How can ICT innovations be leveraged to address value chain challenges?

Insights from the Kenya Workshop Report
This report is based on insights gathered during a multi-stakeholder workshop organized by the Business Call to Action (BCtA) and the United Nations Development Programme (UNDP) in Nairobi on 1 October, 2015. Interviews were also conducted with technology providers in Kenya that use information communications technology (ICT) and mobile technology to address challenges faced by smallholder farmers. Both the workshop and the interviews discussed the major challenges faced by smallholders in Kenya and beyond, and ways that technology can be used address these challenges. Based on these insights, the report provides recommendations for further leveraging technology for inclusive agribusiness. The report does not aim to recommend any solution providers, but to offer examples of existing solutions.
Introduction

The importance of agriculture as a source of livelihoods cannot be overestimated: half of the world’s population works in agriculture¹ and approximately 2 billion people gain their livelihoods from small farms in developing countries.² It is estimated that smallholder farmers provide over 80 percent of the food consumed in sub-Saharan Africa, despite remaining the poorest and most food-insecure people in the world.³

Increasing the productivity of smallholder farming in a sustainable manner holds great potential for boosting the incomes and securing the livelihoods of smallholders themselves. With the International Fund for Agricultural Development (IFAD) estimating that the demand for agricultural production will increase 70 percent by 2050, greater agricultural productivity is needed to build food security and spur economic growth in developing nations.⁴

The productivity of agriculture and smallholder farming is far below its potential. This is the result of many challenges facing smallholders and the companies working with them. Smallholder farmers often lack skills and knowledge; have limited access to credit, inputs and market information; and increasingly face climate-related risks, which threaten their yields.

Companies sourcing from smallholders – or providing them with products or services – cite farmers’ lack of skills, capacity and knowledge; poor infrastructure and fragmented value chains; uncertain supply and quality of raw materials; and the need to ensure traceability as some of the biggest challenges they face.⁵

Given the vast opportunities in agriculture for job creation, food security and economic growth, innovations in both technology adoption and business models are needed.

Companies engaged with smallholders use several strategies to address these challenges, including training and information – often in collaboration with civil society – and supplier finance.⁶ Increasingly, technological solutions are being utilized to make inclusive agribusiness more efficient, productive and transparent.

This report gathers insights from Kenyan stakeholders on the key challenges faced by smallholder farmers and the companies working with them, and discusses opportunities for leveraging technology to address these challenges. The first chapter summarizes the challenges named by participants in the Nairobi workshop organized by BCtA and UNDP on 1 October 2015. The following chapters summarize interviews with four technological solution providers operating in Kenya. The last chapter concludes by discussing opportunities to further utilize technology for more inclusive agriculture based on insights gathered during the workshop.

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¹ http://wiego.org/informal-economy/occupational-groups/smallholder-farmers.
⁶ Ibid.
What are the key challenges facing smallholders and companies working with them in Kenya?

On October 1, 2015, BCtA and UNDP hosted a workshop in Nairobi to gather insights from agricultural stakeholders on the challenges they face when working with smallholder farmers. The workshop also elicited stakeholders’ experiences using technological solutions to address these challenges and recommendations for building more inclusive agricultural value chains with technology. The two-hour workshop gathered a wide range of agribusiness stakeholders including lead companies, providers of inputs, buyers engaging with smallholder farmers and inclusive agribusiness development professionals.

According to workshop participants, the most significant challenges faced by smallholders and the companies engaging with them include: lack of knowledge, skills and capacities such as technological awareness and skills; limited access to finance, markets, quality inputs and technologies; farmers’ lack of trust in companies, extension officers and middlemen; and insufficient collaboration among agricultural stakeholders.

Lack of information, knowledge and skills

According to participants, smallholder farmers continue to lack information and knowledge in several areas that are critical for making informed decisions about who to sell to and at what prices, which crops to cultivate, which pesticides and fertilizers to apply and when. This is a result of insufficient access to extension services, outdated advice and difficulties in reaching rural farmers.

“Farmers face an inadequate input supply and lack information on how to apply inputs – which may be incorrectly labelled – and lack quality seeds and fertilizers, leading their products to be rejected.”

Challenges in accessing finance, quality inputs and markets

Even if farmers have the correct information, they continue to face difficulties related to financing inputs and ensuring their quality, insuring their crops, assessing soils, finding trustworthy and fair buyers, and transporting their produce to market. Many smallholder farmers who wish to invest in high-demand horticultural products are unable to because they cannot afford the inputs and lack access to financing.

Value chain-wide challenges and insufficient collaboration

Participants also mentioned challenges related to fraud and lack of transparency within value chains, insufficient collaboration with agricultural value-chain stakeholders and insufficient investment in crop warehousing, transportation and logistics, which lead to high costs.

Challenges in building trust

As result of past negative experiences with markets (or lack of understanding), there is a high degree of mistrust between farmers and traders and buyers. According to some workshop participants, this lack of trust makes it hard to collect information from farmers, and highlights the need to showcase solutions and value in a practical manner.

Participants also mentioned farmers’ weak representation in policy making and price negotiations, and the need to build the capacities of farmers’ organizations and ensure that they represent their members’ interests.
It was noted that donor support should aim to build sustainable private-sector markets in agriculture and needs to be targeted to sharing market risks where other means are lacking. In addition, participants called for greater involvement of insurers in the agricultural sector, especially in collaboration with financiers.

“There’s a big gap between seed companies, suppliers and farmers. To meet challenges, all stakeholders should come together, including financiers.”

Leveraging technology to address challenges in agricultural value chains: Examples from Kenya

The high prevalence of mobile phones and widespread use of mobile-money platforms makes Kenya an excellent testing ground for technological solutions featuring mobile technology. Four solution providers that are addressing value-chain challenges in Kenya were interviewed to gain insights into existing solutions, challenges and opportunities for scaling up technological innovations that make inclusive agribusiness more efficient and transparent.

Four different solutions aimed at addressing challenges faced by smallholders and the companies working with them were introduced at the workshop. Several solution providers in Kenya participated in the discussion as well.

The four solutions presented as examples include:

- **Weather aWhere** – an agricultural intelligence service providing localized weather and agronomic data to last-mile service providers that offer information to smallholder farmers via mobile phones;
- **Farmforce** – a solution for managing smallholder farmers working in contract-farming schemes to increase traceability and accountability for export markets;
- **Agrilife** – a digital platform connecting value-chain actors, including financiers, with farmers; and
- **Open Book Trading Service** – a tool for traders to increase trade transparency and build trust among farmers, traders and buyers.

These solutions were selected to provide examples of how to address different challenges by stakeholders engaged in inclusive agribusiness.

The following chapters are based on information provided by the solution providers in interviews and during the workshop.

**Kenya hosts several innovative models**

Like for inclusive business, Kenya is a hub for innovation, especially with regard to leveraging mobile technologies. Of the four examples featured in the following chapters, three were developed in Kenya.

Other innovative solution providers operating in Kenya and throughout sub-Saharan Africa include BCtA member companies Ignitia (delivering localized tropical weather data) and Farmerline (Ghana-based last mile farmer knowledge and information provider), and solution providers partnering with member companies such as e-Prod, an out-grower management system used by Equator Kenya.
Weather aWhere: Providing localized weather information and agricultural advice to smallholders

aWhere is a US-based agricultural intelligence company that joined the BCtA in 2015 with a commitment to deliver agricultural weather information through last-mile providers to 5 million smallholders in South East Asia and Africa by 2020. Its product Weather aWhere™ delivers real-time localized, weather-driven agronomic data to farmers through providers such as iShamba in Kenya, Vasham in Indonesia, RevoFarms in Jamaica and ESOKO in Ghana. Weather aWhere’s combined weather and agronomic data helps farmers to determine how best to manage their crops for better yields, and provides researchers and public institutions with valuable information on how the changing climate is impacting food crops.

How does Weather aWhere work?

Weather aWhere™ is an agronomic weather service that works with last-mile distributors around the world to provide rural farmers with weather information, agronomic recommendations and pest alerts. The company’s software system collects weather data from satellites, radar drone operators and weather aggregators (ground stations), and provides accurate and current information to locations as small as a few acres anywhere in the world. This includes data on temperature, rainfall, humidity, solar radiation and wind that can be used to make decisions about what crops to plant, when to plant them and how to care for them.

Using a set of algorithms including a library of crop, pest and disease models, Weather aWhere analyses and packages the data, makes recommendations and relays the information to last-mile service providers, who send it to client farmers via mobile applications. The information can also be aggregated to inform other segments of the agricultural value chain including input providers, buyers and supply-chain managers. It can even be used to guide agricultural research and policy making.

Weather aWhere is a subscription-based service delivered to last-mile software and mobile providers. In Kenya, the technology is used by iShamba to deliver information directly to farmers. Other customers include research institutions such as the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), which evaluates yields along with localized weather conditions.

The information can be provided to smallholder farmers for $1 or less per year through last-mile partners. Customers pay only for the data they use; aWhere’s revenue is based on farmer adoption rates. aWhere’s customers further recover their costs through the small fees paid by farmers combined with charges to other actors in the value chain such as agricultural retailers and mobile access providers.

Weather forecasts and other information can be sent to either feature or smart phones so that farmers can decide when it is optimal to spray crops, fertilize and plan for field moisture stress. These data can also help farmers to assess new crops that are more suitable for the weather and soil conditions in their location.

Impacts

For smallholder farmers: Localized weather information and agricultural recommendations can help farmers to increase productivity and yields. For last-mile service providers, up-to-date information provides a valuable service for their customers.

Other actors such as governments and non-governmental organizations can use this information to monitor droughts, food security and the effects of climate change. Aggregating data can also provide valuable information for businesses that aim to monitor agricultural production and provide insights into food security and commodities markets.
Lessons learned

For aWhere, it has been important to work with sustainable, dedicated last-mile service providers. This reduces the risk of poorly executed mobile services and low-quality data, which can hinder farmers’ trust in technology. aWhere continually strives to work with companies that have long-term viability in order to provide customers with meaningful data.

It is also important that last-mile service providers are in touch with farmers and can provide services in a flexible and relevant manner. For instance, one of aWhere’s customers, ESOKO, has developed 20 symbols – each representing a specific agricultural condition or suggested farming action. After ESOKO receives the farm-specific data from aWhere, it sends the symbols to subscriber farmers’ phones via text messaging.

The relationship with last mile-service providers, farmers and aWhere also needs to be multidirectional. A one-way push of data has limited value; collaboration is the key to success. Multi-interface solutions including call centers, text messaging and local training are particularly impactful.

aWhere also helps organizations using its data to integrate their own data into a predictive analytics platform that adds greater value to the data. Sharing locally derived data in a collaborative manner allows these organizations to deepen their knowledge and strengthen decision making.

Opportunities

The biggest opportunity seen by aWhere lies in the integration of its data across the agricultural value chain, from analysis to microfinancing and insurance integration. Agricultural intelligence can contribute to better informed decisions about many aspects of the agricultural value chain, and can be used to predict and tackle many agricultural challenges.

In order to scale up and further localize its services, aWhere continually adds local observation stations. It also collaborates with local research institutions to increase localized crop models, best practices and knowledge, which leads to accurate data. In addition, aWhere sees an opportunity in collaborating with mobile operators to provide agricultural and weather information for their customers, which can enhance customer loyalty.

According to aWhere’s management, government and development-partner support is needed to promote viable and proven solutions that are also financially and technologically sustainable.

“When farmers and last-mile service providers receive aWhere weather data, they understand the value of this information, so they gain confidence to subscribe to additional services. Trust-building is key.”

—John Corbett, CEO, aWhere
Farmforce: Increasing traceability for export markets

Farmforce is a web and mobile platform developed by Syngenta Foundation that helps agribusinesses to efficiently source from smallholder farmers, allowing the farmers to access formal markets. Especially developed for agribusinesses managing contract farming schemes composed of smallholder farmers in Africa, Farmforce has been deployed on a global scale with more than 35 companies in Asia, Latin America and Africa. Customers include exporters, cooperatives, buyers and processors with the largest customer base comprising Good Agricultural Practices (GAP)-certified horticulture companies. In Kenya, where Farmforce was developed and piloted in 2012, the system is used by 10 export and aggregation companies.

How does Farmforce work?

Formal markets can increase the number of buyers for smallholders’ produce, but these markets require traceability and compliance with food safety standards. Farmforce is a software-as-a-service system that allows out-grower schemes to be managed with real-time digital data to ensure standards compliance and support auditing. Farmforce is used to gather information on farmers and their locations, crops, spraying and fertilizer applications. The data are used for crop inspection, GAP surveys, field-level yield forecasts and harvest traceability. In line with certification requirements, clients define the crop protocols they wish to apply.

Farmforce is composed of a web platform used by office staff and agronomists, and a mobile application used by field staff, agents and extension officers who conduct field visits and gather data. The data can be collected online or offline, and include farmers’ and field agents’ GPS locations. Farmforce also has photo features for recognition to ensure that extension officers visit and monitor farmers on a regular basis.

In addition, Farmforce offers a secure harvest purchasing module that is integrated with mobile scales for weighing crops and a Bluetooth printer for use at collection centers to improve transparency.

Finally, Farmforce can manage input loans and cash advances to small-scale farmers and their organizations. The system deducts the payment installments when farmers deliver their produce and issues them receipts including information on what they delivered, loan payments and the remaining balance to be paid. Exporters and aggregators can confirm payments to individual farmers via mobile transfer platforms such as M-pesa or bank transfers.

Impacts

Farmforce has produced several case studies on the impacts of its service. Some of the benefits are described here:

For contract-scheme managers including exporters and buyers, the system helps to ensure adherence to global food-safety and sustainability standards. This reduces farming risks by controlling factors such as maximum residue levels of pesticides. With increased quality and quantity of data, exporters are able to better estimate yields and advise farmers on needed pesticides. They can also monitor and manage farmer input loans in a transparent manner, and produce payments to individual farmers and farmers’ groups.

The system improves overall transparency in contract farming schemes, reducing fraud by extension officers with up-to-date information on farmers and their inputs.

Smallholder farmers benefit from better access to formal markets since sourcing from these farmers becomes less risky with increased transparency of their activities. Greater transparency of input loans ensures that farmers get the right financing for their land size and regular GAP monitoring pro-
vides an opportunity to increase yields. Digitizing information on farmers’ produce also safeguards them from fraud at collection points.

**Lessons learned**

Farmforce is tailored for use by agribusinesses in some of the world’s toughest operating environments. Many businesses using Farmforce have had little previous experience with technology. This necessitates comprehensive training during system setup.

Efforts are also needed to demonstrate to clients the technology’s benefits and the potential for cost savings. Farmforce has prepared several client case studies to showcase the system’s benefits and collaborates with the Global GAP certification body to introduce the solution in relevant conferences.

According to Farmforce, greater awareness of how technology can increase farming productivity and transparency must be built among stakeholders.

Key success factors include the ability to provide tailored and localized service, and continuing support to clients. Using a cloud-based system decreases hardware costs and reduces the need to employ IT staff. Providing training for extension officers and services in multiple languages are also key to Farmforce’s success.

**Opportunities**

There are significant opportunities for Farmforce to improve its services by collaborating with other technological solution providers to add additional modules. For instance, some clients may be interested in receiving weather alerts and pest-and-disease forecasts, which could be integrated into Farmforce. Collecting additional data will require collaboration with data providers and government entities.

The information collected at the individual farmer level could also be used to work with financial institutions on providing advance payments and credit to farmers. In addition, Farmforce is exploring how its service can assist certification bodies in conducting audits.

“There’s a need to build more awareness of how technology can transform the lives of small-scale farmers, from taking losses to being profitable while observing food-safety requirements. This will enable farmers to access markets, mitigate farming risks and increase production in order to support the food supply chain.”

— Faith Kamenchu, Project Manager, Farmforce
Agrilife: Connecting financiers with farmers in the cloud

Agrilife Limited is a Kenyan technology start-up and the developer of the Agrilife platform – a cloud-based service linking data, payment and settlement mechanisms for agricultural financiers, service providers, markets and farmers. The service, which targets farming groups, begins by capturing data on farmers, and allows farmers’ produce to be used as collateral for access to credit, farm inputs, insurance and other assets. In Kenya, Agrilife has been used to allow dairy farmers supplying one of Kenya’s biggest dairy companies to access credit that is guaranteed by the processor and provided by collaborating financial institutions.

How does Agrilife work?

The Agrilife platform was piloted with one of Kenya’s largest dairy processors to address working capital and liquidity challenges. In the dairy industry, processors are usually paid within 90 days after collecting milk from farmers. The processors credit farmers for their milk within 30-45 days after delivery. This often causes farmers liquidity challenges and forces them to sell to middlemen who offer cash on delivery even despite lower prices.

Using the Agrilife platform, farmer groups delivering milk to the processors are able to request advance payments for their members from plant managers. The plant manager can use the Agrilife platform to request an advance payment with a low-cost tablet computer. The request is then linked to documentation showing the amount of milk the farmer group has delivered to the processor.

Financiers connected to the platform receive these requests and grant advance credit through the platform. A farmer group requesting credit through the platform receives confirmation from the financier that its request has been approved, and can visit a local bank branch to receive the advance payment.

Once the processor pays the farmers for the milk, the bank deducts the advance payment and interest from the funds. Agrilife receives a commission out of the interest paid to the bank.

**Impacts**

The benefits of the Agrilife platform, as reported by Agrilife, are described below for each stakeholder group.

**For processors,** the platform allows them to increase the volume of raw milk they receive since less milk is lost to middlemen as a result of farmer liquidity challenges.

**For farmers,** the service has provided better interest rates, opportunities for advance payments and a means to receive payments faster. This has increased farmers’ incomes according to Agrilife, and mitigated the need to sell milk to middlemen for lower prices. In addition, connecting digital scales to the Agrilife platform has increased the transparency of milk collection, preventing plant managers from altering delivery records to farmer groups’ disadvantage.

**For financiers** the service has reduced the risks involved with lending to farmers and enabled them to increase their credit lines with no marketing costs.

**Lessons learned**

For Agrilife, the major challenge in working with milk processors has been the fact that few farmer groups are able to use the service. For Agrilife to break even, more collection centers and farmer groups need to become subscribers; however, only collection centers with internet access can be enrolled. Another challenge is training plant managers to use the platform.

As a startup, the company has also faced challenges in accessing financing to add more features, including services to individual farmers. With limited access to financing, employing more staff and establishing proof of concept have been major challenges.
In addition, there is significant competition in the industry: mobile network operators with wide customer bases have the upper hand if they wish to begin providing agricultural services.

According to Agrilife, a key success factor is the platform’s flexibility in terms of alignment with processors’ operating systems and records. This has helped the company to survive some financiers’ attempts to cut out Agrilife (and its commissions), and work directly with processors.

### Opportunities

The company sees partnerships with other ICT companies and mobile network operators as critical for future success. Incubators and ecosystem support, including communities of practice such as iLab, have allowed start-ups like Agrilife to establish connections with other local innovators.

Agrilife is committed to developing its service further to offer individual farmers credit and inputs. In the dairy sector, processors often provide farmers inputs by procuring them in bulk. However, estimating the correct amount of inputs is difficult because of fraud within the value chain. If processors were able to provide individual farmers with opportunity to order their own inputs, transparency and efficiency could be improved. This requires an additional investment in collecting data from individual farmers.

Adding more services for farmers, including individual credit and insurance, could help to build relationships between processors and farmers, and ensure more reliable delivery and increased quantity.

Finally, Agrilife sees further opportunities for leveraging ICT to add services such as soil testing, artificial insemination and insurance to its platform.

“Partnerships and collaboration with other service providers and innovators is key for survival and success – incubators and support mechanisms such as iLab are useful, but financing is also needed to build on local innovations.”

— Charles Mutuku, Director, Agrilife

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### Open Book Trading: Building transparency for trade

techfortrade is a UK-registered charity launched in 2011 with a mission to bridge the divide between emerging technology, international trade and economic development. In 2014, techfortrade launched Open Book Trading, which offers agricultural traders and brokers a new way to conduct business by providing transparency and accountability in the trading process. Open Book Trading focuses on transforming the role of the middleman, from simply buying and selling to facilitating strong deals for all parties. Through Open Book Trading, techfortrade currently provides 23 traders with its methodology and associated software.

#### How does Open Book Trading work?

Open Book Trading is built on a custom-designed online trading platform that records every aspect of trading, from the number of farmers sourcing produce to the costs of transportation and packaging for delivery (also known as middle costs). The platform is accessible from mobile, tablet, desktop and laptop computers, giving all parties a clear view of every stage in the transaction, and uses mobile money to ensure a fast and secure payments.

The traders who use the system act as network managers responsible for logging trade deals in the platform, which works as a transparent audit trail for all trading business. All payment records and contracts can be uploaded, and all payments related to trade deals processed through the system.
techfortrade takes a 2-percent commission from each deal’s gross profit as a charge for using the service. It also provides new traders with interest-bearing working-capital loans that allow them to pay farmers on delivery, and plan for the middle costs involved in transporting, processing and packaging their produce. To make sure that loans are provided only for deals that are profitable, the system calculates each deal’s efficiency based on middle costs, the buyer’s price and current market prices.

When traders are able to reduce middle costs, the money they save is shared with farmers as an additional bonus payment. Since Open Book Trading began operating, $4,000 in bonuses have been paid to farmers.

Ideally, individual farmers would be paid through the mobile-transfer platform M-Pesa; however because of limited connectivity, techfortrade mainly works with farmer groups, which deliver payments to their members. To ensure that individual farmers receive their payments, techfortrade calls farmers at random.

**Impacts**

According to techfortrade, agribusiness stakeholders benefit from Open Book Trading in several ways.

**For farmers**, working with traders using the service ensures faster payments, fairer prices and more consistent market access as the relationship between the trader and farmer is built. Most importantly, by changing the way traders are paid to a commission structure aligned with farmers’ prices for their produce, it is in traders’ interest to obtain the best price possible for farmers. To date, the platform has recorded over $400,000 in deals, returning an average 15 percent improvement in farmers’ prices, with a further 1 percent in bonus payments for reduced operating costs.

**For traders**, the service improves business performance through better planning and record keeping that also builds a foundation for accessing working capital financing and strengthening business relationships with supplying farmers and buyers.

**For buyers**, the benefits from working with traders using Open Book Trading Service include greater assurance of consistent supply, which reduces the need to deal with multiple traders. This is a result of the working capital provided to traders, which helps them to secure deals with farmers and deliver goods on time. Second, the service helps the final buyers, whether supermarkets, hotels or exporters, to ensure transparency and fairness in the value chain.

**Challenges and lessons learned**

The challenges faced by techfortrade include tailoring and translating the service to other languages to make it understandable for users that do not understand Swahili or English; ensuring payment verification at the individual farmer level; and strengthening connectivity and technical skills of farmers and farmer groups.

While techfortrade is also helping farmers to become more active in the trading system, these efforts are limited by farmers’ lack of connectivity and smart devices.

Finally, educating financiers to better assess risks involved with lending to SMEs is critical for connecting financiers and traders, and building trading networks.

**Opportunities**

Moving forward, techfortrade aims to further connect financiers with traders, initially using its own funds to train new traders. Once traders’ operational, record keeping and business-management skills improve, and data is collected on their recurring income, techfortrade will connect them with collaborating banks and other financing institutions. techfortrade is currently negotiating a collaboration with Equity Bank that will allow the bank to access traders’ incomes and business information in order to provide them with financing.

techfortrade also aims to allow farmer-level communication and verification of payments through text messages.
Finally, techfortrade sees the need for public institutions and county governments to play a role in trade transparency, for instance by providing farmers with market-price information to showcase ethical traders. Transparent trade ecosystem building with several actors is needed to leverage information and build better solutions, including at the county level, in Kenya.

“The Government and public sector have a role in leveraging available information to showcase ethical traders to farmers and the wider audience. By awarding ethical traders and working with the private sector to lift standards, they can benefit farmers.”

— Kevin Kinusu, Director East Africa, Open Book Trading Service/techfortrade

Recommendations: Leveraging technology for inclusive agribusiness

The recommendations and insights gathered during the workshop include the need to:
(i) increase stakeholders’ awareness and understanding of technological innovations through sharing knowledge and experience; (ii) invest in and support training and capacity building for smallholder farmers, including in the use of technologies; (iii) develop localized, tailored solutions; and (iv) increase collaboration among technological innovators and all agricultural value chain stakeholders.

Share knowledge, increase awareness of solutions and assess them

It was noted that more information and awareness are needed among all value chain stakeholders to understand how technology can be leveraged. It is important to bring different stakeholders together to share insights and experiences, and jointly develop solutions at the value chain level, including through workshops and events. In addition, participants called for platforms to collect and share information on available resources and solutions.

“There are so many farm applications, farmers are confused about which application to use.”

Several actors play important roles in raising awareness of existing solutions, including development partners. Local academia and research institutions can also be supported to assess available solutions, while agricultural sector networks and associations can facilitate events to share experience and insights among value-chain actors.

Support for training and skill building

In order to leverage technology for delivering information to more farmers, there is a need to build farmers’ technological skills and help them to access technology. It was suggested that Kenya’s
technology-savvy youth could play a role in this process.

Many participants called for tools to empower farmers’ participation in decision making and self-advocacy. Many found Kenyan farmers are poorly represented in decision making and investments are needed in building the capacities of farmer groups and cooperatives. These groups also play important roles in leveraging available technologies since individual farmers often lack the skills and resources necessary to utilize these services.

Agricultural development and support organizations could integrate technological training as part of the training curricula offered to farmers. In order to be sustainable, training is also needed for other stakeholders, including those in the public sector.

Tailor solutions to local needs and support innovation

Many participants considered it vital to provide advice through feature phones, in local languages and tailored to specific value chains.

In order to localize solutions and further develop them, some solution providers highlighted the importance of connecting with other innovators through iLab and iHub, and using hack-a-thons to engage local developers.

“**Innovation is not a competition. The players involved in providing solutions should not just look to outdoing each other in the market while in the process hurting the farmer.”**

It was also highlighted that farmers should be engaged in developing solutions to ensure their relevance.

Opportunities lie in sharing information through collaboration

Participants felt that most farmers continue to lack access to key information and knowledge to help them improve productivity and farming practices and mentioned that solutions to help farmers select and assess the quality and suitability of inputs, and accessing market pricing information and farming advice. These needs provide opportunities for technological solution providers. Providing cost-effective technologies for soil testing and agricultural advice were specifically mentioned by technological solution providers as areas of future interest.

Both the solution providers and other stakeholders considered collaboration among technological innovators and solution providers important for sharing information across platforms in order to provide more value.

Furthermore, collaboration between technological solution providers and local research institutions, public institutions and development partners was considered essential to increase the availability of information for decision making and providing sound agricultural advice.

The need for public-sector institutions to expand their provision of up-to-date information and advice was especially highlighted.

“**There’s potential for governments to leverage data more, e.g. analyzing soil acidity data to determine which fertilizers to provide.”**

Participants requested that development partners share the information and knowledge gathered through their programmes. Several technological solution providers present at the workshop work with development partners and NGOs to gather information for informed decision making and assessing the impacts of development programmes.

Financial institutions called for more information on farmers’ credit-worthiness to more accurately assess the risks involved in agricultural lending; solutions could include specialized credit reference bureaus and alternative credit-rating mechanisms. It was also noted that financial institutions are increasingly interested in using the information collected by technological solution providers. In fact, three of the presenting solution providers mentioned existing collaboration or plans to collaborate with financial institutions to help farmers access financing based on information about their incomes.
Conclusions

While technology can be leveraged in many ways, it is not sufficient without changes in attitudes, increased understanding, collaboration across actors and between the private and public sector, and attention to farmers’ empowerment and self-advocacy.

Several participants saw the need for more collaboration at the value-chain level to jointly address challenges and reduce “silos” of effort (and misunderstandings) among different actors. Workshops and other events are important to share lessons, knowledge and insights, and establish networks among actors, including the public and private sectors.

Finally, participants highlighted the need for public-private dialogue at the devolved county level and policy development for an enabling environment – including needed infrastructure for leveraging technology.

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Charles Mutuku, Director, Agrilife
Faith Kamenchu, Project Manager, Farmforce
Kevin Kinusu, Director East Africa, Open Book Trading Service/Techfortrade

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Further information on the solutions featured in this report can be found at:

aWhere: http://www.awhere.com
Farmforce: http://www.farmforce.com
Techfortrade: http://tt.techfortrade.org/en/
Agrilife: http://www.agrilife.co.ke/the-agrilife-solution
The Business Call to Action (BcTa) Alliance is a global joint advocacy platform providing public recognition of the private sector’s contribution to development. BcTa’s mission is to challenge companies to advance core business activities that are inclusive of low-income populations and thus contribute to the achievement of sustainable development goals.

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The Business Call to Action is a unique multilateral alliance among donor governments including the Dutch Ministry of Foreign Affairs, the Ministry for Foreign Affairs of Finland, the Swedish International Development Cooperation Agency, the United Kingdom Department for International Development, the United States Agency for International Development and the United Nations Development Programme -- which hosts the secretariat -- in collaboration with leading global institutions such as the United Nations Global Compact, the Inter-American Development Bank’s Opportunities for the Majority Initiative and the World Bank’s International Finance Corporation.

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