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# Transforming from e-Governance to M-Governance

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**Abstract**: India is rapidly advancing in the technological space. With the growing population and increasing Smartphone penetration, India is going mobile and digital. Smartphone and internet is not just for the rich and wealthy but more users are becoming informed by getting access of mobile internet. E-governance is trying its level best to provide e-government services to citizens. But still there is need to reach these services to individual at their doorstep. So the looking at the current mobile age there is need for transforming E-governance services to M-Governance ,which promise to bring the "anywhere-anytime-anybody" e-government service vision one step closer. This paper presents an current scenario of mobile usage and Smartphone penetration in India. Information on the current M-Government services and Which e- government services can be transformed to M-Government for a powerful and transformational capacity to extend access to existing services, to expand the delivery of new services, to increase active citizen participation in government operations and to change the way of working within the public sector.

**Keywords**- E-Government, Mobile government, G2C, G2E, G2G.

## I. INTRODUCTION

In view of increased mobile penetration in villages, the government has decided to provide various services to citizens through mobiles. The department of information technology (DIT) has issued guidelines for mobile governance (mGovernance) for all departments. It mandates that the website of all departments should be mobile compliant using "one web" approach. This means making same information and services available as far as possible to users irrespective of the device or browser they are using. One web approach requires that not only websites work on the smaller screen size smart phones or tablets they be future proofed for mobiles that will be available in the market in coming years. To ensure interoperability of applications across various operating systems and devices, open standards must be adopted for mobile applications. DIT has specially stressed that departments should not restrict their m-Governance to urban areas but also to extend it to remote rural areas where people have mobiles.

Government organizations, already, have stood to reap the benefits of a wireless world. Several sectors have been located that already offer G2C or government-to-employee (G2E) services. Following the general taxonomy of e-government sectors by Seifert and Bonham (2003), regarding G2C services the more common m-sectors are: health, transport, tourism, commerce, e-learning, electronic payments, emergency services, electronic voting and local wireless networks for public use (hot-spots). Certain examples of services are: real time alerts to citizens for upcoming emergencies, SMS weather forecast, use of wireless devices by students in order to register for exams, get results and search libraries archives. Mobile and wireless services currently offered to employees (G2E) are: fleet management, e-policing, conducting the necessary audits and fast issue of licences, tracking down the exact location (in3D) of an employee in a building, direct printing and receiving e-mail on mobile devices.

*Why do we need mobile phones for governance?*

There is no need to re-emphasize the importance of ICT systems in good governance. ICT, as seen in many developed countries, facilitates a free flow of information between the government and citizens and opens up opportunities for citizens to participate in decision-making processes that directly affect them. But why do we need mobile phones for governance? Can they act as a new interface between the government and citizens? Or is it just another hype that often accompanies the latest technical breakthroughs?

World over, we have seen that mobile phones help create an informative, connected, innovative, participative and converging societies. But then what is the rationale behind use of mobile phones for governance in India?

Access - Penetration rate of mobile phones in India is ever increasing. Also, more people gain access to phones through shared usage and ownership. In addition, mobile phones add the dimension of 'anywhere and anytime' to the usage.

Reach - Due to its mobility and network infrastructure, mobiles can reach areas where there is no other ICT infrastructure (like internet, fixed lines).

Adoption - Since mobile phones are becoming an integral part of people's lives, m-commerce and m-government will become the usual way of doing business. Further, there is an increasing public demand for mobility and easy access to services.

Interaction - Mobile phones make real-time, two-way dialogue possible as opposed to radio, brochures, posters, public speeches, etc.


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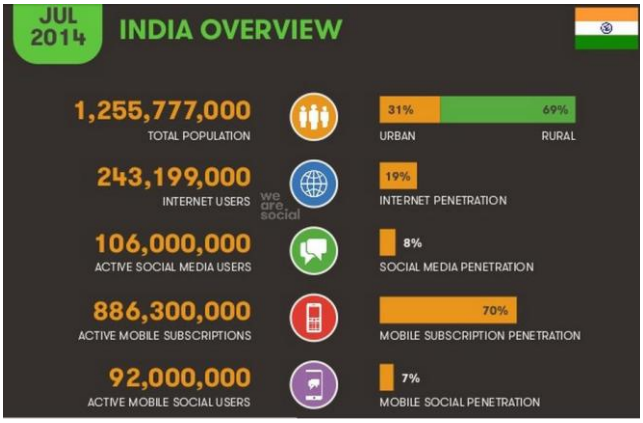
Costs - The relatively lower cost of mobile phone technology versus internet technology has lowered the entry barriers for poor people.
Efficiency - Due to high access, reach, adoption and real-time interaction, mobile phones offer efficient solutions to government's communication challenges.

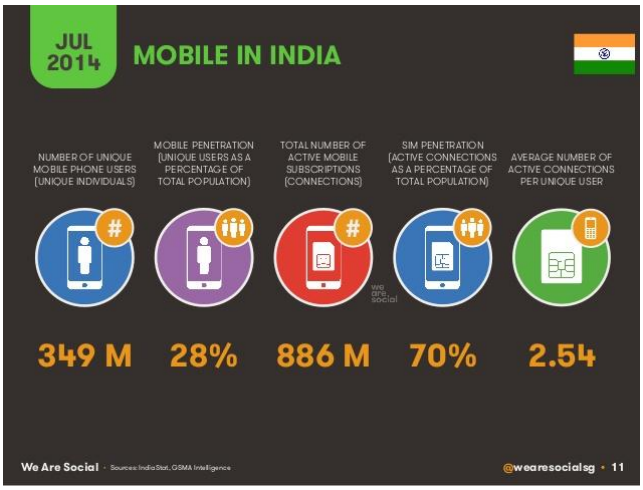
## II. CURRENT SCENARIO OF MOBILE USAGE IN INDIA

India is rapidly advancing in the technological space. With the growing population and increasing Smartphone penetration, India is going mobile and digital. Smartphone and internet is not just for the rich and wealthy but more users are becoming informed by getting access of mobile internet. However, the growth is still not at par with the other countries



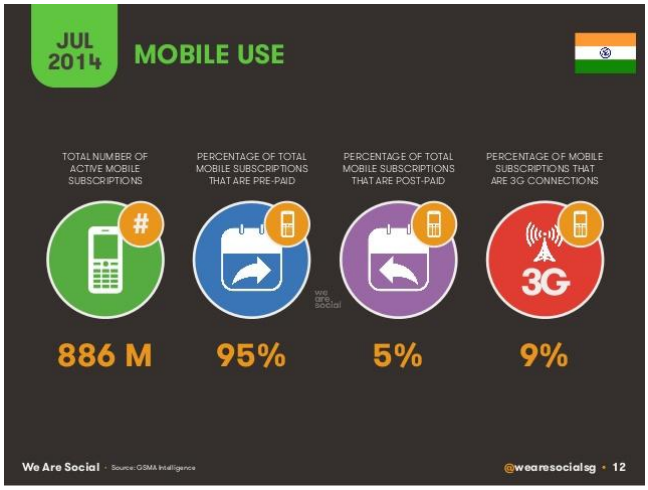

Source:dazeinfo.com

Out of the 1.25 billion people in India, only one-fifth of the people use internet and only 50% of these are using social media. The growth of social media sites, especially Facebook, is accelerating the adoption rate. Surprisingly, out of the 886 million mobile subscribers though – only 10% access social media sites on their mobile. The advent of low-price smartphones and cut-throat price competition in internet tariffs might change this trend and more users in the country may become tech and net-savvy.



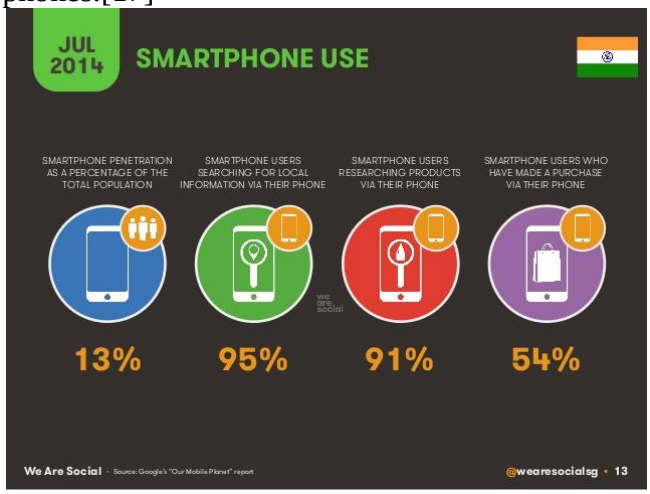

Source:dazeinfo.com

The number of unique subscribers are less than half of total 886 million subscribers. Against the 70% sim penetration in India, the mobile penetration has not even reached the one-third citizens. Understandably, an average Indian has 2.5 Sims to his name.




Source:dazeinfo.com

An average Indian spends almost 5 hours accessing internet and out of the 3 hours spent on mobile internet, only 45 minutes are spent doing any other work apart from social media. Unsurprising, since Face book claims that it has 100 million users in India , out of which 84 million accesses the site or app on their mobile phones.[17]




Though the smartphone penetration is low in India, more than half the smartphone users are using their devices to make an online purchase while more than 90% use their mobile devices to research about a product before buying it. This trend is likely to change the face of m-commerce industry in India . India is known as price-sensitive country and the availability of low-price smartphones is likely to increase the smartphone penetration as well as kill the feature phone market in India .[17]

## III. WHAT IS M-GOVERNANCE

M-governance is a sub-domain of e-governance. It ensures that electronic services are available to people via mobile

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technologies using devices such as mobile phones. These services bypass the need for traditional physical networks for communications and collaboration. Mobile services are also cheaper as well as accessible in most of the rural areas in India and/or Asian countries. Mobile applications also rely on good back office information and communication technology (ICT) infrastructure and work processes: governance networks and databases, data quality procedures, transaction recording processes, etc.

*M-Government:*

Mobile government, sometimes referred to as m-Government, is the extension of e-Government to mobile platforms, as well as the strategic use of government services and applications which are only possible using cellular/mobile telephones, laptop computers, personal digital assistants (PDAs) and wireless internet infrastructure. In addition, m-government is a better option compared to e-Government in delivering services and public information to citizens due to its nature of being available anywhere, anytime and from any internet enabled device. Mobile Government addresses the mobility of Government itself. m-Government is not meant to be a replacement for e-government but a complement to e-government. m-Governance can be defined as a strategy for the implementation of Governance and its implementation involves the utilization of all kinds of wireless and mobile technologies, services, applications, and devices. It improves upon the benefits for those involved in e-governance, including citizens, businesses, and all government units.[5]

Mobile technologies are enhancing the value of government services: from an electronic wallet card linked to a mobile phone in Bahrain, the United Arab Emirates or the Philippines; to voting, registration or election monitoring in Morocco, Kenya, Estonia and Ukraine; to support of farmers with weather and market price alerts in Malaysia, Uganda, India and China; to co-ordination of real-time location data for emergency response in Turkey, the United States and France.

In general, there are four primary delivery models of e-Governance that can be transformed to m-Government:

- Government-to-Citizens (G2C) To M-Government-to-Citizens (MG2C)
- Government-to-Government (G2G) To M-Government-to-Government (MG2G)
- Government-to-Business (G2B) To M-Government-to-Business (MG2B)
- Government-to-employees (G2E) To M-Government-to-employees (MG2E)

## IV. MOBILE APPLICATIONS AND SERVICES

*G2C applications and services*

Government-to-Citizens services enable citizens to interact with government in a way that is responsive to citizen needs and communication preferences. G2C services allow citizens to stay current on government information, ask questions, request services, complete transactions, submit comments, report problems, request emergency assistance and access data.

Once an agency has "emerged" and is at the "enhanced" level of governance, more channels – such as SMS (Short Message Service), IVR (interactive voice response), IVVR (Interactive Voice and Video Response), and WAP-equipped phones – are used to send to and receive from citizens information about topics important to them, ranging from overdue library books and exam results to job vacancies and emergency updates. Included in these new tools for G2C communications is the active use of popular social media, such as Face book, Twitter, and YouTube.

M-Government G2C services fall into four categories:

- Informational and Educational services
- Interactive services
- Transactional services
- Governance and citizen engagement
-

*Informational and Educational services (Push services)*

This type of G2C service involves distributing information to citizens.

Information related to services, schedules, education, emergencies, regulations and other flat content. The government service is mainly comprised of pushing information through SMS or making it available on a Web or WAP site. Much of the information is static and there is little interaction with citizens. Most inquiries to government from citizens are for basic service information, and providing push services both enables real-time communications to citizens, and creates cost savings for government.

M-government Services can be related to:

General information like weather forecast, Tourism details, Health Tips, public safety, contact information, services, regulations can be provided to the citizens on their mobile phones.

Specific Information like exchange rates, market rates, exam results, events and programme details, news, road closures, holiday schedules, public hearing/meeting schedules, service or fee changes, can be made easily available to citizen on their mobile phones.

Emergency alerts like severe weather, terrorism attack, fires, accidents, health risks can be given to citizens

Health and safety education can be given to citizen for prevention and preparedness of new diseases or epidemic.

Educational programmes notifications like library book deadlines, security notifications, social media posts, RSS feeds for news and updates can be provided to citizens.

*Interactive services*

Through interactive G2C services, citizens can engage in dialogue with governments and send inquiries, problems, comments, or service requests to specific agencies. Citizens also can access forms, applications and databases. In this stage, the interaction becomes more personalized,

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detailed and targeted to specific citizen interests and service needs, and specific agency divisions and service areas.
The communication becomes one-to-one, rather than one-to-many. The focus is on citizen convenience and increased participation, with citizens choosing to receive specific notifications, such as neighborhood crime reports, exam results or the availability of a special library book. Mapping, location-based services and photo/video capabilities enhance the functionality of SMS and mobile applications. Social media tools build communication networks for breaking news, events and emergencies, with real-time citizen feedback and information sharing.

Services can be related to:
Health services like screening and tests, monitoring, health forms, health campaigns can be provided to citizen doorstep.

Education services like grades, admissions, exam forms, exam results can be used by citizens.
security services like crime reporting, service requests, law enforcement, emergency assistance requests can be utilized by citizens.

Filing claims and reporting problems like service interruptions, suspicious activity, voting issues, complaints about government services, grievance can be used by citizens in efficient manner.

Information inquiry services like account information, traffic and transportation availability, service request status can be given to citizens.

Schedule details like airline flights, field crew locations, Bus transportation can be viewed by citizens.

*Transactional services*
With G2C Transactional Services, governments begin to transform themselves by expanding two-way interactions between citizens and government to new levels. In this stage, citizens can complete their transactions with government electronically and at their convenience. This includes self-service options for paying taxes, making payments, lodging tax returns, applying for services and grants, as well as other similar G2C interactions, allowing the citizen to access these services 24/7.

Services can be related to:
Employment services like job postings, job applications, matching services, interviews, etc can be utilized by the citizens.
Government transfer programmes like food coupons, relief compensation, basic income grants, social benefits can be utilized by the citizens.
Paying online income taxes and real estate taxes.
Booking official appointments and making inspection schedule.
Transportation services like buying train tickets, parking, bus tickets, airline flights Signing a transaction with mobile signature for mobile payments.
Mobile payment
Mobile payment is a growing alternative payment method, especially in Asia and Europe. The four primary models for mobile payments are Premium SMS-based Transactional Payments, Direct Mobile Billing, Mobile Web Payments (WAP) and Contactless NFC (Near Field Communication). The mobile payments (m-payments) industry in India is estimated to grow from $86 million in 2011 to $1.15 billion in 2016, with a compound annual growth rate (CAGR) of 68%. [16]
*Governance and citizen engagement*
A key result area for connected governance is citizen engagement. Mobile technologies facilitate achievement of that goal by increasing ease of access and participation. One mobile tool, SMS, or "texting," has become a powerful and prevalent communication channel for government and citizens, and a fundamental foundation of effective m-government strategies, positively impacting the democratic process.
Services can be related to:
citizen engagement to strengthen a citizen cantered approach to government and to involve citizens in policy development and decision making.
Taking Elections and voting from different regions.
G2G applications and services
With G2G services, governments transform themselves into a connected entity that more effectively and efficiently responds to the needs of its citizens by developing an integrated back-office infrastructure.
Connections can be:
horizontal connections among government agencies
vertical connections between central and local government agencies
Services can be related to:
co-ordination of government activities for inspections, controls and supervisions security services like law enforcement, citizens' security government resolution (GRs), circulars, office orders.
Emergency management in natural disaster or terrorist attack.
Access to knowledge bases and records like public safety, health, education, etc.

*G2B applications and services*
Government to Business (G2B) services include providing information regarding policies, regulations, forms, and applications related to procurement, licensing, permitting and payment of taxes, as well as support of small and medium enterprises and business development. With considerable value for rural businesses, government agencies are providing support including accessible kiosks and low-cost handsets, digital signature services, SMS weather and market updates, mobile wallets and maps for transport and tourist sites

Examples:
India's unique mobile weather forecast service helps farmers and fishermen decide when to plant, water and


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harvest their crops, and when to fish, boosting the profits of many fishermen in south India.
Farmer's Friend, an agricultural information service based on text messages, is used in Uganda and other countries. The system accepts queries such as "rice aphids", "tomato blight" or "how to plant bananas" and retrieves advice from a database. More complicated questions are forwarded to human experts. The query "pineapple disease" elicits the
answer "Copper deficiency in pineapples leads to fruit rot. Cut affected fruit as soon as noticed and dispose of where they will not contaminate other fruits or burn"
*G2E applications and services*
With Government to Employees (G2E) services, governments provide
tools, training, and data access to their employees that not only assist those
employees in their daily operations, but also improve organisational efficiencies and accountability, maximise limited resources and enhance the quality of service to citizens. Mobile technologies have substantial impact on improving G2E services, especially for field crews and staff who work in secondary or remote locations, enabling real-time access to enter, retrieve and share data.
Examples:
The North London Strategic Alliance Street Wardens Pilot Project is a mobile government application aimed at streamlining the operations of street wardens, who fill in information regarding incidents "at the scene" using a mobile device like a Smartphone or Pocket PC, which have GPRS and Bluetooth connectivity as well as mapping capabilities

*Potential of Mobile governance in India*
Mobile phones have tremendous potential to expand the access and reach of public services in India. The rapidly expanding subscriber base of mobile phone users in India can help in accelerating the use of modern ICTs for improving governance and ushering in inclusive development India has 55.48 crore mobile users as per our India Mobile Landscape (IML) 2013 study. More than 29.8 crore, about 54 per cent, of these device owners are in rural areas as compared to 25.6 crore in cities and towns[14]

The huge user base of mobile phones in India presents an unprecedented opportunity to expand the reach of public services to every resident, especially in rural areas.

The relevance of mobile platform as a medium for delivery of public services is also evident when we compare the subscriber base of mobile phones to that of the internet. The study found 2.38 crore individuals access Internet from their mobile phones using a data connection such as GPRS or 3G. Out of this, 93 lakh access Internet only through mobile phones and around 77 per cent of these users are in rural areas[14]About 70 percent students today own smart phones with a larger user base in smaller cities than the metropolitan cities, according to a survey by software services firm TCS.[15]

Wide access to mobile phones in the country has made it an ideal platform for government and resident interface, especially in rural areas.

## V. M-GOVERNANCE PRESENT STATUS

Mobile government(M government) is the extension of e-Government to mobile platforms, as well as the strategic use of government services and applications which are only possible using cellular/mobile telephones, laptop computers, personal digital assistants (PDAs) and wireless internet infrastructure.
M Government is now evolving on four dimensions - transforming e-Government services directly to the mobile platform, providing access to mobile technologies and application for the field workers of the public sector, enabling smart / flex working and providing citizen services anytime, anywhere.
*1) SMS based Alerts Pushed Down (Examples of Projects):*
*Bhoomi, Karnataka, 2007:* Landowners register with Bhoomi by paying a fee. Will get an SMS whenever there is a transaction on the land.
*PDS, Chhattisgarh, 2008:* Register phone and Fair Price Shop (FPS). Access to information on availability and supply of food grains, and about times and truck numbers that will deliver supplies to a FPS in order to involve the public in enforcing accountability
*Reuters, Maharashtra, 2007:* Register and receive weather forecasts and commodity prices.
*Western Railways, 2008:* Subscribed service for general updates such as mega blocks affecting train services, new services, ticketing facilities, etc., free of charge.
*SMSONE, Maharashtra, 2005:* ―A Local SMS Community Newsletter‖ service provided to different communities, each comprising of 1000 registered users. Users are empowered with localized, specific and useful information anytime, anywhere via a SMS. The community is served with messages that are relevant to them, practically covering all aspects of their daily life from health camps to be held, non supply of water or electricity, and traffic congestion to reminders of bill payments.
*2) SMS based Two Way Information Exchange (Examples of Projects):*
*Toll Free Agricultural HelpLine, Haryana, 2007:* Users send SMSs to a mobile number, and experts/officials telephonically respond to the questions within 48 hours.
*Jan Seva Kendra, Gandhi Nagar, Gujarat, 2006:* Barcode assigned to a service application is used for tracking the application, sending reminders to officers, and for any inquiry on pending cases. People can enquire the status of their application.
*m-Sampark, Chandigarh, 2005:* SMS ―SMENU to 58888. A menu of services available will be sent back to user via an SMS, from where he/she can get the required information.
*Mysore City Corporation, Karnataka, 2008:* Citizens message their problem related to civic services to a pre-assigned number through SMS. An acknowledgment

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number is sent back with the concerned officer's name and contact number.

*Railway Enquiries:* Railway information on train schedule/time table/PNR status/train Search /seat availability can be accessed.

*3) WAP based Transactional Services (Examples of Projects):*

*Zero Mass Foundation (ZMF), Andhra Pradesh:* Agents, working on behalf of partnering banks, use special mobile phones and accessories to provide frontend full featured transactional services (opening of accounts, deposits and withdrawal of cash) for financial inclusion of the rural poor.

Government of India is planning to take the e-Governance program a step forward by launching a village level mobile governance system for speedy delivery of services to the rural people. The Department of Electronics and the Information Technology in the Ministry of Communications and Information Technology has prepared a framework for m-Governance to ensure inclusive delivery of public services in a time-bound manner. Websites of all Government departments and agencies will be made mobile compliant, using the 'one web' approach. Open standards will be adopted for mobile applications for ensuring the inter-operability of applications across various operating systems and devices as per the Government policy on open standards for e-Governance. Uniform or single pre-designated numbers (long and short codes) will be used for mobile-based services to ensure convenience. Government departments and agencies are required to develop and deploy mobile applications for providing their public services through mobile devices to the extent feasible on the mobile platform. Food Supplies and Consumer Welfare department has already started monitoring paddy procurement, rice transfer and delivery thorough m-Governance. [10]

## VI. CONCLUSION

The amalgamation of mobile devices and new media applications which support quick access to integrated data, location-based services, and empowered citizens from any place at any time is the cornerstone of the emerging impact of mobile governance.

M-Government affords a powerful and transformational capacity to both extend access to existing services, and expand the delivery of new services and to increase active citizen participation in government operations, moving beyond the initial concentration of e-government on commerce and e-taxation, and improving internal operations. This will foster civic engagement and transparent democracy, as well as educational advancement and innovative health services.

Thus E-governance can be transformed to M-governance in better way which will be more closer to citizen who can access government services more effectively.

The m-Governance facility will still not help a large percentage of rural population, who are not comfortable with English. They only use mobiles to make and receive calls. Experience in urban areas shows they have problems with IVRS. The government should introduce the service in local language so that moe people could benefit.

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