

NOTE 17: mExtension – Mobile Phones for Agricultural Advisory Services

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There is plenty of information available in the public domain that covers various aspects of extension and know-how about new methodologies for implementation. However this information is often scattered and presented in complex academic language. Hence practitioners, who often have very limited time and/or may only have basic formal education, find it difficult to make use of this information.

The Global Good Practices Initiative aims to bridge this gap by providing information about extension approaches and methods in easy-to-understand formats. As part of this effort, it makes “Good Practice Notes” available to all at www.betterextension.org. This Note contains one of the extension methods included in this series.

Introduction

In the last few decades, information and communication technologies (ICTs) have provided immense opportunities for the social and economic development of rural people, and some technologies have surpassed others. Mobile telephony is one such technology that has developed significantly in the past few years, and the subscription rate in developing countries has gone up from 22 per 100 inhabitants in 2005 to 91.8 per 100 inhabitants in 2015. Mobile technology goes beyond geographic, socio-

economic, and cultural barriers and this large increase in mobile subscriptions, along with the recent roll out of 3G and 4G technology, can play a big role in the development of rural people. Mobile phones are devices that can create, store, access, and share information anytime, anywhere. But they are more than that. When teamed with extension and advisory services, they can help improve the livelihoods of rural people by getting much needed timely information to their fingertips at potentially low cost. So-called mobile-based extension and advisory services (mExtension, see Box 1) enable value-added services, such as mobile agro-services and machine to machine services,¹ which help farmers monitor their crops and farm machinery through mobile phones. While value-added services are generally fairly accessible to all the farmers in rural areas, machine-to-machine services are more cost intensive and require infrastructure that is often not present in developing countries.

Philosophy and principles

Mobile-based extension and advisory services (mExtension) are location specific and, at the same time, able to transcend geographic limitations.

The principles of mExtension are as follows:

- **Content:** The content and design should be user-centric. Combining value-added services and mobile financial services can be both attractive and sustainable.
- **Delivery mechanism:** The business and pricing model, mode of delivery (text, interactive voice response, call,



¹ Stryjak, J., Sharma, A., Lucini, B.A. and Kechiche, S. 2015. *Agricultural machine-to-machine: A platform for expansion*. Available at: <https://gsmintelligence.com/research/2015/03/agricultural-m2m-a-platform-for-expansion/479/>



BOX 1: mEXTENSION

There are various modes – push and pull SMS, interactive voice response, mobile apps, and so on – through which mExtension services are provided either individually or in combination. While SMS and interactive voice response services are accessible from both conventional and smart phones, mobile apps require smart phones. Services can be free or subscription-based. Cost does not seem to affect popularity as shown by services such as IKSL (www.iksl.in) in India, iCow (<http://icow.co.ke>) in Kenya, Kilimo Salama (<https://kilimosalama.wordpress.com>) in Kenya and Rwanda, and e-Krishok (<http://wp.ekrishok.com>) in Bangladesh. Mobile-based advisory services are mostly targeted at farmers and the rural population but collaboration among stakeholders in agricultural innovation systems (AIS) for providing content is not unknown. The advisory services also vary from providing solely agricultural information (e.g. Gobi Sahana Sarana (<http://www.agridept.gov.lk/index.php/1920-hotline>) in Sri Lanka) to providing micro insurance to rural people (Kilimo Salama in Kenya and Rwanda), real time market information (e-soko (<https://esoko.com/>) active in 10 African countries), farmer-specific fertiliser recommendations (NMRiceMobile (<http://webapps.irri.org/nm/phmobile/>) in Bangladesh, China, India, Indonesia, Philippines and West Africa) or integrating agricultural and weather information along with entertainment to attract large numbers of rural people (Nokia Life Tools).²

pictures, videos, etc.), and choice of application-based versus normal access should depend on maximising client access and not the benefit of the service provider.³

- **Reach and interaction:** Rigorous awareness-raising programmes should be conducted to increase reach, and the services should be interactive to ensure clients' needs are being met.
- **Communication, not just advisory:** mExtension should encourage increased dialogue between the stakeholders in agricultural innovation systems rather than providing farmers with information. This will facilitate capacity development of farmers and pass farmers' knowledge and experience back to the development arena.
- **Sustainability:** Both financial and infrastructural sustainability can be ensured by using a profit-based model of information delivery.
- **Integration of technology:** Different formats such as web portals, videos, voice, pictures and animations, etc. can be easily accessed from mobile phones, thus making integration of technology easier and efficient, and increasing the scope of mExtension.
- **Reassessment vs development:** Often it is better to build on existing services rather than coming up with new ones. This is likely to be more sustainable as the client is familiar with the services and the service provider has infrastructure to build upon.⁴
- **Associated services:** mExtension can only go so far in enabling economic development of the rural community. Infrastructure like roads, electricity, education, market and credit access, and so on are also required. So investments in these are at least as important as timely information delivery, sometimes even more so.

Implementation

The following should be taken into account to ensure long-term success:

- **Baseline survey:** A baseline survey is needed to understand the information needs of rural clients, the type of mobile phones they use, and the pattern of mobile phone use.
- **Developing partnerships:** Depending on the type of service provided, stakeholders will vary but partnerships among different stakeholders aid standardisation of services, reduce integration issues, and help to segment the service providers and target users.⁵ Partnerships with network providers are very important for extension organisations to provide services catering to the needs of the client.
- **Content Management System (CMS) and device dependency:** A CMS enables multiple users to have different permission levels for collecting, managing, and publishing of information in any form or medium. The service provider needs to have expertise on the CMS to select and upload suitable content. The content should be equally accessible through smart and conventional phones, the former being developer-friendly and the latter being more popular in emerging markets.
- **Infrastructure:** Infrastructure like servers, mobile phones, PCs, etc. should be in place before the project is formally implemented. Providing smartphones to selected farmers/coordinators can

² Suchiradiptha, B. and Saravanan, R. 2014. Global review on mobile phone applications for agricultural extension. In: Saravanan, R. (ed.) *Mobile phones for agricultural extension: Worldwide mAgri innovations and promise for future*. New Delhi, India: New India Publishing Agency.

³ Saravanan, R. and Suchiradiptha, B. 2014. Mobile phone applications for agricultural extension in India. In: Saravanan, R. (ed.) *Mobile phones for agricultural extension: Worldwide mAgri innovations and promise for future*. New Delhi, India: New India Publishing Agency.

⁴ Addom, B.K. and Moy, L. 2014. Mobile phone applications along the agricultural commodity value chain. In: Saravanan, R. (ed.) *Mobile phones for agricultural extension: Worldwide mAgri innovations and promise for future*. New Delhi, India: New India Publishing Agency.

⁵ Stryjak et al. 2015. Op. cit.

ensure timely information delivery (e.g. m4AgriNEI (<http://www.m4agrinei.in/>) in India, SIA-Huaral (<http://www.apc.org/en/node/9477>) in Peru).^{6,7}

- **Staff selection:** While dedicated staff are needed for large scale services, text-based services can be handled by extensionists.
- **Scalability and sustainability goals:** Sustainability is a problem with ICT projects and so there need to be clear goals and benchmarks for financial sustainability of the project without depending on a funding agency.
- **Adding the extras:** Mobile apps, call centre services, and peer-to-peer connection facilities with online and offline accessibility can be of added advantage.

Capacities required

Extensionists need to be well versed in the use of mobile devices, but more importantly, should be aware of their clients, as missing critical information can be a serious flaw.⁸

For clients, the most important capacity issue is accessibility to mobile phones. In rural areas of low- and middle-income countries mobile phone subscription still has a long way to go, and women specifically are yet to benefit from the technology. The number of unconnected women is still significantly high and of those who have access to mobile phones, many have never sent an SMS.⁹

Technical illiteracy is also a major challenge in active use of mobile phones and this issue needs to be addressed before rolling out mExtension services. Rigorous awareness-raising and training on using mobile phones to access the service are also needed for proper utilisation of the potential mExtension has to offer.

Strengths and weaknesses

Table 1 shows the strengths and weaknesses of mExtension.

Governance

In mExtension, the solution provider and service provider need to keep information updated regularly. Where funding agencies are involved, transparent fund flow is necessary along with internal monitoring and eventual external evaluation. Since numerous stakeholders are involved, with different roles, there should be regular follow-up of work done to ensure proper coordination.

Costs involved

Costs will vary depending on the scale of the project, services provided, and model, but generally fall under the following headings:

- infrastructure development and procurement
- staffing
- awareness creation and training
- maintenance of infrastructure
- costs to generate, curate, evaluate, localise and customise information.

Table 1. Strengths, weaknesses, opportunities, and challenges

Strengths	Weaknesses	Opportunities	Challenges
<ul style="list-style-type: none"> • Portability • Personalised information • Two way communication • Timely delivery of information and alerts • Location specificity • Media mix • Increased access to public info via RAS¹⁰ • Both online and offline access • Free or minimum charges for access • Broad-based information coverage • Improved monitoring and evaluation of extension services through efficient communication system 	<ul style="list-style-type: none"> • Using mobile phone for accessing agricultural information is still not very popular • Technical illiteracy among clients and extensionists limits scope • Minimum use of smart phones by rural farmers, which limits farmers access to web portals, videos, animations etc. • Cost • Relevancy of information in a personal context • Amount and type of content delivered is limited 	<ul style="list-style-type: none"> • Mobilising women • Encouraging an entrepreneurial culture among young people through developing new apps and services • Partnership among multiple stakeholders increases the opportunity for better service¹¹ • Wide reach • Group-based approach¹² • Increasing mobile phone penetration in rural areas of low- and middle-income countries • Low cost of initial investment • Improved market access and protection against climatic shocks 	<ul style="list-style-type: none"> • Reaching resource-poor, small-scale, and marginal land holding farmers • Scaling up of pilot projects • Long-term sustainability • Authenticity of content • Relevant content development • Access to infrastructure (roads, market, credit, electricity, and so on) and lack of network coverage • Inclusion of women • Awareness creation on potential of mobile phone in RAS • Lack of research on impact

⁶ Saravanan and Suchiradipta. 2014. Op. cit.

⁷ Barrantes, R. and Agüero, A. 2014. Mobile phone applications for agricultural extension in Peru. In: Saravanan, R. (ed.) *Mobile phones for agricultural extension: Worldwide mAgri innovations and promise for future*. New Delhi, India: New India Publishing Agency.

⁸ Hatt, T., Gardner, C., Wills, A. and Harris, M. 2013. Scaling mobile for development. London, UK: GSMA. Available at: <https://gsmaintelligence.com/research/?file=130828-scaling-mobile.pdf>

⁹ GSMA. 2015. Bridging the gender gap: Mobile access and usage in low- and middle-income countries. London, UK: GSMA. Available at: <http://www.gsma.com/connectedwomen/resources-2/gender-gap/>

¹⁰ Bolarinwa, K.K., Oyeyinka, R.A. and Banmeke, T.O. 2014. Mobile phone applications for agricultural extension in Nigeria. In: Saravanan, R. (ed.) *Mobile phones for agricultural extension: Worldwide mAgri innovations and promise for future*. New Delhi, India: New India Publishing Agency.

¹¹ Hatt et al. 2013. Op. cit.

¹² Bolarinwa et al. 2014. Op. cit.



While the cost of setting up infrastructure for mExtension can be expensive compared to other ICT4RAS,¹³ the scope for revenue generation is also higher thus giving them better scope for sustainability, a limitation in many ICT4RAS projects.

Best-fit considerations

- **Target group:** mExtension can facilitate creation of scalable, replicable, and commercially sustainable advisory services for rural clients. Efforts should be made to target women to benefit from mobile technology.
- **Innovations:** Adapting services depending on client needs, preferences, and socio-economic conditions requires constant innovation.
- **Ecological and institutional setting:** While ICT infrastructure is needed for organisations, clients need to have access to mobile phones and network services to access the advisory services.

Evidence of impact

Mobile-based advisory services have been found to have a positive impact across the globe. In countries like India, Niger, and Uganda, mobile phones have reduced producer price dispersion and ensured higher market participation by farmers. They have also helped to reduce wastage, increase the number of transactions, and reduce the costs of searching for markets and of transportation. Information accessed through mobile phones has strengthened local livelihoods and helped to preserve natural resources, and has also increased general awareness and networking opportunities. Also, targeted at women, mExtension can significantly improve their income and livelihood opportunities, as has been the case in Bangladesh.^{14,15}

Potential scalability and issues of sustainability

Financial sustainability is a major issue in mExtension. While paid services are still subject to sceptic opinions, there is much evidence of mobile-based paid advisory services that are being subscribed to by large numbers of rural people in developing countries. Establishment costs do need to be externally funded, but at later stages a profit-oriented model has the advantages of being scalable, sustainable, and client need-based compared to services offered free of cost.

Further reading

e-Agriculture.org: <http://www.e-agriculture.org/mobile-telephony-rural-areas>

GSMA. 2014. *Mobile policy handbook*. Available at: <http://www.gsma.com/publicpolicy/handbook>

GSMA: <http://www.gsma.com/>

World Bank. 2011. *ICT in agriculture: Connecting smallholders to knowledge, networks and institutions*. World Bank, Washington DC.

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Picture: Raj Saravanan, e-Agriculture project

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¹³ Saravanan, R., Sulaiman, R.V., Davis, K. and Suchiradipta, B. 2015. *Navigating ICTs for extension and advisory services*. Note 11 Global Good Practice Notes for Extension and Advisory Services. Lindau, Switzerland: GFRAS.

¹⁴ Mittal, S. and Mehar, M. 2014. Socio-economic impact of mobile phone based agricultural extension. In: Saravanan, R. (ed.) *Mobile phones for agricultural extension: Worldwide mAgri innovations and promise for future*. New Delhi, India: New India Publishing Agency.

¹⁵ Dickert, M. 2011. Mr Yunus, telephone ladies and the development jigsaw. Available at: <https://globalprosperity.wordpress.com/2011/03/24/mr-yunus-telephone-ladies-and-the-development-jigsaw/>