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AGRA
Growing Africa's Agriculture

The Tech-Touch Equilibrium

LESSONS ON PROVIDING DIGITAL FINANCIAL SERVICES TO SMALLHOLDER FARMERS

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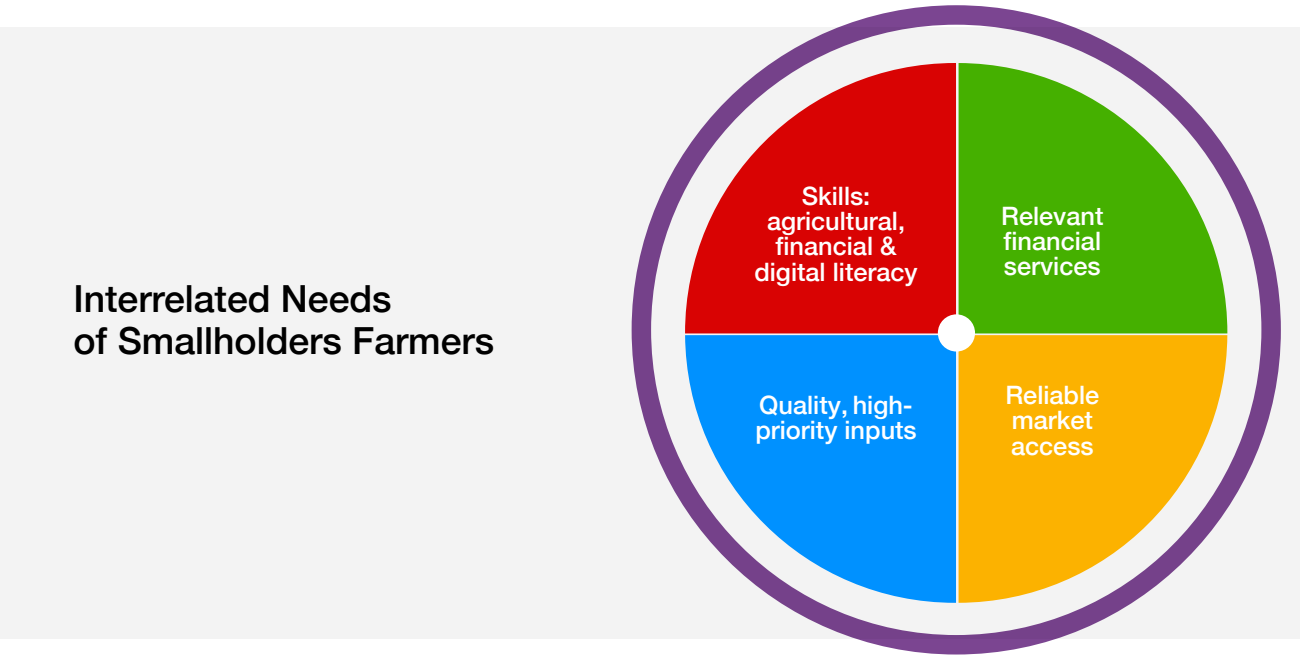
Executive Summary

Alliance for a Green Revolution in Africa (AGRA) with the support of the Mastercard Foundation provided grants to foster innovation in rural financial inclusion through the Financial Inclusion for Smallholder Farmers in Africa Project (FISFAP). AGRA collaborated with more than two dozen organizations from 2015 through 2020 to develop and test innovations in digital financial and nonfinancial services for smallholder farmers. Many of AGRA's partners were confronted by the same paradox: digital technology finally makes it feasible to serve widely dispersed, low-income people in rural areas; yet without in-person interaction, potential customers do not learn about, trust or actively utilize those services.

Five of AGRA's partners in Ghana, Kenya and Tanzania experimented with a range of service models and partnership approaches to deliver financial and nonfinancial services to smallholder farmers efficiently and effectively:

- ACRE Africa (digital agricultural insurance - Kenya)
- Advans Africa (digital savings and loans - Ghana)
- Farmerline and Ecobank (digital payment platform, savings accounts and input loans - Ghana)
- Grameen Foundation (digital input layaway savings accounts and input linkages - Tanzania)
- Pan African Savings and Loans and Agrocenta (digital savings, input loans and market linkages - Ghana)

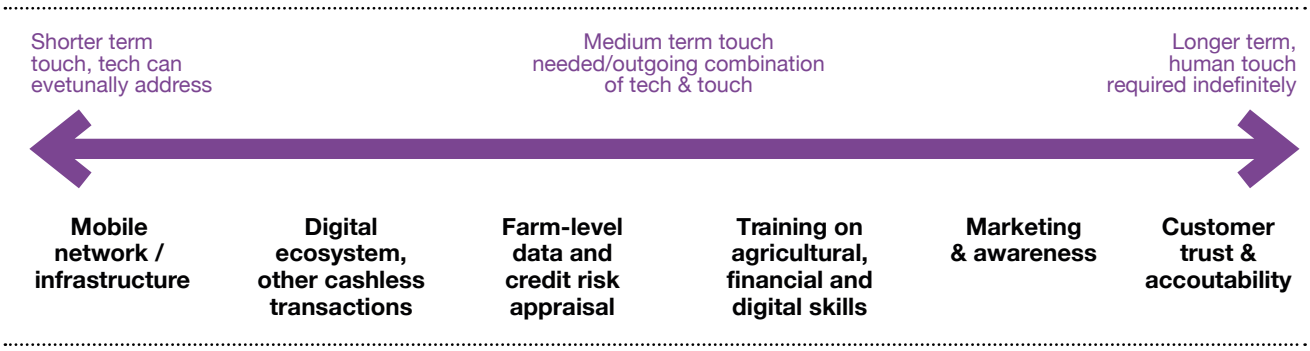
From these experiences, three main lessons learned emerge for leveraging digital tools to successfully serve rural smallholders:



1. Rural digital financial services work best when they coordinate or bundle interrelated products and services that address farmers' highest priorities. Four critical ingredients for farmers' livelihoods need to be united: relevant financial services, reliable market access, high-priority inputs, and skills in agricultural practices, financial management and digital literacy (above). The absence of any one of these reduces the value proposition of the

others. Service providers can deliver these through a combination of technology and in-person engagement, and digital platforms present an opportunity to efficiently coordinate the offerings of multiple actors.

2. A continuum of short-term to long-term in-person engagement is required to foster usage of digital services among rural populations. While barriers such as mobile infrastructure, digital payment availability and farm-level data are likely to require gradually less human engagement, activities such as client-level training, marketing and building trust will necessitate in-person support on an ongoing basis (below).



3. Sharing human resources can make rural outreach sustainable if stakeholder incentives are demand-driven and well aligned. All of the actors offering financial services, market access, inputs or training, have some level of human touch in the field—whether staff, agents or other local representatives—but they struggle to make such in-person outreach sustainable. When the partners' service offerings are interrelated and their incentives are well aligned, sharing in-person resources (whether formally or informally) can reduce operational costs, increase efficiency and permit better customer service delivery. The experience of AGRA and its partners to date points toward a high potential for collaboration and coordination of in-person service delivery.

Further investment is needed to advance the development and uptake of digital solutions with the right in-person support to meet the needs and constraints of smallholder farmers:

- Catalyze partnerships that bring together interrelated, high-priority services for farmers;
- Invest in "running room" to achieve network effects and sustainable scale;
- Promote innovative business models that cross-subsidize client capacity building as a necessary business investment;
- Encourage disaggregated data collection and proactive measures to reach women and other persistently excluded groups;
- Provide subsidy for environmental resilience measures, which take time, investment, and longer-term commitment to reach sustainability and demonstrable impact.

I. Background

Although mobile money has driven strong uptake of formal financial services in many African countries in recent years, the use of digital financial services has been slower to realize its potential in rural areas. Digital technology has radically changed the playing field for financial inclusion in Africa, and COVID-19 restrictions have stimulated even more innovation and widespread adoption of digital financial services. In rural areas, however, infrastructure barriers such as gaps in mobile network coverage, combined with socioeconomic obstacles like lower mobile phone ownership (especially among women), illiteracy and weak financial and digital skills, continue to impede access and usage. Financial service providers are also deterred by logistical challenges such as the high expense of reaching and building trust with widely dispersed rural customers, maintaining reliable liquidity across large geographic areas, and assessing and managing credit risk despite cash flow seasonality and the low levels of income, collateral, insurance and documented financial and business history of many farmers. Nevertheless, as mobile network and phone ownership continue to advance in rural areas, financial service providers and other stakeholders are searching for the optimal balance between cost-saving digital technology and the resource-intensive human support needed to reach and effectively serve more rural customers.

Subsistence and small-scale agriculture dominate the rural economy in sub-Saharan African countries, and hundreds of millions of African farmers remain still largely unbanked. Smallholder farmers contribute substantially to agricultural and food production, yet information asymmetries and numerous other factors have thwarted their ability to increase production, access markets, take advantage of formal financial services and improve their livelihoods. Digital technology is opening new opportunities for rural financial inclusion by lowering the expense and risk of reaching rural populations with financial and other services. Financial service providers are increasingly digitizing basic tasks and services, thereby reducing their operational costs. Technology also offers an efficient mechanism to assemble the different market actors required to enhance smallholder income and boost rural economies. Extending any single service—such as farm inputs, agricultural extension, financial education, savings accounts, credit, mobile money, insurance or market linkages—can make an important difference in farmers' livelihoods. But using technology to coordinate access to these interrelated elements can add essential value for farmers as well as those who buy and sell from them, while also potentially sharing the associated costs and risks among more service providers.

From 2015 through 2020, Alliance for a Green Revolution in Africa (AGRA) with the support of the Mastercard Foundation provided grants to foster innovation in rural financial inclusion through the Financial Inclusion for Smallholder Farmers in Africa Project (FISFAP). AGRA collaborated with more than two dozen organizations to develop and test innovations in digital financial and nonfinancial services for smallholder farmers. Many of AGRA's partners were confronted by the same **paradox: digital technology finally makes it feasible to serve widely dispersed, low-income people in rural areas; yet without in-person interaction, potential customers do not learn about, trust or actively utilize those services.**

Drawing principally on five AGRA-supported models in Ghana, Kenya and Tanzania, the current paper explores three main lessons learned so far on navigating this catch-22 to find a viable approach for leveraging digital tools to successfully serve rural smallholders. The overarching lessons highlighted are:

1. Rural digital financial services work best when they coordinate or bundle interrelated products and services that address farmers' highest priorities.
2. A continuum of short-term to long-term in-person engagement is required to foster usage of digital services among rural populations.
3. Sharing human resources can make rural outreach sustainable if stakeholder incentives are demand-driven and well aligned.

II. Introduction of Partners

AGRA and its partners have experimented with digital financial products combined with offtaker linkages, digital literacy training and other in-person engagement to address the market frictions faced by rural smallholders and make digital financial inclusion more accessible to them. Five of these models inform some key lessons learned for ongoing innovation and scaling of rural financial services. Figure 1 provides an overview of the initiatives under review. A brief description follows of the partners' goals, gaps addressed and their approaches.

ACRE Africa (Kenya)

Agricultural index insurance has been shown to have a substantial impact on farmers' willingness to invest in higher-priced crops and innovation; but convincing smallholders to take up insurance is a major hurdle. Agriculture and Climate Risk Enterprise Ltd (ACRE Africa) is a social enterprise specializing in promoting and linking smallholder farmers to digital insurance products so that they can confidently invest in their farms. Registered as an "insurance surveyor" in Kenya, ACRE Africa operates as an insurance service provider—not providing insurance directly, but rather facilitating access to local insurers and other stakeholders in the agricultural insurance value chain.

With the support of AGRA beginning in 2018, ACRE Africa initiated a farmer insurance preparedness program to address the low uptake of insurance among smallholder farmers. Targeting farmers earning an average income of $3 per day on about one to three acres of land, the program educates rural communities about the value of agricultural insurance and promotes uptake as a sustainable risk mitigation measure. The program aims to a create a sustainable network of "village-based champions" as human touch points for the distribution of digital agriculture insurance and other risk management solutions. The insurance is purchased via Safaricom airtime with scratch cards provided as tangible proof of insurance purchase, and SMS-based messaging reinforces customer service and confidence. Through this combination of tech and touch, ACRE Africa seeks to leverage local communities' trusted social structures to promote uptake of insurance services through village-based change mechanisms, thereby enhancing farmers' economic resilience.

To date, ACRE Africa has built the capacity of 945 village champions who have in turn trained and pre-registered over 300,000 smallholder farmers with ACRE Africa. Of these, 13,884 smallholder farmers have purchased commoditized weather index agriculture insurance products across four main value chains (maize, potato, sorghum, and pulses) in 15 counties in Kenya since 2018.

Figure 1: Overview of Five AGRA Partners' Rural Financial Services

Lead partner (Country)	Financial service provider(s)	Value chain partner(s)	Technology partner(s)	Key services	Human "touch"	Scale of outreach (as of early 2021)
ACRE Africa (Kenya)	ACRE Africa as insurance service provider, linking to local insurers	(none)	Safaricom (scratch cards for airtime, SMS support)	Promotion of and linkage to weather index agricultural insurance	High-touch model via 945 trained village-based champions	Farmers trained: 711,626 Farmers enrolled in agricultural insurance: 13,884
Advans Ghana (Ghana)	Advans Ghana	Offtakers: RMG, Barry Callebaut, Touton, others	Telcos (mobile money integrated with Advans' platform-neutral, USSD Mobibank platform)	Digital farm payments, digital savings, input loans linked to offtaking, financial literacy, pictorial and IVR content	No Advans agents – model relies on offtaker agents and telco agents	Farmers engaged: 18,357 Aggregators/ agribusinesses: 2 Savings accounts: 5,000 (mostly dormant) Input loans: 16,816 Farmers trained on financial literacy: 2,500
Farmerline (Ghana)	Ecobank (Xpress savings accounts only); Farmerline and aggregators (sharing credit risk)	Farmerline's platform provides a linkage to various aggregators	Farmerline platform, telcos (mobile money)	Bulk digital payment platform, input credit, savings accounts, digital financial literacy, IVR content	Around 100 Farmerline agents	Farmers engaged: 200,000 Digital farmer profiles created: 46,076 Farmers registered on mobile money: 27,892 Aggregators/ agribusinesses: 42 Savings accounts: 3,272 (mostly dormant) Farmers receiving mobile payments from aggregators: 2,699 (average of $248/farmer) Farmers trained on digital financial literacy: 11,863
Pan-African Savings and Loans (PASL) (Ghana)	PASL	Offtaker and digital platform: Agrocenta	PASL: digital account creation, agency banking, funds transfer, loan processing & management; Telcos: mobile wallet-bank & bank – wallet transactions via PASL's Quick mobile banking platform using USSD channel	Agent banking with farm credit linked to offtaking, savings, financial literacy	Around 500 PASL agents Agrocenta agents	Farmers engaged: 8,006 Savings accounts: 1,213 Loans disbursed: 1,059 Farmers trained on financial literacy: 1,359
Grameen Foundation - Digital Input Farm Layaway (DIFT) (Tanzania)	TPB Bank (savings accounts only)	Input provider: Positive International Ltd (PIL)	Biztech USSD platform, telcos (mobile money)	Savings layaway for inputs, financial literacy, ag extension, IVR content	63 Agro-dealers Around 100 active Village-Based Agents (1,445 trained) 263 VSLAs	Farmers registered for digital layaway: 4,608 (38% women) Farmers have bought on platform: 1,270 Savings accounts: 246

Advans (partnering with RMG, Barry Calleabuat and Touton, among others) (Ghana)

A member of the global Advans Group of microfinance institutions, Advans Ghana focuses on financing micro, small and medium enterprises, low-income customers and women (57% of accounts are women-owned). Seeking to increase agricultural lending from 1% to 15% of its portfolio, in 2016 Advans Ghana began partnering with the global agribusiness offtaking company RMG Concept Ltd. Advans digitized payments to RMG's outgrower farmers in the rice value chain, training farmers in financial education and helping them open the bank's USSD-based, mobile money-integrated "Mobibank" savings accounts.

With the support of AGRA and the technical input of the Advans Group, Advans Ghana expanded into the cocoa value chain in 2018, offering digitized outgrower payments, Mobibank saving accounts, access to input loans and indirectly—through partnership with Touton and GIZ—financial education to cocoa farmers. Advans does not employ or pay commissions to any agents, but platform-neutral telco agents provide cash in and cash out services via mobile money, linked to the Mobibank platform. Agribusiness companies can reduce their cash risk, as well as their input financing, by participating in Advans' digital payment scheme. In exchange for this service, offtaker agents collect and submit farmer data using a spreadsheet tool developed by Advans. Offtaker agents also deliver education developed by Advans as an added benefit to attract and retain outgrower farmers. With AGRA's support, Advans is currently working on pictorial and IVR training enhancements for illiterate farmers.

As of early 2021, Advans had engaged 18,357 farmers and two aggregators/agribusinesses. About 5,300 savings accounts had been opened, although 80% remained dormant (those not receiving loans tend not to use their accounts). Advans provided 5,703 input loans (32% of them to women) totaling about $183,000 in the last season and expected to provide 10,000 loans totaling around $300,000 in 2021. Since the partnership with AGRA started, 2,500 farmers have received financial literacy training.

Farmerline (partnering with Ecobank) (Ghana)

Farmerline is a digital platform offering a range of services to increase farmers' access to resources and visibility in supply chains. Recognizing the challenges that smallholder farmers face in assembling the different elements required to build their livelihoods—including farm inputs, credit, mechanization services, marketing and buyers—Farmerline set out to bring together all the interrelated services farmers need in one coordinated, digital access point. At the same time, agribusiness aggregators (farm produce off-taking companies) struggle to group and pay outgrower farmers efficiently and safely. Distributing cash payments in the field entails logistical and liquidity issues, as well as the risk of theft for all parties. Farmerline combines a network of field agents with technology to bring agricultural value chain actors together and equip farmers to improve their profits.

Farmerline established a bulk payment platform, Paytime, and later rolled it into a comprehensive platform called Mergdata. Mergdata enables a range of activities, including the compilation of farmer-level data to inform Farmerline input loan assessment, and digital payments from aggregators to farmers via mobile money. With AGRA's support, Farmerline brought new agribusinesses onto the Mergdata platform, enhanced education to farmers on digital financial services, and added Ecobank Xpress savings accounts to encourage farmers to transfer money from their mobile money accounts to a savings account, instead of cashing out and pocketing their payments in full. Farmerline engages agents on commission to recruit farmers, promote the service and provide financial education.

As of early 2021, following support from AGRA's FISFAP and others, Farmerline was working with about 200,000 farmers and 42 aggregators throughout Ghana. Nearly 12,000 farmers had

received education on digital financial services, and over 3,000 had opened Xpress accounts on the platform.

Grameen Foundation (partnering with TPB Bank and Biztech) (Tanzania)

A group of stakeholders comprised of Grameen Foundation, TPB Bank and Biztech, as well as Positive International Limited (PIL) in an earlier phase, developed and continue to iterate on a digital input financing tool (DIFT) for smallholders in Tanzania. DIFT offers a digital platform where farmers can gradually accumulate money in a TPB savings account, place advance orders for quality farm inputs, and purchase their inputs on time during the season without incurring interest charges for credit. By ordering ahead in bulk, local agro-dealers are able to provide the inputs at a discount to farmers and avoid stock ruptures at critical points in the season. A portion of the margin gained through bulk orders also covers the cost of the digital service.

At the outset of the AGRA-funded project, DIFT offered the opportunity to save up for and order pesticides provided by PIL. Linkages were made with VSLAs to build on existing local savings practices. Agro-dealers assured direct engagement with clients, and later, village-based agents (VBAs) were recruited and trained to help aggregate farmer orders for local agro-dealers, on commission. After the initial platform encountered technical difficulties, Biztech was brought in to customize a new one. As of early 2021, around 4,608 farmers (of which 38% women) were engaged in the DIFT layaway scheme with 246 farmers saving for inputs via TPB accounts or VSLAs. A total of 1,270 farmers had purchased 46 MT of inputs through the platform so far.

Pan African Savings and Loans and Agrocenta (partnering with Agrocenta, Solidaridad and others) (Ghana)

Pan-African Savings and Loans (PASL) partnered with Agrocenta to offer a set of integrated financial and market access services to smallholder farmers in Ghana. A microfinance subsidiary of Ecobank, PASL was seeking an affordable way to expand its financial services to rural customers and wanted to work with knowledgeable and connected local actors to create a viable agent banking network.

Agrocenta—an agri-tech company—was using digital technology to unite local agribusinesses such as breweries with local small cereal producers, like maize farmers. Agrocenta had observed that smallholders were losing substantial value to middlemen, while local agribusinesses were importing the same crops from abroad with high prices, frequent spoilage and long waiting times. As new business opportunities were forged, Agrocenta's founders saw that farmers desperately needed input credit, insurance and other financial services to increase production, fulfill offtaker orders and flourish.

Agrocenta designed a digital platform to facilitate the delivery of services to their farmer network along with data collection to support credit scoring by formal financial service providers such as PASL. PASL employs its own agents (around 500 as of early 2021) to offer cash in and cash out (CICO) services, while

leveraging Agrocenta's network of farmers and agents to extend input credit and offer financial services in rural areas. As of early 2021, PASL and Agrocenta had engaged 38,444 farmers, 1,359 of which had been trained in financial literacy. A total of 1,213 savings accounts had been established, and 1,059 loans disbursed (embedded with credit life insurance in partnership with Allianz Life Ghana) to date.

III. Lessons Learned

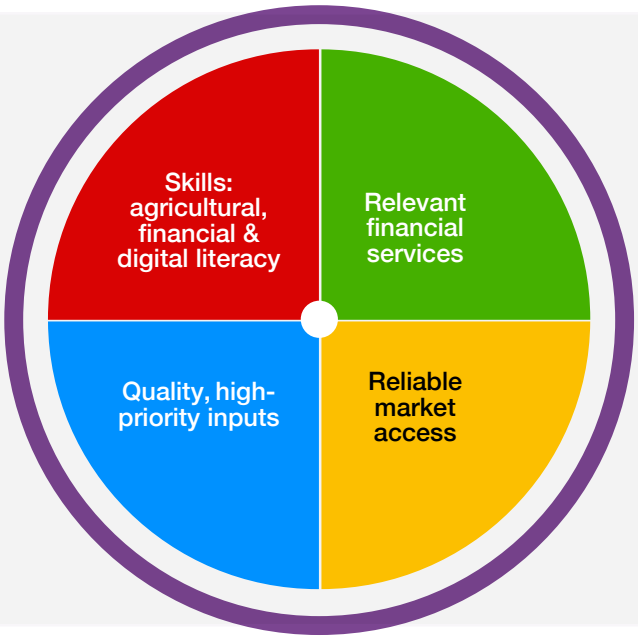
All of these partners are providing financial services through digital platforms linked to mobile money, accessed by clients either directly with their mobile phones or via agents. Offering digital savings and credit products enables the financial service providers to serve the rural market more affordably, even though in-person engagement is still needed to various degrees. Rural clients embrace the efficiency of digital services and find a way to utilize them (with help from relatives or agents if necessary) when the services fit their needs and constraints. The experiences of these AGRA partners so far point to three emerging lessons in expanding digital financial services in rural areas that bear further testing and documentation.

1. **Rural digital financial services work best when they coordinate or bundle interrelated products and services that address farmers' highest priorities.**

   The dominant livelihood in rural areas—agriculture, and especially smallholder farming—calls for a combination of the right inputs and services to come together on time to meet farmers' needs. Farmers need: **financial services,** including savings, credit and insurance; **reliable market access,** including buyers and transport; **quality, high-priority inputs** including seeds, fertilizer, pesticides, labor and mechanization; **skills** in financial and digital literacy, as well as good agricultural practices and climate-smart agriculture. These components must come together at the right time and in the right quantities, in order for farmers to succeed, and the absence of any one of them undermines the value of the others.

Figure 2:

Interrelated Needs of Smallholders Farmers



Finding and assembling these interdependent elements would be challenging in any environment, but the obstacles are especially acute for low-income, under-educated farmers in sparsely populated areas. Digital technology can reduce the friction for both farmers

and service providers if the bundled services are integrally related and self-reinforcing. The experience of AGRA and its partners sheds light on delivering these products and services to smallholders.

► Financial services:

To encourage take-up of digital financial services, savings needs to be accompanied by credit, transaction fees need to be minimal, and physical proof is required for transparency and trust.

- Farmers need a safe place to save, but savings alone is not motivating. Both Advans and Farmerline have found that farmers' digital savings accounts remain dormant when credit is not involved—an experience that appears to be common among rural financial service providers.
- Similarly, Grameen Foundation expected farmers to embrace the concept of saving up and ultimately paying a lower price for inputs, rather than borrowing and/or paying higher prices at the peak of the season. Even after an intensive CGAP-led human-centered design process, and client training on the value of saving, farmers showed that they would prefer to pay higher prices for inputs when they need them, rather than save up for and commit to inputs in advance.
- Moreover, several partners observed that farmers would often prefer to travel to make manual deposits if they could, rather than pay an agent commission fee, or that they would rather save with their local VSLAs instead of facing withdrawal charges from a formal savings account.
- Meanwhile, ACRE Africa has seen encouraging results from the use of scratch cards to render insurance enrolment more tangible, just as agent receipts from mobile money transactions protect customers and reinforce trust.

► Reliable market access:

The three models that are leveraging their platforms to link farmers with off-taking companies are convinced of the viability of this self-reinforcing model. Farmers are confident about investing in and increasing their production when they have solid buying agreements. Moreover, while many farmers would prefer to receive harvest-time payment in cash, they are willing to accept digital payments (and assume the associated cash-out or transfer fees) to accommodate the off-taking companies' security requirements, in exchange for being able to sell their crop at a fair price.

- PASL offers credit linked to savings volume and is seeing strong uptake among farmers, but farmer demand for credit is directly related to market access. Farmers cannot safely plan, invest in and expand their crops without the assurance of buyers. PASL partners with Agrocenta (and others) to leverage the digital off-taking platform's local footprint and farmer relationships, which protects PASL against lending risk while also reducing their outreach costs.
- Advans is partnering with RMG, Barry Calleabuat, Touton and other large off-taking companies to expand their agricultural finance portfolio.
- Farmerline is collaborating with aggregators to share the risk of extending input credit to farmers on the bulk payment platform.

► Quality, high-priority inputs:

Farm inputs of course need to be of genuine, high quality, appropriate for the local area's environmental conditions, and priced to avoid market distortions. When inputs are not dictated by the offtaker, it is critical that the choices align with farmers' priorities and preferences.

- For instance, farmers participating in DIFT were ill-inclined to save for and pre-order pesticide; although seeds were also available on the platform, fertilizer was not, due to a pre-existing government-subsidized fertilizer program. Seeds and fertilizer were higher priorities for farmers' scant investment resources, and saving for the uncertain need of pesticide (whether it would be necessary this season and for which pests) was a lower priority.
- Farmerline initially offered cash loans to farmers but quickly realized that most were using the loans to purchase inputs, which were difficult to find and often involved traveling long distances. In response, Farmerline began providing actual inputs directly to farmers on credit.
- Agrocenta, the platform collaborating with PASL, has added the mechanization service provider TROTRO Tractor Limited to its platform to provide a cash-free linkage to land preparation, harvesting and other mechanization rental services.
- AGRA promotes a consortium model, bringing together a variety of offtakers, input providers (with locally adapted/appropriate products) and farmers at pre-season community planning meetings. This allows farmers to select from several providers and provides an opportunity for market actors to coordinate efforts and share the risk of agricultural investment.

► Agricultural, financial and digital skills:

Farmers need practical information on recommended farm practices, financial management, market prices, insurance and the use of digital financial tools. Skills training not only provides benefits to farmers in terms of environmental resilience, production, profitability and financial inclusion, but also serves the needs of the off-taking companies, financial service providers and mobile money operators that work with them. Without training, farmers are less likely to learn about, understand the value of, and know how to utilize the improved inputs, financial services and digital market access tools on offer. Hence service providers have a vested interest in training farmers, as long as the cost of training still permits a profit margin.

- Four of the partners are experimenting with digital training as a strategy for reducing in-person engagement and training costs; SMS and voice (IVR) messaging are two ways that they are trying to complement and reinforce in-person engagement through technology.
- ACRE Africa taps respected, local farmers in local farming communities to be "village-based champions" and provides them with interactive, exercise-based training on agricultural insurance. The village-based champions, in turn, receive payment for training groups of farmers, and can earn commissions on insurance sales and related client services. This local in-person training and support is reinforced by SMS messages and reminders, and vice versa.

These four elements are interdependent—when any one of them is lacking, farmers are less likely to flourish, and the service providers' business models are more likely to be hamstrung. Digital technology offers an efficient way to bring these key elements and their providers together in a single virtual access point, help farmers find and assemble what they need to improve their farm production and livelihoods, and simultaneously contribute to the success of financial service providers and agribusinesses, as further discussed below. However, technology cannot completely replace in-person involvement; digital services must be complemented by human engagement in order for the services to succeed.

2. **A continuum of in-person engagement is required to foster usage of digital services among rural populations.**

   Digital technology can play a catalytic role in bringing actors together and reducing frictions to deliver services to rural people more affordably, but human engagement is still required. Mobile money agents are of course essential for cash in/cash out points of service, and they can also be trained, equipped, and motivated to provide wraparound or complementary services. All the partners continue to experiment with how to address the different needs for in-person engagement in an effective but cost-efficient way. While certain roles are likely to be required in the long term, others may be more short-lived, as technology and digital literacy continue to improve in rural communities. Figure 3 presents a range of market "frictions" along a rough time spectrum, showing at left those that are more likely to be addressed through technology in the shorter term, and at right those that will require in-person engagement for the long term.

Figure 3: Tech-touch Timeframe to Address Key Frictions

Shorter term touch, tech can evetunally address

Medium term touch needed/outgoing combination of tech & touch

Longer term, human touch required indefinitely

Mobile network / infrastructure	Digital ecosystem, other cashless transactions	Farm-level data and credit risk appraisal	Training on agricultural, financial and digital skills	Marketing & awareness	Customer trust & accoutability
As long as digital networks remain unavailable or unreliable in rural areas, digital solutions are not feasible, and humans are needed to bridge the gap. However, this is changing rapidly, and mobile infrastructure is expected to continue improving in the coming years. When the network is reliable, fewer staff/agents are needed for local support and troubleshooting. Currently, about 50% of PASL clients have digital accounts, and adoption is rising gradually. Advans relies exclusively on telco agents (no agents of their own) and is seeing increasing autonomy among clients accessing its platform.	Currently in most of rural sub-Saharan Africa, there is not yet a digital eco-system that enables people to pay for goods and services with mobile money. As a result, digital payments, savings and loans must be "cashed out" with agents to be used as cash for local transactions. Farmerline, for example, found that farmers were reluctant to be paid with mobile money, since they could not pay school fees without incurring a commission to cash out. This undermines the value of digital payments and mobile money. Agent points of service for cash deposits and withdrawals will be needed indefinitely. However, as the digital ecosystem evolves and expands, and rural people can use mobile money for a broader array of purchases, reliance on CICO is likely to diminish. Digital savings, loans and payments will become more affordable (less CICO and commissions) and more useful for farmers (easier, more direct, fewer transactions)	The promise of big data, thick data and digital profiles for automated credit scoring has not yet been realized. Data collection remains largely analog or reliant on data collectors equipped with tablets or smart phones. The lack of open data platforms and regulations on data privacy also hamper data collection and usage. Some of these partners, and many other financial service providers, continue to test methods for data collection, digitization and analysis. This is likely to improve over the medium term, and to gradually reduce the need for intensive human engagement.	Women, illiterate people and older farmers are among those who tend to require more active support of agents or trainers. Training needs include functional literacy and numeracy, basic financial education, usage and trouble-shooting of digital tools and menus, agricultural extension and climate-smart practices. While all client-level capacity building will continue to require some in-person engagement, this is likely decline over the medium term. As the new generation enters the sector, bringing higher literacy skills and more exposure to digital tools and financial services, digital training will become more viable. Evidence points to a need for simple and user-friendly tools, including digital and IVR service menus. Advans Ghana reports that their farmers are able to use their simple mobile platform themselves after 1-2 years, while other platforms see less autonomy. The purpose of the tool is also important—users tend to succeed at simple interfaces directly linked to money, whereas more complex menus and IVR messages about financial or farm practices yield less value/results.	The customer journey begins with awareness of available services and an understanding of how they address needs. Although word-of-mouth is the most common impetus for farmers' uptake of financial services, this and technology alone cannot spur access. There will always be a need for human engagement to introduce, personalize and build trust in the provider, product and services. Research has shown that the need for in-person engagement is greater when it comes to serving marginalized groups, such as women who are less likely to own their own mobile phone. Most of PASL's clients are low-income with low education levels, and they have found in-person support to be critical for uptake and usage.	Technology alone cannot build trust and compel customers to follow through on their commitments. All the partners view human engagement and presence as a non-negotiable, permanent requirement for successful delivery of financial services. Advans stated: "If farmers do not see any evidence of people (if it is all electronic), they will not repay." As farmers gain trust in a service, the role of agents may change, but maintaining trust will always require some level of in-person engagement. Recognizing the central role that trust plays in insurance, ACRE Africa has embedded a combination of tech and touch to build and maintain trust and continues to experiment with how to make this sustainable.

3. **Sharing human resources can make rural outreach sustainable if stakeholder incentives are demand-driven and well aligned.**

   Bundling services not only reduces friction for farmers by bringing together a set of solutions to their interrelated needs, but also has the potential to spread the cost of in-person engagement across more stakeholders. All of the actors offering financial services, market access, inputs or training, have some level of human touch in the field—whether staff, agents or other local representatives—but they struggle to make such in-person outreach sustainable. When the partners' service offerings are interrelated and their incentives are well aligned, sharing in-person resources can reduce operational costs, increase efficiency and permit better customer service delivery. The key actors' overlapping goals can be summarized as follows.

   - Financial service providers and insurance providers want to expand into new (rural) areas and populations. They want to lend and extend policies, but often do not know the customers' businesses and risk levels, cannot affordably and adequately assess and monitor customers in person, and lack the footprint to gain trust and build customer accountability. Financial service providers typically lack the agricultural/value chain expertise, credibility and relationships on the ground, which are too expensive to cultivate given the low margins.
   - Aggregators and offtakers have agents and strong incentives to build and maintain farmer relationships. They are motivated to provide education to farmers in order to increase productivity as well as farmer loyalty. These agribusinesses would like to free up capital instead of providing input loans themselves, hence they have an incentive to partner with financial service providers.
   - Agro-dealers and input suppliers seek to sell more products or services to farmers. Farmers cannot invest in more product without assured buyers as well as financing and insurance. Agro-dealers are based in the field and do local marketing, which benefits input suppliers. They have sound business reasons to support market linkages and financing for farmers, to encourage increased production of quality crops.
   - Telcos have extensive mobile money agent networks in many rural areas. They seek to drive growth in new customers, number and volume of transactions. They also want their agents to be motivated to continue operating on commissions. Agent commissions for a single service are generally insufficient, and most agents have other businesses or operate multiple complementary agencies to foster cross-selling and a combined, livable wage. Agents can generally represent more than one service without cannibalizing the other. Given the strong presence and continued push of money mobile providers, it makes practical sense wherever possible for new entrants to build on existing agent networks, thereby increasing sustainability, rather than investing in redundant networks of agents.

AGRA's partners are striving to unite these actors and their complementary strengths and weaknesses. They have experimented with staff (too expensive to cover the large geographic distances) and commissions (challenging to offer enough to keep agents motivated while also earning a small margin for the company). While there is no formal or official agent sharing relationship among the partners so far, the partners are already sharing the burden of customer outreach, data collection, training, cash in/cash out and/or other in-person engagement with a partner. Some are informally sharing last-mile human resources and data to reduce the costs and risks of serving smallholder farmers. Examples include:

- Advans Ghana initially provided training and troubleshooting to farmers on using the Mobibank platform, but after one to two years, rice farmers began using the service autonomously with only occasional assistance needed. Advans therefore relies almost entirely on the in-person presence of its off-taking partners (RMG, Touton, etc.) and

telco mobile money agents. Realizing that the agribusiness companies' farmer-level data was insufficient for Advans' Know-Your-Customer and credit scoring needs, the bank developed a simple Excel-based spreadsheet tool for its partners to use in collecting farmer data. The offtakers' agents engage regularly with the farmers and collect this information for submission to Advans, as their contribution to the provision of farm loans. Delivering training and facilitating the loan process are beneficial to the off-taking partners, because it enhances their relationships and adds value, which in turn increases farmer loyalty and crop production.

- PASL has found that in-person engagement and support are critical to serving rural clients with low education and income levels. PASL has staff in the field and is building a network of its own agents (currently numbering around 500) to extend its reach in rural areas. However, PASL discovered the importance of establishing credibility by working through known, local entities. Agrocenta, which has a network of trusted agents that know and work with farmers, also has a vested interest in getting financing into the hands of farmers so that they can increase production. PASL recruits agents from its rural client groups, as well as from Agrocenta's network—who add on the commission-based PASL agency to their existing services.

In 2019, an AGRA-commissioned a study of customer outreach models in Ghana suggested strong potential for sharing local in-person resources to reduce costs and expand their reach through cross-marketing and cross-selling.[1] Examining the companies' costs of training and operations, as well as agent commission earnings, the study engaged 94 stakeholders in Ghana, including the leadership, staff and agents of AGRA's local partners: Advans Ghana, Agrocenta, PASL, Agro Africa, TroTro Tractor and Success for People. Two agent sharing scenarios emerged from the investigation:

- **Advans and Farmerline:** Farmer agents manage agri-input procurement and delivery for farmers receiving Advans financing. Farmerline's agent commission structure ranges from 1% to 3% on inputs sold, depending on the number of farmers and volume of inputs. By facilitating input purchases for Advans clients or helping Farmerline customers connect to Advans financing, Farmerline agents could dramatically enhance their commission income. As of early 2021, this partnership had not been forged, and Advans was focused on linkages with offtakers, who mandate and provide specific supplies.

- **Agrocenta and TROTRO Tractor Limited:** A partnership between Agrocenta and TROTRO's "Uber for tractors" model would enable an expansion of both agent networks to reach more customers through the cross-selling of non-competing products. Based on Agrocenta's and TROTRO's commission structures, the more farmers an agent signs onto the platform, the higher their commissions. Both sets of agents stand to increase their commissions by cross-selling the other product—which also has the potential to improve farmer livelihoods. Since the study and a culminating learning workshop, Agrocenta and TROTRO have begun collaborating with mechanization services now being offered as one of the product/service linkages on Agrocenta's digital platform.

Asked about the potential of sharing agents, the partners expressed reservations about the complexity of establishing partnership arrangements—considering how to negotiate and parse such costs as agent transportation, hiring criteria, training, time spent, stipends and commissions. More experimentation is needed to find models that are practical, efficient and effective. Nevertheless, with properly aligned incentives and some support to activate such partnerships, agent sharing appears promising for improved sustainability and outreach.

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[1] See Assessment of the Outreach Models of FISFAP Partners in Ghana. AGRA: 2019. https://agra.org/wp-content/uploads/2021/05/2021-Assessment-of-the-Outreach-Models-Executive-Summary.pdf

IV. Conclusion

Digital technology has revolutionized financial inclusion and is making it feasible to extend a range of financial services, market access and other services more affordably to rural farmers. However, in-person engagement is still needed to complement digital solutions throughout the customer journey. As farmers' knowledge, experience and trust of digital services grow, the nature of in-person engagement will necessarily change, but there will remain a need for some level of human touch to accompany digital services. The challenge, then, is to zero in on where human engagement is indispensable, gauge the timeframe for that need, and find viable mechanisms to make the human touch sustainable.

The experiences of these five models in Ghana, Kenya and Tanzania point to several recommendations for further investment to advance the development of sustainable and high-impact digital solutions in combination with the right level of in-person support:

1. Catalyze partnerships that bring together interrelated, high-priority services for farmers. While their goals, incentives, strengths and weaknesses may be complementary, stakeholders often require a catalyst and support to design, test and operationalize win-win partnerships. Financial service providers, aggregators, input suppliers and telcos should be encouraged to collaborate with the benefit of digital technology and to experiment with sharing data as well as human resources to make overall service delivery cost-effective and sustainable. AGRA has played a role by providing funding for research, development and pilot-testing, along with human-centered design and other technical assistance to broker strong partnerships, stimulate meaningful data collection and application, and field test sustainable operations. Investing in over 20 consortia in seven countries, and in business model analysis and stakeholder workshops, AGRA has united key actors and stimulated innovation and collaboration. There is still a strong need for such support to encourage proactive aligning of incentives and activities to meet shared goals.

2. Invest in "running room" to achieve network effects and sustainable scale. Many digital solutions require critical mass to hold value for users and to be sustainable. Farmers will not grow their farms and credit worthiness without guaranteed offtakers for the produce; offtakers will not participate if the crop volumes and geographic concentration of farmers are insufficient; financial service providers will not be able to operate in areas where there is insufficient credit demand, savings deposits and risk mitigation; insurance providers cannot operate sustainably if the risk pool is not large enough. The need for all the elements to converge at once is known as "network effects," and this takes technology, people and time to achieve. One of the success factors of mPesa's mobile money network was its gradual addition of agents to meet the gradual rise in demand—as opposed to some other networks in the region that brought on too many agents before there was enough business to keep them engaged. Since such solutions can be viable once they achieve scale, and appear poised to revolutionize rural economies, it makes sense to provide financial and technical support to help them get there. As a condition for subsidy, a clear business model should be in place with steady progress toward sustainability of an appropriate tech-touch combination.

3. Promote innovative business models that cross-subsidize client capacity building as a necessary business investment. Nonfinancial services, such as financial and digital literacy training, are vital to the uptake and sustainable use of income-generating financial and market services. As such, they can be rolled into business models and their costs can be covered by revenues from associated services. An example is aggregators supplying agricultural and financial education to farmers because this enhances production and loyalty—so the cost is absorbed as a necessary operational expense

and covered by off-taking revenues. Although technology may be able to support and reinforce in-person training, human engagement will be required to successfully impact behavior change. Stakeholders should aim to design and embed such auxiliary services in a cost-effective and self-sustaining manner. Still, some upfront subsidy is warranted for research and development—including market research, human-centered design, curriculum and delivery design, pilot-testing, proof of concept, fine-tuning of the business case for each partner, and refinement of digital and in-person training.

4. Encourage proactive measures to reach women and other persistently excluded groups. While digital technology holds enormous potential to increase inclusion, it can also inadvertently exacerbate existing disparities. Without donor and investment pressure and technical support, stakeholders may be less inclined to devote scant resources to the collection of gender- and other disaggregated data (to track and compare usage), marketing and training designed to appeal and be accessible to underserved groups, and products and services that address their unique needs and constraints. Underserved groups tend to have less exposure and familiarity with digital technology and often require more in-person demonstration and exchange before trusting and adopting new behaviors or tools. Attention and investment are needed to reinforce the inclusion of women, illiterate people, forcibly displaced people and others—thereby contributing to both the business and social bottom lines of providers.

5. Provide subsidy for environmental resilience measures. Ongoing investment is needed to reinforce environmental protection and climate-smart agriculture, which take training, local demonstration, investment, time and commitment to reach sustainability. The realities of smallholder farmer livelihoods and market forces do not foster training in sustainable farming techniques and investment in long-term processes such as soil improvement. Farmers, aggregators, input suppliers and financial service providers all have strong incentives to increase production in the short-term, even if it means compromising longer-term productivity and exacerbating climate-related risks. Donors, governments and social investors therefore have an important role to play in stimulating actions and investment in longer-term environmental resilience. To influence farmer adoption, there must be direct human engagement and live demonstration, as well as patient capital to invest in measures and practices that may entail a reduction in available land or only provide a return after many years. Providing financial and technical support to ensure that environmental resilience is embedded in digitally enabled financial and nonfinancial service packages for farmers is vital for long-term farm livelihoods and rural economic development.

As AGRA and its partners have experimented to find the right balance between technology and person-to-person engagement, it has become clear that “tech” and “touch” go hand in hand and will both be needed on an ongoing basis. The nature and level of human engagement may change over time, and business and partnership models must find viable ways to accommodate these costs. As mobile network coverage, digital payments and data collection and sharing advance, the need for agent involvement will decline for related tasks, but in-person support for client training, service marketing and building trust will persist. With the right business models, the associated expenses can be covered by private sector actors in the long term. But there remains a strong need for technical and financial support to develop win-win partnerships, achieve the necessary network effects, design and launch client training, ensure the benefits of digital financial services reach women and other underserved groups, and support longer-term investments in climate-smart measures and practices. With the foregoing lessons learned and recommendations in mind, stakeholders can leverage the potential of digital technology to increase smallholder financial and market inclusion, improve agricultural livelihoods and rejuvenate rural economies in Sub-Saharan Africa.

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