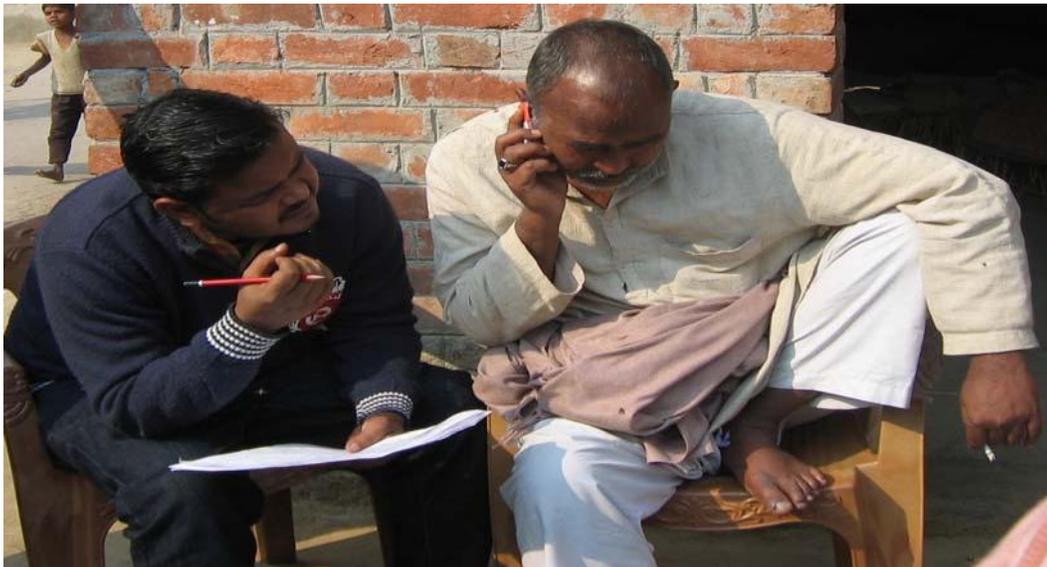


### Delivering agro-advisories through mobile phones-reality check?



*Though mobile phones promise new opportunities for reaching farmers with agricultural information, its potential remains unutilised due to several institutional and infrastructural constraints, argues, Surabhi Mittal and Mamta Mehar*

Over the past few years India witnessed several experiments on agro-advisory service delivery through mobile phones such as IFFCO Kissan Sanchar Limited (IKSL), Reuters Market light (RML), Kisan sanchar, Fisher Friend, M Krishi, and the recently initiated Kisaan SMS Portal . These service providers use a mix of text messaging and voice messaging along with mobile phone based applications. They provide information about weather, market prices, agro advisories, policies, government schemes, new technologies. Some of the service providers such as IKSL has reached more than 13 lakh farmers spread over 18 states in India.



Though several studies (Aker 2008, Aker 2010, Aker & Fafchamp 2010, Mittal et. al 2010, World Bank, 2011) have demonstrated the potential of mobile phones in improving the capacity of farmers to cope with agricultural risks, many others (Mittal, 2012; Fafchamp & Minten, 2012) have questioned its real impact on farmers. If farmers have to benefit, the messages delivered through the system have to be “actionable” and available at the right time. It should also be able to create awareness, strengthen capability of farmer to take informed decisions and give alerts in case of emergencies like frost, hail storm, floods. Moreover the information has to be relevant to his/her farming context and the model of mobile phone based agro-advisory should be sustainable. But how are we faring on these aspects?

## The Reality Check

**Content:** Most of the mobile phone based agriculture information services have not been able to function effectively or meet the requirements of the farmers. Although farmers are getting information through these sources, they realise only little add-on gain from this information vis-a-vis the information received through traditional information sources (Mittal, 2012). The broad categories of information required by farmers are the same, irrespective of their location and crops (Mittal and Tripathi, 2009). However the messages delivered should be based on the information needs of farmers so that it can be used by them for daily agricultural activities. A better understanding of farmer's local context is needed to develop locally relevant content/advice that farmers need.

**Sustainability:** Various services started under different projects supported by different NGO's and development programs still require continued financial assistance. Sustainability issues had not been taken care of in most cases. Often the project support had been short term leaving the targeted group feel cheated resulting in loss of trust in information delivery through mobile phones. Most of the initiatives are scattered and not connected with each other and this also acts as a constraint to realize its potential. There is a need to assess the willingness of farmers to pay for these services and develop sustainable business models.



**Trust:** Building trust and relationship with farmers is another aspect that can't be neglected (Kumar, 2005; Mittal et.al 2010, Lokanathan and De silva, 2010). Farmers generally trust face to face interactive sources of information such as fellow farmers and input dealers more compared to information provided through modern information sources such as mobile phones. A clear shift towards modern information sources requires the service providers to closely interact with farmers, developing trust on their motive and provision of reliable information to farmers.

**Equity:** Despite the increasing availability of mobile phones and supply of agricultural information the benefits are not reaching the poor (Bhavani et. al. 2008). The main beneficiaries of the mobile phone revolution are the ones with skills and infrastructure. The poor and those living in distant areas are left behind further making them information poor (Mittal et.al, 2010). Despite the

increasing penetration of mobile phones in rural areas, there is need for significant improvements in supporting infrastructure like markets, institutional credit, storage and warehouses, roads and capacity development programmes for farmers to attain the full potential of mobile phones in agriculture (Mittal and Tripathi 2009).

### **Harnessing the potential of mobile phones**

The four main components of any service delivery model are: What to deliver? When to deliver? Whom to deliver and How to deliver? In this case, agro advisories have to be delivered to the farmers using mobile phones. This looks simple! But is it that simple?

#### **What to deliver?**

The information to be delivered or the content is the “soul” of the model. This content can’t be developed only by subject specific experts; it has to be validated and has to be generated on time when the crops or other agricultural activities are in a particular agricultural cycle. This knowledge has to be converted into simple language that can be understood by the target farmer groups. The local language, appropriate content creation and its validation are important parameters to be considered. The information delivery has to be demand led and not supply driven by what is available with the scientific community.



In a CIMMYT survey (2011) with 1200 farmers in Indo-Gangetic Plains (IGPs), it was highlighted that the most important information needed by farmers is about ways of addressing pest attack and advice on the right variety that can better adapt to changing climatic conditions. However the information they commonly get from various sources (including the service providers through mobile phones) include standard prescriptions on input use (pesticides, weedicides, etc) and general seed varietal recommendations. Monitoring and assessment of farmer needs therefore has to be a continuous process with provision for a feedback loop. Also the content needs to be gender sensitive.

#### **When to deliver?**

Timing of delivery of content has to be in the cropping cycle which the farmer is operating in, but it also has to be backed up by day to day details of each of these activities and respective actions to be taken also need to be properly timed e.g., information on choice of variety needs to be timed much before the

sowing period. The timing of delivery of information (giving farmer enough information to make informed decision) is crucial. One of the examples of this was saving farmers' wheat crop from the attack of rust mainly in PBW 343 variety in 2011. Farmers got alert information from SMS service providers about the traces of rust noticed in few fields and were advised to take recommended measures. Those farmers connected with the SMS service could take prompt action to save their crop.

### **Whom to deliver?**

The database of farmers to whom specific information is to be delivered is to be created based on some predefined criteria. If a farmer does not want the information or is not accessing information on the mobile phone in the database, then this information delivery is not useful. Some service providers like RML, IKSL and the recently launched Kisaan SMS portal attempt to create database with farmers cropping pattern and accordingly form communities for information dissemination. The database has to be dynamic in nature so as to track changes mobile numbers and change of service providers. The information about their land size, cropping pattern, soil type, geographical location, types of inputs used, variety of seed used, irrigation facility etc has to be an integrated part of the database to deliver precise information.



These types of information are not available with KVKs, research institutes, state extension machinery, mobile service providers or NGOs in most cases. It is thus important to create a platform to integrate these databases and also regularly update it with information collected by the field staff on the ground and tele-feedback systems. Similar attempt is being done under the CCAFS project in selected villages of Karnal, Haryana and Vaishali, Bihar. Otherwise we are just delivering what the traditional mode of ICT had been informing farmer in a conventional style.

### **How to deliver?**

The information sent on mobile phone in the form of text message or voice message has to be based on the preference of the targeted consumers. Merely receiving messages over mobile phone will not motivate the farmers to start using this information or apply as recommended. Awareness has to be created among farmers about utility of this faster means of communication and its utility for their benefits. This has to be supplemented with demonstration of new technologies on farmer's fields and

through field trials. In CCAFS project a similar approach is introduced in selected treatment villages where climate smart technologies are introduced along with information dissemination through voice messaging. Efforts have to be made to build trust with the farmers. To strengthen the relationship it is important to find synergies between the various public and private partners and also with other ICT models.



The effectiveness of the different extension systems (public and private) that are using mobile phones based intervention plays an important role in the impact of mobile phone interventions in agriculture. Sometimes, institutions and policies in these organizations constrain the development of an effective knowledge sharing system. One should also note that over time as information flow increases and information gap reduces, the noticeable change in impact will be less. This is so because as farmers become more aware, the utility of the information they receive declines. For instance, market price information through SMS is not valued by farmers who have access to price information via internet. Overall the impact will be a function of good technology, policy, efficient markets and institutions. Moreover, the financial sustainability of service provision is crucial for its long run operations.

## Conclusions

The process of integrating mobile phones into the traditional mode of extension to farmers is slow and still at an early stage of development. The key challenges that mobile based information system face are- its sustainability, up-scaling to wider operations, building trust with farmers, delivering required information on time. But with increasing penetration of mobile phones and development of new applications and services many of these issues are getting addressed. These in turn will catalyze rural development and economic growth. Mobile phone-enabled information delivery mechanism should try to address the information needs of small farmers by reducing their knowledge gaps. However, enhancing the potential of mobile based advisory services will require significant improvements in supporting infrastructure, content development, client targeting, development of farmers' skills and a suitable policy environment. To enable these, appropriate policies, right incentives and institutions need to be developed.

## Ways Forward

- The service should be able to meet the varied and increasing demand of farmers. An assessment of the farmer's need for information should be done at the village level and continuous evaluation of needs should be an inbuilt part of the system. This will help service providers to keep track of the existing socio-economic situation of farmers and prevailing market and infrastructure constraints.
- Accuracy and timeliness of service is an important factor. To fully utilize the potential of two-way communication facility on mobile phones, help lines should be created to provide customized solutions and to enable feedback from farmers.
- Modern service providers should build synergies with existing extension services (as envisaged currently under the Farmers' Portal) so that information gaps at various levels could be better addressed.

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## References

**Aker, J. C. (2008).** Does Digital Divide or Provide? The Impact of Cell Phones on Grain Markets in Niger.

[http://www.cgdev.org/doc/events/2.12.08/Aker\\_Job\\_Market\\_Paper\\_15jan08\\_2.pdf](http://www.cgdev.org/doc/events/2.12.08/Aker_Job_Market_Paper_15jan08_2.pdf)

**Aker, J.C and M. Fafchamps. (2010).** How Does Mobile Phone Coverage Affect Farm-Gate Prices? Evidence from West Africa. University of California, Berkeley

<http://www.aeaweb.org/aea/2011conference/program/retrieve.php?pdfid=629>

**Aker, J.C. (2010).** Dial A for Agriculture: A Review of Information and Communication Technologies for Agricultural Extension in Developing Countries. Presented at Agriculture for Development Conference at the University of California.

**Bhavnani A., W.W.C.Rowena, J. Subramaniam, and S. Peter. (2008).** The Role of Mobile Phones in Sustainable Rural Poverty Reduction. Report, Washington, D.C., World Bank, ICT Policy Division, Global Information and Communications Department.

**Fafchamps, M., and B. Minten. (2012).** Impact of SMS-based Agricultural Information on Indian Farmers. World Bank Economic Review. Vol 26 (3).

<http://wber.oxfordjournals.org/content/early/2012/02/27/wber.lhr056.abstract>

**Lokanathan Sriganesh & Harsha De Silva (2010).** Leveraging Mobile 2.0 in India for Agricultural Market Access. LIRNEasia ([www.lirneasia.net](http://www.lirneasia.net))

**Mittal, S. (2012).** Modern ICT for Agricultural Development and Risk Management in Smallholder Agriculture in India. CIMMYT. Socio-Economics Working Paper 3. Mexico, D.F.: CIMMYT. <http://ageconsearch.umn.edu/handle/147107>

**Mittal, S., and G. Tripathi. (2009).** Role of Mobile Phone Technology in Improving Small Farm Productivity. Agricultural Economics Research Review, Volume:22. Pp:451-59  
<http://ageconsearch.umn.edu/handle/57502>

**Mittal, Surabhi , Gandhi, S., Tripathi, G. (2010).** Socio-economic Impact of Mobile Phone on Indian Agriculture. ICRIER Working Paper no. 246, International Council for Research on International Economic Relations, New Delhi. <http://www.icrier.org/page.asp?MenuID=24&SubCatId=175&SubSubCatId=691>

**Mittal, Surabhi and Mamta Mehar (2012).** How Mobile Phones Contribute to Growth of Small Farmers? - Evidence from India. 2012. Quarterly Journal of International

**Agriculture** 51 (2012). No. 3: 227-244; DLG-Verlag Frankfurt/M.  
<http://ageconsearch.umn.edu/handle/155478>

**World Bank 2011.** E-source book. ICT IN AGRICULTURE Connecting Smallholders to Knowledge, Networks, and Institutions- Report Number 64605

*Surabhi Mittal is a Senior Scientist (Agricultural Economics) with the Socioeconomics Program of International Maize and Wheat Improvement Center (CIMMYT). She is working on the role of modern information and communication technology (ICT) in overcoming asymmetric information among farmers in India and South Asia. ([s.mittal@cgiar.org](mailto:s.mittal@cgiar.org)). Mamta Mehar is Associate Scientist-Economics at International Rice research institute, prior to this, she was working at CIMMYT on ICT and Climate change ([m.mehar@irri.org](mailto:m.mehar@irri.org)).*