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m-Governance future in Indian context

Introduction

A century ago, companies stopped generating their own power with steam engines and dynamos and plugged into newly built electric grid. The cheap and affordable power did not just change how businesses operated, it set of a chain reaction of economics and social transformation, which brought the modern World; the global village. Today a similar revolution is under way, when internet's global computing grid is pumping massive data, information and software code into our home, offices and businesses. Internet technology is the key to 21st Century growth and progress and is used to refer to the collection of tools and techniques to improve productivity both in public and private sectors. In this context, it is the current state of humanity's knowledge which combines resources to solve problems, fulfill needs of citizens, or satisfies their wants. That is exactly the charter of all Governments all over the World. The use of technology by the man began with the conversion of natural resources into simple tools to build automatic machines that are able to help human beings in cooking, washing, entertainment and travelling. The discovery of the wheel helped man in travel and other technologies development during previous centuries helped man to do work in much easier ways. The development of information technology has impacted the press, the media, the communication using internet, which has reduced the physical barriers and allowed human beings to network on a global scale with the click of a button. e-Governance is expected to become a common mode of meeting people's needs which is in infancy particularly in developing country like India. Can India, with abundant of computer literate professionals take a quantum jump by using the explosive growth of mobile device and meet the need of masses particularly in rural area by directly focusing on m-Governance?

Governance to e-Governance

Governance is the act of governing by the governments or any other organizations or agencies which can be defined as "The manner in which power is exercised in management of a Country's economic and social resources for Development". Hence, Governance can be simply put as the process of decision-making and the process by which decisions are implemented (or not implemented). Since governance is the process of decision-making and the process by which decisions are implemented, an analysis of governance focuses on the formal and informal agencies involved in decision-making. e-Governance is the efficient use of Information and Communication Technology (ICT) at all levels of government set up in delivering citizen services to common man and also to the corporate world.

m-Governance

m-Governance is a sub-domain of e-Governance and it is not a replacement of e-Governance, through which the governments delivers their services to the citizens using mobile devices. m-Governance is as an alternative to e-Governance especially for the country like India, that has very large population of citizens where accessing or having the personal computers and internet usage is comparatively low as compared to mobile phones. Hence, the alternative of m-Governance or mobile Governance can help make public information and government services available anytime and anywhere by bringing personalized, localized and context aware services close to citizens and officials. Most of the government realized a long time back that mobile is no longer a tool meant only for communication but it's a medium for empowering the citizens and a powerful enabler of good governance. m-Governance can be defined as a strategy and its implementation involving 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. m-Governance offers a great potential for enhancing the provision of basic public services, especially to the poor and marginalized populations. Furthermore, it also enhances the participation of non-State agencies in critical democratic governance issues, such as transparency, electoral processes, oversight of governments and public policy making. While many m-Governance efforts are essentially focused in the provision of private services, United Nations Development Programme (UNDP) interest lies in the improvement in terms of both quality and quantity of public services for those who have little to no access to them.

Need for m-Governance in India

To know the relevance of mobile devices in developing countries such as India, we must know the benefit of these devices. The growth of mobile technology is increasing rapidly day by day and every month, a new mobile device might come out in the market. This grows with the demand and the use of mobile devices by the users is increasing now a days. The high demand of mobile devices from the users especially in developing countries such as India which has high population is because of the benefits and advantages that they can get from these devices. Some of the advantages/benefits of the mobile devices are: Ready Availability, Low Cost, Easy Learning Curve and Location Based Services.

One of the India's Government aims is to connect all the States, villages and even every home in India through wireless broadband; so that, information can flow from any part of India to the home of any citizen anywhere in India even in a rural areas. Instead of the need of citizens to go to government agencies to get the services, now those services come to the citizens through all the e-Governance projects and plans. But, because of the high population in India and as well because of the slow pace at which the internet is spreading across the country, there will be a problem to reach e-Governance to all the citizens especially in rural areas. Hence, mobile devices technology has come out to improve the government services delivery

to the citizens with mobile technology. The hand held mobile device set can make in roads into even the remotest area and can help make public information and government services available at anytime, anywhere to citizens and officials.

In rural India, being able to store a number in contacts and then call that contact is a primary mechanism for overcoming traditional infrastructure challenges, like learning the prices of goods at market. However, currently, most mobile phones available to people in rural areas of India, have a text driven interface, making it near impossible for illiterate users to obtain and store contacts. Information in rural India isn't centralized through census information, medical and health records, or a regional phone book. Therefore, the contact lists on mobile phones become an extremely valuable mechanism for creating adhoc networks that enable information sharing. For example, several research participants recorded the blood type of the contacts stored in their phone's address book. These users were able to act on this information when medical emergencies occurred in their village. They could quickly identify possible donors for blood transfusions and alert their network of the need. All these actions can be done through a simple piece of information stored in a mobile device. To show how data could be made tangible, and how illiterate users could easily share contact information, Adaptive Path, a product experience and strategy design company created a concept called *MobilGlyph*. Solving the "save a contact" problem for illiterate users became one of the focuses for their project.

m-Governance allow for the use of mobile wireless communication technology within the government administration and tool for delivery of information and services to citizens and business. The use of mobile technology in government sector not only provides an alternative channel of communication and public service delivery, but more importantly, it can address the mobility of government itself where m-Government can help make public information and government services available anytime and anywhere by aware services close to citizens and officials. Therefore, these can help in reaching rural citizen to access government services. Transition from e-Government to m-Government requires researching the integration process between the two. m-Governance is an add on to e-Government involving the utilization of all kinds of wireless and mobile technology, services, applications and devices for improving benefits to all parties involved in e-government including citizens, businesses and all government agencies. m-Governance can be powerful component of the e-Government in facilitating the delivery of more and better services to citizens. With the developments in mobile and wireless technologies, some applications and services of e- Government are being provided through mobile devices, and yet these technologies are also opening ways to some unique and new applications and services. In terms of technology involved, currently many mobile government applications make use of SMS (short messaging service). Other technology includes Wireless Application Protocol (WAP), MMS and mobile internet. It is expected that mobile internet will play a more significant role in near future due to the development of 3G technologies and the capabilities to process more information faster.

Mobile Devices in India

Though mobile phones have been available for over two decades, their exponential spread in India during 2010-2011 is due to low cost and affordability, through large number of players in 2G arena. Not only their penetration has exceeded landline, it is bound to displace the existing inefficient BSNL set up. Steve Job of Apple must get the credit for his launch of iPhone and iPad, smart devices meeting the diverse need of new generation. No wonder Apple has replaced Microsoft as the new leader in IT domain in the world. Below shows the detailed list for some of international mobile devices with their features, available in India.

Mobile Devices Hardware Features (Source: http://www.businesslink.gov.uk/)

a. Blackberry Bold 9000

Size/Dimensions 114 x 66 x 14 mm; Weight 133 g; Display - Type: 65K colors; Size 480 x 320 pixels and 2.6 inches; QWERTY keyboard and trackball navigation. Memory – Phonebook: Practically unlimited entries and fields; Photocall Call records: Yes; Internal: 1 GB storage; 128 MB RAM Card slot: microSD, up to 8GB; OS - BlackBerry OS; CPU - 624 MHz processor; Messaging - SMS, MMS, Email, IM; Browser – HTML; Radio – No; Games - Yes + downloadable; Colors – Black and White; GPS - Yes, with A-GPS support and BlackBerry Maps.

b. iPad 2

Processor - Dual Core A5 CPU and superfast gaming graphics with graphics processing is 9x faster. Size - Thinner and lighter, which has 33% thinner than iPad 1, with diameter from 13.4mm to 8.8mm which makes it even thinner than the iPhone 4. Colors - Black and White. Display - Comes with both rear and front cameras. Overall specifications - Faster, Lighter, Thinner, come with cameras and Gyro, iOS 4.3 + FaceTime & PhotoBooth, iMovie & GarageBand, 3G on Verizon & AT&T and 10 hour battery life. Accessories - HDMI 1080p Video Out, Smart Cover. Palmtop computers or personal digital assistants (PDAs) - A typical PDA has a touchscreen for entering data, a memory card slot for data storage, and IrDA, Bluetooth and/or Wi-Fi. While some PDAs which may not have a touch screen, using softkeys, a directional pad, and a numeric keypad or a thumb keyboard for input.

c. iPhone 4

Size - Dimensions: 115.2 x 58.6 x 9.3 mm. Weight: 137 g; Display - Type: LED-backlit IPS TFT, capacitive touchscreen, 16M colors. Size: 640 x 960 pixels, 3.5 inches, scratch - resistant oleophobic surface, multi-touch input method, accelerometer sensor for autorotate, three-axis gyro sensor and proximity sensor for auto turn-off. Memory - Phonebook: Practically unlimited entries and fields, Photocall Call records: 100 received, dialed and missed calls; Internal: 16/32 GB storage, 512 MB RAM; Card slot: No; OS: iOS 4; CPU: 1 GHz ARM Cortex-A8 processor, PowerVR SGX535GPU, Apple A4 chipset Messaging: SMS (threaded view), MMS, Email, Push Email; Browser: HTML (Safari); Radio: No; Colors: Black, White; GPS: Yes, with A-GPS support. In India, apart from Government initiative for Rs 10,000 laptop, a number of companies have announced their low cost tablets costing as low as Rs.1500=00. These include Reliance, Wipro, HCL, Olive Pad and LAC Bangalore. Their devices have yet to see the market in India, where hand held devices from Apple and Samsung are

doing roaring business.

Status of m-Governance in India

Today, India is moving towards m-Governance after major involvement in e-Governance. It's a well known that Information and Communication Technology (ICT) is very essential for processing, storing, organizing, and presenting data and information. The reasons for the keen interest in governing through mobile are not tough to guess. As the Indian telecom subscriber base reached the extraordinary figure of 700mn, mobile phones have become the most accessible tool of communication available to such a large population. Thus, making the best way for delivery of information at citizen's site is a personalized way. Within two decades of mobile launch in India, mobile phone has reached at remote rural hamlet despite the much known hurdles like lack of connectivity and power and low level of literacy. In the other side, it has created lakhs of direct and indirect job opportunities for youth.

In the second phase of the development, it has emerged as a delivery channel for different kind of services and now anyone can transfer amount from one bank account to another using their mobile phone. Government and private agencies have also started using "Mobile Phone" to deliver citizen and business services to common man. Recently, Reserve Bank of India has allowed commercial banks to provide banking services on mobile phone, whereas Government of India has approved the "Framework for delivering financial services through mobile phone" developed by Inter-ministerial group. After the launch of 3G technologies in India, users will be able to access health, educational, agricultural, infotainment services on their mobile phone. Around 54 Gram Panchayats in five remote blocks of West Bengal State will soon have SMS alerts on disasters, funds inflow and outflow, information about health camps and pulse polio campaigns will be sent to and from between the State departments, district offices and Gram Panchayats, block development offices. In India, m-Governance is still at a nascent or new stage. While many innovative applications are underway in both private sector as well as government domains, it may be a little premature to celebrate its success. However, embracing the possibilities and opportunities that this technology provides will only lead to an effective and cost-efficient way of exploiting the same.

Current m-Governance project and services in India

The project and services that currently provided by Government of India through m-Governance are:

i) The latest M-service added is The electoral Details on Mobile

Kerala State IT Mission (KSITM) has added a new m-service by which citizens can check their Voter ID details by sending an SMS. The voters just need to send the message ELE to the Kerala m-Governance short code 537252 and the sender will get the details regarding his/her voter details Roll No, and polling station. Another example is that Gujarat State Election Commission has developed a project called 'Online Voting System' for its Local Body Elections in October 2010 and in April 2011.

ii) Mobile Banking in India

In India, Banking sector has become more customers friendly to provide banking services through mobile phone. It has given an opportunity to customers to update themselves about Account balance, transactions and do the transfer of amount from one Account to another. All the public and private sector banks in India have started providing their different services through mobile phone. Currently they are offering banking services through mobile free of cost (except some bank) but customers have to bear the cost of mobile service providers.

List of the banks offering banking services on mobile handset (Source: http://www.indg.in/e-governance/mobilegovernance/mobile-banking):

iii) Common Citizen Services in India using Mobile devices

Some examples of common citizen services using mobile devices are Indian Meteorological Dept's Weather Information, Kisan Call Centre's Agriculture related queries solution, CBSE's Exam result of class 10 and 12 and so on. DataQuest (May 2011) may be referred for detailed list.

Suggested Proposal for moving from e-Governance to m-Governance in India

Within two years from now which has a time frame till Oct 2013, Government of India should implement m-Governance using below six phases to get better m-Governance services in order to give complements to e-Governance:

Phase 1 : Making all government websites mobile compliant/mobile site access should be promoted. All government agencies should use mobile optimized content as a primary method for device support.

Phase 2 : Plan strategies to popularize the use of mobile devices technology in rural areas by giving subsidies, training and guidelines.

Currently, m-Governance status in India still at the starting level and in fact still new to the citizens especially for the Indian citizens in rural areas whereas the urban citizens are most aware of the mobile technologies that are growing increasingly nowadays. While most of the Indian rural areas are not aware and interested about the mobile technologies that are growing increasingly nowadays, and in fact some of them never use and own at least a mobile phone. If this condition still happens, the services that are provided by the government through the mobile devices might not reach the citizen. The government should plan a strategy how to popularize the use of mobile devices among the Indian rural citizens. Most of the Indian rural citizens have lack of knowledge about these technologies, because they are born and live in poor condition which might prevent them to own and use such technologies. To overcome this problem, the government should provide and give subsidy to own a mobile phone and they should be given a training how to use that mobile device. They also should be given knowledge what are the benefits they can get from the mobile technologies and why these technologies are becoming famous for other areas and countries. The Government of India should come out with the plans and strategies to formulate guidelines about the use of mobile devices and enable government departments to provide services from mobile phones like paying utility bills etc. It also should aims to formulate standards for applications for easy interoperability of services across multiple service providers and multiple Government departments and other agencies.

Phase 3: Implement m-Governance

by developing mobile applications in local languages and more mobile utilization applications.

Phase 4: Plan strategies to popularize the use of mobile devices technology among all citizens by education.

To popularize the mobile technologies among all the citizens, they should be introduced to such technologies since their early childhood. Currently in India, most of urban kids are already exposed with those technologies but the problem is for the kids in rural areas. To overcome this problem, the government should provide more learning by using the mobile technologies in the education space in India. This learning method is called as m-learning. Whereas m-learning apps already exist in the education in India but this learning method might still not in use in rural areas. Meanwhile, the government should expand m-learning method to all the school areas in India even in rural areas, so that, all the citizens might be exposed with those technologies. This strategy will change the mindset of rural citizens about the mobile technologies.

Phase 5: Develop mechanisms and platforms for the good design and delivery of mobile Governance.

To improve the m-Governance in India, it is proposed that development of suitable mechanisms to enable users to pay for public services through mobile phones, and develop and deploy innovative public private partnership. Multi stakeholder partnership models for the design and delivery of mobile governance services should come out. It will also encourage the development of cloud-based implementation models. Besides that, a platform should be proposed for the way the mobile services deliver to the citizens which will be fully integrated with existing infrastructure created under the National e-Governance Plan (NeGP). All ministries and departments will be able to start offering their services on this platform.

Phase 6: Implement laws for mobile Governance for better m-Governance services.

As we know, m-Governance is the complements of e-Governance so that m-Governance should provide services in a better way rather than e-Governance services. To achieve this vision, Government of India should come out with some laws to get the better services from m-Governance to overcome the problem that are still faced by e-Governance such as corruption. The laws that should be enacted by the government are such as Privacy Law, Data Protection Law and Legal Enablement for better m-Governance.

Challenges for m-Governance in India

To facilitate the deployment of m-Governance services reach to the citizens, it is essential to critically examine the challenges that have traditionally being the 'entry barriers'. Here, we can define those challenges into technical challenges and management challenges. The main challenges of m-Governance are typically the same as those of e-Governance, such as low levels of computerization of government operations at the back-end, lack of digitized data or content and change management. As mentioned above, that the challenges for m- Governance in India have traditionally been the 'entry barriers'. Some of these 'entry barriers' which we can put it as management and technical challenges in m-Governance includes:

i) ***Cost:*** m-Governance tends to be yet one further channel for e-governance, in which case it will create additional costs. This will continue until m-Governance can truly substitute for other delivery channels. Such substitution will be viable for applications within government.

ii) ***Low levels of literacy***
The low levels of literacy in India mostly happening in the rural areas. Currently, most mobile phones available have a text driven interface, making it near impossible for illiterate users to obtain, read and get any information provided by the government.

iii) ***Lack of knowledge of English language***
80% of Indian citizens speak and understand only the local languages while only 5% of them have knowledge and understand English language. But, most of mobile devices applications are developed using English language. So, this factor will give challenge to the m-Governance services to reach their services to the citizens especially in rural areas through mobile devices.

iv) ***Computer illiteracy***
The computer illiteracy problem in India will also pose challenge to m-Governance application reaching the citizens. This is because some mobile devices are using technology in m-Governance which is related to computer based devices such as tablet PC, iPad, iPhone etc. Therefore, the computer illiterate users might face problems and difficulties to access government services which are offered through such mobile devices.

v) ***Not enough facilities in mobile devices for m-Governance***
Though, in India the costs of mobile devices and calls are perhaps the lowest in the world, in order to effectively deliver government services on mobile devices, we need very simple text messaging solutions. For example, if a person has to put details in a form etc, he/she cannot do so if such facilities are not available in the current devices. Therefore, the immediate option is to look at mobile devices that combine computing with mobility and are affordable.

vi) ***To develop application in each of local languages***
Another challenge is to develop applications that can be offered in each of local languages. Because India is facing a lack of knowledge of English language challenge, the applications that can be offered in local languages should be developed. But, it still has another challenge where currently, India has 22 different national languages which will give major challenges for developers.

vii) ***Trust/security***
If m-Governance is to encompass m-payment systems or other transactional public services, then it must have good security and must be trusted. As yet, there is still a credibility gap to be crossed for many mobile device users.
The mobile nature of information poses a significant challenge at the government level. Data no longer simply resides within the network. It exists on mobile devices and data that is on a network can be accessed from virtually anywhere. In addition, compromising a mobile device itself can place the government at risk.

The present cloud computing being offered will further aggravate the security environment.

viii) Data overload

Mobile devices increase the pressures of a world in which users are permanently connected. These connections increase the number of messages circulating and can cause a blizzard of communications by spam, junk and unwanted messages. Govt of India has just restricted the number of SMS per day to 100 to control such eventuality.

Conclusion

The research study done at IIIT, Hyderabad on the m-Governance in India is to give a better view of the government services through mobile devices technology. The discussion on this application has brought many issues, challenges and ideas involving m-Governance applications in India. In India, m-Governance is still at new stage and still need for more improvement to get a better m-Governance. While many innovative applications are underway in both private sector as well as government domains, it may be a little premature to celebrate its success and still need for the improvement. The proposed suggested plan for the m-Governance in India is to give better e-Governance environment in each phase. The proposal covers the strategy that could be accepted by Government of India in order to make m-Governance success and get acceptance by all citizens. Currently, m-Governance in India is still facing challenges in both management and technology. Hence, to improve the m-Governance in India, some suggestions have been recommended which are to overcome those challenges in order to implement m-Governance and make it successful in next few years.

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