

Mobile Phone and Social Media for Agricultural Extension: Getting Closer to Hype & Hope?

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Abstract

Human beings evolved around half a million year back and since then communication has been one of the cornerstone for development. Human civilization and communication moved hand in hand till today, but, human beings never communicated they way they do now. At any point of time, hundreds of millions of global population are connected with each other and also generating, and publishing information worldwide. Thanks to the mobile evolution and explosion which made the revolution in human communication process and relationships. Along with mobile penetration, the social media has also having unprecedented growth in present times. The social media is demonstrated its extraordinary potential in social networking and information sharing among increasingly connected global population. Similarly, mobile phones and social media applications in agricultural extension are evolving. At the same time, there is a global realization for “New Extension” with new capacities and changing roles to meet the challenges in agricultural development and also to ensure food security for the increasing global population. A number of innovative mobile phone and social media applications are emerging and experimented to meet the new and expanded roles of extension. Experiences indicate that mobile phone and social media can facilitate the agricultural extension to move beyond “information facilitation” to “enabling innovation and empowerment” among the stakeholders of agricultural innovation systems. This article deals with evolution, case studies on best practices, challenges and lessons learned from the mobile phone and social media applications in agricultural extension across the globe.

Introduction

Communication has been one of the basic needs of human being after food, shelter and clothing. And with the development and advancement of the civilization, the need for communication also increased. Man became social animal and everyday tried and tested new modes and methods of communicating. Starting with carvings on wall of caves, they progressed through stone tablets, papyrus leaves to printing. The insatiable quest of human for increasing his realm of contacts and reaching larger mass paired with technology evolved into Information and Communication Technologies (ICTs). But development did not stop there. From mass media tools like radio and television we progressed towards more user centric devices with today’s computers and mobile phone. They have made us think more, do more and achieve more. Not just that, technology in present world is something that we can’t live without not just because it makes our life easier but also better. Information and Communication Technology is being used for development purpose because of their mass reach. Radio and television has long been utilized for development and then computers and internet. The mobile phones are the new addition in the war against poverty. The number of mobile subscription (6.8 billion) is about to be equal to the global population (7.1 billion). Cellular penetration rate globally is 96 per cent with 128 % in developed countries and 89 % in developing countries (ITU, 2013). Mobile phones are recognized as the tool to create and support development in developing countries, to take their inhabitants above poverty line and provide a sustainable livelihood to the rural population. According to USAID, 41 per cent of mobile phone subscribers use their phones to increase their income and professional opportunities (USAID, 2013). And in a world where mobile phones are about to outnumber the human beings (ITU, 2013), it does say something about our dependence on the device.

Another recent addition to this list of aides in communication is social media. Social media refers to the internet-based tools for sharing and discussing information among

people. It refers to the user generated information, opinion, video, audio, and multimedia that is shared and discussed over digital networks (Andres and Woodard, 2013). Merriam-Webster (2013) defines social media as forms of electronic communication through which users can create online communities to share information, ideas, personal messages and other content. According to Michelle Chmielewski, social media is not about what each one of us does or says, but about what we do or say together, worldwide, to communicate in all directions at any time by any possible digital means (Cohen, 2011). Social media tools include social networking sites (Facebook, LinkedIn, MySpace, *etc.*), video and photo sharing websites (Flickr, YouTube, Tumbler, Pinterest, *etc.*), blogs and microblogs (Blogger, Twitter, Instagram, *etc.*), forums, discussion boards and groups (Google groups, *etc.*), Wikis (Wikipedia, *etc.*), video and podcasts (Skype, *etc.*), video conferences and web conferences, Email and Instant Messaging (IM), BlackBerry Message (BBM) *etc.*, socially integrated mobile text messaging (Line, WhatsApp, Viber, *etc.*), websites with social plug-ins and layers, social bookmarking (Delicious, Blinklist, *etc.*), social news (Reddit, Propeller, Digg, *etc.*) and many more. Simply stated, social media are digitally enabled platform for communication through internet in any form where the content is created and used by the users.

But inspite of this, the digital divide in rural and urban areas still continues and to address this glitch, mobile phones and social media can play an important role. In the developing world, most of the rural populations are still dependent on agriculture and taking them out of poverty will take the world a long way ahead in achieving the Millennium Development Goals, increasing their ranks in Human Development Index and above all, increase the living standard of its people. And in doing that one area that needs the attention is information gap. Then again, providing information to farmers has become a cliché. The much hyped about research-extension-farmer linkage will have little utility if the knowledge of the extension personnel are not up-to-date. So not just strengthening the extension-farmer linkage but equal attention needs to be paid to the extension-extension linkage. And doing that, mobile phones and social media can be the best available aids as of now.

Mobiles and agricultural development

Agriculture continues to be the most important sector of Indian economy. Research, extension and farmers' efforts are all contributed significantly from 50 million tonnes in 1950-51 to land mark achievement of an estimated production of 259.32 million tonnes of food production in 2011-12 (MoA, GoI, 2013). But estimates indicated that 60 per cent of farmers do not access any source of information for advanced agricultural technologies resulting in huge adoption gap (NSSO, 2005). In India, there are about 120 million farm holdings and the number is growing year by year. At least to provide one village extension personnel for 800-1000 farm families, the requirement of field level extension personnel is estimated to be about 1300000-1500000, against which the present availability is only about 100000 personnel (PC, GoI, 2007). And this, more or less, is the condition of all the developing economies. In this existing scenario, it is expected that integration of ICTs in agricultural extension will provide needed impetus to agricultural sector and ICTs can complement the traditional extension system for "Knowledge Resource" delivery to the millions of the farmers (Saravanan, 2010). Among ICTs, impressive penetration of mobile phones in many of the developing countries changing the agricultural communication process and mobile phones have made personal communications readily accessible, for the first time, to women and men, poor and prosperous, rural and urban dwellers in developing as well as in industrial countries (Colle, 2010).

The efforts to provide the farmers with advisory services through mobile phones have evolved a lot. Started with land lines or fixed telephone connections and farmers' helpline, the advisory services are now being provided through dedicated and specific apps (Few projects from around the world has been listed in Table 1). And of all the technologies, SMS still dominate as the most used medium for providing advisory. Along with these, videos and audios have also gained popularity among the farmers. The increasing number of apps for crop and weather information and alerts compatible with Apple, Android and Windows

operating systems indicates the increasing use of high end smartphones among the farmers of developing countries and more importantly, their awareness about the utility of the devices in farming. And it's not only the mode of delivery that has changed but also the content and the context. Actually, it's not even confined to advisory service but has gone beyond that to help the farmers out of their poverty and misery. Kilimo Salama offers micro insurance to the farmers which are a novel attempt and no doubt a very successful one. Especially in places where insurance is something that is not meant for the base of the pyramid farmers, Kilimo Salama is a wonder in itself providing insurance on a bag of seeds or an acre of produce. Next2 is more of a facilitator than an advisor connecting the farmers and making a conducive environment for information exchange. Social clubs were once only for the elites or young but Vodafone has opened a virtual club for the farmers to help them get both hard and soft resources for farming. Even the bank has been brought to their fingertips with mPesa where the farmers do not have to go far and wide to receive or pay money but can do simply clicking the keypad. These are just a few examples of many unique efforts going around the world. The evolution of mobile based advisory services has been very fast. The trends have been changed before they could set leaving behind a more dynamic environment for change and development. And interestingly, the farmers have also changed with them. Their readiness to accept the changes and get adapted has encouraged the developers, policy formulators and the implementers explore their boundaries and get more innovative everyday and set a trend for the future. Keeping the farm in the family is a necessity for the livelihood security of the BoP farmers and so mobile based agro advisory, with its reach among all the members in a farm family, has to reach them all with soft resources to offer everyone according to their needs for a holistic development.

Social media and agricultural development

We have always emphasized on the importance of the research-extension-farmer linkage, be it linear or interactive. But there are many more aspects of communication that have been out of the limelight in development perspective. Be it research-research linkage, extension-extension linkage or farmer-farmer linkage – the interaction among the homogeneous groups around the world are also of similar importance considering world a global village. And to increase this interactiveness, social media can play a vital role. Short and snappy Twitter, the visual web of Pinterest and Tumbler occupies most of our waking time and then they say if Facebook was a country, it would be the third largest in the world after China and India. Social media has changed the way we think, talk, watch TV, listen to music, search potential employer and employee and sometimes start a revolution – be it political and social. The fact that only young people and teenagers are most active in social media is turning into an urban myth. The fastest growing demographic on Twitter is 55-64 years age bracket, every second two new members join LinkedIn and not just that, the increase in usage by the 55 to 64 year olds is greater than 100% for Facebook, Twitter and Google+. Moreover, LinkedIn was found to be 277% more effective in lead generation than Facebook and Twitter. And in this frenzy of getting social digitally, the major five social media websites that are gaining popularity worldwide are Facebook, Google+, Twitter, YouTube and Pinterest.

And when social media is taking up a large share of the waking hours of today's and yesteryear's generation, it is predictable that agriculture will take up the platform to engage its own advocates and practitioners. Farmers, researchers, enthusiasts and professionals have taken up Facebook and Twitter to share their views, their experiences and their ideas through various communities in Facebook and trending topics in Twitter. LinkedIn connects the professionals of similar interest and Wikipedia, Blogspot, Slideshare and Agropedia provides platform for sharing experiences and ideas to all the stakeholders of agriculture alike. It is said that pictures speaks a thousand words and if so, videos must tell stories and that is what different agricultural organizations are doing through YouTube to help out everyone related to agriculture. Soundcloud has made audio clips related to agriculture accessible to all and in all these; the agricultural world has become more connected than ever before (Table 2).

Distinctive features of mobile phones and social media

Communication has definitely been made easier through these new technological developments but the concern is how far they are helpful in making agriculture more distinct in the economy and GDP of developing countries? To understand that, we have to understand better how mobile phones and social media stand out and what are their pros and cons.

Category of users: In social media world, the users are both active and passive and both the categories of users can take full benefit. In mobile communication and social media, there is no firm distinction between the professionals and practitioners as knowledge developer or user. But in traditional communication and extension methods, it is mostly the active participants who are benefitted and the contributors are mostly the professionals whereas the users are the practitioners.

Relevancy of information: Relevancy of information has always been an issue in extension. But mobile phones and social media has made it easier for users to find out information necessary to their own conditions, choose them and use them according to their own situation.

Self publication: An important feature of mobile phones and social media is self publication of information, ideas, *etc.* at a much faster rate than traditional communication methods. But there is also the risk of violation of Intellectual Property Rights in online medium because of no stringent regulation of copyrights and patents.

Multiplicity of human interest: While the mobile service providers like Nokia provides other entertainment sources along with the Nokia Life Tools, social media combines different media to keep high interest level of users. This helps keep the users entertained without diverting their attention from the important aspect of agricultural information

Awareness creation: Both mobile phones and social media are widely spread amongst people around the world and because of the increasing number of people subscribing to mobile phones and registering in social media sites, these can be very powerful tools for creating awareness about agriculture and its technologies. And not just awareness creation but also dissemination of information can be faster manifolds through these tools.

Conclusion

ICTs and applications have a great potential for agricultural extension. And their best part is the power of integration. They can be used interactively and their utility can be increased by many a times. Mobile phones are becoming the most important tool for accessing internet and when the power of mobiles and social media can be integrated, the result in extension can prove wonders. Human resource in extension is the best and the most valuable but its synergy with information and communication tools can prove to be more fruitful and more efficient in extracting the full potential of all the resources for development of the farming community and that is the ultimate goal of all development initiatives in agriculture.

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Table 1 Some notable mobile based agro advisory services across the globe

Sl. No.	Mobile Service	Country	Network	Year	Unique feature	Working Mechanism	Nature and type of Agro-Advisory Services	Target User	Business Model
1.	IFFCO Kisan Sanchar Limited (IKSL) (http://www.iksl.in/)	IFFCO and Airtel (Private)	GSM mobiles, landlines	2008	One of the earliest mobile based advisory services in India; specific SIM card was needed and provided by the service provider (airtel); starting of personalized advisory to farmers	SMS, Voice messages and farmers' Helpline on Green SIM cards	On a VAS platform, farmers can know about mandi prices, farming techniques, weather forecasts and fertilizer availability for free. Every day farmers receive 5 messages each one minute long voice messages. Helpline for farmers from Green SIM Card.	Service available in 18 states of the country	Free of cost service
2.	Nokia Life Tools (http://www.nokia.com/)	India, Indonesia, Nigeria, China and Kenya	Mobile software	2009	Agro-advisory is integrated with entertainment services to attract the attention of the customers; Comes with the phone and can be accessed with any SIM card	Life Tools software is used to access the services	Crop tips, agriculture news, market prices, weather information and advisory	Nokia handset users in the five countries	Subscription charges are applicable
3.	iCow (http://www.icow.co.ke/)	Kenya	Mobile application	2010	Invention of a woman farmer; very much personalized app which helps farmers keep track of their livestock health	Push and pull based SMS service	Livestock and crop information	Farmers of Kenya	Subscription charges apply
4.	Avaaj Otalo (Voikiosk/ Spokenweb) (http://code.google.com/p/avaajotalo/)	IBM Research (Private)	Mobiles and landlines		Introduced to overcome the problem of illiteracy through voice based web interface	Voice based portal. Portal can be accessed by dialing a number.	Any information related to agriculture can be accessed on the kiosk using a wired or wireless phone.	Accessible in selected villages in Andhra Pradesh	Free of cost service
5.	NM-Rice Mobile (http://webapps.irri)	Philippines	Web and mobile app	2011	A crop specific decision support system in mobile	SMS, IVRS and web interface	Farmer specific fertilizer recommendation	Farmers and any other	Free of cost service;

	.org/nm/phmobile/)	Bangladesh, Indonesia, China, India and West Africa			for the farmers of development countries; the crop in focus is the most widely grown and consumed cereal in Asia and parts of Africa			interested party	internet charges might apply
6.	Kilimo Salama (http://kilimosalama.wordpress.com/)	Kenya and Rwanda	Mobile phones	2011	Mobile based crop insurance system; profitable for both farmers and the insurance agency;	Micro insurance	Micro insurance provided through mobile phones	Farmers of Kenya and Rwanda	Subscription charges apply
7.	Sauti ya Wakulima (http://sautiyawakulima.net/)	Tanzania	Mobile phones and mobile app	2011	Collaborative multimedia knowledge base created by farmers using mobile phones	SMS and application used to access data	Any crop related queries	Farmers of Tanzania	Free of cost service
8.	AgriFin Mobile (http://www.mercycorps.org/research-resources/agri-fin-mobile)	Uganda, Indonesia and Zimbabwe	Mobile phone	2012	Provides 'bundled' agricultural supports; connects financial institutions, mobile network providers and farmers	Farmers get a 'bundled support' via mobile phones	Crop information, financial services and market services	Farmers of the three countries	Free of cost service
9.	CocoaLink (http://worldcocoafoundation.org/cocoolink/)	Ghana and Ivory Coast	Mobile app	2012	Crop specific app; Queries of farmers are also answered	SMS and voice calls	Farming practices, farm safety, child labour, health, crop disease prevention, post-harvest management practices, produce marketing	Cocoa farmers of Ghana and Ivory Coast	Free of cost service
10.	Next2 (http://wp.next2.us/)	Kenya and Nigeria	Mobile phones	2012	Networking tool for farmers; sharing circle created within 10 km of radius	SMS service	Any information related to agriculture	Farmers of Kenya and Nigeria	Subscription charges apply

Table 2 Social Media Applications in Agricultural Extension

Particulars of social media applications	Roles
Facebook	
Turmeric Farmers Association of India	Information sharing among the turmeric farmers of India
Young Professionals in Agriculture and Rural Development (YPARD)	Information sharing among the young professionals in agriculture
e-Extension programme of the Philippines Department of Agriculture	Information sharing, dissemination of programme opportunities and activities
Agricultural Extension in South Asia (AESAs)-a sub regional network of GFRAS	Information sharing among the agricultural extension professionals in South Asian countries
e-Agriculture community	A global community of e-Agriculture stakeholders sharing information on agricultural developments related to Information and Communication Technology
Twitter	
AgChat	Users share information on specific topic subject to discussion once a week
GFRAS	Share information about their work around the world with the followers
LinkedIn	Network for professionals to increase networking among the professionals of specific interests
Google+	Sharing of information to others in the circle
Youtube	
Indian Council of Agricultural Research	Shares videos related to agriculture
Tamil Nadu Agricultural University's e-Extension centre	Shares videos related to agriculture in Local language
Wikipedia	A free online encyclopaedia where anyone can add or edit information and topics
Blogspot	
Agricultural Extension in South Asia (AESAs)-a sub regional network of GFRAS	Blogs on Agricultural extension by extension professionals from South Asia
Scribd	World's largest digital library for social reading and publishing where the users can share other authors' work as well as publish their own
Slideshare	
IFPRI South Asia	Online presentation publishing and sharing
Soundcloud	
Farm Radio International	Online audio sharing website for users to upload, promote and share
Agropedia	
	Wikipedia of agriculture with the same privileges
Digital Green	
Farmbook	Facebook for the farmers where the comments and likes and dislikes of the farmers on the videos they watch are uploaded. The farmers can also be followed on Facebook when linked up with Facebook
Wondervillage	A social gaming with the real farmers on Farmbook

