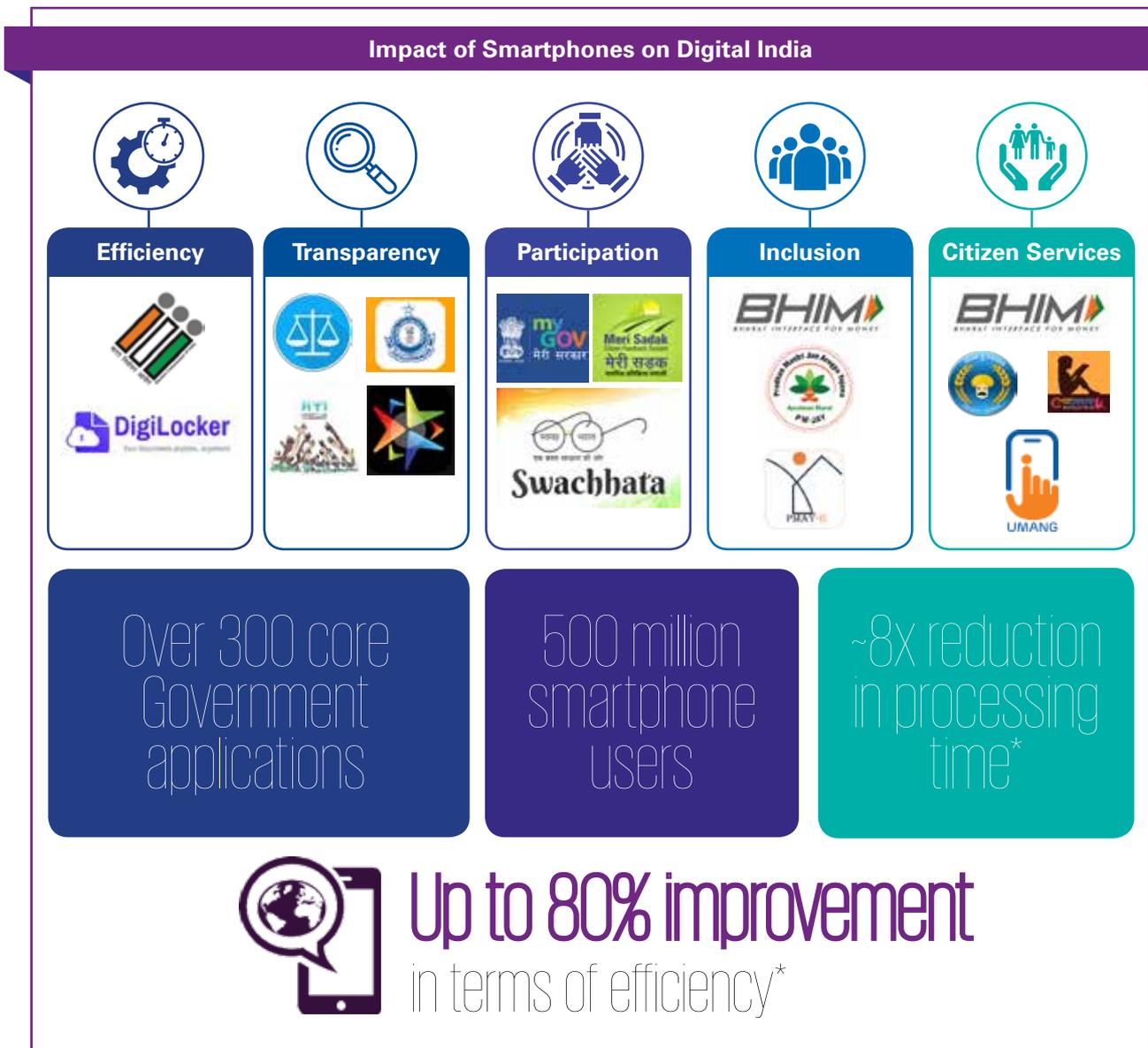
By 2022, India is expected to reach 829 million smartphone users. This, combined with the widespread reach of hybrid feature phones, has the potential to ensure that every citizen of India is connected through a mobile device in the next 3 to 4 years.

There is vast potential to leverage this reach for social and economic development, under Digital India. Mobile apps as the primary form of service delivery can lead to more efficient processes, transparent workings, ease of access to services, citizen participation and inclusion.

The central Government, along with various departments, ministries and state authorities

have implemented various mobile apps to provide better services and improve the standard of living for citizens of India. Some of these apps have been developed through private public partnerships, allowing for higher quality functioning and time/cost savings. This has created a collaborative environment which can lead to development of more apps and services.

The advent of smartphones has accelerated India's digital journey and bridged the gap between rural and urban India. Thus, various challenges will need to be addressed to foster India's bustling app economy and 'mobile first' attitude.



\*As per study of efficiency of online processes such as Change of Land Use, New water connection, Passport issuances in paperless government offices

# Growth of Smartphones in India



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## The Wave of Digitization and Smartphones

This has been largely prompted by advancements in areas of e-Governance, digital identity (Aadhar), mobile internet access and online citizen engagement.

In 2017-2018, India's core digital sectors, including IT-BPM, digital communication services and electronic manufacturing, contributed about 7 per cent of the country's GDP<sup>1</sup>. As India's digital journey progresses, this number is expected to rise to 10 per cent by 2025. Furthermore, this digital transformation has the potential to create economic value of USD 800 billion to 1 trillion in 2025, giving rise to 60 to 65 million jobs in the country, across various sectors<sup>2</sup>.

A major catalyst in India's growth towards digitization has been the increased access to and affordability of internet services. This has resulted in a rapidly growing internet user base that exceeded the 500 million mark in 2019. As more Indians now have access to internet enabled smartphones, this number is expected to reach 829 million by 2022. Increased internet penetration in rural India has been largely driving

this growth, with 40 per cent of the active internet user base now hailing from rural India<sup>3</sup>.

Approximately 97 per cent of the internet users across India access the internet through mobile devices<sup>3</sup>. Thus, India's smartphone industry has experienced steep growth in the last four years.

In 2018, India had approximately 277 million VoLTE capable devices and more than 50% 4G device penetration across India.<sup>4</sup>

The smartphone user base is expected to double to 829 million in 2022, accounting for 60% of the population.<sup>5</sup>

Additionally, India became the second largest smartphone market by volume in 2017 and recorded a growth rate of 14.5 per cent in 2018 with 142.3 million units shipped.<sup>6</sup>

Several factors have contributed to this smartphone user growth, including increased affordability of mobile data, reduced smartphone prices, increase in number of rural users, vernacular accessibility and various Government initiatives.



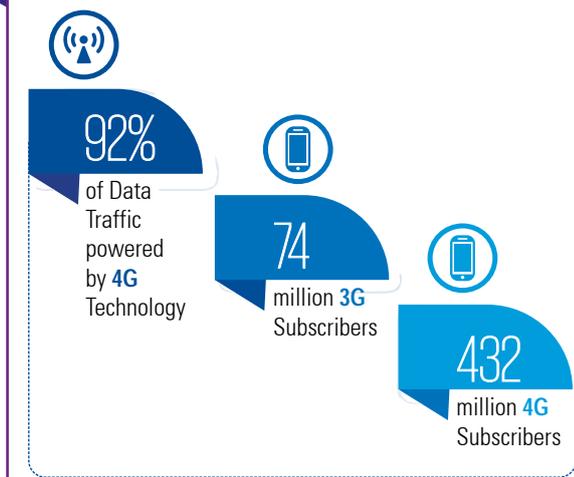
Sources: 1,2. Report on India's Trillion Dollar Digital Opportunity; 3. Kantar IMRB MMA; 4. Nokia MBiT 2019; 5. CISCO VNI; 6. IDC

## Increased Affordability of Mobile Data

The 2016 disruption in the telecom industry led to the price of a gigabyte (GB) of mobile data falling from INR 152 to INR 10 within a year, making mobile internet accessible to a much larger population of Indians than ever before<sup>7</sup>. This change in mobile data pricing led to an equally exponential increase in average monthly data usage, which increased at a CAGR of 129% between 2015 and 2018<sup>8</sup>. In 2018, India recorded the highest monthly data consumption in the world with 9.8 GB consumed per user and is predicted to double to 18 GB by 2024<sup>9</sup>.

This growth is supported by further adoption of 4G technology which aims to provide uninterrupted service and faster speeds to consumers.

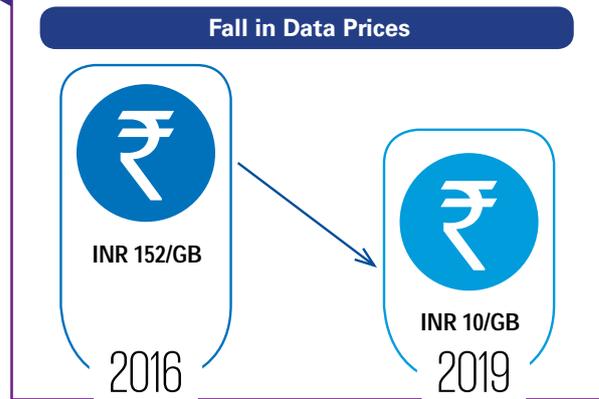
**Figure 1: 4G in India**



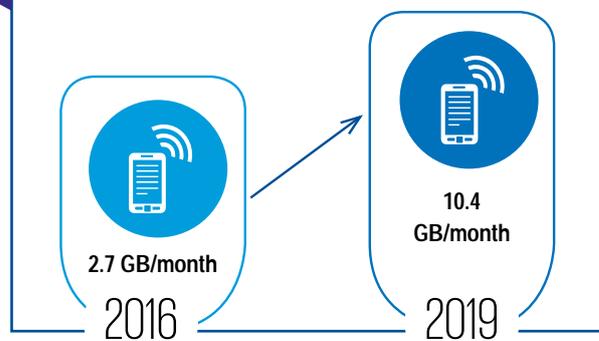
Source: Nokia MBiT 2019

With increased availability of 4G/VoLTE services, Indians are graduating from 3G to 4G technology. Thus, there is a complementary increase in mobile data consumption, with 109% mobile data traffic growth in 2018<sup>8</sup>.

**Figure 2: Data Consumption in India**



**Figure 3: Data Consumption per user**



Source: Nokia MBiT 2019

## Reduced Smartphone Prices

The fall in smartphone prices has been spurred by increased local manufacturing, encouraged by the Government's Phased Manufacturing Program and an expanding smartphone market. With enhanced demand for smartphones, manufacturers are expanding capacity and increasing investment in the Indian smartphone market.

In 2018, India emerged as the second largest manufacturer of mobile handsets by volume, only behind China<sup>10</sup>. Another factor contributing to fall in smartphone prices is the adoption of open operating systems such as Android. The ability to re-distribute source code for free, and the typically significant ability to modify OS software, reduce development costs thereby driving down the overall prices of smartphones. These reduced barriers to entry and innovation have led to introduction of several entry level smartphone models dropping the lowest retail price to INR 1,400 in 2018-19 from INR 12,000 in 2008-09.<sup>11</sup>

Sources: 7. IFC; 8. Nokia MBiT 2019; 9. Ericsson; 10. Government of India; 11. ICEA

## Increased Rural Users and Vernacular Accessibility

Rural India witnessed a year-on-year growth of 35 per cent in 2018 as opposed to 7 per cent growth in urban India in the same period in terms of internet users. Smartphone penetration in rural India has risen from 9 per cent in 2015 to 25 per cent in 2018<sup>12</sup>. Through increased affordability of smartphones and mobile data, even those on the lower end of the income spectrum can participate in the internet economy.

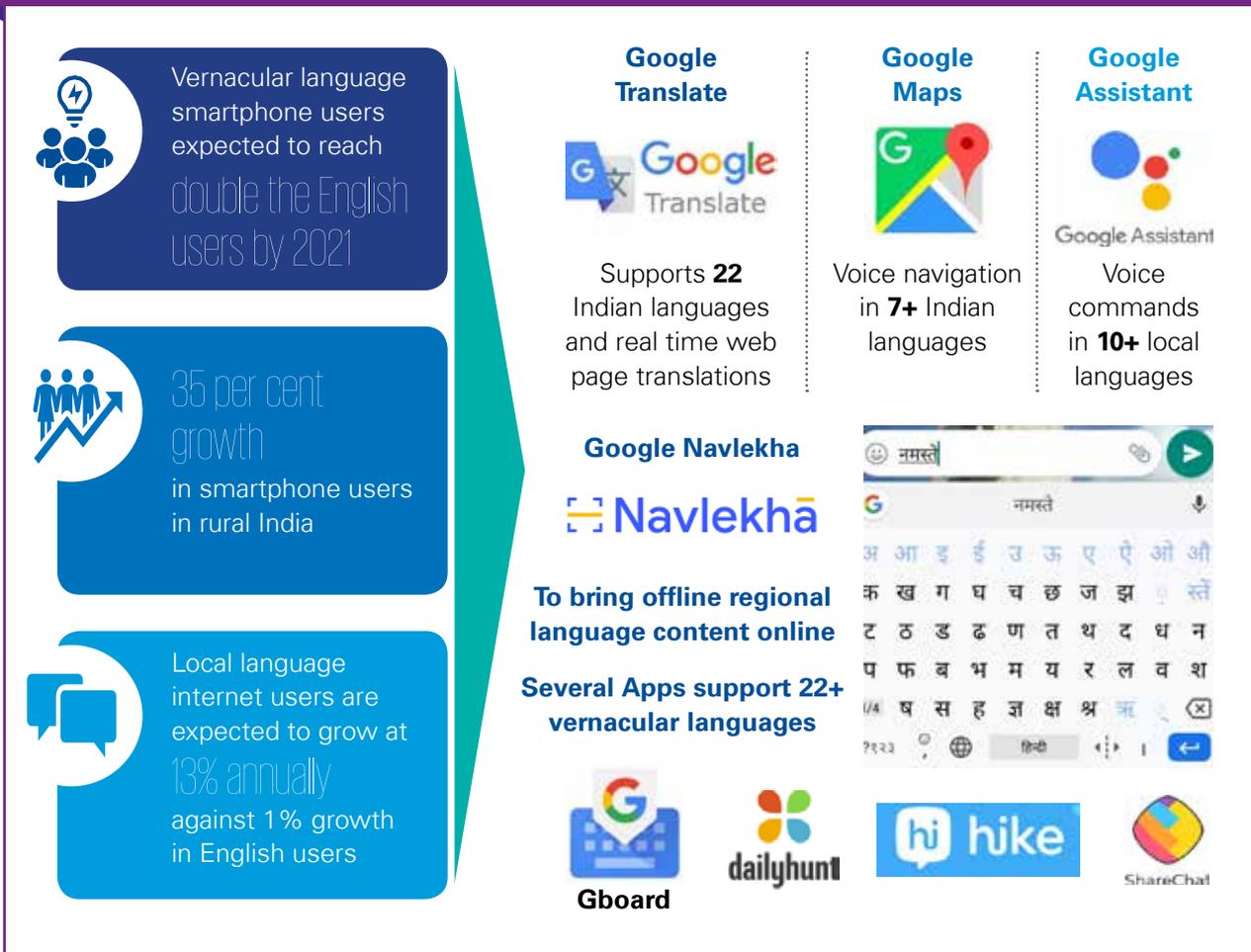
Another factor behind this exponential growth in rural India is the rise of vernacular users. The low literacy rates in rural India posed as a significant deterrent to rural India getting online on an English dominant platform. Realizing the existence of this gap, the Government mandated vernacular support in 22 official languages in all

mobile phones. Vernacular internet users now have options like Gboard which supports 22 Indian languages.

Ease of development and customization in open source mobile ecosystems, such as Android, led to faster adaptation to demand for local language content. It is expected that nine out of ten users will be using vernacular languages to access the internet between 2016 and 2021, reaching double the number of English users by 2021<sup>13</sup>. This has also led to the rise of vernacular apps and voice based functions for texting and search.

Developments such as Gboard, real time translations, etc. allow users to access existing internet services through their native languages. Vernacular internet users are expected to grow at 13% annually, against 1% growth in English-speaking internet users.<sup>14</sup>

Figure 4: Vernacular internet users in India and supporting applications<sup>15</sup>



Sources: 12. Kantar IMRB; 13. Indian Languages- Defining India's internet, KPMG Google Report 2018; 14. Industry reports; 15. Primary Interactions

## Profile of Smartphone Users in India

In the early phases of the internet and mobile phones, adoption was skewed towards the urban population. However, the user base has significantly matured both in terms of demographics and geography in recent years. Percentage of smartphone users above age of 25 has increased from 40 per cent in 2013 to 54 per cent in 2018<sup>16</sup>. Access to internet is becoming more equitable across genders as well, with a 42:58 split of women to men in the user base. Not only are more women online, they spend about the same amount of time online as men, with high engagement and activity rates.<sup>17</sup>

## Emergence of internet users in Rural India

Internet penetration through smartphones in rural India is growing in double digits, bridging the divide between urban and rural India. With a 35 per cent growth rate, Bihar and Odisha have the highest growth rate for new internet user addition in 2018<sup>17</sup>.

Mobile phone penetration in rural India has overtaken Television<sup>18</sup>, indicating the shift in consumer preferences towards more active communication driven technology. Users in

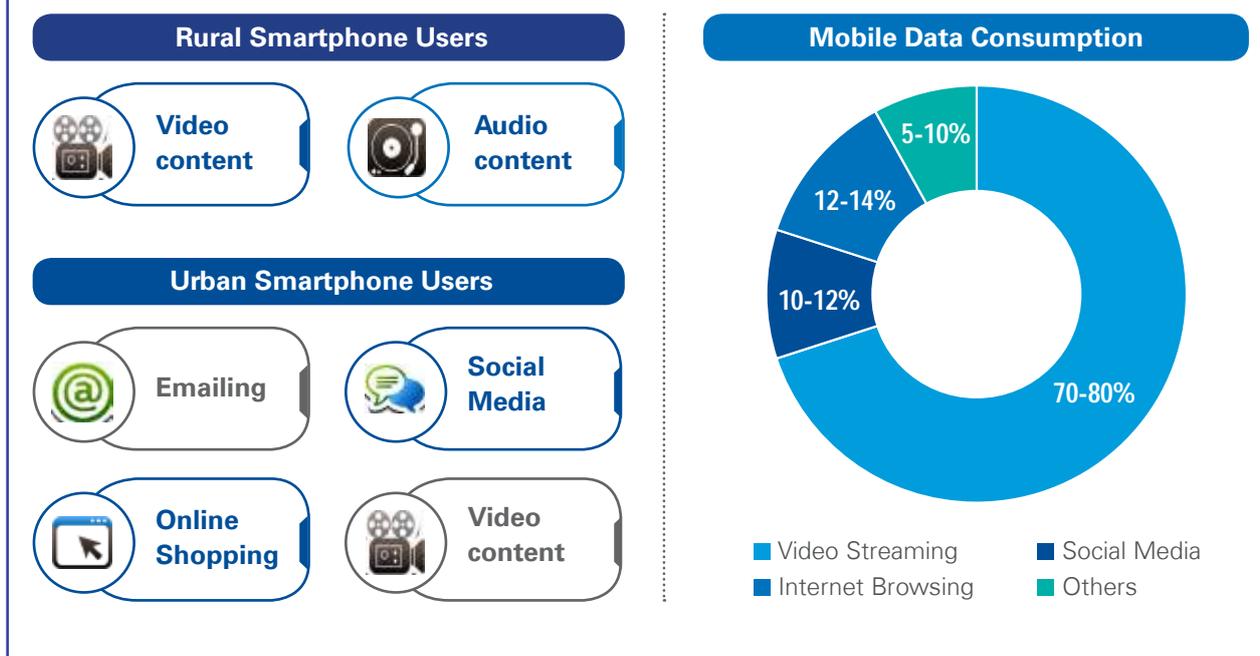
rural regions spend almost the same percentage of their budget (25 per cent) on mobile phones as urban residents (26 per cent)<sup>18</sup>. Acting as a mode of communication, information and discovery, smartphones are enabling rural Indians to interact more easily with the larger world.

## Smartphone Usage Patterns

Analysis of mobile data traffic across India reveals that 70 to 80 per cent of total mobile data consumed is used for video streaming, followed by internet browsing and social media<sup>19</sup>. As the ratio of users in rural India to urban India changes, the differences in their internet consumption becomes more apparent. Urban users tend to use emailing, social networking and online shopping apps most often, while rural users engage more with entertainment content through videos and audio.

On an average, Indian smartphone users spend 4.5 hours daily on their mobile devices<sup>16</sup>. Over 90 minutes are spent on online activities, while those with premium smartphones spend over 130 minutes on the same<sup>20</sup>. With high usage and variety of smartphones available, Indians tend to replace their premium smartphones every 2 to 4 years<sup>21</sup>.

Figure 5: Smartphone Usage Pattern



Sources: 16. InMobi; 17. Kantar IMRB ICUBE; 18. National Sample Survey Office; 19. Nokia MBiT 2019; 20. Nielsen; 21. Counterpoint Research

## Smartphones enabling Government programmes

The Indian Government is at the forefront of digital transformation. Recognizing the scope and reach of internet and smartphones, the Government has established several E/M-governance programmes, which refers to utilizing digital solutions to provide citizen centric services and increase accessibility of Government services.

E-governance, and m-governance, has allowed citizens to access Government services with ease and from any part of the country, encompassing several sectors including finance, healthcare, agriculture, and education, among others. Acting as a significant bridge between the Government and the masses, these digital governance initiatives contribute to fostering socio- economic inclusion across all sections of the society.

**Figure 6: Key governance areas and apps**



Given that 77% of urban and 92% of rural users consider mobiles as the primary device to access the internet,<sup>22</sup> availability of these apps and services allow citizens in remote parts of the country to access Government services without the hassle of travelling long distances to a Government office. Several Government departments have also established social media accounts for easier accessibility and streamlined communication with the public.

The Government's flagship digital programme, Digital India aims at increasing digital inclusivity by bridging the digital divide between rural and urban India. This is done through increasing digital knowledge, access and affordability by bringing high speed internet across India and improving digital literacy. India is home to the world's largest digital literacy programme, Pradhan Mantri Grameen Digital Saksharta Abhiyan (PGMDISHA) whose objective is to train 6 crore rural adults.<sup>23</sup>

E-Kranti, one of the initiatives under Digital India, provides electronic access to services related to agriculture, health, education, passports, etc. Re-engineered to provide a more streamlined process for Government transactions, e-Kranti enables electronic delivery of services, often accessed through smartphones.<sup>23</sup>

As India moves towards digital inclusion and advancement, the Government is playing its part in encouraging digital adoption across sectors, enabled largely by the increased smartphone penetration.



Sources: 22. IAMAI & Kantar IMRB report; 23. Government of India, Digital India Website, KPMG Analysis



# Pillars of Digital Governance

## India's Digital governance journey

In the 1980s, the Indian Government spearheaded several e-governance initiatives aimed at enhancing delivery of public services and increasing ease of access, starting with computerization of government processes. This translation of physical services to an online platform was taken forward in the form of several department and state specific initiatives.

In 2006, the National e-Governance Plan (NeGP) was developed to focus on national level e-governance initiatives to ensure accessibility, efficiency, transparency and reliability of services. However, the program faced several operational challenges that limited its impact.

While these changes were a step in the right direction towards digital governance, there was scope for improvement in interoperability and citizen friendly functioning.

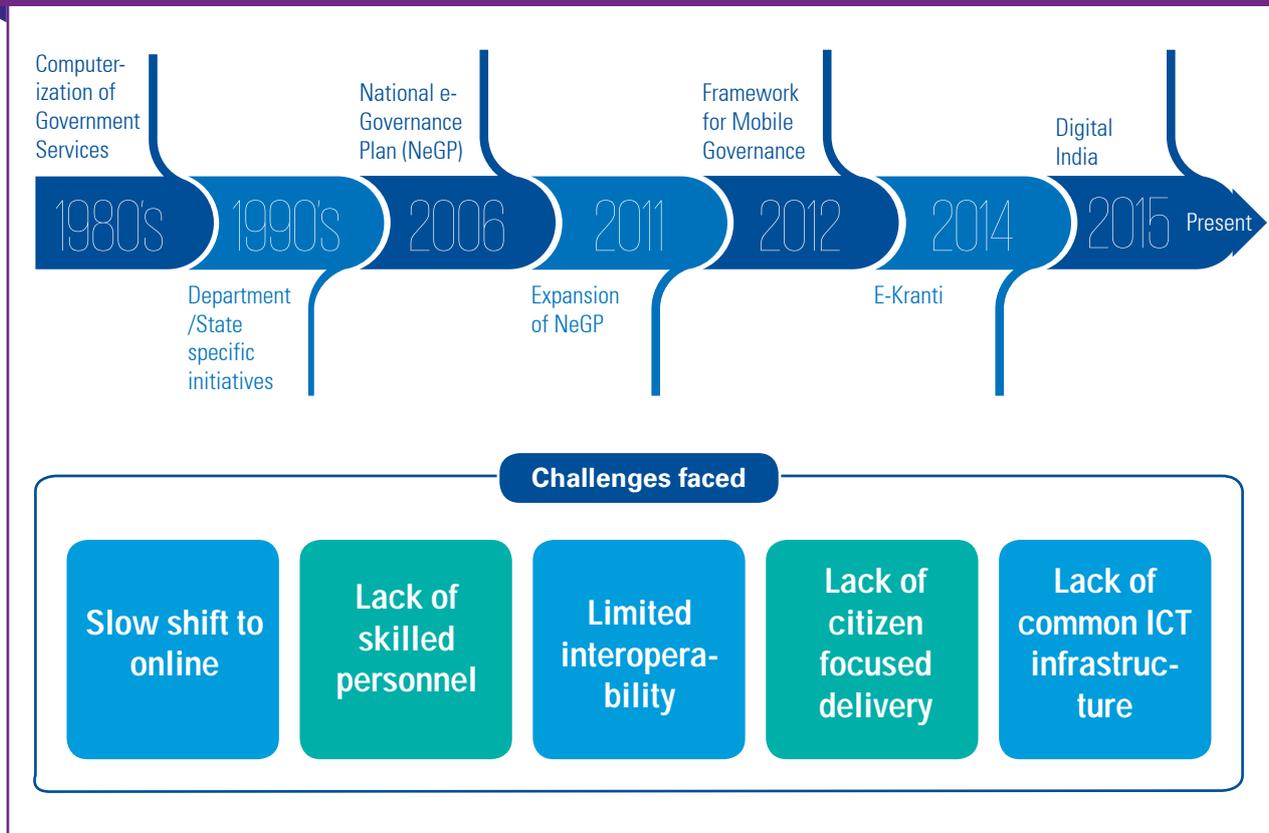
With the introduction of Digital India in 2015, the Government consolidated all its digital and e-governance initiatives, including e- Kranti, under the umbrella program.

The vision behind Digital India comprises three key areas; Digital Infrastructure as a utility to every citizen, Digital governance services, and Digital Empowerment of citizens. These vision areas act as the guiding pillars for digital governance.

To ensure transformative impact, the Government acknowledged that mobile handsets and smartphones can act as a tool for empowerment and service delivery.

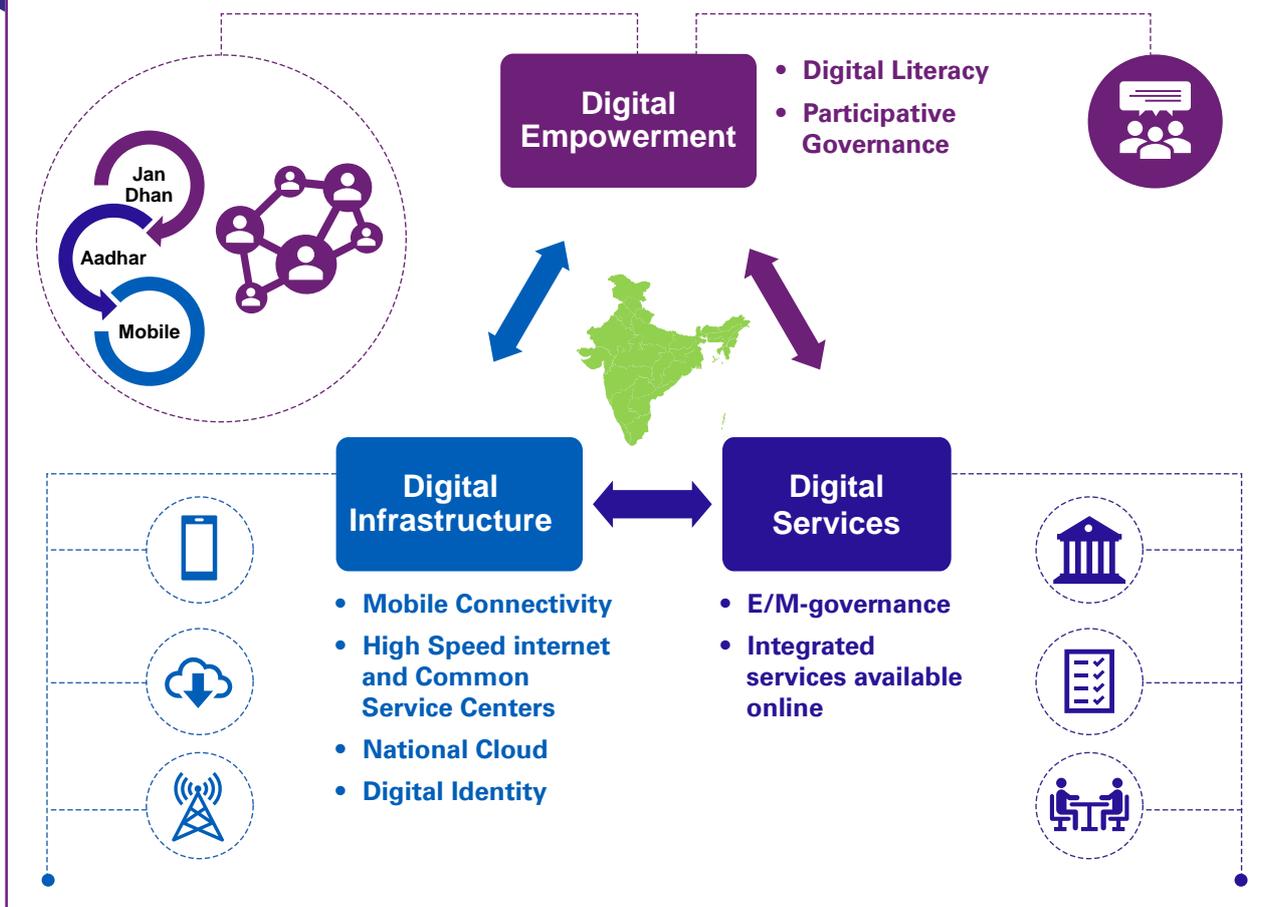
With digital infrastructure in place, the Government can leverage technologies such as smartphones to effectively provide required citizen services to a digitally equipped population.

**Figure 7: Central Government's Digital Governance Journey**



Sources: Government of India, Digital India website, KPMG Analysis, Primary interactions with MeitY

**Figure 8: Pillars of Digital governance**



### Digital Infrastructure

The first step towards Digital India is to lay down a solid foundation in terms of digital infrastructure. High speed internet and mobile connectivity for all citizens is essential for uniform digitization. This also includes ensuring Wi-Fi for all, National ICT infrastructure such as cloud, and a digital identity for all citizens. For India to progress as a digitally advanced country, current infrastructure gaps need to be addressed.

### Mobile Connectivity

India has the second largest telecom network in the world with 1.2 billion subscribers as of 2018<sup>24</sup>. However, there are still gaps in mobile connectivity. Currently, 43,000 villages, accounting for 6.7% of total villages in India are not connected by telecom towers. However, Department of Telecom has taken measures such as 100% subsidies for the initial years to incentivize players to set up required telecom infrastructure in non-profitable areas such as rural villages.<sup>25</sup>

**Figure 9: Components of Digital Infrastructure**



With this basic infrastructure in place, India is now catching up to global 4G adoption levels, with plans of early adoption of the future forward 5G technology. The need for faster and better quality 4G services is one of the leading contributors to smartphone demand in India. Since the 2016 telecom disruption, data prices in India are now the lowest in the world, opening the smartphone market for a new segment of users.

Sources: 24. IBEF; 25. Economic Times, 2018, Digital India website, KPMG Analysis, Primary interactions with MeitY  
 \*Common service centers are included as they are equipped to provide wi-fi hotspot to connect people to the internet

Additionally, data traffic for 4G has doubled in 2018 from 2017, with 92% of total data traffic stemming from 4G utilization.<sup>26</sup>

Large scale availability of 4G networks is another factor to this growth. Mobile operators have reached approximately 80 per cent coverage of India in terms of 4G<sup>27</sup>.

Such widespread coverage has incentivized over hundred million rural users to leap from minimal to no internet exposure, to using mobile internet. 4G capable devices increased 1.5x in 2018 from 2017 to a total of 335 million.<sup>26</sup> This is supplemented by Reliance Jio's low cost fusion phone, a feature phone with functions comparable to a smartphone, such as internet capabilities and app support.

**Figure 10: Jio 4G Feature Phone**



## Common Service Centers

Access to the internet is the backbone of digitization, and adoption of smartphones across the nation has played an influential role in bridging the digital divide. In areas of low mobile connectivity or digital literacy, Common service centers serve as access points for delivery of basic G2C services.

Through these CSCs, the Government aims to provide high speed internet as a core utility for delivery of services to citizens. In order to expedite economic growth, Common Service Centers can also act as change agents and educate citizens on the various ways to leverage internet access. In some cases, they are also a means of smartphone distribution.

**Figure 11: Services Available at Common Service Centers (CSCs)<sup>28</sup>**

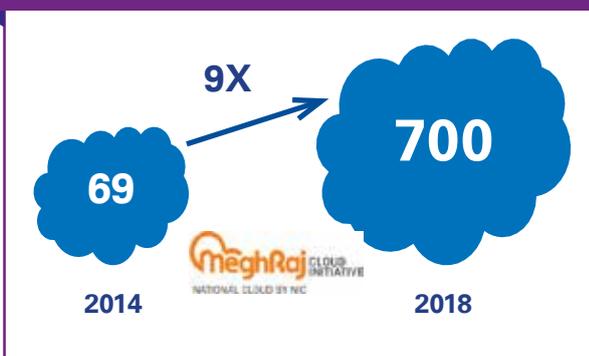


Sources: 26. Nokia MBIT 2019; 27. Open Signal 'State of Mobile Network' report; 28. "Samsung, HP to tap rural India via Common Service Centers", DNA India, 2018

## National ICT Infrastructure

As the wave of digital sweeps in, the need for a nationwide secure cyber space is a must. Under Digital India, the Government has adopted a 'Cloud first' policy to promote ready to use and scalable digital infrastructure. Along with savings in cost and time, this allows departments/ministries to securely store and easily access relevant information at all times. From its inception in 2014 to 2018, the nation cloud 'Meghraj' has seen a 9x growth in terms of number of applications hosted<sup>29</sup>. Some key applications hosted on the cloud are e-office, e-hospital, GeM, Jeevan Pranaam, MyGov, and DigiLocker.

**Figure 12: Growth in Applications on Meghraj**



## Digital Identity

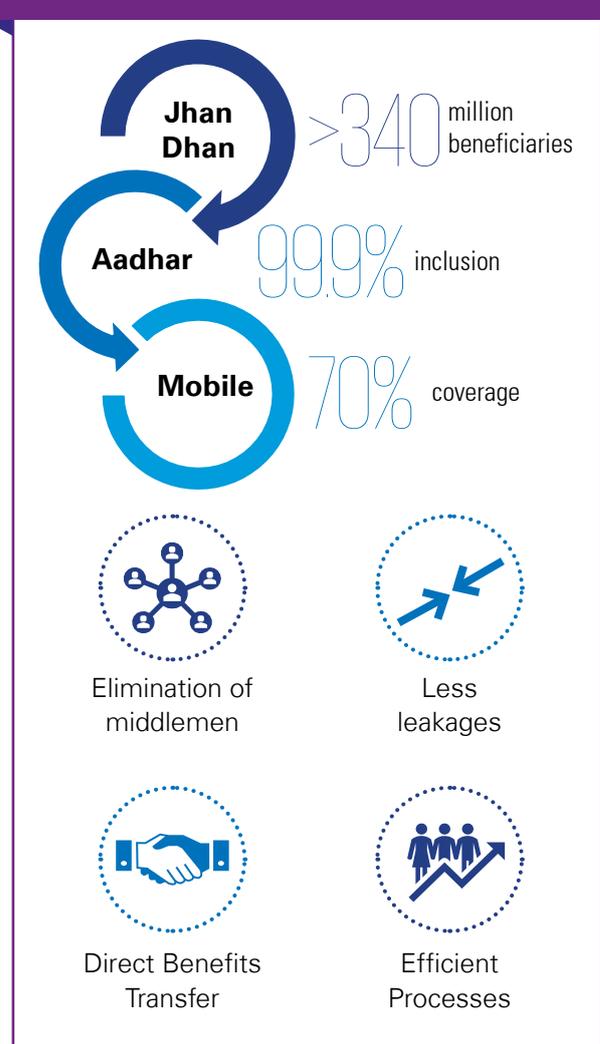
The current governance structure is shifting from a paper dependent system to a cloud based one. Thus, for successful interoperability between departments, there must be a common point for reference for services. A digital identity serves this purpose.

This digital identity also acts as a means to identify and include every citizen of India into various relevant Government schemes directly. For India, Aadhar initiative serves as a digital identity, covering approximately 99.9% of the population.<sup>30</sup>

Through Jan Dhan-Aadhar-Mobile(JAM), the Government aims to enable inclusion and uplift communities. With at least one element of JAM, citizens can directly avail benefits allocated to them. For example, linking Aadhar to MGNREGA can identify beneficiaries easily and the funds can be deposited directly into their Jhan Dhan account.

Since its inception to 2017, the use of JAM trinity has helped save \$ 10 billion for the government.<sup>31</sup> Furthermore, smooth and efficient processes through JAM can lead to a better standard of living for many Indians.

**Figure 13: Digital Identity through JAM<sup>30,31</sup>**



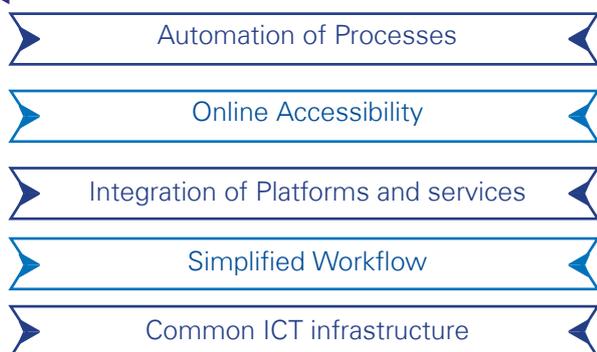
Sources: 29. Digital India Press Release; 30. IBEF; 31. 'JAM trinity will check subsidy leakages', Hindu Business line, 2018

## Digital Services; Transforming Services through E-Governance

India is one of the fastest growing economies in the world. However, given its ever increasing and diverse population, there are a variety of challenges to its governance. Although several steps have been taken to streamline processes through programmes such as NICNET, DISNIC, NeGP, the Government is making efforts for tackling these challenges through e-governance.

E-governance refers to the transformation of existing processes by leveraging IT across all departments and ministries. This would lead to a simplified form of delivery of services, especially to citizens. In today's digitally driven world, the shift from traditional processes to e-governance is crucial in order to reach every corner of the country. This widespread access to services is expected to have a waterfall effect on a citizens and businesses and thereby, spur sustainable economic growth.

**Figure 14: Characteristics of E- Governance**



One of the simplest steps in this endeavor is the shift from manual forms to online applications and tracking. Allowing citizens to avail services such as payment of bills, appointment bookings, etc. from the comfort of their homes leads to a more efficient and streamlined process.

Reducing the number and complexity of forms required is also necessary. With online repositories for basic user information such as educational degrees, identity documents, etc., there are fewer redundancies in the process and smoother functioning. This also holds true for database and Government documents.

With low digital literacy rates, adoption of online services and e-processes is a point of concern for the Indian Government. However, with smartphones penetrating every corner of the country, more and more citizens are getting familiar with being online. As initiatives like Bhoomi, Gyandoot, FRIENDS\*, etc. for e-delivery of services become commonplace, citizens would recognize the benefits of such services and use them more often.

## M-Governance; The way ahead

M-governance is another effective medium for governance. This refers to the use of mobile phones to provide Government services or information. With a growing population of Indians equipped with smartphones, m-governance has the potential to increase the productivity of public service personnel, improve the delivery of Government information and services and lower costs, leading to higher participation of people.



Sources: Digital India website, KPMG Analysis, InsightsonIndia.com

\*Fast Reliable Instant Efficient Network for Disbursement of Services, Kerala

Figure 15: M-Governance



Source: KPMG Analysis

### Gurgaon Metropolitan Development Authority: A case study on a paperless Government office

#### Examples of e-services for Citizens

-  Stadium Booking
-  Right of Way
-  New Water Connection
-  Access Permission
-  SWD Connection



#### For Internal Operations

- Paperless office since inception in 2017
- NIC's e-Office application for internal approvals and documentation
- Deploys In-house team for application development
- Applications deployed on GMDA's cloud



Up to **80%** increase in efficiency

Ease of application tracking for citizens

**21** services available online

Mobile apps developed for few services

Sources: KPMG Analysis of available services on GMDA portal, Primary Interactions

\*As per study of efficiency of few online processes

## Digital Empowerment of Citizens

While utilization of digital solutions is important for a country's digitization, it is also important for the citizens to participate in the digital economy by upgrading their current abilities to relevant digital skills.

Additionally, various initiatives have been undertaken by the Government to be more accessible to the citizens and its departments. Such a two-fold approach to digital governance leverages technologies such as mobile, cloud, open data platforms, digital identity, etc. This allows citizens to avail government services without having to make multiple physical visits or adhere to complex documentation and processes, saving large amounts of time and effort.

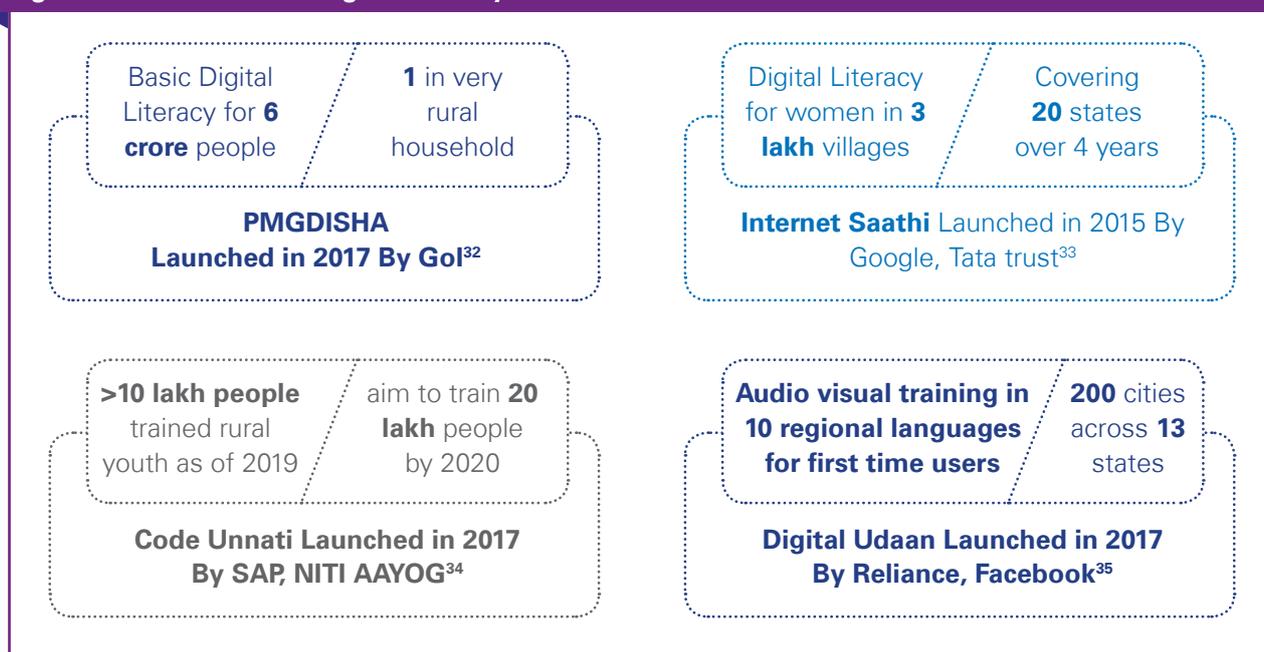
To further empower the citizens, there is need for universal digital literacy and adoption of platforms for participative governance.

## Digital Literacy

As smartphones extend to every corner of the nation, the Government has initiated various programmes to ensure digital literacy for all. These initiatives stem from Government's vision to make every household digitally literate for digital empowerment and inclusion.

The proliferation of smartphones in rural India has played a major role in increasing interest in the IT sector as well as increasing digital literacy organically. As mobile based internet companies such as Google, Facebook, Amazon, Uber, UrbanClap etc. grow, their delivery boys, security workers, local partners, etc. are being inducted to the smartphone era to carry out operations. Thus, there is a push for digital literacy from the Government as well as the private sector.

**Figure 16: Initiatives for Digital Literacy**



Sources: 32. Digital India Website; 33. 'Google Tata Trust's Internet Saathi now live in 2.6 lakh villages', Livemint.com, 2018; 34. Code Unnati, CSRbox.com; 35. 'Digital Udaan Reliance Jio ties up with Facebook', Livemint 2018

## Participative Governance through smartphones

As smartphones become ubiquitous, the use of social media grows in tandem. Through this medium, the Government can directly engage with citizens and disseminate information.

With increase in ease of internet access, social media users in India have grown from 142 million in 2015 to 326 million in 2018. The social network users in the country are expected to be almost 448 million in 2023<sup>36</sup>. Currently, they account for 72% of smartphone users. Thus, smartphones act as an effective channel of two-way communication for information and services. Consequently, this has led to the emergence of mobile apps such as 'Mygov.in', that focus on providing relevant information to concerned citizens and Meri Sadak, Swachh Bharat, etc. which allow citizens to highlight problems directly to the Government.

Additionally, these apps also provide a platform for citizens to express their grievances, allowing them to feel more empowered and involved in the country's governance.

Figure 17: MyGov.in<sup>37</sup>



Figure 18: Steps to Digital Empowerment



Sources: 36. Statista; 37. Mygov.in, My gov mobile app, KPMG analysis

## Empowering departments

As India strengthens its position in a technology driven world, the pillars of digital governance must come together to propel India further. With the required infrastructure in place and proliferation of smartphones in India, mobile devices will continue to play a dominant role in economic growth. Thus, delivery of public services must be revamped accordingly. This holds true for services to citizens as well as its own employees.

By empowering employees with smartphones, some tasks can be accomplished on the go for maximum efficiency. Allowing ground level workers such as Asha workers and Anganwaris to use smartphones for data entry can lead to reduction in errors and steps in the process. Through this, beneficiaries of various government schemes can be recognized faster and can directly avail benefits allocated to them.

### Case Study: Hybrid BLO; Empowering Employees<sup>38</sup>



**Time Saving:** Reduces need to visit Electoral Registration office. All the notification and alerts related to their work will be received in mobile app



**Offline Functionality:** Works in remote areas with little to no internet access



**Reduction in Errors:** Real time data entry of applicants to reduce errors. Tracking of statements can be done through app

>15 million downloads



In order to provide services efficiently, Government departments need to work together to simplify process and reduce the number of steps involved for citizens and businesses. By leveraging technology, there are several ways to increase interoperability between ministries and departments.

Technologies such as open source applications have the potential to improve intergovernmental functioning. Use of open data platforms, cloud, smartphone technology, e-repositories, etc. can lead to immense time and cost savings.

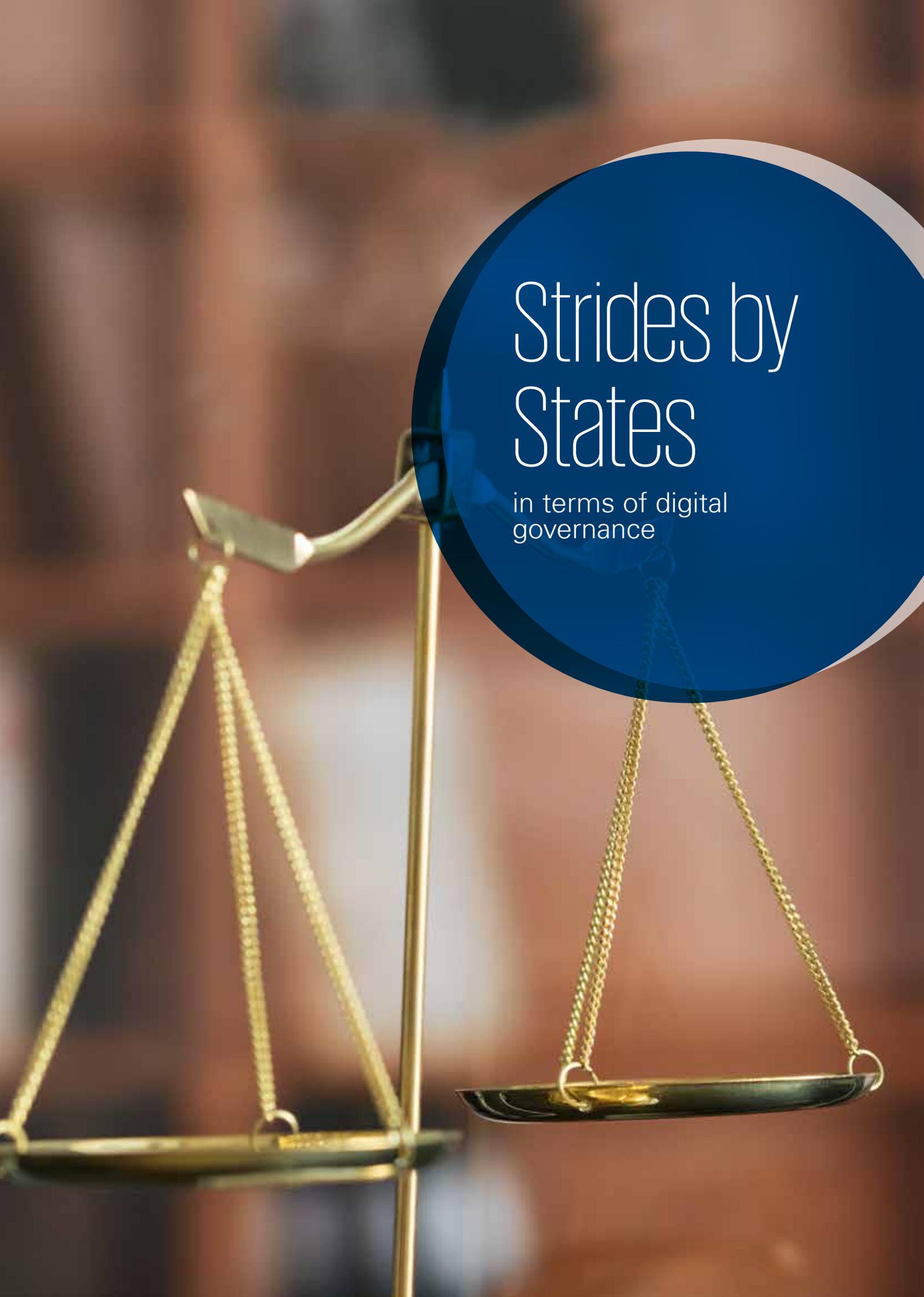
**Figure 19: Initiatives to facilitate digital interdepartmental interactions<sup>39</sup>**



With smooth running of internal operations established, the Government would be in a prime position to provide essential services to citizens, digitally.

Additionally, smartphones have become cornerstone of rural development. Even urban users prefer to access information and services through their devices. For a country as vast and populous as India, smartphones act as a viable bridge to access information and services. Hence, Government services must be adapted to suit today's smartphone dominated market.

Sources: 38. Mobile Seva app store; 39. Digital India, Egov.co.in, Mobile Seva.com, KPMG Analysis

A golden scale of justice is the central focus, set against a blurred background of people. A large, semi-transparent blue circle is overlaid on the right side of the image, containing the title and subtitle text.

# Strides by States

in terms of digital  
governance

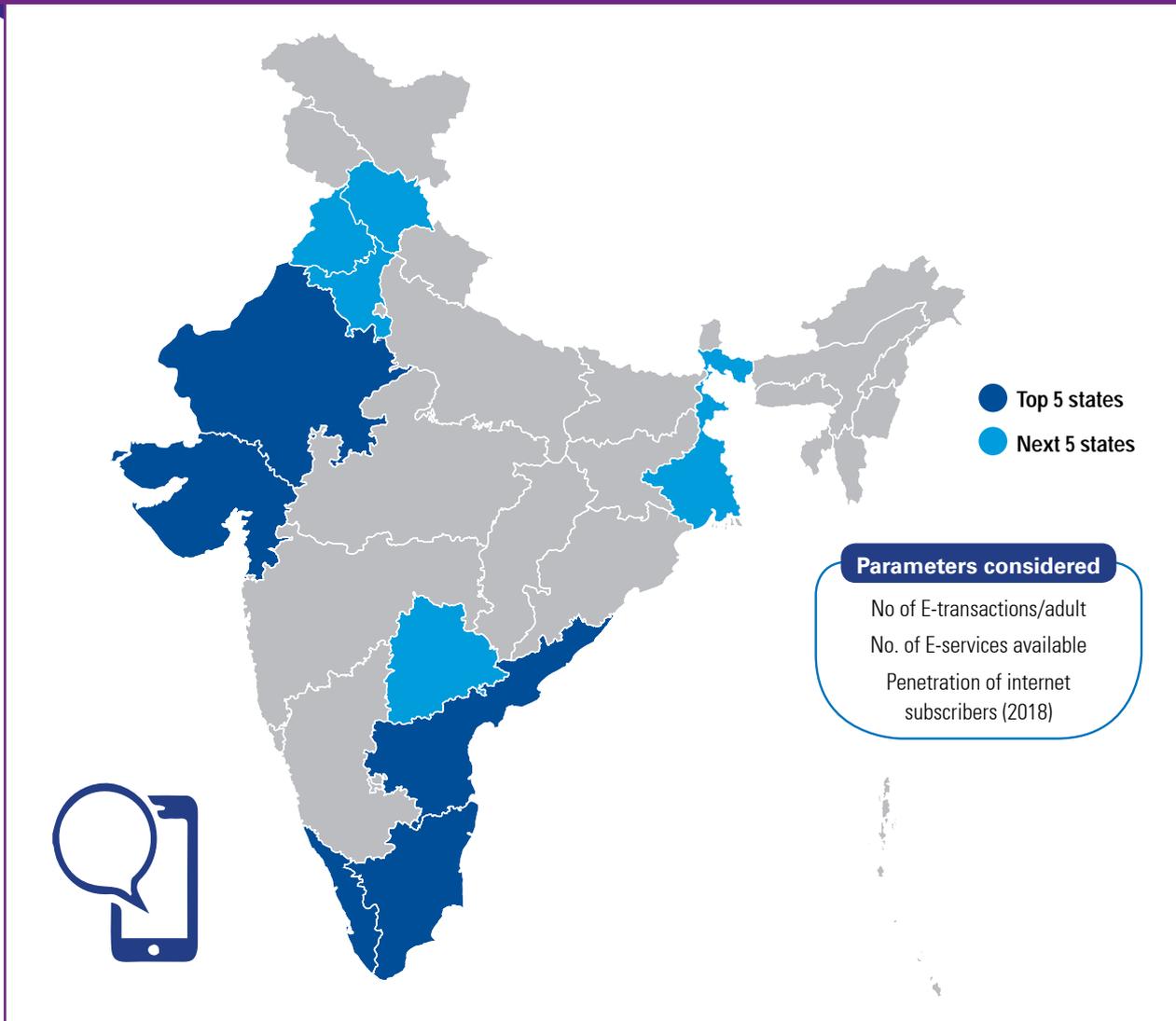
In the recent years, India has made significant attempts to catch up to global e- governance leaders such as Denmark and Republic of Korea breaking into top 100 countries<sup>40</sup>. This includes setting up of reliable digital infrastructure and immense push to digital services. Currently, there are over 3,000 e-services available for the citizens of India.

E-transactions in India have grown from 761 cr in 2015 to 4266 cr in 2018, at a CAGR of 77%<sup>41</sup>. Apart from providing these services, monitoring their progress is also a key activity. The e-taal platform serves this purpose, allowing states and ministries to evaluate and identify further measures needed for growth.

Top e-services provided are agriculture related activities, e-courts, bill payments, etc. Additionally, states with higher smartphone penetration also have the highest no. of e-transactions.

In terms of readiness for Digital India, Andhra Pradesh, Gujarat, Kerala, Rajasthan and Tamil Nadu emerged as leaders. They also have very high number of services available online. This benchmarking was done with respect to number of e- transactions per adults, number of internet subscribers and no. of e-services provided. Guided by the successful initiatives in these states, other states, have also made noteworthy attempts in the area of digital governance.

**Figure 20: India Digital Readiness Benchmarking<sup>42</sup>**



Sources: 40. UN E-government knowledgebase; 41. Total e-transactions from Jan-Dec 2015 and Jan-Dec2019, Etaal; 42. Figures from Etaal, TRAI, Ministry of Statistics & Programme Implementation

## Kerala: India's first digital state

Kerala began its journey towards a digital state at a grass root level, by ensuring digital literacy in schools. Given its high literacy rates, the population of Kerala was well positioned for upskilling for a digital era.

In 2002, two major programs were launched; Akshaya Centers and IT@School. Through proper implementation and targeted expansion of these programmes, the state reached 75% digital literacy by 2016.<sup>43</sup>

To cater to the needs of a digitally literate and tech savvy population, Kerala state government implemented Kerala Fiber Optic Network and Skill Delivery Platform Kerala (SDPK). In November 2019, Kerala became the first state to have 100% broadband internet facility in all districts with 100 mbps.<sup>44</sup>



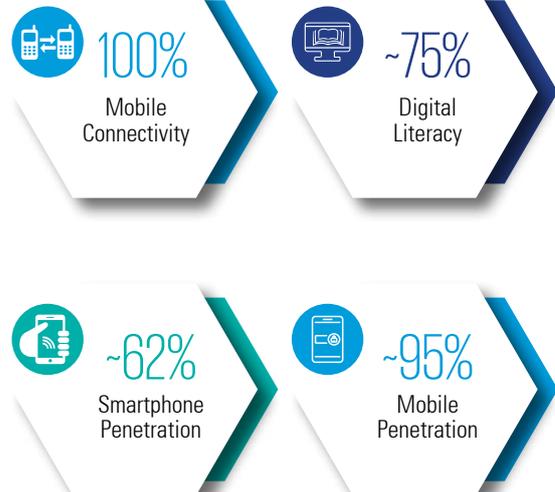
Similar to common service centers, Akshaya Centres provide basic internet connectivity and services such as water, electricity bill payments, issuing of Aadhaar and PAN cards, digital training etc.

This combined with over 2,500 Akshay Centers in the state, has enabled the shift from traditional processes to digital governance.

Kerala has over 600 e-governance applications, covering almost all departments of the state. Over 3,000 offices, including motor vehicles and land registration department are fully computerised.<sup>44</sup>

Consequently, the state has one of the highest number of bank accounts linked to Aadhar card and e-transactions for Government services.<sup>45</sup>

### Kerala: Key Metrics<sup>43,44</sup>

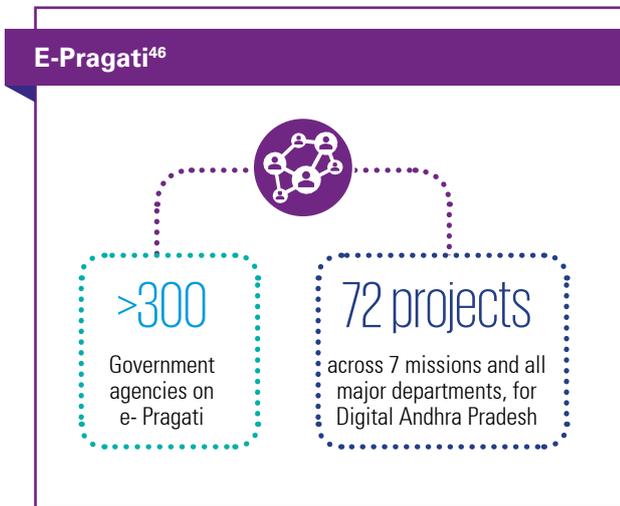


Sources: 43. 'Kerala declared first digital state in India', India Today, 2016; 44. 'Kerala leads in digital awareness and technology literacy', Business World, 2019; 45. E-taal

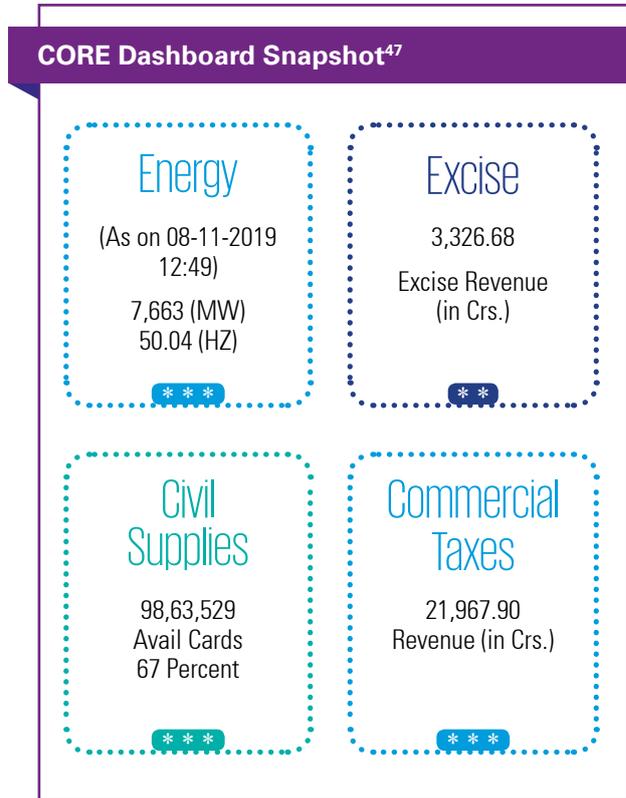
## Andhra Pradesh: A Pioneer of Digital Revolution

Andhra Pradesh was the first state to successfully implement E-Pragati, a state wide e-governance framework via enterprise architecture.<sup>46</sup>

E-Pragati focuses on building a unified, connected and citizen-centric government, leading to free-flow of information among departments. It also serves as a single access point for all digitalized and digitally transformed services provided by Government of Andhra Pradesh. This approach has increased transparency and efficiency of Government services, leading to improved citizen services.



Another key initiative undertaken by the state is the CORE Dashboard. This dashboard is designed and developed to address wide range of objectives & monitor various departmental activities in order to achieve service-level targets. It is a comprehensive e-governance initiative that is spearheaded by the Chief Minister's office directly covering over 33 departments.<sup>47</sup>



Sources: 46. Myap.e-pragati.in; 47. Core.ap.gov.in

## Rajasthan: Leveraging technologies for Digital governance

The Government of Rajasthan has taken several successful steps towards digitizing the state through a wide variety of initiatives ranging from cloud to e-services to digital infrastructure and literacy.

One of Rajasthan's flagship schemes, the Bhamashah Yojana, was one of the first state-led initiatives that went completely online.<sup>48</sup> This achievement brought Rajasthan to the forefront of digitization. Given its success, this scheme was extended to serve as an umbrella for other services such as e-banking and financial inclusion.

The Government of Rajasthan is leveraging all available technologies to further the development of the state and ensure quick and convenient delivery of citizen services.

By ensuring internet connectivity through RajNET, it has enabled digital infrastructure for digital services. To foster innovation and entrepreneurship in the state, RajMegh offers free cloud services to startups under certain programmes. Raj Sewa Dwar allows beneficiaries to directly enroll in schemes. This service is also available as a mobile app to directly connect to citizens. With online services or apps for a variety of purposes such as connecting to the CM, storing documents, tourism, etc., Rajasthan is well positioned to become a fully digitally governed state.<sup>49</sup>



Figure 21: Some Digital Initiatives by Government of Rajasthan

### 1 E-mitra<sup>48</sup>

- Over 250 G2C and B2C services across all rural & urban areas
- Services include utility bill payment, digitally signed certificate services, banking, tele-medicine, e-commerce services, etc.

**24 cr e-transactions\***



### 2 Bhamashah Yojna and others<sup>49</sup>

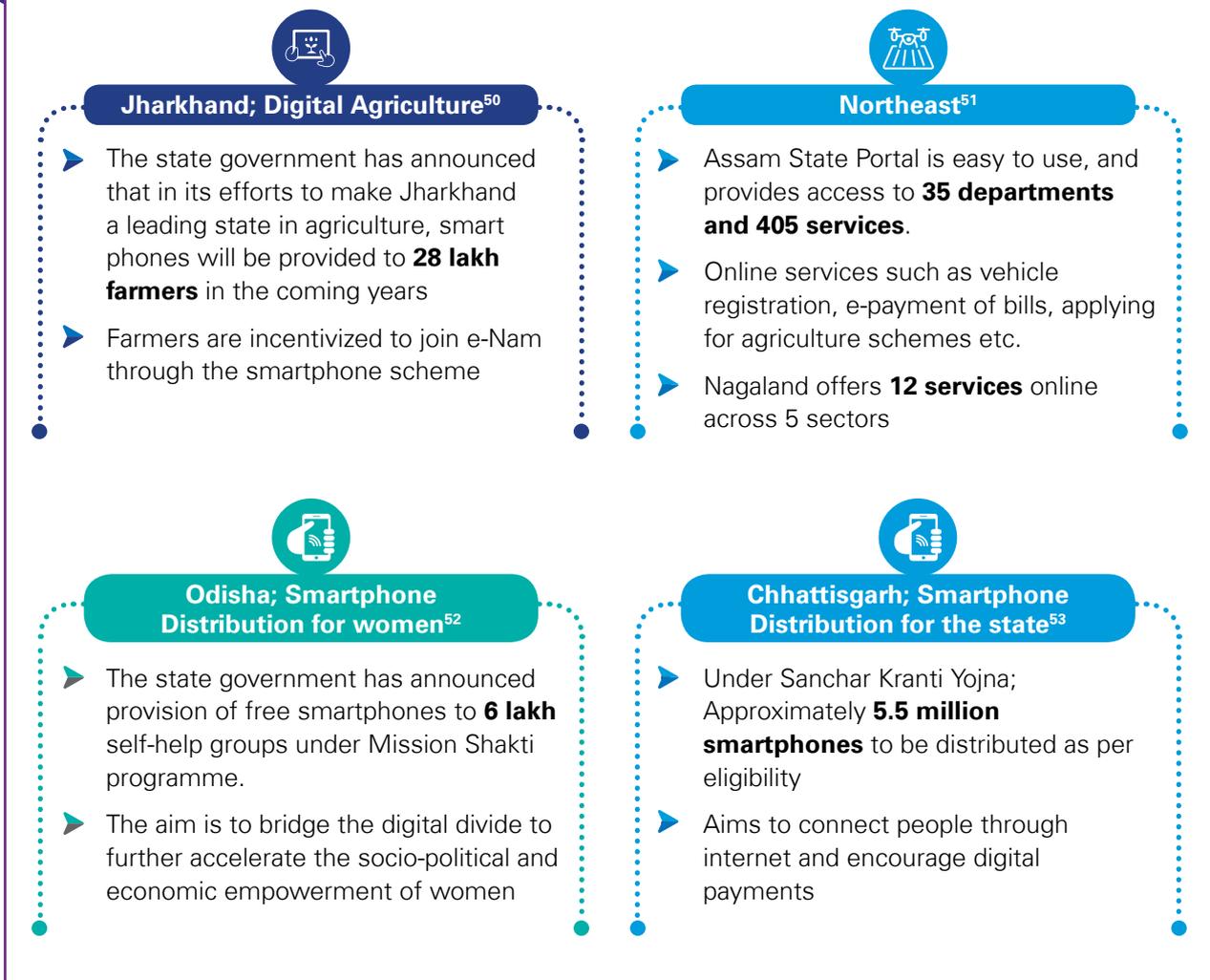
- Single-window delivery system for crediting benefits of 150+ social security welfare schemes
- Bhamashah Wallet mobile, an online payment application that offers a safe and secure digital payment experience, banking services, merchant transactions
- A digikit in local languages
- Bhamashah Digital Pariwar Yojana; provides ration card and cash advance to purchase smartphone



Sources: 48. 'Rajasthan takes another step to a digital future' Yourstory.com, 2018; 49. E-mitra.rajasthan.gov.in

\*As on November 2019

Figure 22: Notable Digital Initiatives by other states



Over the years, state level initiatives have had varying degrees of success. However, with a supportive central government push towards digital governance, the current scenario is likely to keep improving.

Several states have made substantial attempts to streamline their government processes. State governments have recognized that desired governance results can come from use of technology in both front end and back end processes. While some states have focused on digital infrastructure and literacy as a means of e-governance, others have focused on providing basic services online.

Several states have developed apps for specific purposes such as traffic control, tourism, e-districts, CM connect, etc. to reach today's smartphone enabled citizens.

Some states such as Odisha convey that owning a mobile device and access to unlimited information will help make the citizens more independent, enable better decision-making on their part, and empower them to broaden their financial scope and strengthen their livelihoods.

Other states like Chhattisgarh and Northeastern states, which have the limited mobile connectivity, have also made attempts to improve their position in terms of digital readiness.

Sources: 50. 'Jharkhand to provide free mobile phones to 28 lakh farmers', Jagranjosh, 2018; 51. 'Northeast to get comprehensive telecom development policy', Economic Times, 2019; 52. 'Naveen Patnaik announces free smartphones for women SHGs', Times of India, 2018; 53. 'Chhattisgarh government distribute 55 lakh smartphones', Yourstory.com, 2018

A high-angle photograph of a person's hands working at a desk. The person is typing on a silver laptop keyboard with their left hand and holding a pen over a white notebook with their right hand. A white coffee cup on a saucer sits on the desk to the left of the laptop. A blue circular graphic is overlaid on the right side of the image, containing the text 'Digital Governance for Citizen services'.

# Digital Governance for Citizen services

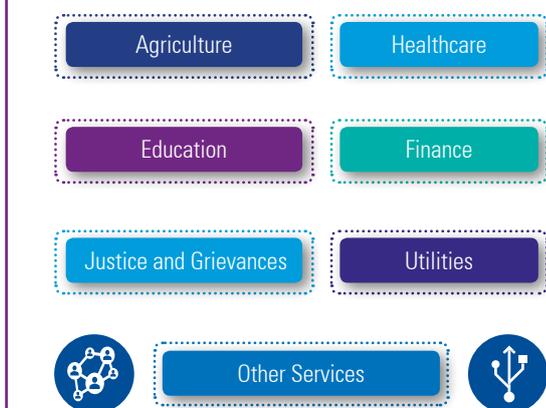
## Government to Citizens Service via smartphones

A mobile device acts as a conduit to an array of services via applications and the internet. Thus, a Government app/online service has potential to make a sustainable impact on citizens services.

Ease of availability of affordable smartphones and low priced mobile data plans have led to a booming app economy in India. In 2019, India became the world's #1 market in terms of app downloads.<sup>54</sup> This app economy is expected to continue to grow, fueled by ever-increasing consumers appetite for apps and mobile friendly services.

Currently, over 300 core government services apps are available on the Google Play Store<sup>55</sup>, with few available on other app stores as well. These apps are focused on providing core services across priority sectors for the Government.

Figure 23: Key Sectors for GoI<sup>56</sup>



## Current state of Digital services

Certain elements, that address the challenges and constraints of the citizens, should be carefully considered while developing government apps/ services. Since government objectives vary from inclusion to development, maximum reach and usage of the app/service is critical.<sup>57</sup>

Some features such as availability in local languages are user specific and can help ensure maximum usability. More and more Government apps are adding regional languages to their platforms as vernacular internet users grow. Open Oses such as Android, Indus OS, etc. allow for ease of development of local language capabilities.

For feedback and support, interactive apps such as Meri Sadak, Swachh Bharat, etc. play a key role. These apps also allow for photos to be uploaded, leading to ease of communication. However, there is still high demand for more regional Indian languages in Government apps.

In India, where there are still regions of low to no connectivity, features such as offline functionality are of high importance. This would allow apps to operate in remote areas. Apps or operating systems with low storage requirements such as Android Go, KaiOS, are more likely to be used as low cost smartphones have low RAM.

Other features such as frequent updates to address bugs and glitches, and to ensure functionality are essential. These constant updates, along with integration with other platforms such as payments, are enabled by an open OS ecosystem, such as Android, for mobile devices.



Sources: 54. Forbes, App Annie; 55. Google Play store data; 56. Primary interactions with MeitY, KPMG analysis; 57. App store reviews, Primary Interactions, KPMG Analysis

## Ideal elements for Digital Governance portals and applications



Open source operating systems such as Android provide functionalities and allow customization, thereby enabling incorporation of these elements to ensure effective governance services.

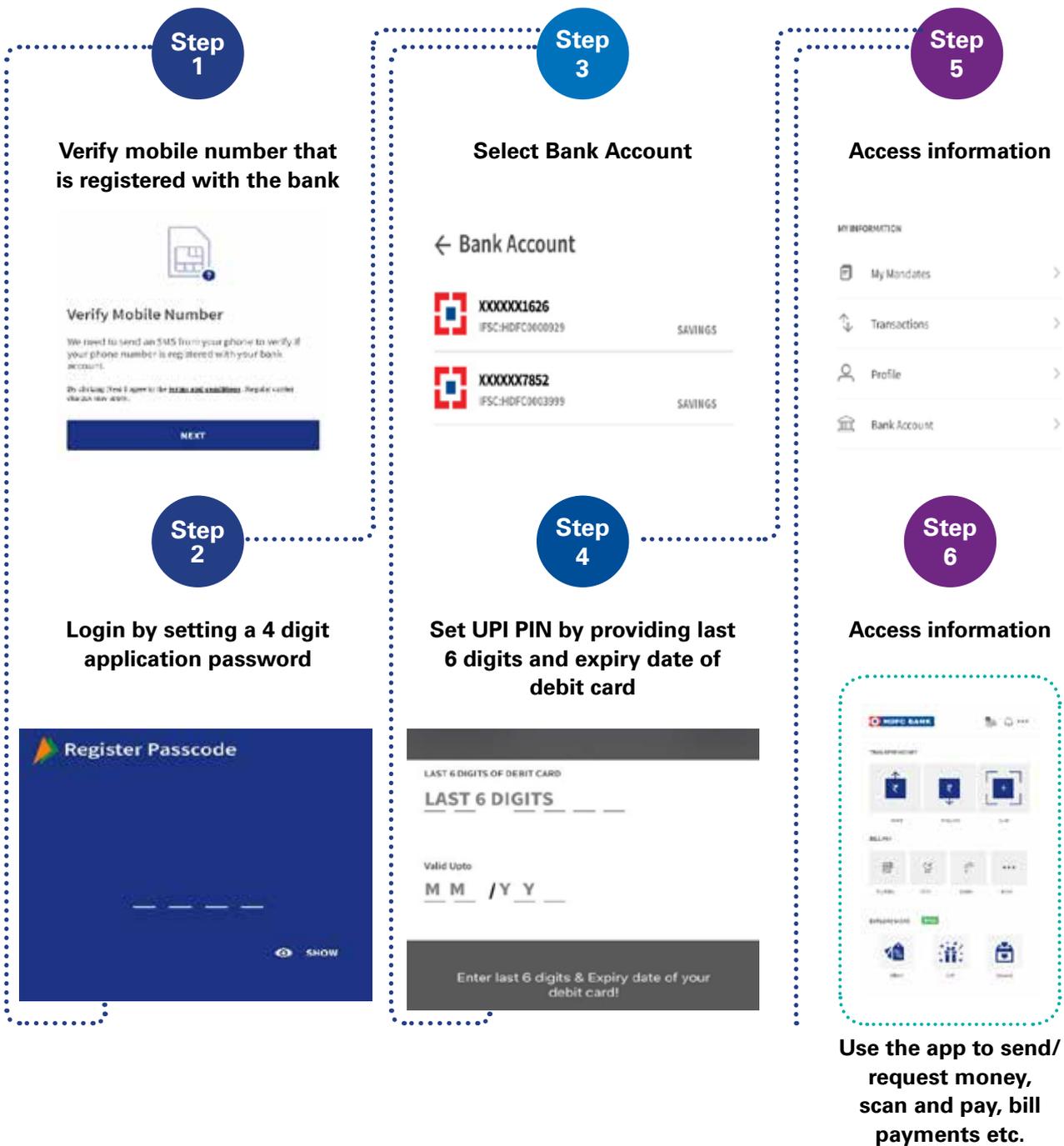


A hand is shown holding a smartphone, with the screen displaying a futuristic digital interface. The interface features glowing blue and purple lines, resembling circuitry or data paths, overlaid on a dark background. The overall aesthetic is high-tech and digital. A large, dark blue circular graphic is positioned on the right side of the image, containing white text.

A closer look  
at available  
digital  
services

► Bharat Interface for Money (BHIM) is a payment app that lets users make simple, easy and quick transactions using Unified Payments Interface (UPI).

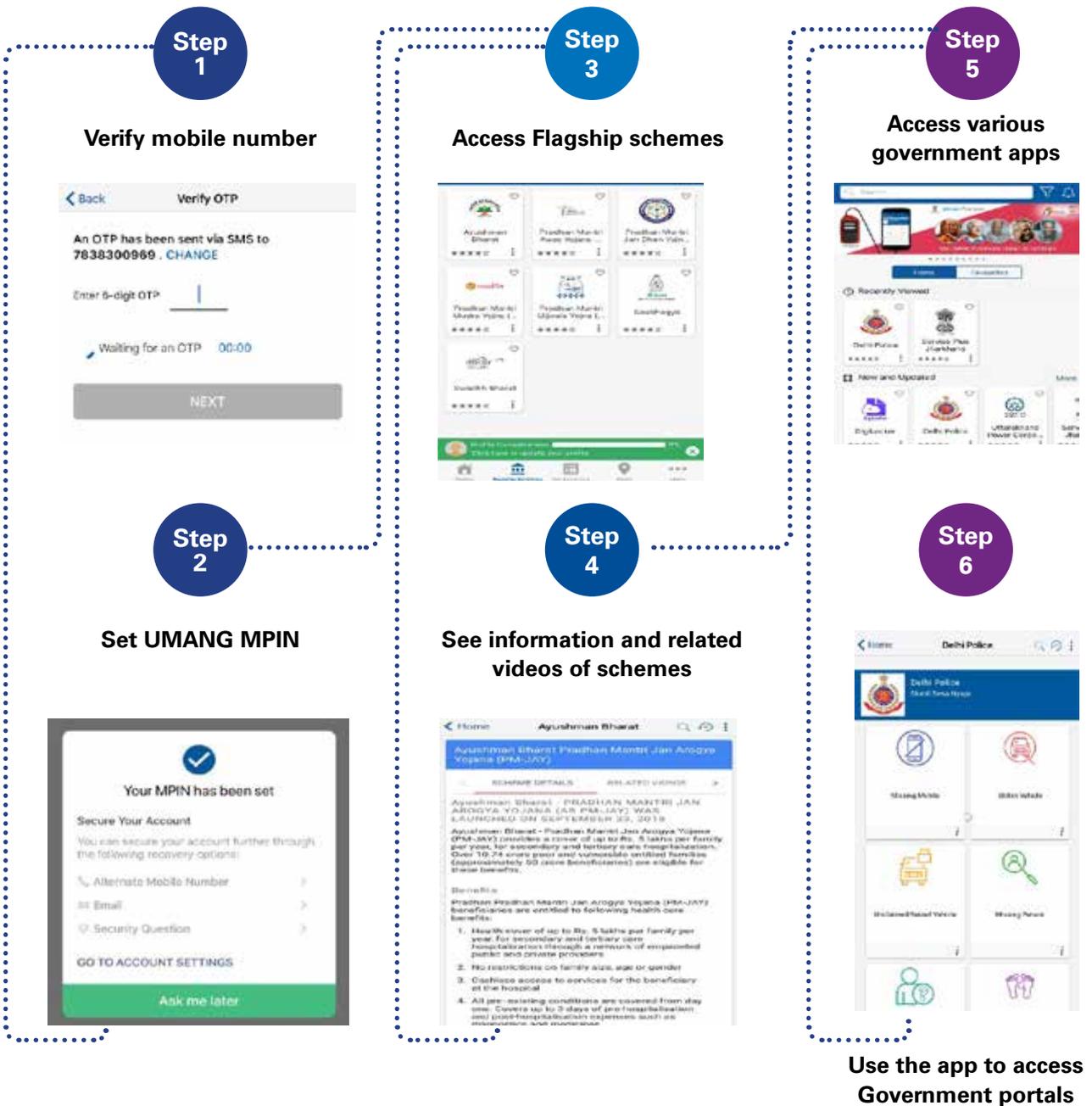
► Users can make direct bank payments to anyone on UPI using their UPI ID or scanning their QR with the BHIM app. They can also request money through the app through a UPI ID.



# UMANG

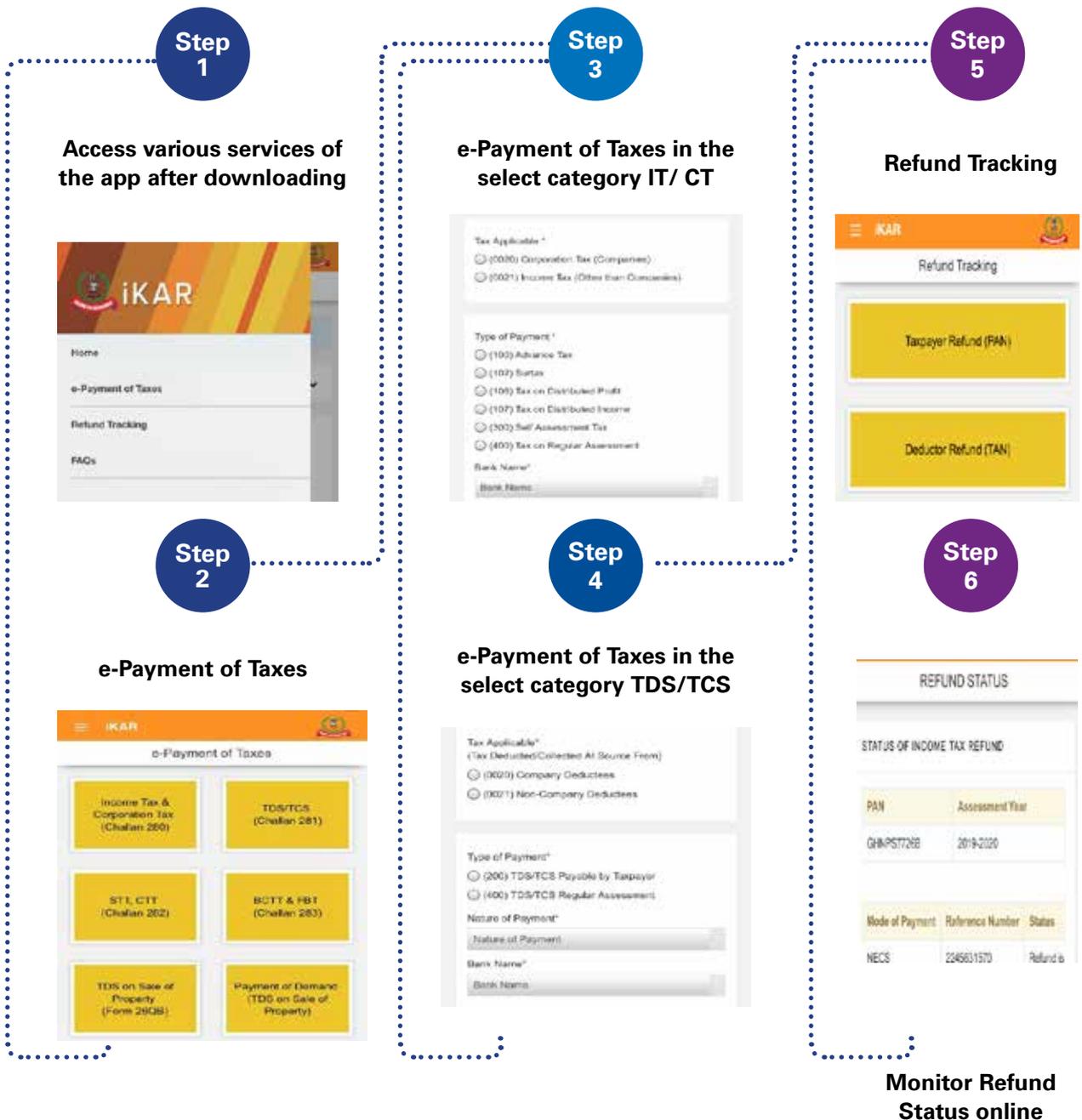


- Unified Mobile Application for New-age Governance (UMANG) provides a single platform for all Indian citizens to access pan India e-Gov services ranging from Central to Local Government bodies and other citizen centric services.
- It provides a unified approach where citizens can install one application to avail multiple governance services.
- UMANG provides more than 400 services across departments and states and supports 13 Indian languages



► This mobile application of the Income-Tax Department offers a quick and convenient platform for payment of various direct taxes using PAN/TAN such as Advance Tax, Self-Assessment Tax, TDS/TCS, etc.

► Users can also track status of Income Tax and TDS Refunds.



# eCourts Services



- ▶ eCourts is a one stop portal to all information related to cases in districts and high courts.
- ▶ It provides information related to the judiciary system to stakeholders such as citizens, lawyers, litigants, police and Government agencies.
- ▶ It provides case status and the entire history of almost 3 crore cases. A user can get current status for case by entering CNR number, which is assigned to each case filed in district and taluka courts.

**Step 1**

**Access various services on the app or portal**



**Step 3**

**Access Case Status**



**Step 5**

**Re-redirect to e-filing application**



**Step 2**

**Search by CNR number**



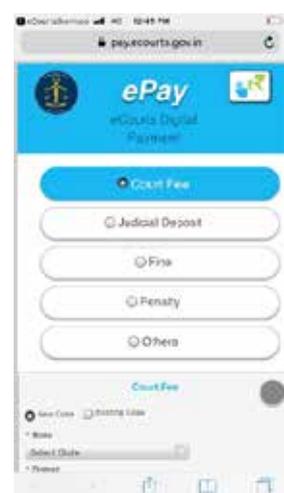
**Step 4**

**Access Cause list/ Daily Board**



**Step 6**

**Redirect to e-Courts Digital Payment**



### Agriculture: mKissan

- Access to market and weather information
- Access to industrial best practices and expert advice



9

No. of languages available

>10 Lakh

No. of Downloads

Similar Apps



### Healthcare: Ayushman Bharat

- Health insurance for low income families
- Information on eligibility, balance, complaints, and nearby hospitals



2

No. of languages available

>5 Lakh

No. of Downloads

Similar Apps



### Education: E-Pathshala

- Access to study material, text books, teaching aides
- Interactions between teachers, students and parents



2

No. of languages available

>1.82 mil

No. of Downloads

Similar Apps



### E-repositories: Digi Locker

- Safe and Secure virtual space to store government issued documents
- Recognized by 24 agencies for official purposes



174 cr

Documents issued

150+

Document types

>1 crore

No. of Downloads

Similar Apps



For key focus sectors, mobiles applications help make an impact due to their widespread reach and ease of use.

No. of downloads as on November 2019, on Google Play store

### Transport: mParivahan

- Online access to driver's license
- Information regarding vehicle ownership, for second hand sales or theft



>10 mn

No. of Downloads

~2 mil

User searches daily

4.4

Average Rating

Similar Apps



### Public Services: Indian Police

- Launched under Digital India to ensure safety of citizens
- GIS Map based interface for citizens with details of nearby police stations for emergencies



>50,00

No. of Downloads

3.7

Average Rating

Similar Apps



### Interactive Governance Apps: Mygov

- Discussions, polls and debates on current affairs
- Latest information, instant updates from PMO



>10 lakh

No. of Downloads

13

Languages

4.5

Average Rating

Similar Apps



### Travel and Tourism: mPassport

- Ease of access to Passport application, status tracking, locating the Passport Seva Kendra (PSK)
- Shorter process time; from 60 days to 7 days via app



>1 mil

No. of Downloads

77

No. of Passport Seva Kendras

4.3

Average Rating

Similar Apps



The central Government, along with its various departments, ministries and state authorities, has implemented various mobile apps to provide better services and improve the standard of living for citizens of India. These apps have enabled effective functioning, and time and cost savings.

## Impact of Smartphones

As the smartphone market grows, there is a corresponding significant growth in mobile applications and online services; driven by both the Government and private players. With rise in smartphone users, there is vast potential to leverage this reach for social and economic development.

Mobile apps and web portals as the primary form of service delivery can lead to more efficient process, transparent workings, ease of access to services, citizen participation and inclusion.

Recognizing this, the Government has made numerous attempts to cater to the growing demand for digital and mobile friendly services.

**Figure 24: Impact of Smartphones on Digital Governance**

### Efficiency

- Ease of availability of data and services
- Automation of processes such as data entry
- On the go monitoring leading to efficient business process



### Transparency

- Apps such as RTI, E-Courts, GST rate finder, GeM, bring transparency to Government processes and build trust



### Participation

- E-Participation through apps such as MyGov, Swachh Bharat, Meri Sadak provide quick and easy feedback for services
- Direct communication to Government and state agencies



### Inclusion

- Increase in rural internet penetration
- Financial inclusion through mobile applications
- Awareness and enrollment under schemes through applications and web portals



### Citizen Services

- m-Agriculture, m-health, m-education
- M-transport, m-banking, m-passport



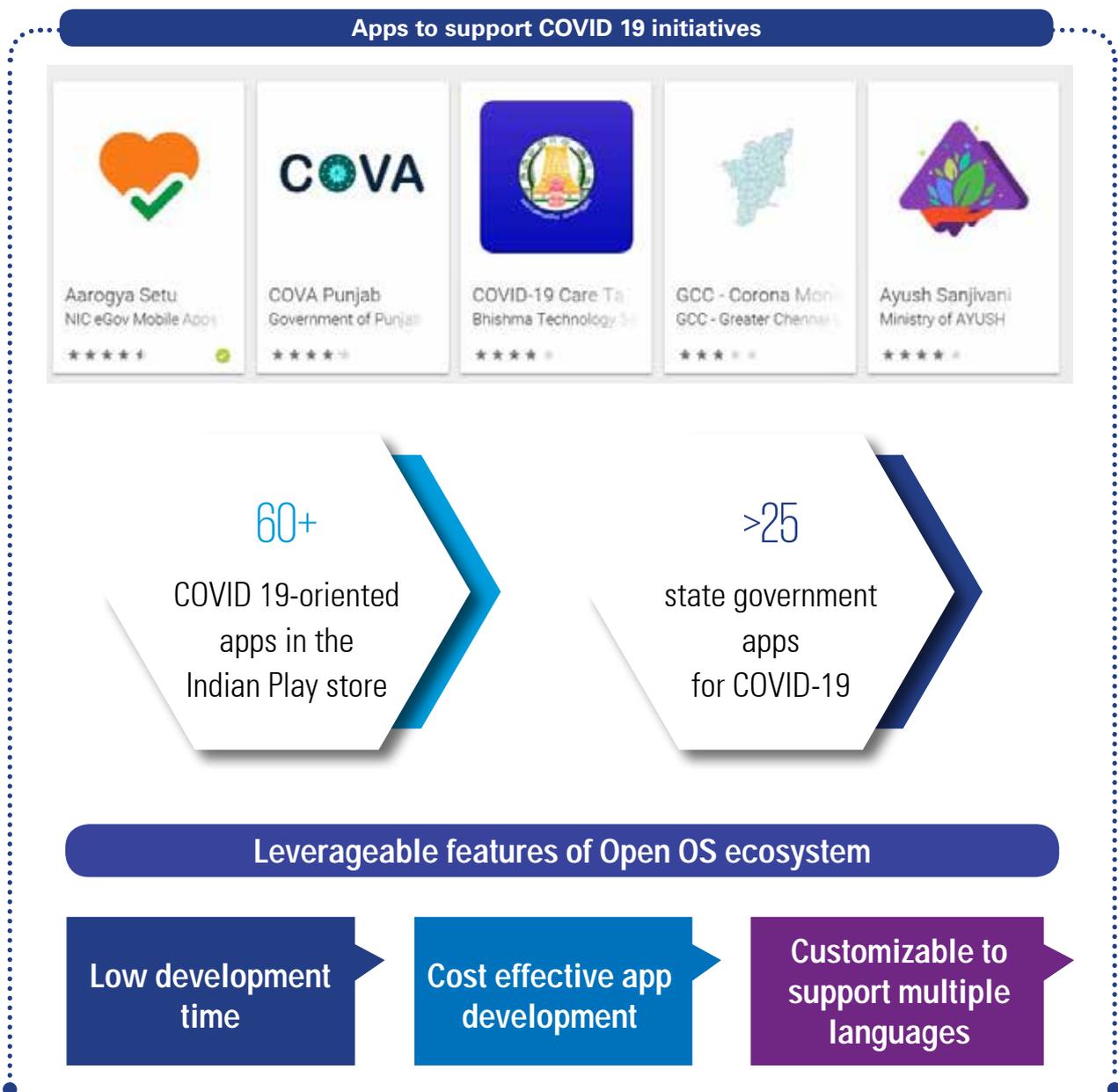
Source: KPMG Analysis

## COVID 19: Role of smartphones

Amidst the global Corona pandemic, smartphones have emerged as a multipurpose tool for the government in various ways. By leveraging key features of open ecosystem such as low development time, cost-effectiveness and customization, many state governments have developed their own apps for a range of services. Owing to open OSes such as Android, the current administration was able to promptly take action and develop apps that would aid various departments in carrying out COVID-19 related functions. This has resulted in over 60 COVID-19 related apps in the Play Store.

To prevent the rapid spread of the Corona virus, countries such as India imposed a nation-wide lockdown. Thus, as the world moves to digital platforms in these physically restrictive times, the role of smartphones is expected to grow in importance and adoption. This may have a cascading and sustainable effect on key sectors such as Education, Health, Finance, etc.

With the country in lockdown, citizens are gradually recognizing the value of accessing public services online, through mobile devices.



In this arduous fight against Corona virus, the government has led a two-prong attack in terms of leveraging smartphones. Firstly, a plethora of new applications has emerged in short time, such as Arogya Setu. New applications developed cover a variety of functions such as identification of active patients, allocation of relief funds, information on healthcare facilities, etc.

Secondly, existing platforms such as social media were leveraged to spread accurate and relevant information in a concise and effective manner. This is especially useful to stop the spread of rumors and baseless

speculations. Owing to Google's efforts to ensure Android compatibility through the AFA/ACC, smartphones are now one of the Indian government's primary contact tracing tools to battle the coronavirus epidemic. By keeping the public well informed on the 'do's and don'ts', well-coordinated steps can be taken to overcome this pandemic.

The government has also urged people to come forward and share technology-driven solutions for COVID-19 to arrest its growth. Smartphones are crucial for the government's focus on technology led governance.

### Role of smartphones in COVID times

Dispelling rumours and misinformation through social media

Spreading simplified updates on complicated issues through social media



Through social media apps such as Instagram, Twitter, Telegram etc., the government can spread relevant information directly to the masses

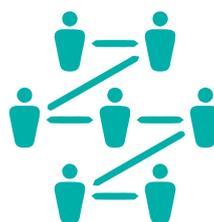


Depositing funds for low income groups through apps

Contact tracing from mobile phones



State governments such as Bihar developed apps to verify information of citizens and allocated Covid relief funds accordingly



When a person tests positive for COVID 19, their activities can be traced using mobiles phones. This allows the relevant authority to track the spread of the virus and limit it

Contributing to funds through smartphone applications

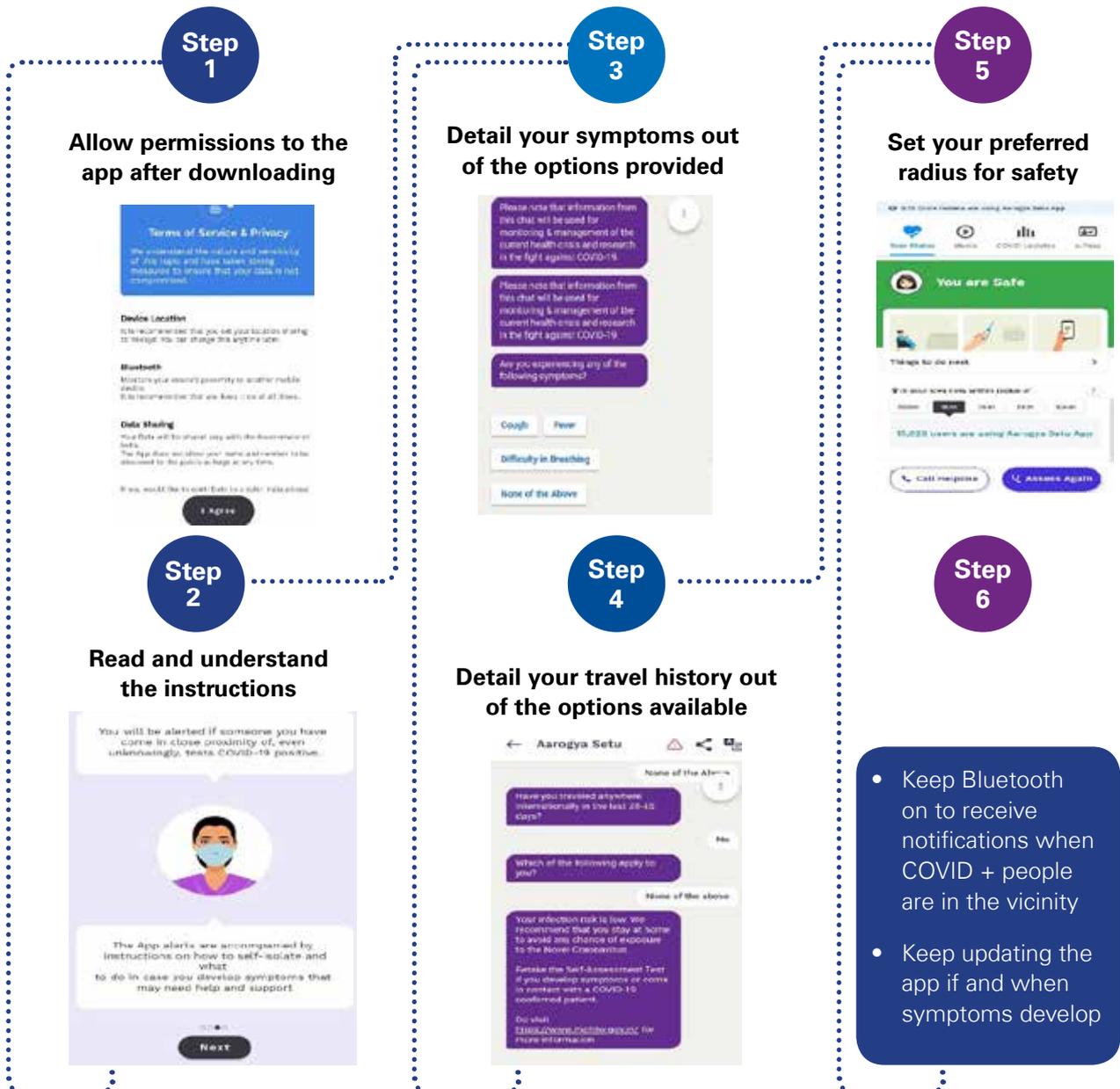
Users are able to leverage smartphones apps such as Google Pay, Paytm, Phone Pe, etc. to easily contribute donations to COVID relief funds

# Arogya Setu



- Arogya Setu is available in 12 Indian languages, with over 9.78 cr users\*
- This app is used to monitor the proximity of COVID-19 positive patients within a

specified radius. This allows users to distance themselves from active patients and keeps the government updated on corona hotspots and patient symptoms



\*As on May 12<sup>th</sup> 2020



A person in a dark suit is shown from the chest down, gesturing with their right hand while holding a white tablet with their left hand. They are seated at a wooden desk. In the foreground, there are several spiral-bound notebooks, one of which is open. A blue circular graphic overlay is positioned on the right side of the image, containing the text 'Way forward for Digital Governance' in white. The background is a blurred office setting with greenery visible through a window.

# Way forward for Digital Governance

Currently, India is ranked 96<sup>th</sup> in UN's e-government index ranking 2018, jumping 11 places from 2016.<sup>58</sup> However, there is still a long way to go.

Although the Government has made noteworthy progress by embracing the 'mobile first' ideology, there are still several challenges to overcome. The waterfall effect of the various digitization initiatives is gradually being realized, resulting in increasing strides towards digital literacy and adoption of digital services.

Increased affordability of smartphones and low app development costs enabled by open operating systems such as Android could propel India's mobile friendly services to new heights.

By 2022, India is expected to reach 829 million smartphone users.<sup>59</sup> This, combined with the

widespread reach of hybrid feature phones, has the potential to ensure that every citizen of India is connected through a mobile device in the next 3 to 4 years.

Increasing focus on ensuring digital infrastructure such as wi-fi and mobile connectivity by central and state governments serves as an enabler for proliferation of digital services.

To overcome these challenges, the Government should follow a prioritized and targeted approach to providing digital services. The development of new online portal or mobile app will depend on the target citizen segment, industry sector, frequency of service usage, service level required, region of implementation, etc. All in one apps may not have much impact in rural India, where needs of the citizens are more basic in nature and avoid complex offerings.

**Table 1: Challenges to be addressed and recommendations**



Development time and costs

- Lack of skilled app developers
- Various stages of testing required

**Recommendations**

- **Utilization of common core infrastructure and platforms like GI cloud to avoid duplication**
- **Sharing best practices and adoption of applications developed by other state governments, agencies**
- **Integration with central portals and applications**

**Adopt apps developed by other states or departments for maximum efficiency**



Sources: 58. UN World E-governance 2018 report; 59. Cisco VNI 2019 KPMG analysis, Primary interactions with MeitY, Google Play store reviews

**Table 1: Challenges to be addressed and recommendations**

 <p>Low functionality of apps</p>	<ul style="list-style-type: none"> <li>▶ App not working in certain cases</li> <li>▶ Not updated frequently</li> <li>▶ No offline functionality</li> <li>▶ Freezes frequently</li> <li>▶ Lack of familiarity with digital delivery of services</li> </ul>	<ul style="list-style-type: none"> <li>▶ Provides limited information</li> <li>▶ Lack of integration with payments, submission of documents etc.</li> <li>▶ Cluttered app interface</li> <li>▶ Lack of vernacular accessibility</li> <li>▶ Apps for one time use</li> </ul>
 <p>Low Digital Literacy and user engagement</p>		
Recommendations		
<p><b>Open API Ecosystem</b></p> <p>Releasing APIs for integrating government services into other applications and platforms</p> 	<p><b>Accessibility</b></p> <p>Deployment on local languages and usage of open source software</p> 	<p><b>Uniform Standards</b></p> <p>Formulation of standards for development of applications; adoption of open standards</p> 

## The way forward

In order to advance in today's digital era, GOI must develop innovative ways of services delivery. Some solutions can be simple such as leveraging social media to communicate with citizens. For example; Delhi Traffic Police WhatsApp chat, Department of Agriculture WhatsApp group with farmers, Mygov Instagram page, etc.

By leveraging existing applications, citizens are more likely to be aware of the services and development time and costs will be reduced. Thus, the government needs to identify key areas of priority for digital governance, both at state and at national level.

Currently majority of apps are developed by NIC,<sup>60</sup> with a few by specific state governments or departments. Encouraging interstate and interdepartmental sharing of applications developed would be beneficial to leverage resources and for quick deployments.

For example, many states have their own tourism/traffic monitoring apps which can be shared and then customized. Increased focus on trainings and scouting for talented app developers would enable various states agencies and departments to create their own high functioning portals or discover other ways to leverage technology to deliver services to the citizens of India.

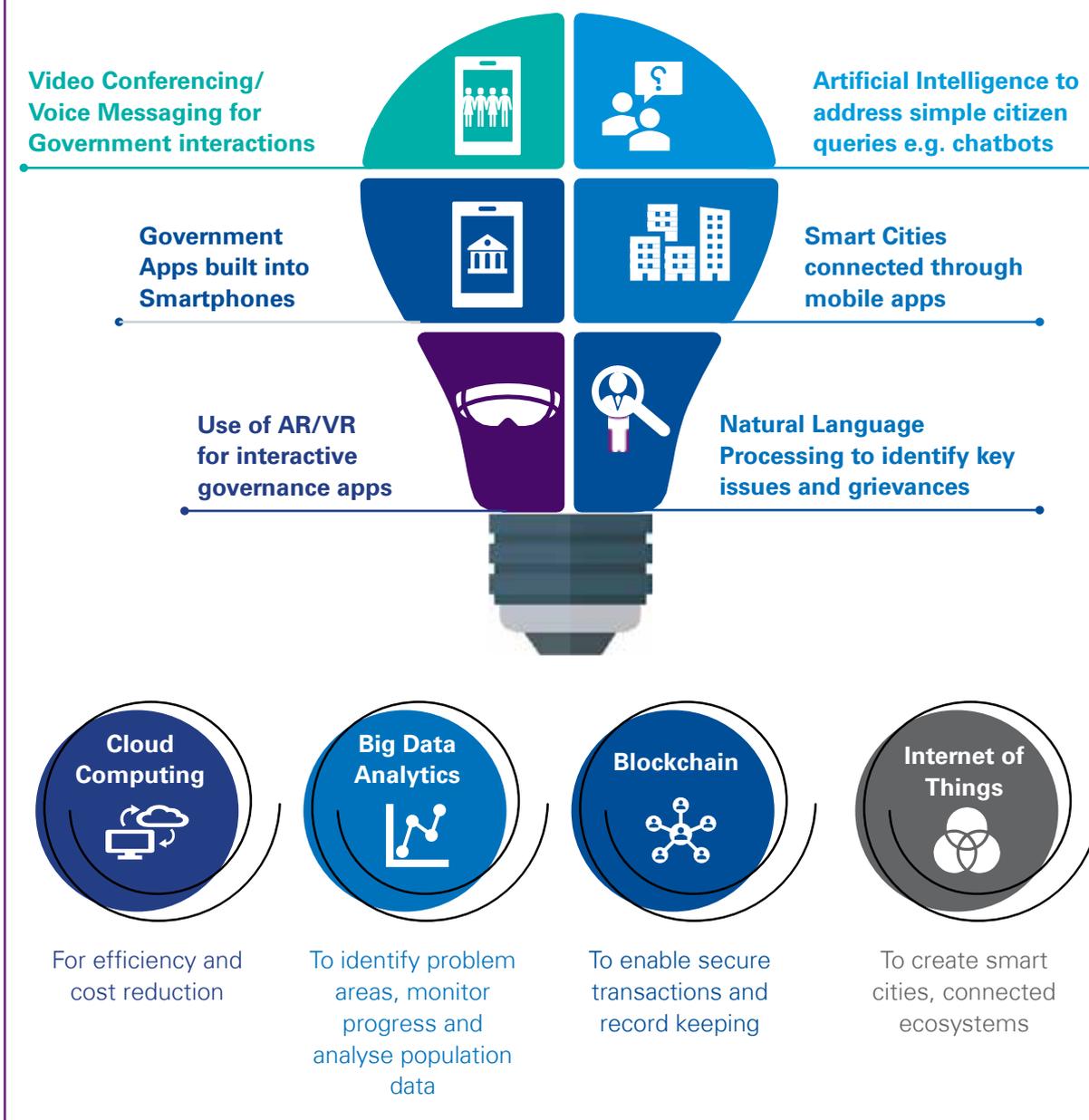
Source: 60. Play Store data from Google, KPMG Analysis

There is a bouquet of other emerging technologies that can transform service delivery by the Government. Building on the strong foundation of digital governance, smartphones provide the platform to adopt technologies such as AI, chatbots for user engagement, Voice recognition to reduce digital literacy and language barrier, use of AR/VR, etc.

In today's rapidly evolving world of technology, the Government of India must constantly update processes and service delivery mechanisms to keep pace with best practices.

The next decade is likely to see more complex technologies such as Blockchain, Big Data analytics etc. being utilized for a truly Digital India.

**Figure 25: Emerging Technologies for Digital India**



Sources: KPMG analysis, Primary interactions with MeitY



# Appendix

# Glossary

<b>3G</b>	3 <sup>rd</sup> Generation
<b>4G</b>	4 <sup>th</sup> Generation
<b>5G</b>	5 <sup>th</sup> Generation
<b>AI</b>	Artificial Intelligence
<b>AR</b>	Augmented reality
<b>B2C</b>	Business to Citizen
<b>CAGR</b>	Compounded Average Growth Rate
<b>CM</b>	Chief Minister
<b>CORE</b>	CM's Office Real time Executive
<b>CSCs</b>	Common Service Centers
<b>DISNIC</b>	District Information System of National Informatics Centre
<b>FRIENDS</b>	Fast Reliable Instant Efficient Network for Disbursement of Services in Kerala
<b>G2C</b>	Government to Citizen
<b>GB</b>	Gigabyte
<b>GDP</b>	Gross Domestic Product
<b>GMDA</b>	Gurgaon Metropolitan Development Authority
<b>ICEA</b>	Indian Cellular and Electronics Association

<b>ICT</b>	Information and Communications Technology
<b>ID</b>	Identification
<b>IT-BPM</b>	Information Technology Business Process Management
<b>JAM</b>	Jan Dhan, Aadhar, Mobile
<b>MGNREGA</b>	Mahatma Gandhi National Rural Employment Generation Act
<b>NeGP</b>	National E-governance Plan
<b>NIC</b>	National Informatics Centre
<b>NICNET</b>	National Informatics Centre's ICT Network
<b>OS</b>	Open Source
<b>PCTS</b>	Pregnancy, Child Tracking and Health Services
<b>PGMDISHA</b>	Pradhan Mantri Grameen Digital Saksharta Abhiyan
<b>PMO</b>	Prime Minister's office
<b>QR</b>	Quick Response
<b>RAM</b>	Random access memory
<b>UPI</b>	United Payments Interface
<b>USD</b>	United States Dollar
<b>VoLTE</b>	Voice Over Long Term Evolution
<b>VR</b>	Virtual Reality

# Approach and Methodology

To analyse the digital readiness of all Indian states, three parameters were considered. Each of these parameters were ranked from 1 to 5, with 0 being the lowest score and 5 the highest.

All parameters were given equal weightage. The average score across all 3 parameters was considered as the final score. States scoring 4 or above will be considered digitally advanced states.

Parameters considered
No of E- transactions/adult
No. of E-services available
Penetration of internet subscribers (2018)

Reasoning
To determine whether e-services are being used by the citizens
Extent of Government services delivered digitally
To assess the accessibility of online government services

Source
Transactions as per Etaal for the period of Jan to Oct 2019; Adult population as per Ministry of Statistics & Programme Implementation
Etaal
TRAI report 2018

No. of e-transactions/adult	Rating
Less than 1	0
1 to 2	1
2 to 3	2
3 to 5	3
5 to 10	4
Above 10	5

No. of e-services available online	Rating
Less than 5	0
5 to 15	1
15 to 35	2
35 to 50	3
50 to 100	4
Above 100	5

Penetration of internet subscribers	Rating
Less than 10%	0
10%-20%	1
20%-35%	2
35%-60%	3
60%-80%	4
Above 80%	5











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