Use of SMS based alerts and applications in e-Governance service Model

Dr. M.K. Sharma[1] and Rajeev Kumar[2]

[1]Associate Professor and Head
Department of Computer Science
Amrapali Institute of Management & Computer Applications
Haldwani (Uttarakhand)
[2]Assistant Professor Computer Science Department college of Engineering
Teerthanker Mahaveer University Moradabad
E-Mail: sharmamkhld@gmail.com,

Abstract: As the number of mobile users growing day by day in India and the good sign is that this is also growing in rural parts of India also .For a mobile user Short message service (SMS) now become one of the most preferred communication medium . Local authorities in many countries are using SMS services also to deliver e-Governance services to their citizen. In this paper we have collected some currently available SMS based e-Governance and other popular services as a model and suggested the use of SMS based services or alerts to offer some services in the area of agriculture, health, education. Due to many times mobile phone users over Internet users in India and adequate established infrastructures it is easier to offer some of the e-Governance services to a large number of people by SMS at a cheap rate rather than using Internet. This paper also represents a comparative study to show how SMS based e-Governance services offer model can fulfill most of the services that Internet based e-Governance can offer. Through SMS based e-Governance services people can be notified immediately about healthcare, natural disasters, tax services, education information and can also participate in voting, auctions and many other activities. This paper concludes by listing opportunities and challenges regarding SMS based e-Governance services implementation in India.

Introduction:

There are many scenarios where SMS messaging can be deployed by local authorities and public sector organizations and we have highlighted the main ones as follows:

Outbound SMS (Mobile Terminated/MO)
- Sending SMS information or bulletins to staff and citizens
- Enabling the flow of information to mobile users
- Sending SMS in emergency situations (flood warnings, etc)
- Involving younger citizens in community projects
- Confirmation of appointments or events by SMS
- Reducing costs by sending SMS instead of calling mobile phones - SMS Calculator
- Housing - contacting residents, maintenance engineers
- Social Services - contact representatives
- Education - broadcast alerts of closures, incidents, contacting supply teachers/staff

Inbound SMS (Mobile Originated/MT)
- Providing citizens with the option to enquire about/request information via SMS
- Enabling SMS voting or requesting citizen opinion
- Enabling SMS payment systems
- SMS reporting of incidents, graffiti, damage to roads or street furniture
- Highways - SMS reporting by citizens on incidents, road maintenance, lighting, untaxed vehicles
- Setting up of SMS advice lines such as bullying and racism

The Indian government, along with the mobile industry, seems to be taking steps to ensure that mobile services are available in the deepest parts of the Indian farming community. The government has begun sending out SMS alerts to farming communities, informing them about details involving the supply of food. The government of the state of Chhattisgarh is going to provide 35 kilos of rice a month to each family, at the subsidized rate of Rs 3 a kilo, under a food security scheme. What the government has

decided to do is send an SMS message that will inform these communities that food is being distributed at designated centers. Families that wish to avail of this service will have to register at the website of the food and civil supplies department. The food scheme starts on January 16 and will cover 3.4 million families (or about 60 percent of the state's 20 million population). The SMS facility will go live from January [1] 26. That cup of coffee you pick up on your way to work every day, have you noticed the price has gone up during the past few years? That's because there's a global shortage of the miracle drug, and basic supply and demand has caused prices to soar. The guys who actually make the coffee have been enjoying the extra money, but at the same time they've been experiencing issues with theft and even violence. Farmers in Central Kenya, looking to curb the amount of coffee related crime, are testing a device that creates an invisible perimeter around their property using lasers. Once the perimeter is breached, text messages are sent to trusted parties who either contact the police or grab a shotgun and open up a can of whoop ass. The system includes a power backup so it can run for up to 3 days should there be any electrical problems, and since this is Central Kenya we're talking about, they don't exactly have first world class infrastructure [2].

HYDERABAD: Farmers will henceforth get the mobile alerts on the market prices. This will be useful to farmers who sell their produce, especially vegetables in Rythu bazaars. The farmers, who sell their produce to hawkers, may not be really aware about the ruling market prices for the vegetables they raise.If farmers make a call to a toll-free number 18001026787 and place a request for securing the prices in different markets, Into It will furnish the changes of prices of different vegetables over their respective mobile phones via SMS. The farmers have benefited by enhancing their earnings by 15 per cent more through the services. The project is being implemented on an experimental basis in two States [3].

BANGALORE: Sericulture in the state has gone hi-tech too. Farmers can now get alerts on market price and weather through SMS. Sericulture minister Venkataramanappa launched the facility on Saturday. All farmers have to do is subscribe to it by paying Rs 600 per year. "Once that's done, they will get alerts on prices at markets like Ramanagaram, Channapatna and Siddlaghatta," the minister said.Besides price and weather, alerts will be issued on issues related to the sector as well. In Maharashtra, one lakh sericulturists are members of a similar system, he added.To eliminate intervention of middlemen in the markets, the government will install CCTVs at Ramanagaram and Siddlaghatta, the minister said [4].

Computer to Mobilephone SMS Alert Broadcast Service for Farmers in Ahmednagar District

....Yet another pioneering milestone by KVK Babhaleshwar in service of Farmers..

Mobile SMS Broadcast Service:

The KVK has pioneered for the first time IT enabled service aiding instant messaging from KVK to individual farmers for extending Agricultural information through SMS alerts. The service comprises sending Short Message Service alerts on cellular phones registered at KVK by individual farmers. Weekly SMS alerts are issued on various agricultural developments like weather forecast, disease forecast, market information. The service is also being used as a medium to send information on important trainings and other programmes to the members of the Farmers Clubs and SHG network under the KVK. The service is an important milestone in reaching out to millions of farmers at a stroke of a mouse click and enable the farmer to have information access and derive the fruits of technological prowess and face the challenge of an upcoming free market. The service was initially inaugurated at the hands of Minister for Agriculture, Govt of Maharashtra, Shri Balasaheb Thorat on **10 March 2006** on the eve of Annual SHGs and Farmers Clubs Meet 2006 organized at KVK Babhaleshwar that comprised a huge congregation of 5000 farmers belonging to 350 SHG and 150 Farmers Clubs members working under the KVK's flagship capacity building programmes.The service is a boon for hundreds and thousands of farmers around the KVK within Ahmednagar District. There are currently 241 registered farmers availing this service on paid basis from KVK Babhaleshwar. All registered farmers who are having cellular mobile handsets supporting all major GSM/CDMA networks compatible for Devnagari Unicode fonts within the country can receive the SMSs from KVK without incurring any cost. The KVK bears all costs of sending the SMS across all the registered farmers having cell phones. In continuing with the KVK's efforts in dissemination of agriculture technological information, the KVK has further started the Marathi based SMS text delivery for the cellular handsets users within the District. The vernacular delivery module was commissioned with effect from 01 June [5] 2008.Rural VAS is gradually

surpassing the realms of the SMS and voice. The simple farmer is set to walk into an era of digital revolution. The sight of a farmer sending and receiving immediate updates using mobile devices, including phone cameras may no longer remain a dream. However, that may not happen very soon as these devices are very expensive and also farmers will need to be trained to use them. A small step in this direction is a scheme developed by UK based Sheffield Hallam University that recently won the Manthan South Asia Digital Empowerment Award. The scheme enables farmers in rural India to get tailored and expert advice on resolving problems with their crops. Kheti, as the project is called was developed by academics from Sheffield Hallam University, who worked with a farmers' co-operative to design a software package for use on a mobile phone, allowing farmers to take pictures of particular problems and also describe what they saw on an audio track[5].

Information thus gleaned, would be sent to experts with local knowledge who could discuss and help to resolve the problems. According to Dr Andy Dearden, reader, Sheffield Hallam who managed the project, "The Kheti system-which was first launched in rural India in the beginning of 2009-provides the means and 'knowhow' for farmers by receiving immediate updates using modern communication. It has made a real difference to the lives of farmers in rural India by strengthening connections between people and their co-operative institutions, and by adding to their knowledge through mobile phone communications. Since the reaction from farmers was great and the service proved to be a real benefit for them, we are now discussing the next steps, but we are hopeful that we can make further inroads to improve communication across the third world."

Service providers in India have been striving hard to bring innovations to rural VAS. With cell phone usage in the rural sector on the increase, and the main occupation in that area being farming, it has been unequivocally reiterated time and again that providing better VAS to farmers is the best way forward. Reuters Market Light (RML) has a network of over 1,000 markets, wherein it provides information on local news and data, covering 250 crops and weather forecast in1,800 locations. It is all set to announce its subscriber base , this year. "Since the launch of RML two years ago, our subscriber base has grown by eight to ten times; and from one state in October 2007, we now operate in twelve states," says Amit Mehra, managing director, Reuters Market Light-which was the first content provider to offer SMS alerts for the farming sector in India[5].

Home Contribution: Tata Teleservices, launched a similar service for its rural subscriber base. According to Pradeep Dwivedi, senior VP, product development, TTSL, "RML was not sustainable from the cost point of view, and thus, we started three-four services for our rural market. This was in the form of data services for agriculture related information regarding the latest market rates, the nearest and best market and the market providing best returns on mandi-bhav, weather alerts, information on crop cycles, fertilizers and pesticides."

"We also started on-call services at a fixed fee for mandi bhav two years ago-a service that is present in almost all states across India, while our advisory services were started six months ago in three states," he continues.

TTSL claims that 25-30% of its subscribers are from the rural belt, and although these services are in the initial phase, the company expects almost half of its rural market to subscribe to these new services in the next two to three years. "Scaling up has not happened yet; we are exploring various models and hope to emerge with the model of highest acceptance in the next three to six months," remarks Diwedi. Nokia Life Tools (NLT) also recently started offering their own set of services available all over the country, especially catering to individual farmer's needs. NLT uses an icon based, graphically rich user interface that comes complete with tables, and which can even display information simultaneously in two languages on the same screen. Behind this rich interface, SMS is used to deliver the critical information on seeds, fertilizers and pesticides, market prices, and weather (temperature, rainfall, wind conditions) to ensure that this service works wherever a mobile phone works, without the hassles of additional settings or the need for GPRS coverage. These services are delivered in a manner that addresses literacy and infrastructure at an affordable price, and are constantly reviewed on the basis of consumer feedback. Currently the two plans available are the basic plan, available across India at Rs 30/month which provides daily weather updates and relevant agriculture related news, advice and tips. The

premium plan, at Rs 60/month, is available in ten states including Maharashtra, and provides the closest market prices for three crops chosen by the subscriber as well as weather, news, advice and tips. Nokia Life Tools was first piloted in Maharashtra before its commercial rollout to other states later last year. The feedback from actual subscribers during the pilot project that was concluded in April 2009 revealed that the service had a wide appeal, and connected with subscribers at both emotional and rational levels. Nokia worked with senior Maharashtra State Agriculture Marketing Board (MSAMB) officials and collaborated with Reuters Market Light (RML)-which was the exclusive provider for agriculture services in the successful pilot project-for this service. Also, recently Nokia extended its offerings to consumers by extending its partnership with another partner to provide real-time to farmers on commodity prices through an extended network of e-choupals. Keen on not being the last one to catch the current VAS bandwagon, Reliance Communications has also launched several services for farmers. Says Krishna Drubha, head of VAS, Reliance Communications, "RML is doing a brilliant job as a content provider, and we do not consider them competition, whatsoever. The challenge is to provide local, updated information to farmers. We are always willing to tie up with any enterprise that will provide such information based, multi-lingual data applications for farmers. With this view in mind, eight months ago we started offering M2M applications (including irrigation level checking, power supply, water level indicator) in the form of SMS alerts. We also started a farmer's channel on voice, which is a radio portal on which a farmer can call and get information from a local expert on crops, poultry, mandi bhav and weather conditions. This portal also allows them to talk to other farmers by means of a one-to-many conference call, where they could exchange updates, say on the next panchayat meet." Reliance Communications expects a triple digit growth for its rural applications within the next financial year, estimating the figure at approximately 2 mn subscribers. Says Drubha, "We are excited about our group messaging service and all other voice and data applications, as VAS has a huge penetration in the rural areas, almost equal to that in urban areas."

Kheti for India: So can Kheti be launched in India on a wide scale basis? According to Mehra, "As far as Kheti system is concerned, we are exploring such prospects for enhanced solutions as the sector matures. For now SMS is enough, probably in the next three to five years, we should be able to offer more solutions." Remarks Dwivedi, "We are exploring various kinds of solutions. As far as the Kheti system is concerned, it sounds interesting. However, the first step is to make

camera phones affordable to farmers, which is not currently possible. We are looking at voice, video and data applications and trying to find what will work best for farmers. We are therefore looking at all technology options, and would be happy to work out the best pilot projects for the same." Says Drubha, "I haven't heard of the Sheffield Hallam project. But I think the scope is large for such technology. We already have a live call-center expert to help farmers on voice, but would be very interested in working with Sheffield Hallam. Basically, content is the key now, and we want to work with the best providers to help farmers in rural areas to the best of our ability[6]." Prior to the establishment of the ECAMIC project, farmers in the Eastern Corridor used the women traders who came to buy from them as sources of information about the prices of the produce they were coming to buy. This phenomenon meant the buyer was in control of the vital market information about what they were coming to buy. The intervention of ECAMIC is gradually giving way to the seller also being able to refer the buyer to what they know about the previous day's price from the various market centres thereby taking control of decision making. The provision of accurate and timely market information to farmers in the Eastern Corridor has enhanced their negotiations and marketing decisions concerning the sale of their produce. Market information is now made available to the larger community through notice boards instead of only the cooperatives. Despite the successes achieved, one of the biggest challenges of the ECAMIC project is how to reduce the recurring costs of the project activities to ensure sustainability when the project ends. Maintaining VSAT for internet access to be able disseminate information to the project field Offices /centres was very costly for farmer cooperatives to pay after the close *(project funding ends).* Furthermore, the End-User Evaluation of the pilot phase acknowledged the critical role the market price information has been making to the lives of the farm-families despite the challenges associated with the transmission of such information. The principal challenge has been the delay between the information at the field office to the farmers in the communities. To address this challenges, the project resorted to the use of mobile phones to disseminate market information by SMS alerts to farmers. A system called TRADENET *(*www.tradenet.biz*)* is an electronic platform that permits users to sign-up for SMS alerts to receive market information for commodities and markets they are interested in. Users can also indicate their areas of business and receive instant SMS alerts for offers to buy and sell as soon as anyone else on the network has submitted an offer via their mobile. This system permits the project to publish any information to farmers through their phones by SMS. To increase accessibility to mobile phones among farmer

cooperatives in the Eastern Corridor he ECAMIC project facilitated the procurement of mobile phones for farmers in view of the shift in emphasis from internet based access to SMS via cellular phones. The process would involve the deployment of a total of 200 cellular handsets at subsidized rates to the farmer's cooperatives. Women paid 60% and Men paid 70% of the total cost of a mobile phone. Building the capacity of farmer cooperatives on the use this phones to access market information is key in assuring farmers continuous access to market information after the close of the project. To this effect, series of training has been conducted for farmer cooperatives on the use of mobile phones to facilitate accessing of market information. Farmers now receive text messages on update of market price, request for market prices of commodities form various market centers and send offers to sell their produce [7].

In Jordan, a new program called SOHITCOM (Social Health and IT for Rural Communities) uses mobile phones and web-based technology to improve access to maternal and early childhood healthcare information. Developed by the Royal Scientific Society of Jordan in a partnership with Canadian funder IDRC, SOHITCOM is part of a larger program promoting and developing ICT4D in the Middle East. A two-part project, SOHITCOM is both a vaccination adherence service and a health information portal for rural Jordanians.

Information Portal

Scheduled to launch at the end of February, the SOHITCOM information portal is a forum for asking (and finding answers to) health questions. A dual website/mobile forum, it features a question and answer module, which allows users in rural areas to text in questions to partner doctors and receive answers via SMS (currently the project has a maternal and early childhood focus). The questions are posted to an online forum as well so that users with access to the site can see what other members are asking and the responses. Explains Islam Ahmad, system analyst for the Royal Scientific Society and technical team leader for the SOHITCOM project, "[a user] can simply open her mobile phone and send an SMS to 9444 – which is so very known here in Jordan because it is the government's national gateway number – and send the question that she wants answered." The question gets loaded onto the website and a doctor answers, with users only being charged if they receive an answer via SMS. The SMSs cost 1/3 the price of regular SMSs because the Royal Scientific Society receives a reduced price from the government.

Built as part of an IDRC funded project, the website is currently a proof-of-concept site, which the RSS hopes to have taken over by the Ministry of Health after the launch. Designed in Java using open-source software and code, the website is available only in Arabic and allows users to submit questions anonymously. Watch a video of the Royal Scientific Society's Edward Jaser demonstrating an early prototype of the SOHITCOM mobile portal here Ahmad explains that an added benefit of the site, in addition to regular medical advice and information, will be the openness SOHITCOM encourages. She says, "We got the people in the rural areas to overcome their difficulty discussing their own medical situations [...] The people of Jordan do have this challenge with speaking about themselves in public. And this is very good for young generations, young mothers, getting to discuss their issues over the Internet."

Vaccination Reminders Through Mobiles

Another aspect of the SOHITCOM project is a reminder service via mobiles for mothers who want to keep track of when their children need vaccinations. According to Ahmad, the vaccination reminder system fulfills a need to streamline the vaccination process. She says that nurses at rural health centers found people weren't coming in to vaccinate their children at the right times, or would miss follow-up appointments. In order to combat this, the service sends enrolled mothers either SMSs or prerecorded voice calls to alert them when it is time for a follow-up vaccination appointment for their children. The initial pilot launched in the Ma'an region of Jordan, and ran from March of 2010 to September 2010 with 16 mothers. The service works by having nurses at community health centers (two community health workers were involved with the original pilot in Ma'an) log information on vaccination dates via SMS and send the information to a central database. Parents get an SMS alert when they need to take their children in for the next round of vaccinations. Health workers record if mother is literate or illiterate, and the database sends either an SMS or a prerecorded voice call depending on her needs.

Building a system that could connect cheaply with all enrolled participants regardless of service provider proved to be a challenge. Ahmad explains, "There are five [GSM operators in Jordan], so which one will you choose to host your idea in? You will be restricted to a fifth of the users. And between [the operators] they can charge each other for having SMS sent or voicemails sent over GPRS, which is very costly. We don't want the mothers to be charged anything." To work around this so that the service would be available regardless of users' service providers, the RSS purchased a modem and connected it to a PC, directly calling mothers through the computer. The modem method was chosen for two reasons: to keep costs down, and to avoid being

restricted to only one of Jordan's five telecoms. A second challenge faced by the project was moving from the original pilot to a larger rollout, due to a lack of feedback coming from Ma'an where there was political turmoil. She explains, "…In order to get to the second phase of the pilot, we needed to get feedback from Ma'an. But no feedback was coming, so the approval for the second phase was delayed. We got delayed for almost three months." After finally getting the data from the original pilot organized, the project is ready to move on to the next phase: the project is now preparing for expansion to five new areas (Ma'an, Al-Karak, Al-Mafraq, Jerash, and rural Amman). Training of community health workers in each areas has been completed, and the new phase will officially launch on March [8] 7th. Parents of new born babies in Kerala will henceforth get SMSes on their cell phones about vaccination details for babies.

Information Kerala Mission (IKM), the flagship e-governance project of the Kerala government, has developed the system as a part of the 'Hospital Kiosks.'

Janasevanakendram Hospital Kiosk

The first hospital kiosk was launched in 2005 by IKM, under Local Self Government (LSG) Department. The kiosk facilitates online registration of births and deaths directly from hospitals in Kerala. They are installed in both public and private (350-odd) hospitals. The stats show that about 60 percent of births in the state are being registered online. The IKM's strategy is to collect data from where it originates, so that civil and community databases will be transparent and the government can target the beneficiaries of any welfare measures efficiently. By combining Janasevana Kendrams with hospitals online, IKM makes birth and death certificates available to informants within 24 hours of registration. And, of course, marriage certificates also get done the same way.

Pings for vaccination

"The messages will be sent to the parents who register online the birth of their child through the Hospital Kiosks, the facility arranged at the hospitals for birth and death registrations," said A Shaji, Director (Implementation), IKM. "The mobile numbers mentioned in the birth registration forms will be collected and details of vaccination will be sent as SMS to the number. "There are several vaccinations and injections to be administered to the new-born babies. The SMS facility will help parents to remember the exact date and period of vaccinations and its significance," he said. The IKM kicks off the program statewide from next month in all hospitals which have

these hospital kiosks. There are 365 hospitals, both private and public, across the state. As the Health department has already made the registration of births through kiosks mandatory, it is easy to collect data. The SMS alert system being fully computerized, "each and every detail of vaccination and the numbers of parents will be fed and updated in the software," he said. Mr.Shaji feels the accuracy of updates in rural areas is going to be challenge. "People, especially those from remote areas will not come to city hospitals for vaccination or related activities. They will surely go to their nearer primary health centers (PHCs) for that. Those regional health centers may not have the facility to ensure whether the parents, who got the SMS alert, have come and take vaccination for his child," he said. The problem is if there is no full proof system to register, monitor, and update the vaccination procedures, the department can not ensure if all the new born babies have been vaccinated. He said the problem can be solved by doctors at primary health centers giving updates though emails and SMSes [9].

Conclusion: SMS alert is the best techniques for communicate the other person. And transfer the data to one person to other person. With the help of sms alert every person know the every movement of business. It is very useful for every field. It is easy to collect data and transfer the data. Sms alert system being fully computerized. will henceforth get the mobile alerts on the market prices. This will be useful to farmers who sell their produce, especially vegetables in Rythu bazaars.

References:
1. http://tech2.in.com/india/news/mobile-phones/food-distribution-sms-alerts-for-farmers/26081/0
2. http://www.intomobile.com/2010/12/28/kenya-sms-coffee
3. http://andhrabusiness.com/NewsDesc.aspx?NewsId=SMS-alerts-to-farmers-on-vegetable-prices.html
4. http://articles.timesofindia.indiatimes.com/2010-01-31/bangalore/28140278_1_farmers-sms-markets
5. http://www.kvk.pravara.com/sms.htm
6. http://voicendata.ciol.com/content/service_provider/110020308.asp
7. http://mohammed4u.wordpress.com/2008/07/08/farmer-cooperatives-under-the-ecamic-project-recognizes-the-important-role-of-ict-in-facilitating-access-to-market-information
8. http://www.mobileactive.org/sharing-health-information-rural-communities-sohitcom
9. http://www.themedguru.com/20110224/newsfeature/kerala-send-sms-alerts-vaccination-babies-86143772.html

5/16/2011