



**ACADEMICIA**  
**An International  
 Multidisciplinary  
 Research Journal**  
 (Double Blind Refereed & Peer Reviewed Journal)



**DOI: 10.5958/2249-7137.2021.00624.8**

## INDIA'S ADVANCEMENT TOWARDS E-GOVERNMENT TO E-GOVERNANCE MOVING FORWARD TO M-GOVERNANCE

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### ABSTRACT

*Information and Communication Technology (ICT) is one of India's fastest growing sectors. The Government of India and the State Governments are using ICT to better serve citizens and the industry. The government interacts with citizens and other stake holders through ICT-based services called the e-Governance Portals. E-governance facilities are primarily used in urban areas, and are less popular in rural areas due to lack of proper infrastructure, training, and awareness. With the revelation of mobile technology, smart phones are also reaching remote and rural areas. Governments are trying to effectively implement government services for businesses and citizens by combining mobile and Internet technologies. Highly saturated mobile devices, high-speed broadband technologies such as UMTS (Universal Mobile Telecommunications System) and wireless networks etc. provide various opportunities to government administration to better serve citizens. E-Governance is already improving the speed of utility services, but with 24/7 reach and availability of mobile services are directly facilitating to all stakeholders, this can be termed as mobile governance (m-governance). This will allow the government to convert more and more e-governance facilities into m-governance facilities. M-governance has also become a tool for servicing to the last person of society and paying attention to his voice. In this paper, we will elaborate on India's progress towards e-government to e-governance and the move forwards m-governance.*

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**KEYWORDS:** *E-Government, E-Governance, M-Governance, G2c, G2b*

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## INTRODUCTION

The main goal of good governance is to provide more meaningful, timely, reliable and transparent government services. Due to the rapid growth of internet usage in today's era, the government is also changing its way of working from manual to computerization and providing its online service to citizens. Electronic governance refers to the application of information technology (IT) which improves the services provided by the government sector for the benefit of the citizen & businesses. IT is changing rapidly and it is almost essential that the government use IT services efficiently to provide hassle free services to the citizens & businesses. Information and communication technology (ICT) is a versatile tool for the government to bring the public closure to it and it includes all the possible needs of citizens to provide them with the best possible services (Sigdel, 2007). ICT is the best solution for fixing the delays of citizens in obtaining information from the government and is an important tool that helps in giving good governance by the government. E-governance has the ability to govern with transparency and accountability, and to help them reduce the cost of government business operations (Harris, 2000). With the rise in popularity of the Internet, citizens want to access information through government websites. To achieve the goal of e-governance, online services provided by the government to the citizens should be used effectively. The main challenges of e-governance are lack of infrastructure, speed of internet, electricity, low income level, illiteracy etc.

The government can provide e-governance services through mobile devices to alleviate these problems such as lack of infrastructure, internet speed, electricity, low income level, illiteracy. Mobile penetration has increased significantly in recent years in developing countries such as India, and the mobile device offers a variety of features such as Internet access, financial transactions etc. A mobile device is considered a personal device that makes mobile governance (m-governance) more user-friendly and easier to use. The two main factors that impede the implementation of e-governance are the rate of literacy and poor penetration of internet in India. Mobile penetration has increased among rural and urban populations, and the government can redirect the direction of these services. The government may offer government services through computer peripherals or mobile devices. The citizen can use any of these services as per their convenience. India ranks second in worldwide mobile penetration (Wikipedia) and according to a report by the Telecom Regulatory Authority of India (TRAI, 2020), India has total 1173.75 million wireless subscribers at the end of September, 2019. The Government of India can use mobile penetration with the ability to reach more people in urban and rural areas that provide government services through mobile applications. M-governance is an alternative way to provide a variety of services to citizens as well as businesses.

The Government of India is developing more mobile applications on various mobile operating systems to make the service available to all citizens. Mobile devices, small portable devices, and wireless networks provide a platform for providing government services to citizens, called m-governance. This can be considered as the use of all types of wireless and mobile technologies, services, applications, and devices to better serve citizens, businesses, and all government agencies. Governments can use mobile devices as tools to provide citizens with a variety of government services. Governments can provide services on the streets, people's homes, or other convenient locations, rather than citizens visiting government offices or logging in to e-

government portals to access these services. The main success factors for m-governance are convenience, availability, and an easy-to-use interface. Convenience means that citizens can benefit from all government services 24 hours a day, 7 days without having to line up in front of government offices. Clients do not need to purchase technology or devices to use government services. He has access to all services on his mobile device. Mobile devices are considered personal devices and do not require any special skills or training to use mobile governance. Implementing mobile governance does not require additional costs to purchase technologies, devices, or infrastructure such as e-governance. Citizens can benefit from these services via mobile devices.

To implement mobile governance, the government must create an easy-to-use application that a citizen can use to receive government services on their mobile phone. He does not need to acquire any special skills or knowledge to use these services. The mobile control can also be viewed as an alternative channel for electronic control. To bring government closer to its citizens, government agencies can use e-governance and m-governance at the same time. For the fast and efficient provision of public services to the rural population, mobile devices are a better channel than computers, as the mobile penetration rate is very high even in the rural population. E-governance has already improved to speed up the delivery of utilities, but mobile services, with their 24/7 functionality, can facilitate the mobile government's direct contact with citizens as well as businesses.

## LITERATURE REVIEW

ICT are an essential part of development strategies in both developing and developed countries. It has great potential to bring about the desired social change by increasing access to people, services, information and other technologies (Dutton et al., 2004). The use of ICT in management processes can be divided into two categories, namely improving government processes and, secondly, building up interaction with and within civil society. Examples of the first category are the diffusion of grievance mechanisms for public information, utility bills and billing services (Mitra and Gupta, 2003). With the further development of ICT, e-government contributes to solving the everyday problems of citizens effectively and efficiently and to reducing costs, time and skills considerably.

Cao and Che (2007) discussed that ICT has been recognized as one of the major torrent products for the telecommunications industry and is used in many fields, such as government, automotive, health and some others. After analysis, they will give some suggestions to the government and telecom operators. Kalsi et al. (2009), this article examines the need for a revolution from traditional governance to electronic governance. Furthermore, it tries to identify the right path for governance. They also focused on the use of e-governance for citizens and the benefits that accrue from it. The result is that the developing country and governance require a joint union between the various major players in the society.

Ghosh (2011) this research presents a brief review of inventive ICT projects for rural development and to what extent they have contributed. The second objective is to deliberate on the achievements and failures of ICT in demonstrating sustainable development. Sharma et al. (2011) in this paper, they study the desirability of e-governance for government enterprises and Indian citizens. They also say that today is the era of electronic communication. Governments around the world are using electronic communications, namely, e-governance, which is used to

control public and private activities in which India is one of them. They explored the areas that benefited from the e-governance approach and who is not benefiting from it at all and what are the reasons behind it that point out the challenges facing e-governance that reduce its usefulness. Padmapriya (2013) focuses on the initiatives taken by India, methods of preparation and delivery of electronic government services, inter-sector cooperation and service delivery and key factors necessary for the successful implementation and ensuring of e-governance. Studied for Study of Mittal and Kaur (2013) the emergence of Information and Communication Technology (ICT) has provided faster and better communication, data retrieval and information usage for its customers. E-Governance primarily applied ICT to provide government services to citizens through the Internet. They highlight the major challenges facing the implementation of e-governance in India.

Srivastava (2015) this paper addresses the challenges facing the implementation of e-governance in rural India, the various e-governance projects undertaken by the government and the government for the successful implementation of e-governance in rural India. Dhillon and Laxmi (2015) say that the author has helped governments and people in the field of ICT. People are able to use the services provided by governments without any difficulty.

## **E-GOVERNMENT**

Using information technology and new business processes to transform government interaction with citizens and businesses - that's e-government. This refers to the use by government agencies of information technology (such as wide area networks, the internet and mobile computing), which have the potential to transform relationships with citizens, businesses and other governments, as World Bank defines. E-government is expected to reduce corruption, increase transparency, improve convenience, increase revenues and reduce costs. The prerequisites for e-government are (a) good functioning of government, (b) functionality of governance processes, (c) availability of infrastructure & resources, (d) consensus on the driving forces of e-government, and (e) strong political will, support and leadership. Government stakeholders include citizens, businesses, government officials, ministries, departments and agencies, labour leaders, community leaders, politicians and foreign investors etc. Governments are the social superstructure of policies formation, implementations of policies and programs. The components of e-government are:

### **i) Electronic delivery of services**

Governments can request, inform and interact with the public through electronic networks. Since people started to use the Internet for leisure and business, governments have gradually shifted their services to electronic platforms. Despite its cost-effectiveness, the problem with this solution was the 'digital divide'. The expectations were as follows:

- Access of the all personal data of those persons that stored in public databases. For now, this is limited by security, privacy and confidentiality reasons.
- Anyone has access to all official documents of all kinds. Storage and retrieval costs are currently prohibited, and there are security, privacy and confidentiality concerns also.
- Information architecture that allows one-stop shopping for all information from all governments in a simple thematic directory. There is also a lack of cost to integrate, index

and search this information, and there is no known technique.

### **ii) Electronic workflows**

There are some user-friendly templates that are currently designed and deployed throughout the government intranet. There should be a standard set for all types of transactions in every government department and agency. Like "business rules", there is the ability to develop "administrative rules" that will regulate information processing and decision making. The key issues in this area are security, privacy and confidentiality. Effective policy analysis and program design using comparative data should be based on evidence. Most additional improvements in policy analysis, program design, and service deployment will come from automated data processing and integrated data repositories.

### **iii) Electronic voting**

Electronic voting machine (EVM) system is working very well in India. In developed countries, security, privacy and confidentiality concerns may be this is more difficult than in other electronic interactions. An elected official in the United States was once unaware of claiming that he knew that every member of his constituency voted, and to prove that his name is on the street after the results! Whether genuine or simply high-profile, this is a fundamental fear of many voters, the reason being that the official went on to explain that he spared no effort to reward his supporters and punish those who did not vote. If candidates are suspected of being able to access the electronic voting record, it is unlikely that voters will trust the process enough to agree to use it. The challenge of any proposal to increase electronic voting is to create sufficient public confidence in the security of the results record.

### **iv) Electronic productivity**

The foundation of e-government is better operations at lower cost, that is, productivity. Despite the predictions of Marxists and anarchists, there seems to be no prospect of the "state withering away" in the foreseeable future. The social need to guarantee public health and safety, national security and the fight against crime, economic prosperity and environmental sustainability, will guarantee the presence of governments and their active participation in our lives, either visibly or "behind the scenes". Spending efficiency should be the goal.

## **E- GOVERNANCE**

Electronic governance refers to the use of information and communication technologies to transform and support the processes and structures of a governance system. It is the use of information technology by government agencies to improve and transform relationships with citizens, businesses, and other departments of government. E-governance involves making and implementing decisions, providing appropriate leadership, making organizational arrangements, securing resources and funding, establishing accountability, and measuring success. Infrastructure needs include telecommunications networks, internal agency systems, intergovernmental systems, service delivery networks: access points, Internet access, and trained personnel. The expected results are better delivery of government services to citizens, better interaction with business and industry, empowerment of citizens through access to information, and more effective government management. The overall benefits are greater transparency,



greater convenience, less corruption, higher revenue and lower running costs. Scope of e-Governance is as follows...

- **Electronic Delivery of Service (G2C):** Delivering information and services and transacting electronically to citizens.
- **Government to Business Transactions (G2B):** Delivering information, services and transacting electronically with businesses including government procurement and infrastructure projects.
- **Government to Government Administration (G2G):** Improving the efficiency, effectiveness and transparency of departmental and inter-departmental interactions within government, with state governments and with government employees.
- **Foreign Trade (G2X):** Allow electronic transactions in foreign trade that include exchange of capital, goods, and services across international borders or territories.

Governance is the societal synthesis of development, changes in politics, implementation of policies, and programs. The components are as follows,

#### **i) Possibilities of electronic participation**

The potential for people to participate in the policy process through electronic networks ranges from sending e-mails to elected officials to creating a separate conferencing facility (mail store, document repository, chat rooms, etc.) for each major policy initiative (new policy, or change to existing policy). There are a few examples of globally understood, inclusive, and a mix of each of these elements that you can imagine, although full electronic communications are still not very common. It will outline more effective methods that can be used to shape future efforts. The Organization for Economic Cooperation and Development (OECD) has made a similar proposal. The five stages of OECD policy-making paradigm will guided to policy-makers that are- agenda setting, analysis, formulation, implementation and monitoring.

#### **i) Electronic consultation**

This refers to the interaction between public servants and citizens and interest groups, liaison between public service and interest groups. But recent developments have combined to create something extraordinary: (1) Ordinary citizens now have the ability to participate in regulation. And (2) E-consultation in medical field brought revolution. These are some good examples of e-consultation, but there is no clear guidance on how to make better use of electronic media in general government negotiations & services. As a solution, the government is trying to propose an e-consultation toolkit and mandatory guidance for central government departments.

#### **iii) Electronic control**

There are two aspects to successful control, which are optimized and integrated to achieve all the benefits, hardware configuration and software customization. For the comptroller to be effective, all the information and telematics hardware must be interconnectable in a single system. The capacity must also be certified. The employee's email mailbox must have the same storage space; All Internet connections must have the same baud rate, and attachments must have the same byte limit in all sizes. Electronic technologies are playing an important role in shaping the mindset of citizens and they want that mindset to be reflected in social governance. Governance software

must also be standardized. Another aspect of software design that requires standardization to complete controls is the use of Extensible Markup Language (XML) for file formats and document layouts. It is used on the Internet and can be included in any software application.

#### **iv) Social networking guidance**

The foremost & important question of political analysis is who watches the watchers, who govern the governors. Part of answering this question is the concept of devolution between government branches and jurisdictions within the country. Those who compete for power look to each other to keep everyone honest or to expose rivals' illegal practices. With the rise of mass media, all the news has travelled from mouth to mouth to more quickly and thoroughly informs people's opinions about such violations. Recently, the Internet has become the fastest vehicle for such revelations.

### **HISTORY OF E-GOVERNANCE IN INDIA**

The history of e-governance in India dates back to 1970. In 1970, given the growing importance of electronics, the Government of India established the Department of Electronics. Establishment of the National Informatics Centre (NIC) in 1977 was the subsequent & first important step towards starting of e-governance in India as it focused on "information" and its communication. However, the primary emphasis for e-governance was initiated in 1987 by the NICNET- National Informatics Centre NETWORK – NIC network. This was consequent by the starting of the District Information System of the National Informatics Centre (DISNIC) to connect all the district offices in the country through computer network, for which the state governments were offered free hardware and software. By 1990, NICNET was extended to all district headquarters through state capitals. These steps by the Government of India helped to revolutionize e-governance in India. The results of these initiatives can be seen nowadays when we can sit in our living room and register for any government scheme or program. We are a push button for any benefit provided by government schemes or programs. Due to the mobile-friendly nature of the websites, people living in remote areas can also access these services. This is a turning point in governance. Not only services and benefits, but also information is provided. This makes it important and legitimate. We can make up our minds about the government by searching the information provided on government websites and if there is a problem with the content they use, we can easily report it. These days, great care is taken in the feedback of the customer or client. There is still room for improvement. This is now also possible through e-governance, where anyone can provide feedback to the government through online portals, as the government communicates with them.

The Akshay Project was Kerala's first as well as India's first mass e-governance program. This was a district-by-district electronic literacy program aimed at "empowering Kerala." The project involves setting up of nearly 5000 multipurpose community technology centres in Kerala under the name of called Akshaya e-Kendra's. Run by private business people, each center set up at a distance of 2-3 km. The project emphasizes the role of private players in e-governance in India. This helps to make the work of the government transparent and accountable for its work.

### **E-GOVERNANCE INITIATIVES IN INDIA**

Now India has taken a big step towards e-governance program. We have this service in almost all industries. India has shown the world that there is a difference of opinion against it. There are

many programs and programs that are entirely Internet-based and have pioneered the advancement of e-governance, such as:

- Aadhar Enable Payable System (AEPS)
- Digital Cloud For Every Indian
- Digital India Programme
- E-Biz
- E-Courts
- E-Kranti Scheme
- Mobile Seva
- My Governance
- MyGov Citizen Portal

All these programs and initiatives have improved the pace of government. Technology makes it easy and fast, saves lots of time and money. This not only improves transparency, but also accountability, convenience, improved customer service and improved access to information.

### **E-Government Development Index (EGDI)**

The UN E-Government Survey which includes E-Government Development Index (EGDI) reflects the state of e-government development of UN member states. In addition to assessing a country's website development patterns, the e-Government Development Index includes access characteristics such as infrastructure and educational levels, to reflect how a country uses information technologies to facilitate access and integration of its population. EGDI is a global initiative that encompasses three pillars of governance, namely online service delivery, telecommunications connectivity and human capacity.

The survey also highlighted the fact that countries with a population of more than 100 million have made tremendous progress and recorded their efforts to provide e-governance services to their people despite the various challenges they face. Regarding the latest growth in e-government services shown in **Table-1**, India has recorded a decrease of 04 points from the year (Rank 96) 2018 to (Rank 100) 2020. The government and citizens must share the 04 point retrogression fall in the index tally. India has emerged to show its potential in e-governance with increased potential in ICT. The government has taken positive steps to provide valuable and objective information through ICT. Information technology (IT) is the greatest strength of India. While we have highly disciplined wizards in the ICT fields, the purpose and goals of providing simple, effective and accurate services to the public but it hampered due to lack of adequate infrastructure, lack of literacy, poverty, political instability, and high level of corruption, etc. With all these setbacks, India has made undeniable progress in socio-economic context and this further encourages India to do all things through ICT which called impossible.



**TABLE 1: E-GOVERNMENT DEVELOPMENT IN LARGEST POPULATION COUNTRIES**

Country	E-Government development Index		World E-Government development ranking		Population (in millions)
	2020	2018	2020	2018	
United States of America	0.9297	0.8769	9	11	329
Russian Federation	0.8244	0.7969	36	32	141
China	0.7948	0.6811	45	65	1,394
Brazil	0.7677	0.7327	54	44	211
Mexico	0.7291	0.6818	61	64	128
Indonesia	0.6612	0.5258	88	107	267
<b>India</b>	<b>0.5964</b>	<b>0.5669</b>	<b>100</b>	<b>96</b>	1,326
Bangladesh	0.5189	0.4862	119	115	162
Nigeria	0.4406	0.3807	141	143	214
Pakistan	0.4183	0.3566	153	148	233

**Source: United Nations of e-Government Development Database, 2020 & 2018**

## M-GOVERNANCE

Kushchu and Kuscü (2004) who define m-government as “strategy and its implementation involving the utilization of all kinds of wireless and mobile technology, services, applications and devices for improving benefits to the parties involved in e-government including citizens, businesses and all government units”. Mobile interfaces can be used to bridge the gap between e-governance processes and the government sector. Mobile communications allow governments to operate especially in rural areas with guaranteed results and also helps to reach citizens faster (Hellstrom, 2009). With M-governance services, the government needs to provide services universally to all mobile users but should not force to the citizen to upgrade for new mobile devices to avail m-governance services (Rannu, 2004).

Kaur (2010) advocates that MANETS has potential of continuous connectivity and high transmission quality so that the implementation of MANETS along with 4G in parallel with m-governance projects in India will more useful. Hellström(2011) studied mobile governance initiatives in East Africa and proposed a course of actions to the success of M-governance. The important point is that M-governance services need to provide direct value to end users, and they need to be well marketed and promoted so that everyone can recognize them, and these services are more It needs to be transparent and accountable and build trust in the public. Poblet(2011) says that M-governance could open new avenues for public participation and political debate. Although he focuses on new challenges such as technical options, target population, ease of use, project scalability, implementation costs, and privacy issues. Kumar (2016) critically analyzed the mobile services project initiated by the Department of Electronic Information Technology (DeitY) of India. It is a cloud-based platform for all government sectors and institutions in the country through various channels. Success factors include a national policy framework for m-governance, implementation team accountability, departmental implementation ease, portal

effectiveness, performance reliability, transparency, and participatory design. The challenges identified are lack of technical knowledge and qualified resources within the government departments, infrastructure support, lack of understanding of the project, lack of understanding of the departments, and face-to-face interactions.

M-governance can be defined as a strategy for implementing e-governance initiatives & services, which includes the use of all types of wireless and mobile technologies, services, applications, and devices. This will improve the interests of people involved in e-governance, including citizens, businesses and all government agencies. For example, the following table shows m-Governance applications in different areas for providing multiple services.

### M-Governance Initiatives in India

The Department of Electronic Information Technology (DeitY) of India has developed the M-App Store for the deployment and provision of public services via mobile phones. Indian states are developing several mobile apps for m-governance. **Table-2** summarizes these details.

**TABLE 2: STATEWISE MOBILE APPLICATIONS**

S No.	Service Type (Central/State/UT)	Total No. of Applications	Total No. of Downloads
1	Central Government Service	474	79153218
2	General Application	248	235533
3	Others	48	150726
4	Andhra Pradesh	15	130738
5	Arunachal Pradesh	3	5131
6	Bihar	5	25313
7	Chandigarh	3	10004
8	Chhattisgarh	2	18979
9	Delhi	2	6540
10	Gujarat	2	10480
11	Haryana	5	18350
12	Himachal Pradesh	15	27763
13	Jharkhand	5	162360
14	Karnataka	3	38368
15	Kerala	4	9295
16	Madhya Pradesh	7	40364
17	Maharashtra	22	108243
18	Manipur	6	8722
19	Meghalaya	5	6286
20	Nagaland	1	2248
21	Odisha	5	7374
22	Punjab	18	125657
23	Rajasthan	14	105850
24	Sikkim	13	19920
25	Uttar Pradesh	3	183859
26	West Bengal	14	26662

<b>Grand Total</b>	<b>942</b>	<b>80637983</b>
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Source: <https://www.mgov.gov.in/> (Access date 25-11-2020)

As shown in the above table at present total 942 various mobile applications are available for citizens as well as for businesses. The total number of downloads clearly shows the popularity of these mobile applications among the stakeholders.

## CONCLUSION

Socio-economic factors such as income, education, age, gender, language differences, lack of infrastructure, and lack of public awareness are major obstructs for successful e-governance implementation. Governments take different directions to implement government services, from e-Forms to mobile apps. Mobile device “always-on” technology enables mobile devices to receive, send, and access a variety of information and services in real time. Governments are using mobile devices as tools to provide services to citizens with a variety of government services. Governments are providing more and more services through m-governance on the streets, people's homes, or other convenient locations, rather than citizens visiting government offices or logging in to e-government portals to access these services. Due to the accessibility of mobile devices, m-governance is more useful and important than e-governance. Mobile penetration is so high even among rural people that mobile devices are better channel than computers to provide government services to rural population in a fast and efficient way. M-governance also be seems as an alternative channel for e-governance. To create a more citizen-friendly government, government authorities are using e-governance and m-governance at the same time.

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