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# Evaluation of ICT Component of the Agricultural Extension Support Activity



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## EXECUTIVE SUMMARY

The Institute for Computing in the Humanities, Arts, and Social Sciences at the University of Illinois Urbana-Champaign was charged with evaluating the information and communication technology (ICT) component of the Agriculture Extension Support Activity (AESAs). Funded by USAID and implemented by the Modernizing Extension and Advisory Services (MEAS) Program at the University of Illinois, Dhaka Ahsania Mission (DAM), CARE, and mPower Social Enterprises of Dhaka, the goal of AESA is to strengthen extension and advisory services in Bangladesh.

AESA works in 20 districts in the central and southwest areas of Bangladesh (Barisal, Dhaka, and Khulna divisions) to implement capacity building and support creation of a farmer demand-driven agricultural extension system, synergized by use of information communication technology (ICT). The ICT specific goals of AESA are: (1) To strengthen capacity of farmers, particularly small-holders and women, to access information on agriculture production and marketing (directly or through extension agents); (2) To strengthen capacity of the agriculture extension agents (both public and private) to respond to needs of farmers timely and accurately; and (3) To strengthen National Agriculture Information System (AIS) to deliver its services more effectively and efficiently.

The ASEA ICT program was developed by mPower and addressed these goals and challenges by developing mobile applications for farmers and SAAOs. The five-year project was divided into two phases. The first phase, years 1 and 2, was spent developing prototypes of ICT applications to determine which are most promising and also to test the usability and feasibility of each ICT intervention. A rapid prototyping approach was used combined with considerable data gathering from farmers and other stakeholders by mPower. Four applications have been implemented to this point, the Farmer Query System (FQS), the Crop Diagnostic Tool (CDT), the Seed Selection Tool (SST), the Fish Diagnostic Tool (FDT), and the SAAO Scheduler. The implementation strategy for each application involved close work with farmer groups that had been developed by the AESA. A farmer was designated “ICT Leader” in each group and was given training in the app so he or she could facilitate use of the apps. In addition, the SAAOs who served the farmer groups were trained in use of the apps. These two “infomediary” roles were later supplemented by “ICT Champions,” who were given special training and smart phones, as were a subset of SAAOs.

Using information gathered from: a site visit; analysis of server data; a field survey of more than 300 farmers, 100 ICT Leaders/Champions, and 100 SAAOs; focus groups of farmers; and interviews with ICT Champions, SAAOs, and Call Center personnel, the evaluation addressed five questions:

1. To what degree have the apps been adopted by farmers?
2. How satisfied are farmers with the apps?
3. Is the development and implementation infrastructure effective?
4. What are the implications of the apps for SAAOs and the AIS?
5. Is mPower’s development process effective and responsive to farmer needs and perspectives? To those of SAAO’s and ICT Leaders/Champions?

This evaluation suggests that mPower has substantially addressed the ICT related goals that were set out in the AESA planning document. They have delivered an effective set of apps for farmers and SAAOs that show promise of improving agriculture in the districts served.

**Adoption Rate:** Analysis of degree of penetration of the apps in the beneficiary group indicates at least a 12.5% adoption rate for the first four months of the program. This rate of diffusion is what one would expect for the beginning of an implementation effort. Typically the adoption rate accelerates once an innovation reaches the early majority, which the apps have done. Surveys focused on specific farmer groups using the apps indicated that about 70% of the farmers in these groups use them. These groups represent seeds of concentrated use in the larger community that can influence surrounding farmers and communities. Provided resources continue, we would expect the diffusion process to speed up over the next year.

**Farmer Satisfaction:** There is evidence that the apps are regarded favorably and that they solve farmers' problems. Evidence from the survey, focus groups, and interviews with farmers, SAAOs, and ICT Leaders/Champions consistently indicates that the apps are regarded as useful and easy to use and respondents are recommending them to others.

**Development and Implementation Infrastructure:** By all accounts, the implementation approach is working well. Focusing on farmer groups and introducing use of the farmer apps through the the ICT Champions has led to increased use over the past four months. Results suggest that farmers are still largely dependent on assistance from infomediaries to use the apps. The infomediaries have been valuable in promoting use, but expanding the program will require an expansion in the number of infomediaries, which will require resources (e.g., training, continuing contact, smartphones). The current infomediaries will also continue to require maintenance and support. It is not clear whether farmers can move beyond dependence on the infomediaries to use the apps directly themselves in the near term.

**Implications for the SAAOs and the AIS:** The program expands capacity to deliver agricultural knowledge in response to farmer problems. It has increased use of ICT by farmers and provided a useful ICT supplement for SAAOs. The SAAO tools promise to reduce SAAO workload, improve organization, and increase SAAO's ability to focus on advising farmers. The SAAOs report that the apps designed for them are useful and increase their efficiency. They generally reported that the farmer apps were useful supplements to their jobs and they were a primary infomediary used by farmers to consult the apps. With the rapid spread of mobile technology, the channels for agricultural information are likely to change substantially in the future. The mobile phone and other mobile devices place ICT in the hands of the farmers. It enables delivery of information in a much more timely and tailored fashion than is possible when farmers have to go to community centers to use computers or watch agricultural television programs. It has the potential to be truly responsive to farmer needs.

Information gathered by the system has significant potential for agricultural administrators and planners. It can help them track trends in crop selection, plant and animal diseases, and other matters over time and space. Bundling or combining other agricultural information services with the apps can also enhance the reach of Extension services. It would be possible to distribute mobile-enabled agricultural education, to use of social media to build farmer communities, and to provide mobile marketing assistance.

**mPower Development Process:** mPower's approach of rapid prototyping and intense consultation with users during the development process has been effective. The shift to more intensively trained and equipped ICT Champions and SAAOs in the summer of 2015 proved to be a valuable strategy that enhanced adoption and use.

**Concerns and Issues:** Sustainability and expansion of the program are key concerns at this point. This evaluation suggests that several measures and resources are required for sustainability and expansion:

- Maintenance of the service at the server side
- Expansion of the range of crops and fish covered by the apps and freshening of the information base
- For the FQS, expansion of the number of call center employees and training in new crops
- To maintain the infomediaries, continuing education and training, smartphones, and consultation with mPower
- Continuing training for the SAAOs as key users of the farmer and SAAO apps
- Continuing improvement in the apps to make them easier to use by farmers with rudimentary ICT knowledge
- Continuing education and training of farmers in ICT
- Careful planning of the transition of the program to the government sector

**Summary of recommendations:**

**Implementation Program**

- Expand the current program to enhance diffusion of the apps. This could be done (1) by adding more ICT Leaders and/or (2) by having existing user-groups contact neighboring farmer groups to encourage adoption.

**Application Development**

- Include more crops in the service
- To short-circuit the problem of farmers’ inability to explain their problems adequately use the data that accumulates to guide development of a deeper set of queries for farmers who register problems. These queries could be designed to elicit the types of information that the call center personnel need to answer questions more quickly and accurately.
- Continue the development cycle with the SAAO Scheduler to make sure that it addresses problems that that SAAOs face and adds functions useful to the SAAOs.
- Coordination with government agencies is recommended in developing SAAO scheduler as it would provide insight into their assigned duties and responsibilities including possible changes in those in near future.
- Coordination with agricultural and weather experts are recommended in developing new tools feature to tackle problems associated with farming problems emerging due to climate change.
- Use open-ended nature of FQS to gather information on questions not envisioned by the original app design. Consider adding information services that the questions suggest.

**Application Support**

- Increase number of Call Center personnel to handle increased load in queries due to the FQS
- Call Center personnel should find ways to provide redundant contacts to farmer queries. For example, they might send as SMS if they do not get an answer on their first call.

- Give the infomediaries guidelines and/or training in taking clear and effective pictures. This would improve the data submitted to the FQS. Such pictures would need to capture appropriate information to help call center personnel identify problems, which might differ from case to case.
- Tailor the training of the three apps to allow for field conditions. It is one thing to show the SAAOs how to operate an app in “sterile” environments. A very important adaptation would be to take into account use in field conditions, where farmers or consulting infomediaries do not know how to describe problems in meaningful terms or take bad pictures. Physical problems, such as malfunctions and difficulties in finding signals should also be addressed.
- Transition of the system to the government sector (AIS) should be carefully planned so that government agencies work with mPower to manage a gradual handover. It may also be advisable to include other nongovernmental organizations related to agricultural information in the transition.

### **User Support**

- Give farmers and ICT Leaders more training in the apps and in using ICT in general. This could be done by “training the trainer” (i.e. ICT Champion) in how to train others in using the app.
- Begin to reduce farmer dependence on infomediaries so that they can use the apps themselves independently. This will require training and would be facilitated by development of farmer support groups within the farmer groups who help one another use the apps, update them, and search for new apps.
- Continue consulting with the SAAOs to ensure that they see the apps not as “competition,” but rather as “supplements” to their extensive local knowledge. For the SAAOs who embrace a service orientation—a significant majority according to our focus groups and survey results—the apps can be framed as enabling them to help their constituents.

### **Agricultural Information**

- Experiment with other types of information such as streams of agricultural programs on the interface. Since farmers seem to be directly accessing the app, this may be a way to more broadly disseminate other content.
- Take advantage of social media to develop connections across farmer groups and to develop community among farmers. Social media can be used to promote the apps and other sources of agricultural information

The ASEA ICT Project has been effective in achieving its goals to this point. If it can expand and sustain itself, it will bring great value to the small farmers of Bangladesh. It also points the way to promising future uses of ICT to enhance the effectiveness of Extension services.