M- Governance Model To Accentuate Governance Framework In Governance Archietecture To Empower People In Himalayan Villages Using Mobile Technology

Dr. Kamal Kumar Ghanshala
Chairman
Graphic Era Group of Universities, Dehradun
Uttarakhand, India

Dr. Durgesh Pant
Prof. & Director, School of Computer Science & IT
Uttarakhand Open University, Haldwani
Uttarakhand, India

Abstract: The world of communication sciences originated with the evolution of languages, right around 250,000 years ago. With the languages, people started to communicate their thoughts, observations, and ideas which inherited new sciences and technologies for human societies around the globe. In Past few decades, with advancement in technology, the communication technologies have completely changed the way we live. Since its scientific invention in 1980's, cell phone technology is most flourishing technical explosion coupled with the low-cost hardware, that makes able people own devices which were previously only available to a particular exclusive class of Information-haves. India has the world's second-largest mobile phone user base with over 929.37 million users as of May 2013 which has grown to 980.81 in June 2015 with the figure rising to 1.16 billion by 2017 [1][2]. The unparalleled speed of espousal of mobile phone technology has raised the general expectations about its latest contributions to spreading of information and knowledge to every individual in society. In a Himalayan region where accessibility is a major cause for digital divide, the importance of mobile technology has immensely increased. Fragile Geological structures lead to frequent disasters, tough terrains makes unreachable habitats and lack of communication generates an information gap for people in this zone, especially in a rural milieu. An integrated mobile knowledge management system can unleash social and geographical barriers through providing all required information and services to last mile person. India has taken a series of initiatives as also an institutional framework to create IT enabled communities, particularly in remote places. This paper aims to discuss an integrated framework to utilize the massive reach of mobile technology and exploit the potential of mobile phones to enable easy access to public services in rural areas.

Keywords: M-governance, communities, Technology, ICT4D1.0, ICT4D2.0, SWAN- state wide area network

1. INTRODUCTION

Access to information is fundamental need of human society. The timely access to effective information is a key parameter in planning and decision making procedure of an individual. In knowledge economy this need of information has transformed into a significant factor to assess the success of governance. An efficient service delivery and information freedom mechanism promotes effectiveness of governance. According to United Nations reports on governance, effective and good governance is characterized by 8 major characteristics. It is participatory, consensus oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive and follows the rule of law [3]. The definition of good governance indicates to importance of information and its accessibility for every individual in society. With the advancement of technology, the digital world has increasingly dominated contemporary change and development. The computer based applications and explosiveness of internet has embedded into every dimension of our societal structure. Furthermore, mobile technology is most persuasive and escalating technology which has offered "power in every hand", in most cost effective manner ever .The growing proliferation of mobile technology has penetrated in almost every sector of human society and becoming an potent tool for information sharing. As field of study and practices, application of technology in governance is in formative stage marked by various innovations and limitation. This paper focus on some of those concerns: the relationship between delivery of public services and mobile technology in Indian scenario, especially at difficult geographies in central Himalayas, gap between need and accessibility of public information due to lack of technological intervention and importance of capacity building of intermediaries using technology. In fact, people in these difficult geographies have an extreme dependence on nature with physical limitations on resource-availability and comparatively less income and employment opportunities. It culminates into tough sustenance and livelihood conditions resulting in rampant migration from higher altitudes. Quite noticeable is the alarming high rate of migration from hills to convenient flatter areas. This paper considers the emerging role of technology in information management and argues technology, specifically mobile technology, is an essential to enhance the quality and capacity of good governance. This work considers several examples of mobile applications and tools that have been integral to improve the service quality. This work argues for an inclusive framework to provide one-stop service delivery of public services and information with feedback mechanism in rural milieu of difficult geographies.

2. BACKGROUND

In the late 70's the technological development in computing set the ground for usage of ICT (information and communication technology) for development. During the 1980s, multinationals and other firms came to the fore and viewed IT as a tool for delivering economic growth in the private sector [1]. During the 1980s and early 1990s, initial attempts towards e-Governance were made with a focus on networking government departments and developing in-house government applications in the areas of defense, economic monitoring, planning and the deployment of IT to manage data-intensive functions related to elections, census, tax administration etc [5]. In 2000, with the initiation of a global partnership for achieving millennium development goals (MDGs- 2015) outputs , ICT was identified as major catalyst by key planners. Simultaneously , this was the era when

internet explosion took place in technological world. These concurrent activities give rise to **ICT4D1.0 [1]** . In last decade, with dramatic advancement in technological space , both in hardware and software, the ICT4D 1.0 has been shifted to **ICT4D 2.0** . innovations, and ICT4D 2.0 seems more likely to take forward m-development: finding ways to hang relevant services onto the growing mobile base [3]. The convergence of information and communication technologies led to increasing popularity of mobile application for information sharing. The potent global initiatives includes M-Dubai for Police –fines, notification of license expiry, civil aviation e.g., using Mobile to fight HIV/AIDS under Cell–life updates in south Africa, Disease Surveillance with Mobile Phones in Uganda and various service deliveries as Road tax renewal, consumer price index, court hearing, tracking traffic, public work monitoring in Singapore. FARM-Africa approached the Safaricom Foundation (SF) which is the Corporate Social Responsibility arm of a Kenyan mobile phone service provider to support and strengthen the Kenya Dairy Goat and Capacity Building Project (KDGCBP). Current limited evidence from individual farmers and fishers in India supports the conclusion that ICTs improve incomes and quality of life among the rural poor (Goyal 2010; Jensen 2007) [4]. In Indian context, Government of India launched National e-governance program (NEGP) on May 18, 2006 to provide a holistic framework for e-governance initiatives across the country, specifically in rural milieu. The mission statement of NEGP is to Make all Government services accessible to the common man in his locality, through common service delivery outlets and ensure efficiency, transparency & reliability of such services at affordable costs to realize the basic needs of the common man [4]. NeGP constituted key elements as setting up nationwide IT infrastructure as State Wide Area Networks (SWANs), State Data Centers (SDCs), Common Services Centers (CSCs) Service Delivery Gateways, laid down standards and policy guidelines for capacity building and R&D activities along with PPP models to set up decentralized implementation with centralized initiatives [6]. Negp increased transparency and responsiveness in service delivery like Passport seva services which motivated the officials to introduce new innovative frameworks. In 2012, a Mobile Service Delivery Gateway (MSDG) was developed to integrate mobile applications with e- governance infrastructure under Mobile-Seva Project. A mobile application store was developed under MSDG which is hosting over 170 m-application for effective delivery of public services. The platform provides multiple mobile based channels (e.g. SMS, USSD, IVRS, m-Apps) for delivery of public services, instead of being focused on only the SMS channel. Departments integrating with any one channel can effortlessly integrate with all the other operational mobile-channels as well [7]. The private sector is influenced by power of mobile technology since a long time and using m- applications for value addition to their services as in news, media, telecom, entertainment which are mostly SMS based. At state levels, Government of Madhya Pradesh has launched a pilot project on m-governance using SCO Mobile Server enables electronic provisioning of services and access to government information using a cell phone over the cell carrier network. The state of Tamil Nadu, Tamil Nadu Agricultural University (SAMETI) is in collaboration with C-DAC (Govt. of India) and providing Daily Dynamic Market Information on major vegetables, flowers, fruits from seven major markets in South India using

SMS and voice service [8].The previous studies identified ICT as a key economic driver along with a social transformative tool. This shows the urgency to adopt ICT as a development pillar for developing economies. However, the current rating of India for global e- readiness index 2015 is only 3.7 and ranking is 89th out of 148 countries. The contribution of current ICT solutions to the development of poor rural communities is largely limited to improving efficiency (i.e. by reducing the cost of acquiring goods or services – mainly social interaction) [9]. The importance of ICT in developing countries is increasingly being recognized in academic literature although as yet no clear and comprehensive framework or theory has emerged for dealing with the very complex issues involved [10]. A study by Imran & Gregor, suggested the public leadership and willingness to initiate change within the government sector, an incremental, step-by-step approach to development, and some sensitivity to local and cultural needs can accelerate e- government growth in developing economies, however each economy has some unique set of parameters [10].

Against the conceptual background, this study aims to investigate the impact of various local parameters on effective implementation of M- governance model in developing economies such as India. A study is performed on primary data acquired to assess the need of people at remote place and capture their view on relationship in good governance and usage of mobile technology. This work aimed to analyze the role of intervention in unleashing boundaries.

3. Diffusion of technology: ICT4D, ICT4D1.0, ICT4D2.0

Information and Communication Technologies for Development (ICT4D) deal with the application of Information and Communication Technologies (ICT) in development programs in underdeveloped countries[13]. As part of the first wave of ICT4D, called ICT4D1.0 (Heeks, 2008) tele-ceneter has provided important learning on how to bring internet access to rural areas and the sustainability issues have been extensively researched (Kendall & Singh, 2006; Tschang, Chuladul & Thu Le, 2002)[14]. ICT4D 1.0 was largely implementing by international or national NGOs. They continued to play a key role in ICT4D 2.0, but seem likely to be joined by others as private funds , partnerships and virtual organization. [15].ICT4D 2.0 reshaped the earlier version of ICT4D i.e. ICT4D1.0 by emphasizing more on business specific models using technological advancements like mobile technology. It was aimed to scale up the existing application for development rather than devising new applications. There are thus greater opportunities within ICT4D 2.0 for engagement with development studies. This is an engagement that will help understand where digital technologies fit into development paradigms, processes and structures.[15]

4. BENEFITS OF M- GOV

Information access to public is the foundation of community empowerment in citizen centric governance. The timely access to accurate information helps in informative decision making procedure. In a service delivery mechanism, the cost effective, timely and précised information accelerate the effectiveness and accountability of system. An accountable and transparent service delivery mechanism is the universal

cornerstones of the good governance. The speedy diffusion of ICT solutions in society has exponentially amplified the information sharing channels among users. Mobile technology has dramatically changed the scenario. According to a report generated by TRAI, the mobile phone user base in India has grown to 980.81 million users by July 2015 and a report generated by Internet and mobile association of India (IAMAI) reported the user base of 402 million internet users by Dec. 2015 and 90% users access the internet using their mobile devices. These statistics represent the potency of mobile technology to intervene into our societal structure. The traditional Indian governance system is home- grown governance mechanism in three tier architecture including centre, state and PRIs (Panchayati Raj Institutions) as governance hierarchy. The major components in each administrative tertiary for governance are: functions, functionaries and funds. Functions are the set of operations in public domain to be performed by officials or functionaries using required economic resources or funds. Good governance is an exact mapping of these three components **(3 f's)** through distinct accountability chains within or among distinct levels of governance. The underlying framework of governance is a complex web of accountability chains. The proposed m-governance framework can augment to governance structure to strengthen the accountability networks to attend the quality

of service, quick response mechanism and accountable and transparent service delivery system.

The success of any innovation highly depends on acceptance of its user. Assessment reports of ICT4D 1.0 also revealed that there were huge gaps between designs and reality which led to need of ICT4D2.0. To assess the acceptance of technological wave in rural milieu of Uttarakhand researchers conducted a study In Uttarakhand. This study aimed to assess the people's perspective on impact of technological intervention on quality of governance.

5. RESEARCH METHODOLOGY

To assess the need of people at remote place and capture their view on relationship in good governance and usage of mobile technology a survey was conducted in remotest village "Munsyari" of Uttarakhand, India in central Himalayas. A well defined questionnaire is distributed to sample size of 300 respondents. Respondents were asked to give their preferences in various dimensions of technological interventions. Eg. Questions were designed to capture their views on importance of technology in good governance model. To analyze the relation between two variables as : technology awareness and importance of technology in governance, a Pearson correlation test was conducted.

Table: Co-relation between governance and technological intervention (People's perspective)

		good_governance	Technology_role
good_governance	Pearson correlation	1	.658[**]
	Sig.(2-tailed)		.000
	N	300	300
Technology_role	Pearson Correlation	.658[**]	1
	Sig.(2-tailed)	.000	
	N	300	300

The results are represented in matrix shows that the Pearson correlation coefficient, r is 0.658 and it is significantly correlated (p < 0.0005). Based on the results it can be argued that a respondent agrees with the statement that technology can empower the good governance. This infer to another argument that the respondents are ready to accept technological advancements. Linkert -5 scale questionnaires are used to access ground realities for effectiveness of e-governance and m-governance frameworks at remote places.

The degree of agreeing is ranked in five categories: 1 for totally disagree and 5 for totally agree with a statement given in questionnaire. A comparative analysis is conducted between four variables computed using SPSS 20.0 based on field data, namely: access to technology, good governance, access to mobile technology, using mobile for availing public services. The descriptive statistics for analysis is represented as follow:

Table: Use of Mobile technology to access governance in Uttarakhand

	N	Minimum	Maximum	Mean	Std. Deviation
Technology_role	300	2.90	4.80	3.6640	.78866
Good_governance	300	3.70	5.30	4.2713	.31925
Mobile_access	300	1.00	5.50	3.0833	1.19910
Public Service delivery using mobile	300	1.83	5.50	1.3589	.86043
Vlaid N (List wise)	300				

The matrix represents that, for a sample size of 300, the mean score for technological access of public services is only 1.3589. The results can be interpreted as sample of 300 respondents is almost agreed with usage of technology in good governance. The sample has average accessibility to technology; however among technology group they have

higher accessibility to mobile services rather than other technologies. Simultaneously, the mean score for using mobile technology to avail public services is only 1.3589, which emphasizes on urgent need of awareness and capacity building programs in remote areas regarding m-governance.

As summarized in above statistics, people's perspective for impact of technology on quality of governance in their regime was seen positively.

However, there exists a well identified gap between usages of technology for governance (the mean score for technological access of public services is only 1.3589).

This scenario demands for an urgent need of intervention at policy-program and development level. The ICT professional have to develop a typical formulation which includes

a) Examining governance architecture at local level , specific to India where three- tier architecture of governance which includes Central, state and Panchayat systems in rural areas

b) Understanding ICT4D framework which supports to integrate innovations from computer science, informatics and development sciences for growth and development through services and production using mobile technology

c) Incorporating user's feedback thorough proper evaluation and monitoring techniques for sustainability of technological governance model. Governance is defined as the manner in which power is exercised in the management of country's economic and social resources (The World Bank). UNDP viewed Governance as the exercise of political, economic and administrative authority in the management of a country's affairs at all levels. It comprises mechanisms, processes and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and mediate their differences. Indian Governance system is a three tier architecture. Panchayats were included in Article 40 under the Directive Principles of the Constitution of India. The Government of India kick started the use of IT in the government in the right earnest by launching number of initiatives. First the Government approved the National E-Governance Action plan for implementation during the year 2003-2007. The plan is an attempt to lay the foundation and provide impetus for long-term growth of e-governance within the country

Earlier, the outcomes of ICT4D 1.0 showed that failures are associated with a large gap between design expectations, and the actual realities of the project and its context. [15] This emphasizes on devising a framework for intervening governance through technological advancements using modular approach. The incremental design of m-governance architecture would help to reduce the gap between reality and design.
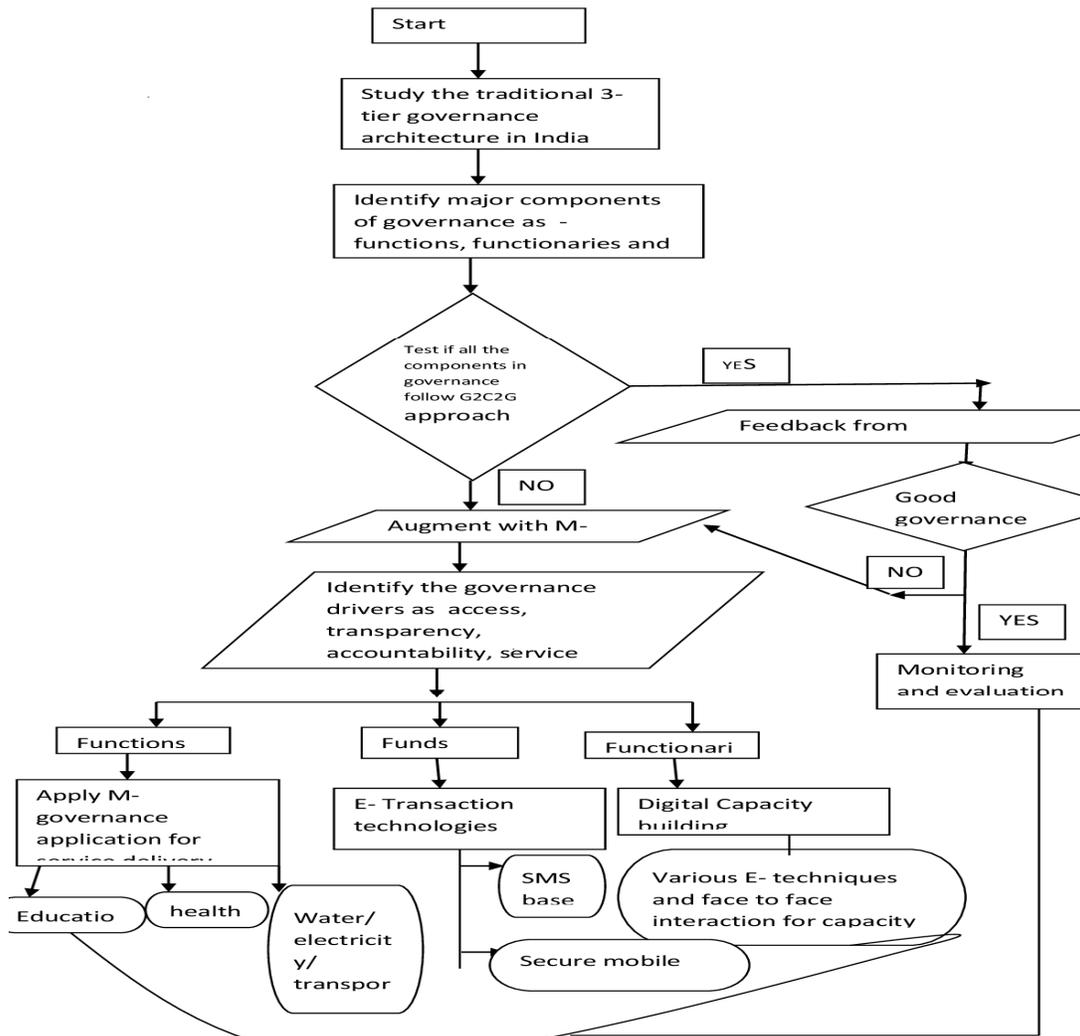

Figure: conceptual incremental M-Governance(proposed) workflow model for Uttarakhand

6. CONCLUSION

The modern information sharing channels and technology are inseparable. M- Governance can be a potent tool to break the boundaries for information sharing. The cost effectiveness and immediate responsiveness are basic features of m-technology which can foster good governance in public service operational. Increasing transparency, accountability and easy access to public services and information for everyone at everyplace generates a citizen centric environment for public interaction among all stakeholders in governance – government officials, policy makers, and service consumers and political representatives. However, security and mobility are main concern to be considered while implementing m-governance framework. We analyzed the existing gaps in usage of mobile technology to develop a efficient delivery mechanism for public services in order to construct information democracy and form good governance.

7. REFERENCES

1. Telecom Regulatory Authority of India, New Delhi, (www.trai.gov.in) . Press Release No. 09/2014
2. New GSMA Report Reveals Unique Role Played by Mobile in India's Transformation. (2013, November 5). Journal of India.
3. Heeks, R. ICT4D 2.0: The Next Phase of Applying ICT for International Development. *Computer*, *41*(6).
4. Barrett, M. (2012). Making ICT infrastructure, appliances, and services more accessible and affordable in rural areas.
5. Larmour, Peter J., ed. Governance and reform in the South Pacific. Vol. 23. Asia Pacific Press, 1998.K. Elissa, "Title of paper if known," unpublished.
6. Chauhan, Radha. "National e-governance Plan in India." United Nations University–International Institute for Software Technology (2009).
7. Planning Commission. "NATIONAL e-GOVERNANCE PLAN. Seventh Five Year Plan 1985-1990."M. Young, The Technical Writer's Handbook. Mill Valley, CA: University Science, 1989.
8. Moshapo, S., & Hanrahan, H. E. (2004, September). ICT Services for Poor Rural Community Development-What Is Missing in Current Implementations?. In *Southern African Telecommunications and Applications Conference* (pp. 6-8).
9. Imran, A., & Gregor, S. (2005, November). Strategies for ICT Use in the public sector in the least developed countries: A cross-co
10. National-e-governance-plan. (n.d.).. Retrieved from http://india.gov.in/e-governance/national-e-governance-plan
11. Karna, Singara Rao, and Divya Kirti Gupta. "eGovernment in India." Conference for E-Democracy and Open Governement. 2013
12. Ebad, Ryhan. "Applications of ICT and Impact of Mobile telephon in e-Agriculture" Computer Science and Information Technology: 41.
13. Information Technology Management in Developing Countries.(2009, October). A Newsletter of the International Federation for Information Processing Working Group 9.4 and Centre for Electronic Governance Indian Institute of Management, Ahmedabad.
14. Herselman[1], Marlien, et al. "Outcome Mapping as methodology to monitor and evaluate Community Informatics projects: A case study."
15. Heeks, R. (2009). The ICT4D 2.0 Manifesto: Where next for ICTs and international development? Dev. Informatics Working Pap. 42. Univ. of Manchester Inst. for Dev. Policy and Manage., Manchester, UK.