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The U.S. Government's Global Hunger & Food Security Initiative

AGRICULTURAL CALL CENTERS - AN INFRASTRUCTURE AND DEMAND AUDIT -

Report prepared by Erin McGuire, Mark Bell, and Amanda Crump

August 2015





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ABBREVIATIONS

API	Application Program Interface
ATA	Agriculture Transformation Agency
BIID	Bangladesh Institute of ICT in Development
CRM	Customer Relationship Management
GIS	Geographic Information System
IVR	Interactive Voice Recordings
ICT	Information and Communications Technologies
ISDN	Integrated Services Digital Network
MIS	Market Information System
MNO	Mobile Network Operators
NGO	Non-governmental Organization
SMS	Short Message Service
SIM	Subscriber Identity Module
USAID	United States Agency for International Development

OVERVIEW AND RECOMMENDATIONS

In an environment with ever-decreasing government budgets and limited resources, agriculture extension services have looked toward Information and Communications Technologies (ICT) to help disseminate good agricultural information. These mediums include radio, web, film, and among others, mobile phones. Due to high adoption rates, the mobile phone has become a valued means of communication to both extension workers in the field and small-scale agriculture producers. As a result, one of the latest developments in ICT is the agriculture call center – intended to extend resources over a larger number of farmers as well as in some cases, become financially self-sustainable through payment for services. Although there are many services that might be attributed to an agriculture call center, for this paper’s purpose a call center refers to a central location where operators answer questions on the phone from farmers who are usually based in rural areas.

The following report is a result of farmer surveys in Ghana and Bangladesh and a six-month audit of Esoko – a call center based in Ghana – with input from call centers in other parts of Western and Eastern Africa and Asia. Major findings are included below, with subsequent general observations. At the end of this report there is a general discussion about financial sustainability within call centers. This evaluation and audit is meant to identify best practices, current challenges, and future opportunities within agriculture call centers.

Much of this study’s information was gleaned from Esoko (as mentioned above). Esoko began as TradeNet in 2005, with the encouragement of the United Nation’s Food and Agriculture Organization and in partnership with FoodNet in Uganda. TradeNet originally focused on agricultural marketing by providing the technology and infrastructure to collect and share current market prices online and through Short Message Service (SMS) messaging. In 2005, TradeNet signed a three-year agreement with the United States Aid for International Development’s (USAID) Market Information Systems and Trader’s Organizations program to adapt the product and make it available to small-scale farmers in over 13 countries. In 2009 TradeNet rebranded as Esoko (name derived from the Swahili word “Soko” for market; the ‘E’ representing electronic), switching to a new platform with a broader set of tools. One of their newest services is the agriculture call center, which opened in February of 2013. However, their expertise in many information systems has allowed them to quickly become leaders in their field and develop the trust and loyalty of many Ghanaian farmers.

USAID and the University of California, Davis are very grateful to Esoko and their staff for the many hours they spent helping researchers understand their systems. If you have further questions about Esoko, please contact their Chief Executive Officer, Mark Davies at mark@esoko.com.

Six major findings:

- Most farmers are currently interested in crop management information, such as pest and weed control and fertilization schedules. When offered a variety of potential information services, farmers wanted to know more about weather and market prices. This information suggests that call centers should highlight their crop management resources and educate potential clients on the agriculture call center’s ability to give information on market prices and weather.

- Building trust with farmer clients is critical. The capacity of the call center operators to speak the languages of the different farmer groups, as well as their demonstrated topic expertise were found to be key in building trust with the farmers.
- Farmers prefer information sent through voice mechanisms rather than SMS – this preference seemed to be due to general literacy issues, plus a lack of basic phone skills.
- In order to mitigate costs and improve products, partnerships could perhaps be expanded with business entities, research institutions, and telecommunication companies.
- Women need to be more engaged.
- Call center financial sustainability is an incredible challenge.

ICT AND CALL CENTERS IN THE AGRICULTURE SECTOR

For the 70 percent of the world's population that live in poverty, 48 percent live in rural areas and 39 percent are employed in agriculture production (World Bank, 2012). The majority of these farmers are smallholder farmers that are living off less than US\$2 per day (World Bank Statistics, 2011). Investing and increasing income levels of small-scale farmers is essential for poverty reduction in rural areas of the developing world.

Studies have shown that the average small-scale farmer suffers from large information gaps in the field. For instance, farmers may not have access to information on how to respond to new pests and diseases (an increasing issue with climate change) or do not know which local market is offering the best price for their product (Aker & Mbiti, 2014). Further, they may not have access to an impartial data source, such as a government extension agent, and must rely on a representative from an input supplier. This limited access to information results in lower production, higher input costs, misuse of dangerous chemicals, and lower profitability (Aker & Mbiti, 2014; Muto & Yamano, 2009).

In an environment with ever-decreasing government budgets and limited resources, agriculture extension services have looked toward Information and Communications Technologies (ICT) to help disseminate good agricultural information. These mediums include radio, web, film and among others, mobile phones. Due to high adoption rates, the mobile phone has become a valued means of communication to both extension workers in the field and small-scale agriculture producers. As a result, one of the latest developments in ICT is the agriculture call center – intended to extend resources over a larger number of farmers as well as in some cases, become financially self-sustainable through payment for its services.

Although still a new concept, several call centers or call center-“esque” services have emerged in developing economies. Ethiopia's government partnered with the Agriculture Transformation Agency to open a call center in June 2014 and just 12 weeks later claimed to have received over 1.5 million calls from small-scale producers (Davison, 2014). In India, researchers collaborated with a local nongovernmental organization (NGO) and private enterprise to start Avaaj Otalo, a mobile-phone based agricultural consulting service. The designers reported a very high rate of enthusiasm for the call center (“unanimous”), and an ongoing study reported that over 50 percent of farmers with access to the

service used the mobile phone hotline within the first seven months, with an average of 7.5 phone calls per farmer (Cole & Fernando, 2012). In Dhaka, the Bangladesh Institute for ICT in Development has created *e-krishok*, a suite of services based around agriculture information being delivered by mobile phone through existing in-field government infrastructure. Further, private entities are diversifying existing call centers to include agriculture services. For instance, Miaki in Bangladesh is expanding their entertainment and health call center to include an agriculture hotline. Miaki is a private entity providing agriculture call lines paid solely by callers, however, overhead costs are mitigated in other ways. Esoko is managed through a public-private partnership with social investors and aid contracts. Generally, these call centers package their services and are subsidized by government entities or other aid agencies.

USER LANDSCAPE

Understanding the landscape in which the call center operates is critical to its success. As mentioned above, 48 percent of the world's population lives in rural areas and forty percent of that population is employed in agriculture production (FAOSTAT, 2015). Of the 40 percent employed in agriculture production, a little less than half are women. According to the Food and Agriculture Organization, 66.8 percent of agriculture products are cereals and roots, while just 5.4 percent are vegetables, oils, or fats.

A survey to assess client information needs and technological capacity was conducted in northern and southern Ghana in July 2014. A similar but more limited survey was conducted in southern Bangladesh in December 2015. The survey was designed to better understand farmers' current agriculture information needs, what information they would like in the future, and the means in which they would like to receive that information. An example of the survey administered can be found in the appendix. The sample size of the survey (150) was not large enough to be statistically significant, however the results have been corroborated by larger studies currently in progress.

Farmers based in southern Ghana had a much higher percentage of female farmers and their crops were almost exclusively horticulture – generally peppers and okra. They also farmed smaller plots of land than the other groups, with an average of 2.7 acres. These farmers also belonged to farmer-based organizations.

A group of farmers based in northern Ghana had a much higher percentage of male farmers and their crops were almost exclusively commodity based – primarily maize and rice. They also had the largest plots of land relative to the other survey groups, with an average of 15.1 acres. These farmers were part of an out-grower operation, Samsford, Inc., which supplies inputs and then buys the resulting crop.

The last group of farmers interviewed was in southern Bangladesh and was exclusively male. They had an average crop size of 3.5 acres and grew mostly rice, though the vast majority also grew a small amount of horticulture crops for their kitchen gardens. Unlike the Ghanaian farmers, who had a literacy rate of about 40 percent, Bangladeshi farmers had a literacy rate of 67 percent.

INFORMATION PATHWAYS

Sources of information. Farmers are most comfortable asking their friends and family for agriculture information. Farmers cited family and friends as being “from the same place” or having “the best crops”, which is why they trusted them as sources of information. Almost all farmers reported using their government extension agents for agriculture information. They cited reasons such as, “they know more about farming techniques” and “I trust that I will get the best advice.” However, respondents also said they often did not have access to the extension agents due to officers’ limited time. Farmers also mentioned asking NGOs for information, which is appropriate due to the prevalence of aid projects in the area.

Mobile phone access. In terms of access to mobile phones, 80 percent of farmers in Ghana had personal phones compared to 46 percent of Bangladeshi farmers. As noted, almost all farmers reported being interested in getting information through their phone. Further, a majority of farmers responded that if they did not have a personal phone, they had access through a family member.

On a promising note, 94-97 percent of farmers who had not used agriculture call center services before said they would be willing to use them to get agriculture information. However, though there seems to be a need and desire for agriculture information through call center mechanisms, how much farmers are willing to pay for that service has yet to be determined.

Preferred information packaging. The majority of respondents preferred receiving information through voice messages (69 percent - 86 percent of farmers not currently using agriculture center services and 56 percent of current call center clients). Notably, very few farmers preferred text messages (2 percent - 11 percent of farmers). Text messages seem to be difficult for farmers due to phone literacy. Since many do not know how to delete texts, their inboxes reach capacity and they are no longer able to receive messages. So a farmer that subscribes to a text series, such as prices and/or weather, may eventually stop receiving the call center messages, rendering the service ineffective. As noted above, literacy is also an issue regardless of the language in which message is sent.

Farmers trusting family and friends and preferring voice messages is quite common. In call centers’ research, such as in Bangladesh, India, and Mali, farmers have shown a preference for voice, as well as seeking advice from family and friends. A call center in Ethiopia, the Agriculture Transformation Agency (ATA), is working extensively with Interactive Voice Recordings (IVR). An IVR is a guided voice messaging system (which includes, in this case, unique voice messages as well as standardized, mapped messages) and though more expensive, it may engage the farmer in a more meaningful way than SMSs.

AGRICULTURE INFORMATION NEEDS

Crop management was the most prevalent response when farmers were asked about their most frequent agriculture information questions. Farmers were asked, “What are your questions usually about?” and the surveyor categorized the answer into one of nine topics: “Agriculture Inputs,” “Crop Management,” “Weather,” “Agriculture Technology,” “Agriculture Credit and Resources, Marketing,” “Harvest and Post-Harvest,” “Climate change and adaptation,” and “Other.” The definitions of each of these categories can be found in the appendix. These methods were employed because we did not want to lead survey respondents by explaining each category and also wanted to keep consistent categories for a following question, “What information do you wish you had?” where the surveyor explained each

category. Farmers most often asked about crop management, but technology and inputs were also of interest.

Crop management represented about 50 percent of the questions by farmers not currently working with an agriculture call center; for those who did use Esoko, about 25 percent of their current questions fell into this category. This may be due to farmers only being familiar with traditional forms of agriculture extension information, such as “crop management,” which was explained as, “information on best practices for general crop management questions; this can include seasonal information, irrigation schedule, soil management, diseases and pests, etc.” As noted above, they asked these questions to government extension agents, family, friends, and NGOs.

In the future, farmers were most interested in receiving information from a call center about “weather” and secondly in varying degrees: “crop management,” “agriculture technology,” and “marketing.” This is promising since it infers demand for information products that agriculture call centers have the ability to offer.

These data suggests that call centers should highlight crop management resources and educate potential clients on the availability of weather, agriculture technology, and market price information.

OPERATING SYSTEMS AND CAPACITY

PLATFORMS, DATABASES, AND CRM SOFTWARE

Call centers are still a new endeavor for most countries, and as a result their software systems can still be rudimentary. Many call centers have developed their own in-house software to manage their operations.

Generally, call centers need a platform in which to operate the many different technologically driven systems – for instance, the knowledge bank, email, SMS, and other digitally operated infrastructure. Then there are databases and Customer Relationship Management (CRM) software. These systems can vary widely, from simple Excel spreadsheets with farmers’ names, numbers, and questions, to tailored software systems created by information technology specialists.

There are several online open-source call center systems available. For instance Esoko uses Elastix, which is available to take incoming calls and route them to a call center’s internal platform, and then into the CRM. There are many CRMs available to purchase and also to download for free. It is important to choose a CRM that is able to generate reports with data that are useful to the call center.

TECHNICAL CAPACITY AND COSTS

Beyond requiring software to operate, every call center needs physical infrastructure, such as phones and phone lines, servers, and routers. The most expensive item is the physical phone line into the office. Call centers can purchase lines from mobile network operators (MNO) – ranging from standard phone lines to Integrated Services Digital Network (ISDN) lines that can receive up to 30 concurrent phone calls. Trading the expense of the lines for the capacity of the lines should be weighed on an individual call

center basis. Since each of the lines in place requires an operator to be available to receive incoming calls, demand for the call center should drive the amount of lines available.

From which MNO a call center purchases their phone lines is also an important consideration. For instance, if a short code is purchased from a certain MNO, farmers and clients with other MNO subscriber identity module (SIM) cards will not necessarily be able to call in to that call center. Depending on how many MNOs there are in an area, lines can often be purchased to be redirected to the short code, however, this incurs more expense and another layer of technical complexity, as well as challenges in marketing multiple numbers. Another issue to consider is the geographical areas from which the calls come, since the language skills of the operators will become a limiting factor when there is an increase of calls from an area with certain dialects/languages.

As seen in Table 1, a call center's current activity can be very different than its capacity. The discrepancy in these numbers can result in large differences in costs per call. Call centers have the ability to push out many SMSs for a very low cost. However, as noted above, farmers generally prefer actual voice calls or messages. For instance, for one call-center, pushing out SMSs costs US\$0.02 per text, while a voice recording costs US\$0.07 per message.

Table 1: Capacity of Call Center with Five Operators

Actual Calls		Capacity	
Calls/quarter	7400	Lines	5
Calls Dropped/quarter	263	Concurrent call capacity	90
Calls/month	2379	CC open work hours	6
Average call length (min)	5	Call center operators	5
Average work time	5	Total possible minutes/day	1800
Call center operators	5	Total possible minutes/month	36000
Idle time/month (min)	12210	Total possible calls/month	3600
Costs			
Cost/call (USD)	2.52	Cost/call (USD)	1.67
Cost/minute (USD)	0.50	Cost/minute (USD)	0.33

Source: Author. This active excel spreadsheet is an example of a tool to assess your call center's current activity and potential capacity. It is available upon request.

Along with pushing out information in SMS form, Esoko and other call centers provide SMS information callback systems where a farmer requests information through text. This can be a useful information product that many call-centers currently offer. However, the farmer can sometimes incorrectly enter these requests for information, which often uses a code, and staff time must be used to decipher incorrectly coded requests. For example, in order to receive information on rice prices, farmers can text

“rice” to the call center number and rice prices will automatically be sent to the farmer. But the word can be misspelled, which results in an ineffective product until the call center staff corrects the mistake.

Although the seat for a call center operator is expensive, the transaction costs for receiving a phone call can be the lowest cost for a call-center, while pushing out a voice message is the highest cost.

CALL CENTER OPERATORS’ EXPERIENCE AND LANGUAGES

Across the agriculture centers globally, including Bangladesh, Madagascar, Senegal, India, and Ghana, call center operators have degrees in agriculture. Most of these staffers also have experience in the field. Both seem necessary in order to provide trusted information to call center clients. Although almost all call centers rely on in-house “knowledge banks” (discussed below) an operator’s ability to interpret that information and also relate it to the geographic area being discussed seems imperative. Often call centers will also employ specialists from fields ranging from horticulture to commodity crops to livestock. Some call centers have these folks on staff; while other call centers have experimented with days that certain specialists are on-call to answer specific questions from farmers.

There has been some discussion within the community on using more experienced operators – such as those with doctorates in agriculture sciences. However, this does not seem to be a useful endeavor as those involved in research may be more inclined to stay within the academic system, generating reports and consulting, rather than fielding direct questions from farmers.

A unique challenge in many countries is the diverse array of languages spoken domestically. It is important that the call center operators are able to communicate in the farmers’ regional languages. Many farmers cited this as one of the reasons they felt they could trust Esoko’s call center operators. Having operators on hand that can speak regional languages, both to field live questions from clients and also generate SMS or voice messages, is essential.

Providing expertise in multiple languages and specialties increases the complexity of a call center. As noted in the above section, if there were more clients calling in from a certain region, then it would be necessary to increase operators with this language skill set or expertise. This can be a challenge when a call center is first starting out and certainly when choosing when and how to scale.

Ongoing training also seems to be important for call centers to employ. Having agriculture call center operators active in their agriculture community and certainly within their specialty helps to keep information relevant and trustworthy.

KNOWLEDGE SYSTEMS AND PRODUCT PACKAGES

KNOWLEDGE BANK

A knowledge bank is the central information database used by the call center. A call center can choose to rely on information created by a third party or create an in-house agriculture database. A call center must consider the breadth of content, amount of detail, and inclusion of regional information. Many call centers choose to create their own knowledge banks. However, as the industry becomes more sophisticated, knowledge systems are being created by third parties that develop and then market

knowledge banks to call centers. These third party entities are commissioned by NGOs, governments or MNOs for use in call centers.

Knowledge banks almost always include major crops within a country. More sophisticated knowledge banks, such as Esoko's, will also include horticulture crops, which are not sold as often but used in kitchen gardens and in smaller scale operations. Further, some knowledge banks also include information on livestock. Crops and livestock are further broken down into seasons, inputs, site selection, land preparation, varietal selection, planting, management tips, pests and diseases, harvesting and post harvest, and marketing.

There are several places from which the information in knowledge banks is sourced:

- Government agriculture departments
- Research institutes
- NGO or other agriculture-focused projects
- In the field: talking with farmers and the extension officers own field experience.
- Internet

Call centers run the gamut on who and how they develop their knowledge banks. On one end of the spectrum there are call centers that only have information on the top five commodity crops, which often serve larger scale producers and is less helpful to smaller scale horticulture producers. On the other end, there are call centers, Miaki in Bangladesh for instance, that have an agriculturist with a doctorate leading a team of three or four people for their knowledge bank. Almost all work in conjunction with an escalation scheme (see below).

ROLE OF EXPERTS AND VALIDATION

There are several roles for experts within an agriculture call center. Ideally, they are available when a question from a farmer is beyond the information infrastructure of the call center; they contribute information to the call center staff and the knowledge bank; and to validate information that is sourced elsewhere and entered into the information system of a call center.

Agriculture call center operators employ the use of agriculture experts when a question from a farmer exceeds their information resources (when a call is "escalated"). Many call centers create an advisory board that often includes government agriculture extensionists, project-based staff, and researchers in academia. These board members are engaged and a response is generated for the client – usually within a one- or two-day time period.

Call centers also work with these entities to help develop content for the knowledge bank and also to provide trainings. These partnerships could be further cultivated. A common complaint in this sphere is the efficiency of the process to get new information from research institutes and universities into the field. The call center could potentially help bridge this gap by engaging directly with new research findings from institutes and being more proactive in gaining and deploying new agriculture methods.

Finally, experts can be used to validate information that is harvested from sources outside the realm of the experts' organization. For example, a knowledge bank manager can glean agriculture information from the Internet – a great inexpensive, expansive source of information, if not notoriously un-cited. Beyond the Internet, call center knowledge bank managers source information from countless other entities and funnel it into the same knowledge mechanism. This can cause discrepancies within the data or might allow for incorrect data to be entered into information channels being supplied to farmers. Call centers often mitigate this by doing quarterly reviews with a team of experts within a certain field. For instance, if new information is downloaded on root and tuber crops the knowledge bank material might be brought to a relevant research institute for systematic validation.

PRODUCTS

A product consists of two fundamental aspects: the type of information supplied and the means to communicate that information. Below are the types of products currently being offered by agriculture call centers.

Knowledge Resources

Market Information System (MIS): Many agriculture call centers offer price information through their phone system and SMS messaging. Farmers can call in to ask about a certain crop or can subscribe to receive regular text messages. This information can be purchased from an outside entity that is already operating the necessary infrastructure to acquire market prices or the call center can build this operation in-house. Esoko in Ghana has created their own MIS, which incorporates a sophisticated network of agents in the field to collect price information and feed those data into a central location within the call center.

Weather: Weather reports are often provided through the agriculture call center. In the surveys conducted with farmers in Bangladesh and Ghana in 2014 and 2015, weather information was a favored product. Information on the weather helps farmers plan when to sow, fertilize and harvest, among other important rain-dependent activities. Agriculture call centers almost always partner with an outside organization to provide weather reports. In order to deliver this product, a geographic information system (GIS) point is collected through either a project or the client, and then through an application program interface (API) call the weather can be sent directly to the farmer. The call center operator can also access partner websites and software if a farmer calls the call center directly.

Bids and Offers: Bids are from buyers who contact the call center to buy a certain amount of a product. At Esoko, when a call center operator or manager validates the bid, it will be sent out to all of the client farmers who have signed up for that particular bid product and crop. Offers can also be uploaded when a farmer/client/trader has a certain amount of a product they would like to sell. Once approved by the call center, the offer will be pushed out through an SMS to those that have expressed an interest in buying that product. Once there is an interested party, the buyer or seller can contact each other directly, or the call center will connect the two parties. There can often more sellers than buyers and during harvest season, as bids generally come in when supply is lower.

Knowledge Bank: The knowledge bank provides the call center's main information resource and is constantly accessed by the operators for best agriculture practices. This product could be potentially sold to other agencies in pieces or in its entirety, while still retaining rights to the information.

Dissemination Methods

Agriculture Call Center: The agriculture call center is one of the most obvious means of providing information. It allows for farmers to call in and ask specific questions about agriculture practices. This provides an important service because farmers prefer to speak directly with an agriculture expert versus IVRs or SMSs. It also helps to establish trust with clients and mimics the role of an in-field agriculture extension officer.

Short Message Service (SMS): The call center uses SMS to push and receive various pieces of information. One way this method is used is to push out one-time messages. For instance, if a tractor company would like to send a message to farmers (at a fee) telling them where they can go to buy their products, this message would be uploaded by the call center and sent to the selected group of farmers. Or the call center might choose to send out a best practice note for a crop, disease, or other crop management tip. Most commonly market prices and weather information is distributed through this mechanism.

Interactive Voice Recordings (IVR): IVRs have been used extensively in agriculture call centers to deliver information affordably. The IVR is usually set-up so that when a client calls a certain number she is lead through a series of questions and responses that will lead to the correct agricultural advice. The Ghanaian government is currently setting-up an IVR for farmers and extension workers to use, and in Bangladesh there are several non-profit entities using IVR for agriculture extension on major crops.

One call center's research has concluded that farmers prefer to speak to someone on the phone rather than to engage with an automated voice system. This is concurrent with findings from the July 2014 Ghana survey. However, it could be possible to send out voice messages, which may be more effective than sending SMS. These messages could be done in the local language and contain information that is currently being sent through SMS, e.g. market prices and weather updates. However, since deleting texts has been an issue, similarly it is possible that farmers' voicemail inboxes could fill up if messages were not deleted.

Considering farmers' preferences for engaging through voice and literacy levels, some call centers are starting to experiment with a voicemail service that clients can call to hear weather and price information. It is also possible to start a service of pushing voice messages out, in lieu of SMS, but again, this would be more expensive. Most projects or businesses that want to purchase information products are looking to achieve a high impact at a low cost, which favors SMSs. However, it might be more meaningful to farmers and effective to the project to interact using voice messages versus SMS.

Other: The call center is in an excellent position to provide services for aid projects, government entities, businesses and research institutes. These organizations can use the call center infrastructure for their own project and research needs (monitoring and evaluation, product support, push information on new programs, etc.).

PARTNERSHIPS

Partnerships within the research, business and aid communities are important aspects of a call center's success. There are many different avenues that a call center could pursue relationships, whether it is for cost mitigation, product or infrastructure enhancement, client expansion, or personnel capacity building.

KNOWLEDGE PARTNERSHIPS

Research entities and universities are obvious partners for knowledge bank enhancement, as well as for personnel training (as was discussed in a previous section). Call centers partner with research entities regularly for help with their advisory boards and knowledge banks. However, it is possible to expand this partnership and allow for call centers to be more active in the data collection process itself.

Call centers that have developed an expertise in creating knowledge systems could potentially work with research entities to help them build their own knowledge banks. Research institutions already have a wealth of knowledge, but disseminating that information in an online or mobile platform can be a challenge. Call centers are well positioned to summarize and disseminate that knowledge in an accessible way.

BUSINESS PARTNERSHIPS

One of the more strategic partnerships a call center can make is within the business community. Agriculture call centers can provide product services for tractor companies, input dealers, etc. who offer agriculture inputs and technologies. These services can include information about where a farmer can buy their product; help troubleshoot issues with the product; or provide a marketing service through a call center's network of farmers.

One of the challenges businesses communicated during the data collection phase of one call center is that there are no data available to show that a call center's product or infrastructure can improve their own business (by making calls, sending out SMS messages). At the genesis of these partnerships it might be advisable to reach out to these private entities as (paying) partners versus clients. If the call center is able to demonstrate the effectiveness of their products with case studies, businesses may be willing to pay a higher price for call center services.

TELECOMMUNICATION PARTNERSHIPS

MNOs are one the most important and common partnerships for agriculture call centers. These partnerships take various forms. They can be very informal and/or one-time partnerships, for instance where a MNO may offer a better call rate to an agriculture call center (such as offering a standard domestic rate for a premium short code, an agreement Esoko has secured) or be a more enduring,

consistent business partnership. In Bangladesh, for instance, telecommunication companies often offer an agriculture call-line, but route the calls to a third party with a trained agriculture staff and knowledge bank to provide the actual service.

AID AGENCY LINKAGES

Call centers can provide a valuable service to project oriented activities, such as doing general monitoring and evaluation or acting as a central point between two parties. For example, Esoko is partnering with Innovations for Poverty Action on a citywide trash-collecting scheme where participants with garbage can call Esoko and connect with a garbage collector.

Other types of projects could include general baseline, midline and endline studies. Further, a call center can provide the infrastructure to receive calls if a project required participants to call into a central location to supply data points from the field. For many call centers the most obvious partnership within the aid community is providing extension service to farmers for agriculture projects. Agriculture call centers provide an immediate suite of products to farmers that aid agencies have the funding to support.

GENDER CONSIDERATIONS

Call centers have traditionally struggled to reach an equal amount of women clients. This should be a top priority for an agriculture call center, first, because there should be a general philosophy to equally reach all farmers, but secondly, women represent a large portion of an agriculture call center's potential clientele that is not being engaged. There are several issues that disproportionally affect women in this space. Women can be subjected to cultural barriers that prevent personal agency in retrieving information. Also, in certain settings, women often do not think of themselves as "farmers" – even though the farm labor is split evenly among genders. Women also often grow crops that are not dominant domestically, whereas a call center will provide information on major commodity crops. Structurally, phone literacy and educational attainment may prevent women from as easily accessing call center services as their male peers.

Cultural barriers to women reaching out directly to call centers became apparent during the data collection phase of the study in northern Ghana. Here women were most likely to reach out to their husbands, sons, and fathers for information on farming. If the family were to reach out to an agriculture expert for further information it would be the responsibility of the patriarch of the family to call. Further, it became apparent in several focus groups in Ghana that women in strongly patriarchal communities need to have access to women agricultural officers in order to feel comfortable calling.

In southern Ghana there did not seem to be the same cultural barriers. Women were empowered to acquire any information they needed for their farming activities. In Bangladesh, however, there were very few women that identified themselves as "farmers" even though they often do a majority of the weeding, harvesting and other non-machine-based agriculture activities. Traditionally, they identify as homemakers and thus would not necessarily naturally gravitate towards using an agricultural call center.

More education should be done around the distribution of agriculture labor so all farmers in a family unit have access to the appropriate information.

In data collected in the field, which is corroborated with other research, women are growing more horticulture crops than men, either for income or home gardens. The type of crop information provided by a call center could play a large role in who uses the service. For instance, some call centers (due to lack of resources) only provide information on the country's top five commodities. Although this strategy may cover the most agriculture production – cereals and grains – it may not be relevant to women's agricultural activities.

Of the women interviewed, they generally had the same access to phones as men and were just as likely to say they would use a call center if they were provided with the service. However, they may struggle more with SMS, as messages require a certain level of literacy and more sophisticated phone skills. However, further research is necessary to understand why women are not engaging with the call center at the rate at which men are. Many call centers have struggled to increase female clientele.

COST MITIGATION

One of the most hopeful and frustrating intentions of the agriculture call center is financial sustainability. In a world where call centers were created because of already limited resources, it would be a very tidy solution if they also could be self-funded. However, this vision will be hard to achieve and will most likely come through various cost mitigation strategies rather than farmers paying directly for services.

There have been many hypotheses concerning farmers' unwillingness to pay much for these services. The first, and most obvious, is that they do not have enough disposable income. Incomes vary regionally, however, it seems that even in the most low-income places people are prioritizing mobile phone usage. In one village in northern Ghana a farmer and fisherman said, "If I run out of minutes and I have no money, I just go to the river and catch a fish and sell it." Having access to phone credit seems to be important no matter a person's income, but getting someone to pay above that rate for a package of agriculture services seems challenging.

It also has been put forward that agriculture call center operators do not have the trust of farmers and thus are not willing to pay for the service. However, most farmers say that they would trust a call center operator. The mere fact that the call center staff is accessed through such sophisticated technology as the mobile phone and speaks the farmer's language lends to the perception that the operator also has access to other sources of agriculture technology and information that could be helpful to the farmer.

What might be the most challenging obstacle to the agriculture call center is that there is no instant gratification from the advice. Entertainment and health call centers have gained quite a bit of success in the developing world, which may be due to the timeliness of the gratification and/or the necessity of the service. With agriculture information a farmer will have to wait months, or even years, to see a positive (or negative) result of the advice the operator has given them.

In the limited data that were collected from the field for this evaluation, there is evidence to suggest that farmers see the call center's advice as profit inducing, which could create a higher willingness to pay. However, there is general agreement within the agriculture call center community that farmers paying for their airtime on a premium short-code is not going to be what makes an agriculture call center financially sustainable. The call center most likely will have to sell a suite of services to which the farmer subscribes. Further, even these product packages may not be enough; almost every call center in this study has had to mitigate costs of their agriculture call center with other services.

There are several ways in which agriculture call centers mitigate their costs. Some are directly subsidized by a government or aid agency without any pretense of trying to be profitable. However, most of these call centers will say they hope to eventually be financially self-sustainable. Other call centers that have more of a private/public funding structure will offer a package of agriculture products to local entrepreneurs that then offer the service. For instance, in Bangladesh, the Bangladesh Institute of ICT in Development (BIID), offers its "e-krishok" suite of agriculture information products to local vendors, who then provide the service. This allows BIID to lower their overhead costs. Other call centers partner with telecommunication companies and offer their services as third party providers.

Finally, completely private entities may operate an agriculture center within a much larger operation that offers a multitude of services. These structures require the farmer to pay per minute, though it is often at a discounted rate. Some private entities, often telecommunication businesses, will require a premium rate from farmers for phone calls – they claim to be meeting costs, but there is skepticism that their call volume is very high.

Unfortunately, there does not seem to be a silver bullet to make call centers financially sustainable. What is clear is that farmers paying per minute will not make a call center financially sustainable. A call center must diversify its portfolio, either through a subscription to a suite of products, outsourcing overhead, selling the call center infrastructure, offering multiple different services through the call center (e.g. entertainment, health) or some combination of the above.

SUMMARY

There are certainly challenges facing all call centers around the world. The field data collected in this study with possible clients is very consistent with other, larger studies – farmers trust their friends and family for agriculture information and prefer to speak with someone to receiving a text. However, there is promising data to support farmers adopting the agriculture call center generally. Interest for call center services seems high and thus, in theory, call centers should have the capacity to scale. However, it currently seems challenging to meet costs at call volumes, regardless of the suite of products. Looking forward, it is important to consider the information that clients want and the methods in which they want to receive that information. It also is important to partner with appropriate organizations to facilitate increased call volume, trustworthy information, and mitigate costs.

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APPENDIX A. SURVEY USED IN DATA COLLECTION IN GHANA AND BANGLADESH

Date: _____

Survey Number: _____

Interviewer: _____

To be read to participants:

Hello, I hope you are doing well. I am working with UC Davis and USAID to learn more about call centers as a means to deliver extension information. You recently were in touch with esoko about an agriculture question. I have a brief, 14 question survey about your experience with potential call centers. Specifically, we want to ask you some questions regarding where you get your information about best farming practices and what sort of information products would be helpful to you. These questions begin with basic questions about your farm, then where you get your current agriculture information, your experience with esoko and end with what kind of information esoko, or another call center, might be able to provide to you. The survey should take about 20 minutes.

These answers will be aggregated, to better understand the needs of Ghanaian farmers. If you don't want to participate, that is fine – we will just end this call now. Are you okay with proceeding?

If yes, Thank you for taking time out of your day for this survey. Do you have any further questions?

Please write down any notes or information that you might find relevant in the space provided below.

Farming and income information

1. How many acres of land did you farm last year? (Include perennial cropping area if available)

Number of Acres _____

2. What are your two main crops?

CROP	Acres cultivated last year	Harvested (bags)	Av. Price per bag received (GHC)
1.			
2.			

3. Is farming your main source of income?

____ Yes

____ No

____ 50/50

a. If no, what is your main source of income? _____

Types of agriculture information being used

4. Who do you usually go to to get farming advice and agricultural information your? (Mention 2 main sources). *Please write down a "1" by the first source of information they mention and a 2 by the second source of information they mention. Any notes are helpful, as well.*

- _____ Government extension agent
- _____ NGO, name: _____
- _____ Family and friends
- _____ Input supplier
- _____ Buyer extension
- _____ University staff or students
- _____ Call center
- _____ Other, _____

5. Why do you go to these sources? *Open ended question; please enter/write anything they say. Feel free to ask clarifying questions.*

Source 1: _____

Source 2: _____

6. What are your questions usually about? *Please enter the subjects they mention in the box below. Add any notes that might be relevant.*

1) Agriculture Inputs

- a. Respondent would like to know more about where to get fertilizers, improved variety of seeds and seedlings, feeds, plant protection chemicals, agricultural machinery, and equipment and water

2) Crop Management

- a. Respondent would like more information on best practices for general crop management questions; this can include seasonal information, irrigation schedule, soil management, diseases and pests, etc.
- b. Respondent would like to know of area specific crop management strategies. What are the current local agriculture conditions? For example, is there a pest in the area right now?

3) Weather

- a. Respondent would like to know what the current weather conditions are for their community.

4) Agricultural Technology

- a. Respondent would like more information on production technology that involves cultivating, fertilizing, pest control, weeding and harvesting

5) Agriculture Credit and Resources

- a. Respondent would like information concerning all loans and advances granted to finance production activities relating to agriculture, fisheries and forestry and also for processing, marketing, storage and distribution of products resulting from these activities. OR general resources, such as government or NGO programs.

- 6) Marketing
 - a. Respondent would like information on product planning, information on current prices, sales timing, post-harvest marketing decisions, or group marketing.
- 7) Harvest and Post Harvest
 - a. Respondent would like information on storage, transportation, packaging, handling, or other methods to preserve product after harvest.
- 8) Climate change and adaptation
 - a. Respondent would like information on changing rainfall, temperature, and/or general climate conditions, due to climate change.
- 9) Other

Question Subject	Notes
1.	
2.	
3.	

7. Do you feel all of your agriculture information needs are being met?

_____ Yes

_____ No

- a. Why or why not?

Call center questions

8. Do you have your own phone, or do you share it with your family?

_____ Own phone

_____ Share with family

_____ Other, _____

9. Are you generally interested in getting your information through your phone?

_____ Yes

_____ No

- a. Why or why not?

10. Do you prefer SMS (text message) or voice?

Communication channel	Yes	No	Note
SMS (Text message)			
Voice			

Both SMS and voice			
Other, _____			

11. Do you have picture capabilities on your phone?

_____ Yes

_____ No

12. Is there information or a service you wished an agriculture call center would offer?

Please read through the below categories, so that the farmer understands all of the categories. Note the category in which they fall and any particular item they may mention under "notes".

1) Agriculture Inputs

- a. Respondent would like to know more about where to get fertilizers, improved variety of seeds and seedlings, feeds, plant protection chemicals, agricultural machinery, and equipment and water

2) Crop Management

- a. Respondent would like more information on best practices for general crop management questions; this can include seasonal information, irrigation schedule, soil management, diseases and pests, etc.
- b. Respondent would like to know of area specific crop management strategies. What are the current local agriculture conditions? For example, is there a pest in the area right now?

3) Weather

- a. Respondent would like to know what the current weather conditions are for their community.

4) Agricultural Technology

- a. Respondent would like more information on production technology that involves cultivating, fertilizing, pest control, weeding and harvesting

5) Agriculture Credit and Resources

- a. Respondent would like information concerning all loans and advances granted to finance production activities relating to agriculture, fisheries and forestry and also for processing, marketing, storage and distribution of products resulting from these activities. OR general resources, such as government or NGO programs.

6) Marketing

- a. Respondent would like information on product planning, information on current prices, sales timing, post-harvest marketing decisions, or group marketing.

7) Harvest and Post Harvest

- a. Respondent would like information on storage, transportation, packaging, handling, or other methods to preserve product after harvest.

8) Climate change and adaptation

- a. Respondent would like information on changing rainfall, temperature, and/or general climate conditions, due to climate change.

Subject	Notes
1.	
2.	
3.	

9) Other

13. What is the most limiting factor to making money from your farming business? *Open ended question; please enter/write anything they say. Feel free to ask clarifying questions.*
14. If you could change your farming or farm product in any way, how would you change it? *Open ended question; please enter/write anything they say. Feel free to ask clarifying questions.*

Final information to collect and/or record

Are you able to read and/or write?

____ Read

____ Write

____ Neither

District/Region _____

Respondent Age _____

Respondent Gender _____

APPENDIX B. SUMMARIES OF AGRICULTURE CATEGORIES USED IN SURVEY

- Agriculture Inputs
 - Respondent would like to know more about where to get fertilizers, improved variety of seeds and seedlings, feeds, plant protection chemicals, agricultural machinery, and equipment and water
- Crop Management
 - Respondent would like more information on best practices for general crop management questions; this can include seasonal information, irrigation schedule, soil management, diseases and pests, etc.
 - Respondent would like to know of area specific crop management strategies. What are the current local agriculture conditions? For example, is there a pest in the area right now?
- Weather
 - Respondent would like to know what the current weather conditions are for their community.
- Agricultural Technology
 - Respondent would like more information on production technology that involves cultivating, fertilizing, pest control, weeding and harvesting
- Agriculture Credit and Resources
 - Respondent would like information concerning all loans and advances granted to finance production activities relating to agriculture, fisheries and forestry and also for processing, marketing, storage and distribution of products resulting from these activities. OR general resources, such as government or NGO programs.
- Marketing
 - Respondent would like information on product planning, information on current prices, sales timing, post-harvest marketing decisions, or group marketing.
- Harvest and Post-Harvest
 - Respondent would like information on storage, transportation, packaging, handling, or other methods to preserve product after harvest.
- Climate change and adaptation
 - Respondent would like information on changing rainfall, temperature, and/or general climate conditions, due to climate change.
- Other

APPENDIX C. ABSTRACT: BEST PRACTICES IN TECHNOLOGY, INFORMATION SYSTEMS AND DEMAND-BASED PRODUCTS FOR AGRICULTURE EXTENSION CALL CENTERS

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Keywords: Extension, ICTs, Information Sources, Mobile Phones

In countries with developing economies, smallholder farmers can outnumber in-field extension workers 2,000 to 1.ⁱ In an environment with ever-decreasing government budgets and limited resources, agricultural extension services have looked toward Information and Communication Technologies (ICT) to help disseminate good agricultural information. One of the latest developments in this field is the agriculture call center – meant to extend resources over a larger number of farmers as well as become financially self-sustaining through payment for services.

This study, which began in July 2014, looks at agriculture call centers in Ghana and Bangladesh to understand the best technologies and information systems. Further, this research focuses on farmers' need for and ability to access agriculture information via their mobile phones. Agriculture call center products, information points and delivery systems are assessed through demand profiles of small-scale producers in the field. The study also examined farmers' potential willingness to pay for agriculture call center services, as well as any increases in on-farm profits as a result of using the call center.

In order to assess the potential of agriculture call centers in the developing world context, a number of methods were employed. A literature review of current agriculture call centers was conducted, although there is a limited amount of prior research. Call center directors, financial officers, and operators, among other employees, were interviewed to understand technology and information systems of the call center. Organizations operating in the same topical sphere as agriculture call centers were also interviewed; this included NGOs, government entities, private industry and farmer groups. Then 150 farmers from each country were interviewed about their current knowledge pathways, their information needs and their ability to access information through mobile phones.

Preliminary results have shown that small-scale producers are interested in accessing agriculture information through their mobile phones. Farmers see phones as sources of easy, accessible, and quick information, as well as a good alternative to often absent in-field extension agents. Information sourced by the call center seems to be adequate and complimentary to other information sources available to farmers. However, there is no common methodology for acquiring and implementing new research-based information into call center information banks in a timely and relevant manner. Similarly, the technology used by call centers depends on in-country communications infrastructure, mobile phone companies and the call center's own capacity to build software and tech systems in-house.

Final results are expected in early 2015.

This study is being implemented by the University of California, Davis through the USAID supported MEAS project which is managed by University of Illinois at Urbana-Champaign. Esoko, a call center in Ghana, was chosen as a case study due to their work in technology development and prior experience with mobile phone usage. The Bangladesh Institute of ICT in Development was selected as an additional partner because of its extensive uses of ICT through its e-Krishok initiatives.

APPENDIX D. TRAINING FOR ESOKO AGRICULTURE CALL CENTER OPERATORS AND COMMUNITY FARMERS

Purpose: The overall goal of these trainings is to help agriculture call center staff better understand the information needs and production challenges of community farmers.

Trainings will be held in relevant communities, hopefully near agriculture production, with two or three agriculture call center staff and 10-15 farmers.

There (hopefully) will be two in the South and two in the North organized by local contacts and Erin.

Staff time in the field: Two days. Ideally, call center manager is present at all four trainings (thus four days).

Training Goal 1:

- a) Agriculture call center operators (ACO) understand producer's trusted sources of information.
- b) Local producers better understand all types and sources of information available to them.

Objective 1: ACOs and community producers share information channels and information types.

Activity: Mind map of information sources. This activity is a nice icebreaker and also will serve to understand the information landscape of the farmers in the community. The activity will start with the farm as the center. Then farmers will be able to talk about different types of information sources they have. Each time someone brings up a similar source, more lines are drawn from that source to the farm, symbolizing the importance of that source in the community. Then farmers can also talk about whom they go to for what information, creating additional lines from each source.

After the farmers have had a chance to talk about their network, it would be nice for the agriculture call center operators to talk about where they see information sources and what types of information that are available through those sources. These can be added to the mind map.

Lead: Ghanaian fluent in local language. Would be great to get a student or young professional and train them on the mind map.

Inputs: Poster, markers

Time: 40 minutes

Training Goal 2:

- a) ACOs know about specific production issues community farmers face.
- b) ACOs understand how to communicate about the issues and potential solutions.
- c) Farmers are advised on best methods to treat production problems.

Objective 2: Learn communications styles of farmers in the field and help address farmer issues on-site.

Activity: Farmer presentation of issues with crops using the “calendar method”. Two or three farmers will be identified prior to the training to talk through local production issues. When possible, this will be in the field where actual examples can be shown to the agriculture call center operators. This will be a time where ACOs can ask questions about local vocabulary and what is necessary for the ACO to best understand whichever issue is being explained from the field. Then, the ACOs can go through and explain solutions to the problem. Any miscommunications can be worked out with the farmers so that the solutions can be clearly explained in local vernacular by the ACO. Also, farmers will have the ability to talk about why one solution being offered is difficult for them to implement, or why another might be easiest.

Lead: Community farmers

Inputs: Crop field, recorder and note taker

Time: 1.5

Training Goal 3: Farmers feel comfortable with basic phone functions in conjunction with Esoko products.

Objective 3: Farmers learn about basic phone technology and AC staff better understand farmers’ interactions with their phones. *(Which might inform product packaging)*

Activity: General training session on phone literacy. Demonstrator will go through –

- SMS texting and deleting process.
- Voicemail
- Short codes, dialing out and costs
- Accessing the web
- Any questions farmers have about their phones

This can also be a time to showcase what types of information Esoko offers over SMS, voice, and the call center and what kinds of issues this information could help address.

Lead: Local Ghanain, and Esoko manager.

Inputs: note taker, recorder

Time: 40 minutes.

Total time: 3 hours. Snacks should be included.

APPENDIX E. FIELD/WORKSHOP TRAINING REPORT IN TAMALE

Date/Duration: 30th -31st March 2015

Team: Mary Naah, Rahilu Iddrisu, Erin McGuire, Johnson Juah Yiah, Adama Attah-Kwei

Location: Tamale

AIM:

1. To find out the sources of agricultural information for farming.
2. To access the reliability these sources of agricultural information.
3. To meet with input dealers to network and now inputs available and in use within the communities.
4. To learn the practicality and challenges of Agriculture advice sent to the users.

Non- Users of Esoko Services:

Bontanga: The farmers within community were mainly rice and vegetable farmers. Their main source of water for farming was the Dam (Bontanga Irrigation Projects). In view of this the farmers were producing throughout the year various crops. They practice crop rotation maximize land use.

Aduyili: The farmers within this community were cultivating mainly yam and cereals and legumes.

Users of Esoko Services:

Kumbongyili: These are farmers already using Esoko services through USAID/ADRA Feed the Future Project. Had a very interactive discussion with the farmers who could now reconcile the faces to the voices they have been hearing when they call.

Agro Input Dealer: Ganoma is one of the major agro-input dealers with outlets in all the districts in the Northern Region. They also collaborate with NGO and other organizations to supply inputs to farmers.

General Lessons learnt: Though farmers knew that burning was not the best alternative, they find it difficult to avoid it due to the laborious nature of clearing rice and millet stalks after harvesting. Again they burning helps them to control reptiles. Interestingly they also burn their farms to protect their farm produce against indiscriminate bush burning.

We further discovered that men usually give already used lands instead of virgin lands to their women to cultivate. These lands are less productive and thus leads to reduced yields for the women.

It was clear to us that though most of the women did not have mobile phones the men shared info received from Esoko with them.

Feedback: Both Esoko users and non-user ranked Esoko weather feed highly demanded by the farmers. They depend mainly on rain fall and all farming activities were controlled by rainfall. Knowing when it would rain guides them to maximize the rainfall during the season. Users of the service confirmed the feed were most often accurate. A major concern from the farmers was on how to source farm inputs and credits. Farmers suggested we help them to get inputs and credits during the farming season. They believe if they have these, they will not miss out on any input activity that is to be carried out at various stages of crop growth/development.

Recommendation: There should be regular visits to interact with the farmers to access the agricultural advice given them and also assess the challenges with the implementation of the advice. This will bond the Farmer Helpline with farmers creating loyalty and increase patronage.

APPENDIX F. PRESS RELEASE

PRESS RELEASE



Is voice the answer? New study looks to see how call centers can improve farmer incomes

November 1st, 2014

Accra, Ghana – Across the developing world smallholder farmers often outnumber in-field extension workers by an impossible 2,000 to 1. At the same time, farmers are struggling with using ever-more sophisticated seeds, pesticides and fertilizers. In the face of these realities, agricultural extension services are looking towards technology to better distribute much-needed tips, best practices and marketing information.

One of these technology solutions is the agriculture call center, meant to extend resources over a larger number of farmers, be easily accessible, and be financially self-sustaining through payment for services.

To better understand the effectiveness of these call centers, a study which began in July is looking at call centers in Ghana and Bangladesh to better understand the best technologies, information systems and product packages to best serve farmers. The study is being implemented by the University of California, Davis through the USAID supported MEAS project. MEAS is managed by University of Illinois at Urbana-Champaign.

Two leaders in this emerging field - Esoko and the Bangladesh Institute of ICT in Development (BIID) - were chosen for this study. Esoko operates both an SMS-based communications platform as well as an agricultural call center in Ghana. BIID operates an initiative called e-Krishok, which uses ICTs to connect farmers with advisory services and market prices in Bangladesh.

The research focuses on farmers' need for and ability to access agriculture information via mobile phones. The call center products, information points and delivery systems are also being assessed. Finally, the

study will examine farmers' willingness to pay for agriculture call center services, as well as any possible increases in on-farm profits as a result of using the call center.

"It's an incredibly exciting study. Agricultural call centers have the potential to improve the lives of farmers everywhere" says Erin McGuire, Evaluation Specialist and researcher at UC Davis. "We plan to share our findings widely so that other call centers across the developing world can benefit." Final results are expected in early 2015.

About Esoko

Esoko was established in Ghana in 2005, providing a technical solution to collect and share market prices via SMS. Since then it has grown into a sophisticated platform helping organizations connect with hard to reach farmers across the African continent. Esoko uniquely provides an entire ecosystem to make this work, including the content, software and field support. A private initiative, our mission is to make agriculture a profitable business for smallholder farmers.

About USAID



The U.S. Agency for International Development administers the U.S. foreign assistance programs providing economic and humanitarian assistance in more than 80 countries worldwide. For more information, please contact: Erin McGuire, UC Davis: ejmcguire@ucdavis.edu or David Aduama, Esoko: david@esoko.com



APPENDIX G. ESOKO CALLCENTRE FIELD VISITS WITH ERIN (UNIVERSITY OF CALIFORNIA, DAVIS RESEARCHER)

TEAM: AKPENGA AZUTA JOSEPH

ISSIFU MOHAMMED

MARY NAAH

ERIN MCGUIRE

DATE: 01/04/2015 – 02/04/2015

LOCATION: TAMALE

INTRODUCTION: With support from Erin and Esoko the second batch of callcentre agents embarked on a field trip to Tamale. This field trip was intended to ascertain the sources that farmers get their extension information from through a mind map, get understanding of their seasons and basic phone usage and Esoko's services trainings for the farmers. The trip was made to four (4) communities.

PLACES: Bontanga Irrigation Project Site

Aliipe (a farming community on the outskirts of Tamale)

Ganoma Agro Chemicals Limited

Savannah Agricultural Research Institute (SARI)

It was a cold morning on the first day of April when we got to Tamale airport onboard an African world airline. We were quickly transported to our place of accommodation and had our breakfast after meeting our other colleagues.

BONTANGA IRRIGATION SITE

At 9:42am, we were already on our way to the Bontanga Irrigation site to interact with farmers using the facility and how beneficial it has been to them. We met Mr. Alhassan who is the supervisor of the various farmer-based organization's (FBOs) at the irrigation site who took us through farmers activities at the site. Farmers here cultivate mainly rice and vegetables.

There were other farms which were being used for demonstration under the USAID/IFDC UREA DEEP PLACEMENT where urea is applied between four (4) plants to a depth of 5 cm.

The time came for us to interact with farmers. Farmers were taken through some trainings under the headings;

Mind map – this is where we asked farmers about their source of information for their farming activities. It was realized some get their information from friends and relatives, MoFA, various NGOs and from radio stations.

Calendar Identification – this is where farmers were taken through their crop calendar within the season. Farmers were also made to identify problems at each stage within the crop calendar.

Basic phone usage – farmers were tested about their basic knowledge of phone usage and were taken through basic phone handling skills and also taught how Esoko works and how to access Esoko's services. Most of these farmers were elated to know that with Esoko's assistance, they can get better prices for their commodities as compared to how middlemen and market queens take advantage of them.

ALIPE

Farmers here mostly cultivate maize and groundnuts and belonged to ADRA and so knew much about Esoko's services. They were happy to meet us and really made us feel at home. The farmers here were taking through the same training as those in Bontanga.

GANOMA AGROCHEMICALS LIMITED

We visited the Ganoma agrochemicals warehouse, which is one of the biggest agro-input dealers in the region where we were taken through various inputs ranging from fertilizers, pesticides, and herbicides. We were also taken through the mode of applications and common names of agrochemicals in the north. We also had the opportunity of seeing different types of seeds.

SAVANNAH AGRICULTURAL INSTITUTE (SARI)

At SARI, we had the opportunity to interact with Dr. Mumuni Abdulai an entomologist and a member of Esoko's Expert network who we had a chat with on Genetically Modified Organisms (GMO's) and couldn't hide his joy at seeing us in his office.

LESSONS LEARNT

At Bontanga, it was observed that because of the availability of the dam for irrigation, farmers in that particular locality could plant all year long without any difficulty. Farmers were also practicing crop rotation by planting different crops on the same piece of land alternatively. We also learnt how nursing your rice before transplanting helps increase yields and produces better and healthier grains. We saw from farms that were cultivated by broadcasting and the disadvantages it comes with it compared to nursing and transplanting.

However at Alipe, farmers complained they did not get their fertilizer subsidies on time from their projects or organization which mostly lead to their plants dying out (lower production). Most of them

complained that they normally get their fertilizers about two months after planting where by then, the plant had gotten to the knee level and cannot be used.

They were happy to see the faces of agents they have been communicating with along because some thought it was a machine that speaks to them when they call the helpline Centre.

Most women were without mobile phones and the men were asked to share information they get from Esoko with their wives and relatives.

RECOMMENDATIONS

Frequent field trainings should be encouraged since it helps build a strong bond between the agents and farmers. Projects which provide fertilizer subsidies should be encouraged to let their farmers get them on time to increase yield and productivity.

ⁱ McNamara, Paul; Dale, Joe; Keane, Jules; Ferguson, Oliver. "Strengthening Pluralistic Agriculture Extension in Ghana." *Modernizing Extension and Advisory Services*. 2014