



Lessons Learned 2009-2014 COMMUNITY KNOWLEDGE WORKER Uganda Program EXECUTIVE SUMMARY



Grameen Foundation is a global nonprofit organization that helps the world's poorest people achieve their full potential by providing access to essential financial services and information on health and agriculture that can transform their lives. Founded in 1997, it delivers solutions that respond to the needs of the poor, as well as tools that help poverty-focused organizations become more effective. It focuses on initiatives that can achieve widespread impact and uses an open-source approach that makes it easy for other organizations to adopt them broadly. Nobel Laureate Dr. Muhammad Yunus, founder of Grameen Bank and the Grameen family of companies, is an inaugural member of its Board of Directors, and now serves as director emeritus. Grameen Foundation is headquartered in Washington, D.C., with offices in the U.S., Asia, Africa and Latin America and the Caribbean. For more information, please visit <u>www.grameenfoundation.org</u> or follow us on Twitter @GrameenFdn.

The Community Knowledge Worker (CKW) initiative was launched by Grameen Foundation and its partners in Uganda in 2009 with funding from the Bill & Melinda Gates Foundation. Today, it serves more than 300,000 farmers in remote communities through a network of more than 1,100 peer advisors. The initiative combines mobile technology and human networks to help smallholder farmers get accurate, timely information to improve their businesses and livelihoods. From its start in Uganda, the CKW initiative has been expanded to Colombia. You can learn more about CKW at http://grameenfoundation.org/what-we-do/agriculture/community-knowledge-worker.



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INTRODUCTION

BACKGROUND

Grameen Foundation's core work centers on providing tools and information to help the poor and the organizations that serve them to reach their full potential. Many of our efforts leverage mobile technology to increase access to essential financial services and information on agriculture and health. Though the program focused on using mobile information services to improve agricultural outcomes, our Community Knowledge Worker (CKW) program in Uganda also surfaced powerful opportunities for the health and financial services sectors. In addition, it provides a platform that contributes to our efforts to provide useful tools and solutions to other poverty-focused organizations.

Our "CKW Lessons Learned Report" highlights the evolution of the CKW model and programmatic strategy by sharing candid insights on the many successes, challenges and findings we discovered throughout the past five years of experimentation and scaling. It was compiled using intensive input from past and current Grameen Foundation staff, CKWs and farmers, clients and partners, and key contacts across the ICT4D sector through internal reviews, individual interviews, focus group discussions, and surveys.

The specific objectives we hope to achieve are to:

- Provide a comprehensive overview of the CKW-UG program and how it works
- Share insights on strategic decisions and design approaches throughout implementation
- Surface lessons learned during the project and implications for future decisions and scaling

This executive summary highlights critical take-aways across various components of the program, including Network Management, Products & Services, Technology Solutions, Results & Impact and Network Sustainability.

THE CKW MODEL

OVERVIEW

The Community Knowledge Worker (CKW) program in Uganda works with service partners like Kiva to equip locally based CKWs with smartphones, solar chargers, training and access to multiple back end support channels, including a call center, a dedicated field officer, and a peer group from their region. We rely on the community to help ensure the CKWs selected will be trusted by others, can contextualize content for the local community, and are eager to be early adopters and testers of the information being provided.

The smart phones are loaded with the CKW App Suite, which includes a searchable library of agricultural information, a data collection tool, and an application that enables real-time two-way communication. We support the network of CKWs to disseminate and collect information within their communities by providing tiered incentives for information services and household surveys.

The information disseminated includes actionable production tips, prescriptive advice for pest and disease control and general information about crop and livestock varieties. It also includes local market price information and weather trends and forecasts. Content partners (such as the International Institute for Tropical Agriculture, the World Meteoroligcal Association and others) provide all of this information, and use the data collected to iterate and update the information to be as relevant and responsive as possible.

The following graphic shows how the CKW model works in Uganda. The CKW network itself includes Grameen Foundation and its network partners, the CKWs, and the smallholder farmers they serve. Network partners include other NGOs, enterprises or international agencies seeking to engage the rural communities where our CKWs are deployed. In this diagram, blue arrows represent the flow of value – including revenue to and from Grameen Foundation and its partners and incentive payments from Grameen Foundation to the CKWs. Green arrows represent the flow of information. In our model, there are two types of information flows: the first is from content stored in our library (i.e. agricultural, market and weather information) and the second is data and feedback gathered from CKWs and farmers. We also rely on external content partners to populate our library, and service partners to help support our platforms and leverage our service offerings in exchange for revenue that helps finance our model.



LESSONS LEARNED

NETWORK MANAGEMENT

The core of our model is the CKW network. While managing the relationships and interactions between Grameen Foundation, our partners, the CKWs and the farmers they serve certainly raised valuable insights about working in the last mile setting, the real learning for us centered around management of our agent network—that is, the 1,300+ CKWs we deployed across Uganda to deliver products and services to rural smallholders. In order for the model to have impact, it was critical that we determine how to select the right CKWs, determine the right incentives to motivate their performance, and find the right balance of monitoring and coverage area to ensure quality service delivery. This was a process of continual learning and iteration for us, and one that we recognize will vary drastically by region and culture.

Content Management

Information is only one link in the chain and does not translate into productivity in and of itself. Farmers must be able to translate information into knowledge that they can use to adopt new practices and behaviors. In order for that to happen, the information needs to be actionable and relevant and supported by the resources and environment necessary to make it possible. In many cases, that may mean lowering risk or securing access to input, output or financial markets. In others it may mean translating the information, adapting it to be relevant to local customs and materials, and physically demonstrating how to apply it. Local intermediaries armed with mobile phones can help to do all of this, if they have access to the full suite of market linkages, financial resources, and personal knowledge to understand the information, adopt it for themselves, and identify markets to make it all worth it. Moreover, that information needs to be comprehensive. A single change in farming practices may not lead to improvements in productivity, so content must be deep enough to support improvement across the full value chain.

CKW Performance

The basis of our hypothesis that a local intermediary can effectively influence adoption in their community depends heavily on those intermediaries having strong social networks and a specific set of personal characteristics. The most effective CKWs are local farmers who are trusted and respected by those who know them, have personal motivation to serve their community, can read, understand and translate the agricultural information they access, and are naturally inclined to be "early adopters" of new knowledge and practices. It is difficult to recognize these characteristics through conventional recruitment methods, so the team developed an interactive community engagement process that helps to identify candidates most likely to fit the unique profile of high performers. We have explored ways to modify the process to be less time and resource intensive, but have ultimately decided that having the right individuals in the CKW role is far too critical to compromise.

Incentive Structure

Because we aim to select individuals who are personally motivated to serve their community, we know that many CKWs will continue to support other farmers even without receiving any sort of formal incentive. However, the role has historically required them to go beyond their immediate social network to proactively disseminate and collect information across their coverage area—and this makes it necessary to provide an incentive to offset the opportunity cost of lost time on their own farms. The team has gone through four

iterations of the CKW incentive structure, with the ultimate learning being that agents themselves need to be involved in designing incentives that are both feasible and motivating. They also need to evolve with changes in CKWs' roles and service time, as well as the local economy. In addition to "hard" financial incentives, CKWs regularly reinforce interest in "soft" incentives such as strong feedback loops, marketing materials to make them feel credible, certificates and IDs, and regular communication and field presence from the organization.

Quality Assurance

One of the most powerful applications of technology we have found while working with populations in the hard-to-reach "last mile" context is the ability to virtually monitor and manage a remote field force. Our software applications enable us to regularly engage and interact with our agents, monitor their progress and performance, maintain updated and constant two-way information flows and manage incentive and loan payments at minimal marginal cost. While this represents a major network cost saving, remote management can provide only limited quality assurance, as it is restricted in its ability to verify actual interactions, solicit unbiased feedback, and provide contextualized troubleshooting. For this, we have found it necessary to maintain a tier of field officers to physically provide technical support and motivation, as well as promote accountability regarding performance commitments. We have found it equally critical to use data validators to reinforce data quality assurance at the farm-level.

PRODUCTS & SERVICES

The CKW program in Uganda delivers products and services to both farmers and partners. Our offerings for farmers include information services, training, support and equipment, which CKWs can use to access the services and generate additional income. For network partners, we originally focused on data collection services and later expanded our offerings to include customized monitoring and evaluation (M&E) and technology solutions. Our ultimate goal is to offer the best possible services for farmers to achieve impact at the farm-level. To do so, we rely on fees from the services we provide to partners to generate revenue that helps finance the network, and to provide CKWs with activities where we believe they can reinforce and accelerate impact. Partner projects combined with and complimented these services in various ways, which gave us rich insights on the best way to use the model to provide extension service solutions.

Extension Solutions

Delivery of information has proven to be just as important as quality and depth. Because different people have different needs and preferences for internalizing information, reinforcing content through multiple delivery channels has proven to be the ideal way to reach a wide audience. Intermediaries are a valuable access point, but are best supported by direct-to-farmer services delivered via SMS, call-center or radio services. Not only does a multi-channel approach create opportunities to validate and reinforce information, but it also provides valuable escalation paths, on-demand options, and back-end support channels. Moreover, it allows for more targeted information flows—such as production tips to all registered maize farmers during critical times in the season. This type of information is less likely to be remembered after any one-off interaction, and farmers are also less likely to proactively request this type of longer-term, less-urgent need..

While most CKWs work with hundreds of registered farmers and offer periodic services to a significant number of them, there are serious tradeoffs between reach of service (i.e. number of registered farmers) and

depth of service (i.e. repeat services, regular interactions and stronger personal relationships). We ultimately decided that depth of service was not only preferable in facilitating the types of behavior changes we hoped for, but could also have similar effects if we found ways to diffuse information throughout the community through established social networks. Our "adoption drive" efforts and 2014 strategy revision both embrace this learning by downsizing targets to 50-100 farmers per CKW and leveraging small groups of CKW-selected "lead farmers" to help drive adoption.

Data Collection

A central part of the CKW model is that the intermediaries also collect information from farmers that can help to inform the organizations and businesses who hope to serve them, as well as ensure research priorities are aligned with the needs on the ground. Using a local resident to collect data has several strengths, including greater trust, improved contextualization, and lower logistical costs. It also raises several risks, as friends and neighbors may be less willing to share sensitive information with someone they see and interact with regularly, and enumerators are more tempted to self-report or bias information they believe they already know. A study conducted by Innovations for Poverty Action in 2009 proved that, on average, data provided by CKWs met acceptable quality standards – but it also found that CKWs had slightly higher error rates and lower response rates than professional enumerators. In response to this, we added refresher trainings on data collection, enumeration skills, and survey ethics. We also modified our incentive structures to allow CKWs who are capable and financially incentivized to conduct more complex or higher volume surveys to do so on a higher incentive tier. In addition, we relied more on data validators to do data quality checks and promote accountability. However, all of these additions come with cost implications for the network.

TECHNOLOGY SOLUTIONS

The CKW program was one of the first to use smartphone technology and cloud computing in an extreme remote, rural setting. While there were several active ICTD and mobile agriculture projects starting up in East Africa and elsewhere, most of them relied on SMS services and basic handsets to disseminate targeted information, and few had the capacity to test the types of features and services that more advanced technologies made possible. While we are ultimately very confident in our hardware and software decisions, designing and deploying solutions that worked well in rugged farm conditions with unreliable electricity and network coverage raised tremendous challenges, as did introducing equipment that were not already widely available from local retail and service providers. Many of our early challenges are resolving themselves as technology rapidly evolves and improves and smartphone and network penetration expand across Uganda. Our experience, however, surfaced several valuable insights about the challenges associated with using technology as an accelerator and trying new technologies in the "last mile" context.

Equipment & Hardware

While the cost of the units themselves were initially subsidized through partners and later fell to a manageable price point, the costs of repair and maintenance far exceeded our initial expectations. The smartphones weren't as durable as a basic handset, so they inevitably suffered higher rates of broken screens and water damage in the farm setting. They also weren't as common in the rural setting, so they needed to be sent back to Kampala for repair and replacement. Despite several efforts to protect the equipment through insurance and warranty coverage, it was difficult to find a supplier willing to cover the extreme conditions they were exposed to at an affordable price. Thus, the majority of these costs and repairs had to be coordinated and paid for by Grameen Foundation, and often left CKWs without phones for several weeks at a time. In addition

to the cost implications of frequent equipment repairs, maintenance, and updates, the team also invested tremendous time and resources in coordinating all of this across a rapidly growing agent network, which ultimately took attention away from other aspects of service delivery.

Software Solutions

In addition to introducing new hardware, the team also set up a new suite of custom in-house software applications – all of which were managed on a cloud-based host. This was invaluable for maintaining a shared content and database platform that all network players could update and access in real-time, but it also necessitated having sufficient Internet connection to make syncing possible across the network. For this reason, it was critical that all of our software was designed to function in offline mode. In addition, the ability to access information in an environment with only periodic network connectivity was an essential consideration in CKW selection.

RESULTS & IMPACT

While the ultimate goal of the CKW program in Uganda is to improve productivity for smallholder farmers, we have simultaneously been working to prototype a model that can be leveraged beyond this specific context and application – and ideally without depending on donor-funding. The desire to experiment with how the model works, how CKWs can be leveraged, and how our software suite can apply to other solutions was one of the team's priorities for the first several years, and it resulted in many diverse iterations and partnerships, as well as really rich learning about our audience, model and partners. However, our emphasis on innovation directly competed with our goals to scale the network and prove impact. As a result, we made an explicit decision to scale back our network and focus more attention on delivering high quality services and proving the impact on the ground.

Impact

We work largely through partners and offer an array of services that are often customized, bundled and applied differently to facilitate different outcomes for different visions of impact. While it would be extremely difficult to aggregate our estimated impact across these efforts, we can monitor the impact of partner interventions individually. Our partners' work tends to be much more targeted and smaller in scope, so we can identify and target specific behavior changes and track these through our surveys and M&E efforts. Thus, our evaluation of impact is based on the partner's interventions, and how the presence of a CKW changes the targeted outcomes.

Monitoring & Evaluation

When considering all of our partnerships combined, our CKWs have completed over 100,000 unique interviews and 1.5 million total interactions with over 300,000 registered farmers across the 43 districts in which we operate. Our databases host an extraordinary amount of information about smallholder farmers across Uganda. This very high volume of data has made meaningful, in-depth analysis somewhat difficult and we've barely scratched the surface of using the data to its full potential. This challenge is, in part, due to the fact that each partner and survey has specific, strategic needs that cannot always be aligned. It is also caused partly by system constraints, as our original platforms were not fully prepared for the tremendous inflows of data they were later expected to host. However, the greatest challenge is more organizational – as we needed to embed the right systems and processes to be able to better access, analyze, and leverage the data to meet our needs and those of our partners.

NETWORK SUSTAINABILITY

The ability to build a network that could be self-sustaining rather than donor funded has been one of our greatest challenges. Early on we identified numerous potential opportunities that would enable us to develop a financially sustainable network. Over the lifetime of this program we were able to work with various partners to test our hypotheses. This formed an important component of our program design.

Business Model

Our experience reinforced how difficult it is to self-finance information services. While there are select types of information that may be sold, the financial viability of agricultural information as a primary service remains questionable. Information services should either be funded publically or they should be complimented by another commercially viable primary service. Our pilot partnership with National Agricultural Advisory Services (NAADS) suggests that the CKW model could be an extremely valuable overlay to the existing extension structure in Uganda. A random controlled trial experiment in Serere proved that the CKW technology suite can improve the quality of extension services, and we are confident that the CKWs themselves play an equally valuable role in escalating issues they cannot address themselves or filling information gaps, where appropriate. . Since information is difficult to finance as a stand-alone service, using the model to accelerate the impact of existing public investment in agriculture extension is a natural fit. Alternatively, there is also early evidence suggesting options to sustain the network with commercial activity as a primary service, and information as a secondary, complimentary service. We have not tested this option, but there is demonstrated demand from CKWs and partners alike to explore ways to use the network and technology to aggregate input and output supply and distribution – as well as similar synergies in financial or telecommunication services.

Partnerships

Our theory of change requires us to leverage partners as much as possible to ensure we have impact on the ground. Our business model and sustainability targets further reinforce the on-going need to expand our partner base in order to generate the revenue needed to support our network. This has meant we have needed to continuously balance multiple partnerships at any given time. Managing the competing timelines and priorities of several unique partner projects simultaneously calls for a lot of resources, and has ultimately been an obstacle for our ability to execute against each of them. However, the diverse array of partner engagements has surfaced critical criteria for what makes an ideal partnership in our context. In order for a partner engagement to be effective, we found that their own intervention and activities need to be mature and stable before our model can "accelerate" their impact. We also found that partnerships where we co-design and co-implement are the most effective. As might be expected, the quality of partnerships (in terms of timing, fit, capacity, and relationship) is ultimately highly preferable to quantity (i.e. many diverse partners at once with varying degrees of fit).

DESIGN CONSIDERATIONS

Adaptive program design and an ability to be agile when faced with program challenges was a cornerstone to the success of our work with CKW in Uganda. Ensuring the transferable nature of these learnings within Grameen Foundation as an organization also allowed us to extend the CKW methodologies beyond the borders of Uganda. The initial challenge was not only to reach the "last mile" farmer, but to reach him or her in a cost effective, sustainable manner, that would result in substantial behavior change and impact.

Focus on Technology

There is almost endless potential to the applications of mobile technology in the developing context, but our experience proved a critical reminder that it is not a stand-alone solution. The technologies we leveraged allowed us to virtually manage our field force, transfer information to and from remote communities, make payments instantaneously, maintain live updates and communication, and produce powerful data – all while lowering the cost of service delivery and reaching new "last mile" audiences. Each of these applications accelerated the impact our solutions could have, but could not displace the need for equally effective human capital and service delivery. Particularly in the beginning, it was easy to get bogged down by the many challenges that came with using advanced hardware in a new setting and designing custom software solutions for a new type of user. However, it was equally critical to get the service offering, content, training, back-end support and other features of network management right, else the technology would have had nothing to accelerate. Thus, our design needed to strike a balance between leveraging technology and allowing it to override the core objectives.

Human-Centered Design

During the initial pilot and prototype, the team borrowed from best practices in human-centered design to ensure that the products and solutions they deployed directly responded to the needs of the farmers and stakeholders they were intended to serve. The pilot and the early roll out that followed were both periods of rapid iteration, user testing and adaptive decision-making. As the network scaled it was much less feasible to maintain the same depth of feedback, so we had to come up with creative ways to interact with users as we tested new services and uses of the technology. In many cases, this included surveys, as well as follow-up through our field officers, training team, and call center staff. In this case, as well as others, we ended up with so much data from so many different contexts, that it was incredibly difficult to use it in a meaningful way. Likewise, we didn't have the right structures in place to fully leverage our monitoring and evaluation efforts to inform our design and strategy decisions.

Innovation

It is difficult to innovate, scale, have impact, and be sustainable all at once. We have a lot of strengths as an innovator, incubator and accelerator, but we need the right partners, strategy and runway to play this role well. We started off with massive energy around designing and improving our products and services, but lost steam as our mandate shifted to scaling and proving impact. The team was enthusiastic about identifying ways to improve, and evidenced this through many ideas and suggestions along the way. However, there was not a clear place for this within the team's competing priorities. While innovation should be a continuous and embedded practice, building platforms, resources or deliverables (such as innovation labs, solutions workshops, team retreats, field trips, etc.) into the program design might have helped us to step back as a team and develop more holistic solutions and strategies to improve the model.



FUTURE CONSIDERATIONS

The first five years were a period of iteration and experimentation, with the ultimate goal of identifying a model that could be scaled and replicated for agricultural extension beyond Uganda – as well as provide a promising platform for comparable applications in other sectors, such as health, finance, or commercial services. The insights gleaned from this process can be summarized by the following considerations for others leveraging agent networks, technology, extension services and/or data collection at the last mile.

- Invest in understanding what would make a good agent for your intended impact and allow for the time and resources needed to determine the right process and criteria to select them.
- Support the information delivered through training, troubleshooting and back-end support channels to ensure continuity in quality and uptake of services.
- Strongly consider "household solutions" where spouses have complimentary roles and can support one another instead creating potential tension due to rural gender issues. For instance, a "CKW couple" could be a promising concept, as could selection of CKWs whose spouse runs a complimentary micro-enterprise.
- Apply a fully blended multi-channel approach in order for extension services to more effectively reach rural farmers. This will have the highest impact in the most cost-efficient way.
- Consider where on the spectrum of cost of reaching farmers vs. quality of services delivered that your intervention needs to fall. Leverage technology for virtual monitoring and increased transparency and accountability, but make sure to reinforce it with physical field presence wherever possible.
- Plan for heavy back-end support, logistic coordination, and maintenance when choosing technologies that cannot be locally sourced or repaired. Recognizing these trade-offs early on and identifying the best plan to minimize field logistics and repair time is critical.
- Explore options for remote handset management, updates, and monitoring. Troubleshooting remotely can be really difficult and ineffective, and mean that easy to fix problems are often escalated to more serious issues over time.
- Determine up front whether you want to prioritize impact and scale or sustainability.. In our experience, it was really difficult to take on all at once without a really compelling and well-tested business model or a guaranteed timeframe within which to plan.
- If financial sustainability is the goal, it is critical to make sure operational costs are funded through the business model directly, and not as a side activity. Our need to "add-on" services that were not part of our underlying business model made it really difficult to focus on our primary services.
- Focus on creating market linkages for both impact and sustainability. Exploring how to link the rural communities we work with to reliable input and output markets and financial services is undoubtedly the next step in the evolution of the model.
- Make the decision to scale at the right time. In Uganda, we may have benefited greatly from a longer runway to explore solutions and execution strategies with a smaller network, or even with smaller subsets of the larger network.
- Be very intentional in designing in knowledge management systems and processes to reinforce their use. Capturing organizational knowledge and program learnings is a key enabler to enriching the sector as a whole. Build this into roles and responsibilities and performance measurement to ensure it is not lost as a priority.