

INCLUSIVE INNOVATIONS

Financial Intermediaries for Smallholders

Providing innovative and cost-effective means to assess smallholder creditworthiness and lower transaction costs

HIGHLIGHTS

- Financial intermediaries improve access to finance for farmers by devising innovative credit scoring and risk mitigation tools and promoting financial literacy.
- They develop ICT-based tools and services to decrease transaction costs, track payments, build farmers' credit history.
- Enterprises facilitate agricultural value chain finance, which can be a cost-effective solution to reach a large number of smallholders and an entry point for farmers to access long-term credit.



Arne Hoel / World Bank

Summary

Very few financial products are designed to address the challenges faced by farmers, such as seasonality in payment (only after the harvest), and a lengthy investment period without cash flow for long-gestation products. Specialized loan officers who understand these challenges are also in short supply. As a result, most banks have traditionally regarded agriculture as fundamentally unprofitable or risky at best.

Financial intermediaries address several financing gaps faced by smallholder farmers by decreasing transaction costs among value chain actors, promoting transparency in the flow of commodities, powering the aggregation and analytics of data (behavioral, agronomic, and market), and enhancing credit-worthiness. Social enterprises (SEs) are developing innovative financing models whereby the flow of funds to farmers can be made less risky and lending decisions can be data-driven. Their solutions broadly aim to improve risk management for financial services providers, leverage technology for digital data collection, payments and crowdfunding, and facilitate value chain finance. SEs have partnered with financial institutions to provide innovative applications, such as warehouse receipt financing, farmer data digitization, input loans through closed-loop business models, and mobile-based payments.

Development Challenge

Traditional financing methodologies have not been able to adequately address the need for appropriate financial services to smallholder farmers in developing countries. While the global demand for finance from smallholder farmers is USD 450 billion, supply falls short at USD 20-30 billion. The gap¹ in agricultural finance is primarily due to perceived high credit risk in agricultural lending and incompatible financial products. Remoteness of rural markets from urban financial centers, isolated and dispersed populations, and poor road and energy infrastructure are other factors that make it difficult and expensive for financial institutions to serve and monitor farmer borrowers.

Farmers face high performance risk (crop failure) and market risk (no clients, low prices), which can be mitigated through a combination of access to credit and savings products. Financial intermediation is essential to optimize the agricultural and financial cycles (e.g., purchase inputs when these are cheap and sell produce when it is expensive). Without such support, farmers remain in the suboptimal loop of low-investment/low-productivity agricultural operations.

The information gap between the financial institutions and smallholder farmers renders the ecosystem inefficient. Also, banks find it difficult to assess the credit-worthiness of smallholder farmers due to low levels of farmer education and financial literacy (no record keeping, business plans, or bank accounts). Credit scoring techniques, which could reduce the cost of loan appraisal, are difficult to apply due to the lack of standardized and objective data.

Business Model

Many SEs act as intermediaries to finance providers in order to reduce friction in the flow of finance to smallholders and minimize the credit risk traditionally associated with agricultural finance. Financial intermediaries often specialize in particular areas in smallholder financing such as credit risk analytics, e-money platforms, or agro-dealer financing. These enterprises catalyze financial services to smallholder farmer communities in a variety of ways. For instance, SmartMoney, a mobile network operator in Uganda, offers mobile money services to enable banks to serve smallholder farmers and achieve last-mile access in a cost-efficient way. SCOPEInsight, an organization based in the Netherlands, has developed assessment tools and actionable insights that help finance providers assess risk and design financial products.

Smallholder households benefit significantly from access to savings accounts and mobile transactions, in addition to credit services. Formal savings accounts offer the added advantage of security; they can also serve as collateral. Mobile money accounts facilitate seamless money transfers from buyers or government programs to input providers, farmers and farm laborers. Such accounts provide smallholders with a secure place to store money, and make it easier for them to receive remittances from family members. Remittances are a critical source of supplemental income for poor rural households, particularly during the lean season, before harvest. Examples of financial intermediaries providing this service are Umati Capital and TigoCash.

Components of the Model

Figure 1. Components of the model



Risk mitigation tools

Commercial banks and microfinance institutions (MFIs) have traditionally held small agricultural finance portfolios as they find it difficult to assess the credit-worthiness of individual farmer borrowers. Some enterprises address this issue by devising innovative solutions for credit scoring and maintaining a track record for smallholder farmers. This increases the willingness of financial institutions to lend at reasonable rates to farmers. For example, FarmDrive, a Kenyan social enterprise, attempts to bridge financing gaps by enabling smallholder farmers to maintain records using a digital bookkeeping platform. It provides access to aggregated agricultural data and smallholder farmers' data, which is used by financial institutions to inform lending decisions and design suitable credit products. The enterprise enables farmers to track their productivity, expenses and revenues, which are then analyzed to reveal performance patterns. Users of FarmDrive record their activities using SMS or a mobile app if they have a smartphone. The enterprise is currently developing a workbook that farmers can fill in and hand to a FarmDrive agent, who will then store the data digitally.

Finance providers cite challenges in assessing credit risk when lending to farmers. In response, some intermediaries have developed tools that increase the efficiency of the credit process to smallholder farmers. For example, Grameen Foundation has created the Sustainable Agriculture Food Environment (SAFE) platform to pilot a tool called Agricultural Risk Evaluation Tool (ARET) with Cooperativa de los Andes (COOPERAN), a large coffee cooperative in Antioquia, Colombia. ARET draws on data from more than 1,500 smallholder farmers in Colombia who have received loans. More than 150 variables were evaluated —ranging from fertilizer use and water access to the number of temporary workers the farmers hire at harvest and certifications they achieved. From this data, 10 key correlated variables were identified to segment farmers into eight groups representing increasing risk of loan defaults ranging from 0 percent - 17.1 percent.

ARET draws on data from more than 1,500 smallholder farmers in Colombia who received loans from COOPERAN.

Financial services providers also build risk mitigation solutions by working with value chain intermediaries. For example, the Agriculture and Climate Risk Enterprise (ACRE Africa, formerly Kilimo Salama by Syngenta Foundation) has developed different insurance products that are underwritten by insurers, but distributed and pre-financed by MFIs or value chain partners. For instance, dairy livestock insurance is offered in partnership with a dairy cooperative or a lending institution. These partners pay the premium upfront, then either deduct it from payments to farmers for milk deliveries, or combine it with loan payments. These arrangements significantly lower the insurers' costs to serve farmers as the partners carry the risk of premium repayment. The partners also benefit from the fact that their customers or suppliers (farmers) are protected. By the end of 2015, ACRE Africa's insurance products had already been adopted by nearly 400,000 farmers, and the company expects to scale rapidly.

ICT-enabled delivery

In order to ensure reach, financial intermediaries leverage technology for digital data collection, payments and crowdfunding. They do this through tech platforms, mobile money and mobile apps. Some enterprises build platforms that enable MFIs and agri-suppliers to easily manage their agri-loans. Platforms such as Farm Capital in Kenya and Farmable in Ghana also act as crowdfunding platforms and enable individual investors to fund small-scale agricultural entrepreneurs. As a delivery channel, mobile phones are a powerful tool to reach vast numbers of clients with a range of information and simple financial services at low costs.

Some enterprises carry out the disbursement and repayment of loans using mobile money so that real-time monitoring is possible and manual cash handling is avoided. For example, Musoni offers a comprehensive range of portfolio and financial reports and an accounting module. Its solution integrates with both, M-PESA and Airtel Money, enabling all transactions to be carried out using

mobile money. The Musoni App enables field officers to register clients, apply for loans, or view key reports while travelling in rural areas.

Value-chain financing

Value chain players such as input providers, dealers, traders, and processors collaborate with financial institutions such as banks, MFIs and non-banking finance corporations (NBFCs) to jointly develop lending mechanisms for smallholder farmers. Common examples include warehouse receipt financing, input supplier financing, asset financing and out-grower schemes (contract farming).

Each of these lending mechanisms provides solutions to get around smallholder farmers' lack of assets for collateral. In warehouse receipt financing, smallholder farmers pledge their agricultural produce as collateral to obtain credit from agri-NBFCs or banks against the receipt issued by the partner warehouses. The farmers are, thus, able to monetize their agricultural produce without actually selling the commodities. Often, this hypothecation system is also accompanied by grading of commodities according to their quality. This enables agri-NBFCs to adopt risk-based pricing of loans. For example, Rent-to-Own (RTO) is a social enterprise that supports micro entrepreneurs in rural Zambia by providing finance via micro-leasing and access to productive assets at affordable prices. It employs local agents who leverage their social networks to determine client credit-worthiness and incentivizes repayment by enabling the farmers to own the asset eventually.

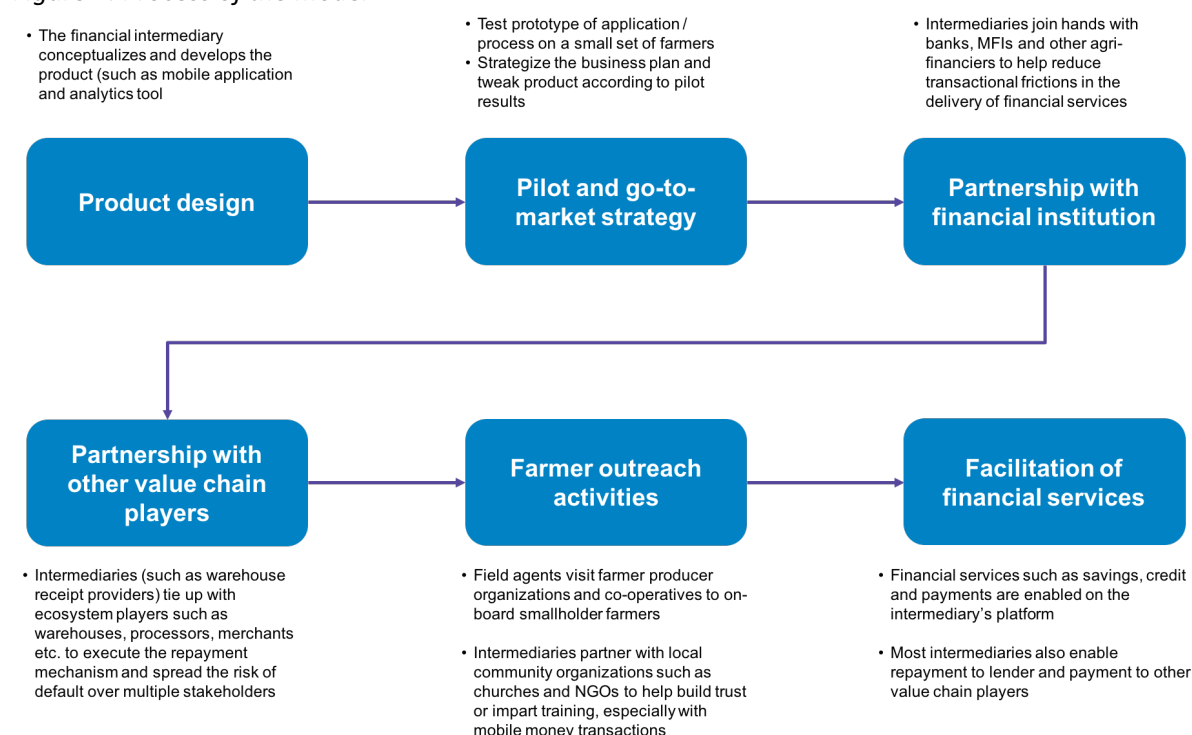
Financial intermediaries have also developed solutions to ease the liquidity crunch that farmers face through the crop life cycle. Sarura Commodities, a Rwandan social enterprise, has developed a modified warehousing receipt financing system that it calls 'warrantage' to ease farmers' liquidity crunch. Under the warrantage model, farmers receive an initial payment equivalent to 60 percent of the harvest value (paid from the inventory-credit financing) when crops are deposited in the Sarura warehouse, and a second payment equivalent to 40 percent of the post-harvest sale value when the stored crops are sold to the premium off-takers. The staggered proceeds smooth out the otherwise long payment lags and provide cash flow for other types of business investments. An average smallholder staple-crop farmer benefits from a 50 percent increase in profits from traditional market channels.

Farmers generally obtain 70-75 percent of the value of their produce as loans against receipts obtained upon deposit of produce at the warehouse.

Some value chain financing intermediaries also adopt ICT delivery channels such as SMS, mobile applications and web platforms. These ICT channels are used to provide last-mile financial access where physical presence may be costly and difficult. For the customers who struggle without access to finance, these services are a means to move from survival to sustainability. For example, Umati Capital (UCAP), a non-bank financial intermediary in Kenya, focuses on the provision of supply chain finance across several value chains. It has set up mobile applications at each stage of the value chain to capture data to inform their disbursement of smallholder farmer loans via the mobile wallet channel. It also enables financing from angel investors to agricultural SMEs that supply to larger entities. Umati's integrated technology platform automates the invoice management process with web-based software to enter and manage invoices of agri-businesses (suppliers to large processors).

Similarly, Kifiya, a financial technology company in Ethiopia, enables financial service providers such as microfinance institutions and banks to reliably deliver full financial services securely and cost-effectively to remote areas through its branchless banking and mobile money services. It aims to build a digital payments ecosystem by supporting agricultural actors along the value chain to switch from expensive cash handling processes to digital payments. This is supported by financial literacy training for smallholders.

Figure 2. Process of the model



Cost Factors

The major costs incurred by financial intermediaries are the costs from training, platform development and human resources.

Table 1. Types of enterprises

Type	Enterprises	Main cost components
Risk mitigation tools	FarmDrive, SCOPEInsight, Compuscan, F3 Life	Human resources, product development, business development
ICT-enabled delivery	Musoni, UCAP, Farm Capital, Kifiya, Farmable, SmartMoney	IT system development and maintenance, training farmers
Value-chain financing	Rent-to-Own, Joseph Initiative, myAgro, FoodTrade ESA	Personnel costs (local offices and field agents), logistics costs, warehousing costs, inputs

The cost components in this business model vary across enterprises. The fixed capital cost is very low as most intermediaries operate as an asset-light model. They are, therefore, generally able to recover costs and achieve economies of scale easily.

- Risk mitigation tools:** Most of the costs incurred are on business development and reaching out to farmers. For example, FarmDrive's operating expenses include cost of training farmers on the use of the mobile application, and costs of profiling farmers. Similarly, for F3 Life, a company in Kenya that does credit scoring of farmers for financial institutions, major costs are incurred in demonstration land and training to financial institutions for use of F3 Life's tools.
- ICT-enabled delivery:** For enterprises adopting this approach, the IT infrastructure and training staff comprise the major costs. For example, SmartMoney, a digital payments company, cites hiring and retaining the rural staff, training machinery (trainers and vehicles) and MIS maintenance as the major cost components.
- Value-chain financing:** This sub-model consists of enterprises with more on-ground presence than the above two sub-models. For example, FoodTrade ESA, an enterprise that

provides credit on the basis of warehouse receipts, incurs major expenses on maintaining a warehouse and a developing digital recording system. Similarly, myAgro incurs costs on inputs bought from large manufacturers, logistics in delivery of inputs to rural areas and personnel.

Revenue Streams

Generally, financial intermediaries draw their revenues from a combination of one or more of these three sources - the financial institution they partner with, the farmers they serve and any agribusiness or other value chain players who avail of their services. The revenue may be a fixed fee or a percentage of the loan amount that the enterprise facilitates for farmers. For example, FarmDrive earns revenues from financiers for their use of the credit profiles (fixed fee) and from farmers who receive credit (percentage of loan amount as transaction fee). On the other hand, for F3 Life, the revenue is sourced only from commissions paid by financial institutions as a percentage of the loan amount.

Some enterprises also collect fees from value chain intermediaries to subsidize services to farmers. For example, SmartMoney has two revenue streams - payments and deposits. It only charges the off-takers (agribusinesses), and not the farmers. It collects a 5 percent fee from the agribusiness based on transaction volume (a commission is charged every time they transfer money); about 1 percent of this is distributed to cash agents (as commission) and 4 percent accrues to SmartMoney. Off-takers benefit because they are able to avoid incurring huge costs associated with transacting in cash. SmartMoney provides a wallet account to farmers for cash-in and cash-out. There is no withdrawal fee for farmers. On deposit side, it works with banks to help them reach the last-mile access to rural areas.

SmartMoney acts as marketing front-end for banks and derives a marketing fee from partner banks, which is around 9 percent of the deposit annually.

Some enterprises such as SCOPEInsight and Compuscan earn revenues by partnering with financial institutions and providing credit information gathered about farmers and farmer cooperatives in the form of assessment reports. Similarly, XDS Credit Bureau in Zimbabwe tailor-makes credit profiling and assessment solutions that assist the private sector and development agencies to commit financial resources to smallholder and communal farmers under commercially viable terms and conditions.

Financial Viability

The business model leverages on enterprises' ability to liaise with multiple stakeholders in the agriculture value chain and become their long-term, trusted partners. The intermediaries are able to achieve early breakeven because they generally have a very low initial expenditure (generally less than 20 percent of the total annual costs). However, these enterprises earn thin margins (typically around 3 percent-10 percent) and depend on a large customer base, the business of its partners, and volume of transactions.

Financial intermediaries offer a host of services to remain profitable. FoodTrade ESA's warehouse program combines enablers in digital technology, warehouse receipts, in-kind inputs and payments to support farmers in obtaining credit by using their stored crops as collateral for loans. Once farmers have deposited their crops in the warehouse, the inventory is captured in a central system that can be accessed in real-time to confirm that crops meet standards and are, in fact, stored at the warehouse. Banks use this information to lend to farmers directly. Alternatively, farmers can purchase inputs in-kind from agro-dealers, who can also access the system and get repaid by banks. Some enterprises employ cross-subsidization strategy to ensure its own commercial viability and affordability for farmers. SmartMoney does not charge the farmers anything but charges the value chain players and financial institutions that it partners with. Similarly, Tigo, a mobile network

operator (MNO), which has rolled out its mobile wallet TigoCash, charges commodity buyers a fee for the transaction (percentage of transferred amount), rather than charging the farmers.

More recently, financial intermediaries have launched digital crowdfunding platforms that work on an equity or commission sharing basis. Farm Capital Africa (FCA), a financial intermediary in Kenya, pools funds from urban-middle class individuals, African diaspora and institutional investors via the internet. FCA channels the capital through mobile money into microbusinesses of small-scale agripreneurs (mostly youth and women) for a term-based profit share derived from the produce. FCA forms a joint venture with the micro-entrepreneurs and manages the allocation and use of funds that are spent on the farm.

Besides capital, FCA also sources and provides distribution services to transport the produce to buyers, and imparts agronomic training and business management services to ensure business continuity and the project's success..

This risk-sharing model allows several investors to invest micro risk-capital into agribusinesses for a share of profits up until they recover their capital and earn a profit from it. This can range from 3 months to 5 years depending on the type of farming activity and amount of investment needed.

Similarly, Farmable has developed an innovative on-line funding model (crowdFarming), where social investors (cowBackers) can purchase a 'share' in a real cow in Ghana (a cowShare) in return for exclusive rewards. This provides a continuous (and expanding) source of funding for Farmable initiatives designed to improve smallholder farmer capacity and cattle production processes.

Partnerships

Financial intermediaries generally work alongside a wide variety of partners such as financial institutions, agribusinesses, and value chain players. Joseph Initiative (JI), a grain management and trading company in Uganda, has partnered with Opportunity International to serve as a platform for delivery of financial services by pre-financing inputs at the beginning of the season while ensuring repayment at the collection centers after harvest. Farmers are organized into lending groups that further co-guarantee repayment and the JI's technology platform tracks data on farmer yields. JI provides training and agricultural extension services via Joseph Centers, as well as some processing capacity/support. Value chain operations are coordinated via the JI tech platform, which promotes transparency, efficiency, and capture of impact data, advances research, and quickly integrates feedback.

SCOPEInsight partners with capacity builders such as NGOs, extension service providers or consultants, who seek to professionalize farmer organizations with support or training. It also works with value chain players such as traders, processors or input suppliers who need a secure and sustainable supply chain with professional farmers. Lastly, it partners with financial institutions that look for low cost and low risk investment opportunities in agriculture. SCOPEInsight has launched an initiative called Agribusiness Market Ecosystem Alliance (AMEA) in partnership with IFC and development organizations ICCO, VECO, NCBA, CLUSA, ACDI VOCA and Agridus. AMEA aims to address fragmentation in current capacity building programs by offering SCOPEInsight-based global and standardized metrics for assessing farmer performance and a training system to ensure farmer development according to their needs.

Many value chain intermediaries are developing financial products not only for farmers but also for other value chain players. In Honduras, major input suppliers, such as Caldega and Del Campo, are developing creative financing products for smallholders, as well as small input suppliers, who in turn advance inputs on credit to small producers. FUNDER, an NGO in Honduras has an arrangement with Antorcha (supermarket) and Cadelga (input provider) to finance inputs for smallholders. FUNDER has joined forces with COMSA (an organic coffee cooperative) to provide financing to up to 150 coffee producers to maintain their coffee plantations.²

Implementation: Delivering Value to the Poor

Awareness

Financial intermediaries generally work with field agents (their own or those of their partner financial institutions) to build the initial critical mass and then tap into networks of existing customer base of farmers to reach other farmers. In-person, on-the-ground relationships are very important in local communities and field force networks led by groups from financial institutions or NGOs can harness the power of these relationships. FarmDrive identifies and works with Youth Farmer Leaders, typically young farmers, to spread awareness and organize trainings. Presently, FarmDrive has on-boarded 15 farm leaders, each responsible for his/her own locality.

myAgro farmers significantly boost awareness as well as membership in the program within their local communities.

With the development and expansion of mobile solutions, the process of coordinating and communicating with these networks is becoming more efficient. For example, myAgro has field agents who hold weekly meetings with farmer cooperatives to onboard farmers. It relies on the farmers' local networks and partners with savings groups to increase awareness of the benefits of using mobile layaway as a financing option. For example, myAgro taps into an existing program run by Oxfam America and other aid groups called Saving for Change, where farmers in a community meet regularly and pool their money in a joint savings plan. In Senegal, many existing farmers have become champions of the myAgro model. These farmers receive training by myAgro to be vendors. They go door-to-door and mobilize farmers to sign up for the program in return for a commission per farmer acquisition. myAgro also leverages radio for advertising its program.

Acceptance

The recent surge of mobile money in Africa is under-leveraged because farmers are wary of using electronic money. Hence, financial intermediaries begin by establishing trust and sensitizing farmers about the benefits of savings and mobile payments. Tigo partnered with non-profit organizations such as ASI (a subsidiary of ACDI VOCA) to leverage its relationships and goodwill with farmers and conduct financial literacy events. Tigo also appointed local farmer 'ambassadors', who were literate and technologically savvy, to explain the concept of e-money and PINs to other farmers. The enterprise opted for a routine of weekly trainings to ensure that farmers are not overwhelmed by the new concepts, and get time to apply them in real-life situations and experience the benefits.

SmartMoney works with NGOs, savings group, schools, agri-companies, women SHGs and local churches to help mobilize the Ugandan farmers and build the trust among customers. It has launched an academy, which works in 5 Ugandan constituencies. The enterprise also provides a call center facility to farmers seeking information. Smallholder receptiveness to mobile financial services is correlated with the general adoption of such services already operating in the country. In countries such as Nigeria, where less than 1 percent of adults are active mobile money users, farmers have been reluctant to adopt mobile wallets. In the absence of a nationwide mobile money infrastructure, smallholder farmers have little incentive to use mobile money services. Farmers have been more receptive in Ghana, where mobile money adoption is increasing rapidly and approximately 8 percent of adults are now active users.

Financial intermediaries are also adopting design thinking and innovations to encourage savings and inculcate banking among smallholder farmers. ideas42, a non-profit research firm, is working with Swisscontact (a Switzerland-based international development organization) to implement the Sustainable Cocoa Production Program in Indonesia, targeting 98,000 cocoa farmers. It plans to use behavioral science to design a banking intervention that allows farmers put away enough money to save for other critical expenses such as improvements to their businesses. For example, ideas42 identified that one key inhibitor to saving was that much of the farmers' "overspending" was a series

of small, incremental purchases such as the odd pack of cigarettes, coffee outside the home, and snacks for children on market days. The intervention includes an opportunity for farmers to make a savings deposit every time they sell cocoa beans to traders - the point when they have the most cash on hand. In three months, the farmers observed increased savings of up to USD 150 that could be used to purchase new cocoa seedlings or pay for their children's school fees.

Accessibility

Financial intermediaries improve the accessibility of their products by adopting an omni-channel strategy to serve a wide variety of farmers. For example, FarmDrive's services are available over SMS, USSD, and Android. This ensures that even farmers with the most basic phones are able to access the FarmDrive platform.

Accessibility is also important for financial institutions and other value chain players that work with smallholder farmers to expand credit uptake and make better lending decisions. SCOPEInsight enables access to its assessment tools and reports that are priced differently for Pro, Basic and Agent assessments. These tools can be accessed by any agriculture stakeholders interested in working with the smallholder farmers, but lack the data to make tailored products. These stakeholders include capacity builders such as NGOs, extension service providers and consultants; value chain players such as traders, processors or input suppliers; and financial institutions. The price per assessment is around USD 1.70 (excluding training and data collection costs). The price of training depends on the number of trainees that SCOPEInsight's clients select to access the assessment tools, ranging from USD 280 to USD 840.

F3 Life has a unique selection methodology whereby it facilitates cash microloans from partner financial institutions in the range of USD 20-180 on soft terms in return for simple conservation measures and climate-smart agricultural practices by farmer borrowers. Their credit scoring is based on the environmental protection milestones that farmers achieve. Farmers are also given technical assistance and incentivized to repay on time through conditional decrease in interest rates. Enterprises also combine loan facilitation with due diligence for credit worthiness using technology. In Kenya, the Grameen Foundation has partnered with Farm Concern International (FCI) to develop an e-Warehouse pilot program for maize farmers. Farmers are able to store their grain at home or collectively with other farmers or, in some cases, the e-Warehouse program sets up village-level warehouses. The innovation behind e-Warehouse lies in Grameen Foundation's mobile-based data collection tools (TaroWorks) that are used by trained village knowledge workers to collect and upload farmer storage information: the amount, the storage method (to indicate risk of pests or spoilage), and the moisture content (to indicate propensity toward rot or disease). A global positioning system device records location at the time of the data input, helping to ensure that those inputting data are not remotely inventing information and that the grain can be tracked down if needed.

Based on the data collected and the value of the stored grain at harvest time, Grameen and FCI determine the loan eligibility amount. They share this information with a partner financial institution, which relies on this data to make a final credit decision and disburses an advance to the farmers against the value of their stored crop. The lender's financial exposure is limited; the loan exposure is typically equivalent to only a third of the value of the grain at sale time.

Affordability

Financial intermediaries make financial services affordable for smallholder farmers by aligning the quantum and frequency of repayment to the farmers' ability, provide flexibility in amounts saved and paid, and make the repayment more convenient through mobile wallets. In the case of myAgro, the mobile layaway allows

Registered farmers can "top up" their myAgro account over time in flexible amounts (USD 1-50) just as they buy talk time for their phones.

the customer to make small payments for the product until the purchase price is paid in full. Farmers also get flexible saving options. For example, farmers can save at flexible frequencies and in varying amounts: USD 2 every week or USD 10 in 1 week and no payment for the following several weeks. Farmers can save according to the payment goal that they fix for themselves.

Some intermediaries also support farmer households to help them save for non-farm activities too, so that farmers are able to better invest the earnings from agricultural activities and then plough the savings back to productive uses. For example, Save 4 School (currently under development and testing) uses Econet's EcoCash mobile money platform to connect smallholders to a mobile savings account that lets them make flexible monthly contributions as low as USD 2, with the option to deposit larger amounts. When school fees are due, the account transfers the savings to a chosen school. Transfer fees are paid by the schools, which see value in the product as they often receive fee payments late, in-kind, or not at all.

A credit scoring algorithm will also give customers the choice to apply for a microloan to cover the remaining balance if they miss their savings target. Rent-to-Own (RTO) is a social enterprise that supports micro entrepreneurs in rural Zambia by providing micro-leasing and access to small to medium productive assets (e.g., bicycles and drip irrigation kits) at affordable prices, typically in the range of USD 100 to USD 1,500. It employs local agents who leverage their social networks to determine client credit-worthiness and incentivizes repayment by enabling the farmers to own the asset eventually. RTO also uses DropBox and TaroWorks to provide client information to its field officers, and sends SMS reminders and updates to clients on their application status.

Many farmers do not have adequate infrastructure (mobile phone, digital platform and agent network) to transact using digital payments. Financial intermediaries, especially mobile network operators (MNOs), can increase the acceptance of mobile money to facilitate deposits, withdrawals, transfers and savings for small-holder farmers. For example, Uganda Telecom (UTL), a small MNO in Uganda, launched M-Sente, a USSD-based mobile wallet, in partnership with the Uganda Coffee Farmers Association. The wallet was aimed at reducing delays in payments to farmers (usually eight to ten weeks) and minimizing the need to handle cash. UTL, by leveraging their agent network and offering low-cost phones, was able to enable salary distribution to around 250 coffee farmers through M-Sente.

Results and Cost Effectiveness

Scale and Reach

The business model of financial intermediaries allows them to scale exponentially across geographies and reach a substantial number of farmers (Table 2).

Table 2. Scaled reach of financial intermediaries

Company	No. of years of operations	Countries of operation	Scale and reach
SCOPEInsight	6 years	Netherlands, Kenya	2 million farmers (20 countries, 800 assessments ³ , 30-40 clients)
Musoni	5 years	Kenya	110,000 farmers (Outstanding value of loans facilitated: Ksh 2.6+ billion (USD 25+ million))
myAgro	5 years	Mali, Senegal	25,000 farmers (in West Africa)
FarmDrive	1 year	Kenya	2,500+ farmers
SmartMoney	4 years	Kenya	140,000+ farmers (2 countries)
F3 Life	3 years	Kenya	100+ farmers
Rent-to-own	5 years	Zambia	2000+ farmers

Increasingly, companies such as Esoko and Manobi are emerging to provide short message service (i.e., texting) information for market prices of different crops in regional and national markets, as well as local weather conditions. These technology platforms can allow financial institution clients to access critical information such as planting, harvesting, and marketing seasons, and thus design financial products better.

Connected Farmer Alliance (CFA) is a 3-year partnership between USAID and Vodafone Group plc, focused on designing, developing, and scaling mobile solutions for agriculture in Kenya, Mozambique and Tanzania. Implemented by TechnoServe, a non-profit consulting firm, CFA is targeting 500,000 smallholder farmers (including 150,000 women) with two types of solutions. Connected Farmer, the mobile supply chain solution developed by CFA and recently offered in the market commercially, enables agribusinesses to engage more effectively with their smallholder suppliers. By facilitating payment and loan transactions via M-PESA, digitizing farmer data management, and creating an easy platform for direct-to-farmer communication, Connected Farmer lowers the cost of doing business with smallholders. CFA also offers mobile financial services to smallholders, including savings, insurance and credit, leveraging the existing M-PESA mobile money platform from Vodafone.

Zoona, a third party provider of mobile payments, partners with value chain players that contract with smallholder farmers. Such value chain players make one payment to Zoona, which then makes e-voucher or mobile payments to each of the contracted farmers. E-voucher recipients can redeem the vouchers at input retailers or at cash-in/out agents. On a monthly basis, the Zoona platform currently supports 50,000 transactions valued at USD 3.5 million and reaches over 60,000 people. Zoona began in Zambia and has expanded into Zimbabwe, Mozambique and Malawi.

Improving Outcomes

The key outcome that all financial intermediaries work towards is a smoother and assured flow of financial services from formal financial institutions towards smallholder farmers. Although it is too early to attribute accurate impact figures and draw correlation of the financial empowerment of smallholder farmers and the role of financial intermediaries in causing these outcomes, there is an increased acceptance among farmers to approach such intermediaries and willingness among banks to push agri-based financial products through these specialized enterprises. Agricultural finance in Kenya increased from USD 335 million in 2007 to USD 620 million in 2011, and is attributed mostly to the introduction of mobile banking and other technology solutions⁴. In India, the State Bank of India has been able to add 100,000 villages to its service network through a combination of mobile phone technology and cash points (within shops) in the village. This has brought millions of smallholder farmers into the banking network.

Agricultural finance in Kenya increased from USD 335 million in 2007 to USD 620 million in 2011, and it is attributed mostly to the introduction of mobile banking and other technology.

First Access, a data analytics company in Tanzania, predicts risk for farmers who have never had a bank account or credit score by using their prepaid mobile data. Their clients are banks and MFIs, agricultural input/equipment suppliers as well as solar/biofuel suppliers. Their credit scores have informed 350,000 loan applications, mostly of smallholder farmers.

Banks and MFIs in African countries (e.g. Albania, Malawi, Senegal) have also experimented with mobile service points as intermediaries, whereby a van visits the villages once or twice a week to offer financial services⁵. This allows clients to withdraw or deposit cash, make payment transfers, make loan repayments or receive other services. There are even ATMs on wheels. There have also been experiments with biometric technology (fingerprints, eye scan) to better identify clients to avoid identity fraud and to prevent serial defaulter farmers from taking loans from many MFIs simultaneously in India. In Malawi, the use of biometric identity verification was found to reduce

loan default⁶. Borrowers were also more careful in their loan applications (asked for smaller loans) and more diligent in repayment.

Mobile wallets can bring about a rapid transformation in the livelihoods of smallholder farmers, especially if adopted by the Government for national subsidy schemes. The efforts of the Federal Government of Nigeria (FGN) provides a good case study on how the cost of administering such subsidies, a key component of financing the value chain, can be reduced through digital financial services⁷. In Nigeria, only 11 percent of poor smallholder farmers received government subsidized inputs because the government input procurement and distribution system was very inefficient and costly, suffered from corruption, and displaced private commercial sales of fertilizers. Majority of the inputs were re-sold in the open market at high profit margins. Despite the huge sums spent on fertilizer subsidies, fertilizer use was still less than 10 kg/ha, compared to the global average of over 100 kg/ha⁸. Cellulant, a digital e-wallet services provider, helped streamline the disbursement of fertilizer subsidies under the Nigerian Government's Growth Enhancement Support (GES) scheme.

In the first 20 months of implementation of the e-wallet, 6 million farmers (which include more than 450,000 women) participated in GES and received subsidized fertilizer and improved seeds. In less than 160 days, through the e-wallet, 150,000MT of fertilizer and about 10,000MT of seeds were supplied to agro-dealers, and distributed to 1.2 million farmers. Today, FGN and relevant Nigerian state governments each contribute 25 percent of the fertilizer cost resulting in a 50 percent subsidy provided directly to smallholder farmers. In the period 2011-2013, the number of smallholders benefitting increased from 800,000 to 4.3 million, while the cost per smallholder receiving the fertilizer fell from USD 225-300 to USD 22⁹.

In Zambia, by using Zoono, Dunavant (the leading cotton producer in country) was able to lower its costs, provide discounts to farmers while increasing their access to inputs, reduce side-selling and improve the recordkeeping and sales of input suppliers. The e-voucher and mobile payment transaction histories through Zoono can also be used to build a financial identity for the farmer that will help with future access to credit.

MyAgro gets farmers in the program to move from subsistence farming to selling produce in markets and making a profit. With the increased income, the farmers often reinvest in their farms and make other investments, such as building roofs, sending their children to high school and buying motorcycles to get their goods to markets more easily. MyAgro is now working with around 15,000 farmers. MyAgro's mobile layaway platform has helped thousands of smallholders purchase income-boosting agricultural inputs without loans or handouts¹⁰.

Cost-Effectiveness

Agricultural value chain finance may provide a cost-effective and commercially sustainable solution for reaching greater numbers of farmers in rural areas. For example, in Mexico, the government used to channel credit directly to producers through Banrural, the national agri-bank. Financed with practically unlimited government funds, Banrural lent at below-market interest rates and had default rates upwards of 50 percent in some years. Banrural's lack of due diligence and minimal efforts to recuperate losses created a culture of non-repayment and discouraged many financial institutions from entering those markets. With post-crisis reforms, banks such as NAFIN, Bankaool and Finterra started capitalizing on existing agricultural value chain financing arrangements by using medium and large agro-processors as intermediaries for lending transactions with their smallholder suppliers¹¹.

The average 2nd year farmer saved an additional 27 percent of his income and cultivated 12 percent more land with myAgro.

For example, Bankaool utilizes the agro-processor to identify potential farmer borrowers, originate and distribute loans, and collect payments. Thereby reducing the costs of loan origination,

administration, and collection for banks, and also reduces the amount of capital the agro-processor has tied up in supplier finance, and providing smallholding producers with entry point to access long-term credit while building credit histories with formal financial institutions.

AgriLife (in Kenya, Uganda and Indonesia) has enabled financial institutions to increase their loans to farmer participants. The AgriLife platform developed by Mobipay and EcoFarmer platform developed by the MNO Econet provides low-cost methods to reduce risks in agricultural lending through mobile-enabled transaction history, and through low-value deposits and withdrawals. One of the three banks currently using the AgriLife platform, Century Microfinance Bank, lends to individual farmers via farmer cooperatives and other aggregators, from whom it obtains a loan guarantee. In 4-5 months, Century's outstanding loan portfolio had risen from KSh 25.2 million to KSh 88.6 million (250 percent increase) with minimal extra costs.

In the absence of such enterprises, smallholders generally borrow from moneylenders, friends or family at interest rates of 40 percent-60 percent. Some farmer cooperatives are able to secure finance from financial institutions but on a very limited basis (criteria include collateral, cash crops, and strict repayment dates). Also, value chain players such as input suppliers and supermarkets that provide trade credit to the farmers have a small reach and limited potential to create impact. Dedicated intermediaries, on the other hand, are able to reach up to 50,000 – 1 million farmers each, thus creating a much more significant impact. However, most such intermediaries require support from donors or Government on initial mobilization, piloting and financial literacy of farmers.

Taking it to Scale

Challenges

Most financial intermediaries face challenges in achieving the critical mass that allows them to be sustainable. They also face infrastructural issues such as low internet connectivity, lack of internet-enabled phones and on-ground field agents to enable last-mile reach. Financial illiteracy and lack of technical understanding among farmers also hamper their adoption of technology-enabled financial services. Many financial institutions are also wary of agricultural finance and hesitate to partner with small intermediaries and startups to on-lend to smallholder farmers.

Financial institutions are less motivated to adopt SCOPEInsight's assessment tools if their funds are free of cost and so they are not fully exposed to risk of payment for their services.

Financial intermediaries with overarching objectives such as environmental protection for sustainable agriculture face an additional challenge in aligning these with financial institutions. For instance, F3 Life faces the challenge of onboarding financial institutions that understand the need to benchmark loans against climate-smart techniques adopted by borrower farmers. Many financial institutions fail to acknowledge the underlying correlation between effective resource management by the farmer and his ability to repay the loan. F3 Life conducts workshops for financial institutions to explain the credit-risk mitigation linked to sustainable practices. F3 Life has an eco-credit mechanism under which credit scores, interest rates and credit limits are set according to the quality of environmental management practiced by the borrower. This system helps a financial services provider disburse soft loans to farmers due to the reduced perceived risk.

SCOPEInsight faces the challenge of donor capital distorting the adoption rate of its assessment tools by agricultural stakeholders. With donor funding, many stakeholders do not assess the credit risk and farmers' performance adequately, leading to an issue of adverse selection.

Role of Government and Policy

In most developing countries, Government sponsored risk mitigation tools can be more efficient than direct lending programs. For example, Government guarantee programs in Mexico have significantly helped financial institutions manage the risk of lending to small and medium producers. These guarantees require less government involvement and fewer funds, thus avoiding bureaucratic delays. On the other hand, in Peru and Honduras, the Government policy has traditionally been to finance farmers directly through programs run by state-run banks. However, the result is that banks focus more on commercial farmers, not subsistence farmers. Also as most banks mandate collateral, guarantee programs give the banks more flexibility to increase their risk appetite to include smallholder farmers in their portfolio.

In Nigeria, the Government-promoted Nigeria Risk Incentive System for Agriculture Lending, or NIRSAL, enables key agricultural sector participants, including farmers, to access finance at single-digit interest rates, using innovative forms of security for their borrowing. For example, agro-dealers can borrow funds using stock as collateral and previous trade history as a reference. For their part, farmers can borrow as groups using mechanisms such as cross-guarantees. This approach has worked so far – since March 2012, Nigeria has injected more than 20 billion naira (about USD 122 million) in loans to key agricultural sector participants.

Governments are also working with private analytics providers to increase the impact of their loans and reduce risk. In Zimbabwe, the Zimbabwe Agricultural Development Trust established the Credit for Agricultural Trade and Expansion (CREATE) fund, a revolving fund accessed by value chain actors through financial institutions. The fund provides working capital to input suppliers and off-takers whose activities ultimately benefit smallholder farmers. Genesis, a Zimbabwean analytics company, helps ZADT to develop and pilot financial products suitable for direct access by smallholder farmers. Genesis identified the 'mung' bean and sesame value chains for product development and testing.

One of the constraints restricting the growth of ICT-based financial intermediaries is the lack of clear policies around the use of mobile money. Since there are multiple stakeholders in the mobile payment ecosystem (MNOs, agents, finance providers etc.), there is often an overlap of different regulatory jurisdictions, leading to complexity.

Lack of regulatory clarity is a key hindrance in the adoption of mobile money.

Distinct and specific Government policies and guidelines could catalyze innovation in this sector and enhance the scalability of enterprises catalyzing the flow of financial services to smallholders. For example, in Africa, especially in Kenya, Tanzania and Uganda, the Governments have taken positive steps to encourage interoperability so that mobile money is more liquid and more users are encouraged to use it. This will encourage more value chain players to adopt mobile money and help financial institutions cater to smallholder farmers through digital payments, lowering their costs.

Conclusion

Specialized financial service intermediaries are particularly necessary when the local banking sector wishes to lend to smallholder farmers. Financial intermediaries add a number of competencies that are not the core business of a bank. Some of these competencies include mobile applications and other technology development, credit analytics, and networks and partnerships with other value chain intermediaries. The presence of a financial intermediary to facilitate financial services such as loans, payments and savings augurs well for farmers as the process is generally made smoother and faster than direct finance from banks.

Working with intermediary enterprises is also attractive for financial institutions, as it helps them develop new markets, reach the last-mile in a cost-effective way and reduce the inherent credit risk of lending to smallholder farmers. Financial intermediaries have a highly scalable and replicable model, but depends on factors such as the geography it operates in, the availability of suitable ICT

infrastructure (such as internet, mobile phones etc.), the lack of farmer data, and the density of farmers.. Proprietary technology, relationships with banks, and a large base of smallholder farmers as customers are the key levers on which enterprises in this model can thrive.

Table 3. SEs: Financial intermediaries

Company	Country	Solution Description
Agrilife (Mobipay)	Kenya	Agrilife is a cloud-based technology platform designed to have the mobile phone & web platforms as the channels to enable smallholder farmers in groups access financial services, markets and other services that are relevant to them.
Connected Farmer Alliance (CFA)	Kenya, Mozambique, Tanzania	The Connected Farmer Alliance (CFA) is a public-private partnership that seeks to promote commercially sustainable mobile agriculture solutions and increase productivity and revenues for 500,000 smallholder farmers
F3 Life	Kenya	F3 Life enables the provision of “climate-smart” or “green” finance by companies, NGOs and financial institutions to farmers, fishermen and forest users in developing countries through credit scoring of farmers based on the environmental protection milestones that farmers achieve.
Farmable	Ghana	Farmable is a Crowdfunding platform that aims to create a new form of global collaborative farming called ‘Crowdfarming’.
FarmDrive	Kenya	FarmDrive unlocks access to credit to underserved smallholder farmers by increasing the efficiency and operational capacity of financial service providers using technology
FoodTrade ESA	Burundi, Kenya, Malawi, Mozambique, Rwanda, Tanzania, Uganda, Zambia, and Zimbabwe	FoodTrade ESA works to systemically improve the national and regional staple food market systems, directly impacting more than 400,000 households and consumers through stable markets for staple food products. The program works to enable private sector to invest and develop regional staple markets, benefiting farmers and consumers.
Joseph Initiative	Uganda	Joseph Initiative serves as a platform for delivery of financial services by pre-financing inputs at the beginning of the season while ensuring repayment at the collection centers after harvest.
Kifiya	Ethiopia	Kifiya aims to build a digital payment ecosystem by supporting agricultural actors along the value chain to switch from risky and expensive cash handling processes to digital payments. This will be supported by financial literacy training for smallholders.
Musoni	Kenya	Musoni Kenya is a microfinance institution (MFI) providing financial services through mobile payments
myAgro	Mali, Senegal	myAgro uses a mobile technology platform to provide access to fertilizer and seed packages on layaway , technical training, market access to premium buyers and access to asset loans for appropriate small-scale farm equipment.
Rent-to-own	Zambia	Rent-to-Own (RTO) is a social enterprise that supports micro entrepreneurs in rural Zambia by providing finance via micro-leasing and access to high quality, small to medium productive assets at low prices
Sarura Commodities	Rwanda	Sarura offers commercial inventory-credit financing, crop storage and trading services, known as “warrantage”, to smallholder farmers.
SmartMoney	Tanzania, Uganda	SmartMoney is a third-party, savings and payment system, replacing cash with SmartMoney in the entire value chain
SCOPEinsight	Netherlands, Kenya	SCOPEinsight is the first rating organization in Agriculture, Aquaculture, Dairy/livestock and Forestry. It assesses the creditworthiness of producer organizations by profiling their organizational performance.
Zoona	Zambia	Zoona is a third party provider of mobile payments, partners with value chain players that contract with smallholder farmers

Additional Reading

- Savoir; Creating Access to Agricultural Finance
<http://www.afd.fr/jahia/webdav/site/afd/shared/PUBLICATIONS/RECHERCHE/Scientifiques/A-savoir/14-VA-A-Savoir.pdf>
- Dalberg Global Development Advisors; INFLECTION POINT: Unlocking growth in the era of farmer finance http://www.mastercardfdn.org/wp-content/uploads/2016/04/Inflection-Point_April-2016.pdf
- The Initiative for Smallholder Farmers; Value Chain Financing: How agro-enterprises can serve as alternate aggregation points for delivering financial services to smallholder farmers
<https://www.raflelearning.org/post/value-chain-financing-how-agro-enterprises-can-serve-alternate-aggregation-points-for>
- Dalberg, Citi Foundation, Skoll Foundation; Catalyzing Smallholder Agricultural Finance
http://dalberg.com/documents/Catalyzing_Smallholder_Ag_Finance.pdf
- CGAP, Segmentation of Smallholder Households; Meeting the Range of Financial Needs in Agricultural Families <http://www.cgap.org/sites/default/files/Focus-Note-Segmentation-of-Smallholder-Households-April-2013.pdf>

ENDNOTES

¹ Initiative for Smallholder Finance

² <http://www19.iadb.org/intal/intalcdi/PE/2014/14885.pdf>

³ Assessment is done at a farmer cooperative level

⁴ Governor of the Central Bank of Kenya in his keynote address to the AFRACA Central Banks Forum on 9 May 2011

⁵ Creating Access to Agricultural Finance, A Savoir (2012)

⁶ Ibid

⁷ Serving Smallholder Farmers: Recent Developments in Digital Finance, CGAP (2014)

⁸ <https://faraafrica.wordpress.com/2016/06/21/when-nigerian-farmers-went-digital/>

⁹ <https://www.cgap.org/sites/default/files/Focus-Note-Serving-Smallholder-Farmers-Jun-2014.pdf>

¹⁰ <http://www.myagro.org/our-mission/>

¹¹ Financing Agricultural Value Chains in Latin America, Multilateral Investment Fund (2014)

CASE STUDY: SMARTMONEY

SmartMoney

Founding year: 2012

HQ: Kampala, Uganda

Countries of operation : Uganda, Tanzania

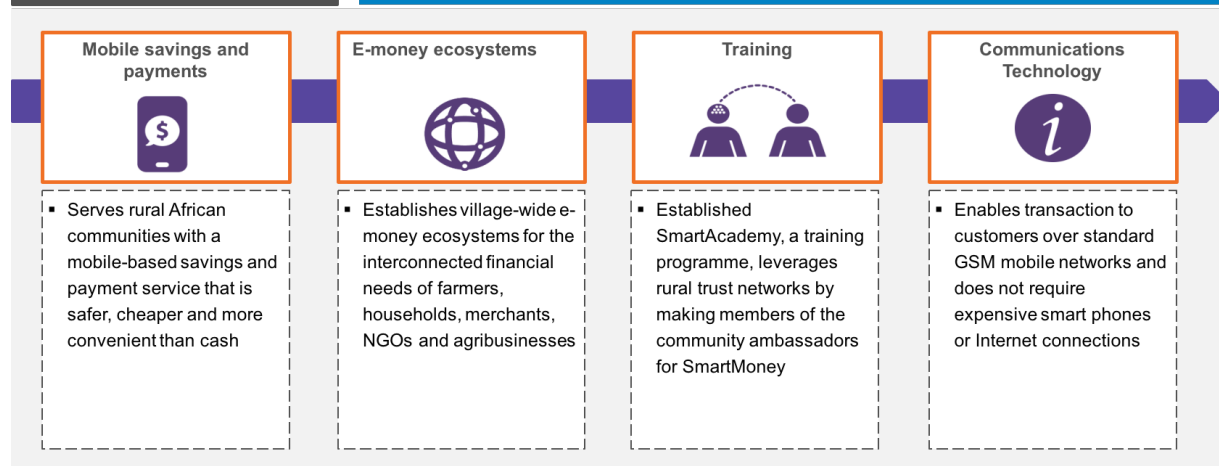
Orientation: For-profit

Employees: 80 full-time, 150 part-time

Turnover: USD 10,000 (projected for 2016)

Transporting cash over long distances to make payments is dangerous and expensive. Storage of cash presents other problems such as theft, violence, rampant corruption.

SmartMoney is a mobile money company with experience developing mobile money solutions. It economically empowers smallholder farmers by promoting savings, increasing security and reducing payment costs. SmartMoney pioneers a unique model geared at driving uptake among rural customers and market access to these retail customers to rural institutions. The business model is based on providing free retail services to farmers and rural households while generating revenue from institutional customers such as agribusiness and bank. SmartMoney generates revenue from payment customers (agriculture companies, schools, churches) and deposits (currently marketing fee from banks).



Operating Model

Theft is prevalent and banks are practically non-existent across rural Africa. Transporting cash over long distances to make payments is dangerous and expensive. The lack of secure places to store cash increases the vulnerability of rural farmers to theft and the temptation to spend, and they find it difficult to save the money they work so hard to earn. SmartMoney, a third party provider of mobile money, aims to digitize payments to various actors across the agricultural value chain, and thus, eliminate the transactional costs and risks from dealing in cash.

SmartMoney reduces costs from transportation and risks of theft for both farmers and agribusinesses.

SmartMoney was founded in 2012 with initial capital of USD 500,000 provided by its founder, Michael Borse. Agribusinesses can use SmartMoney's web interface to transfer electronic funds into the mobile wallet of their intermediary buyers. These buyers purchase crops by transferring money to the mobile wallets of the farmers. Farmers can choose to cash out from another SmartMoney user or maintain the stored value in the mobile wallet and pay cashlessly at rural shops, schools or transfer money to other retail customers. Other users of SmartMoney include retail customers (e.g. farmers) as well as rural merchants such as rural shops, restaurants, butchers, kiosk vendors, input suppliers, and cooperatives. SmartMoney has an agent network to infuse liquidity into its digital payments ecosystem. SmartMoney's rural merchants are fundamentally different from conventional mobile money "agents" – SmartMoney does not pay them commission. Instead, it trains them on the benefits of using e-money and provides incentives such as inventory

Households can simply swap e-money for cash among neighbors (Community Exchange) - no agents, no fees.

payments through the SmartMoney application. Nearly 95 percent of SmartMoney merchants have switched over from using cash for inventory payments to electronic transactions.

SmartMoney has partnered with the Ministry of Trade, Industry and Cooperatives (MTIC) to introduce the service to more than 13,000 cooperatives throughout the country. Together with the MTIC point of contact, SmartMoney conducted pilots in northern and eastern Uganda and began implementation in August 2013 with coffee and cotton buyers in the Kasese district in western Uganda. The five SmartMoney community operations managers (COMs) serve as relationship managers for the SmartMoney CICO retail shops, SACCOs, cooperatives, large buyers and users. The COMs also manage the 38 independent community representatives (CRs) who register new users on a fee-per-new-user basis that illustrates the potential of digital payments to boost job creation.

The SmartMoney sales and marketing team works with selected large buyers to determine their cash usage behaviour patterns, their intermediary buyers, as well as their farmers. This analysis of the entire cash value chain considered the number, frequency and average amount of transactions incurred by a large buyer. As of August 2014, SmartMoney entered into a contractual relationship with four large coffee buyers.

By driving the use of cashless payments and savings among all key economic stakeholders within a remote rural community, SmartMoney establishes holistic village-wide electronic money ecosystems, called E-Village. These ecosystems address the diverse and interconnected financial needs of farmers, households, merchants, schools, agriculture companies, NGOs and other rural institutions. SmartMoney customers can purchase goods such as salt, sugar and sodas at more than 2,600 rural merchants across Uganda and Tanzania. To drive large scale awareness, trust and usage, SmartMoney has also developed “SmartAcademy”, a comprehensive training programme that leverages existing rural institutions and trust networks (cooperatives, schools, churches) to cost-effectively deliver training to rural households and farmers. SmartAcademy's constituency managers recruit and train institutional registration agents who in turn train and register retail customers. Institutional registration agents are drawn from SmartMoney's partners such as agriculture companies, schools, churches and NGOs.

Another major differentiating factor is that SmartMoney facilitates access from all available mobile networks through USSD, which allows farmers without internet-enabled smartphones to transact using SmartMoney as well. SmartMoney reaches a large number of rural customers with a proprietary cloud-based platform designed to work with the minimum bandwidth and technology available in rural communities – a low-cost GSM mobile phone and a SIM card. No smartphones or internet access are required.

SmartMoney operates with cotton ginneries in Tanzania serving 750,000+ farmers. In Uganda, it partners with the Ministry of Industry, Trade & Cooperatives to introduce SmartMoney to their 13,000 cooperatives throughout the country. The Ministry works with local SmartMoney staff to travel around the country to register farmers in cooperatives and SACCOs involved in coffee, maize, fish, fruit and dairy. It has also partnered with USAID and GIZ that help SmartMoney partner with offtakers. It also works with churches, NGOs, savings group, schools, women SHGs and local churches to help mobilize the Ugandan farmers and build the trust among customers.

Financial Sustainability

SmartMoney offers the retail savings and payment services to farmers free of cost. By additionally providing training and setting up holistic e-money ecosystems in remote rural communities, SmartMoney is able to drive uptake of digital finance at scale across rural markets. SmartMoney covers this cost through the institutional payment services which generate fee revenues from large

rural economic actors (agriculture companies, schools, traders) as well as through marketing fees that SmartMoney charges its partner banks for mobilizing rural deposits on their behalf.

SmartMoney has two revenue streams - payments and deposits. It charges oftakers (agribusinesses), and not the farmers. It collects a 3 percent fee from the agribusiness each time they transfer money, while there is no withdrawal fee for farmers. SmartMoney provides a wallet to farmers for cash-in and cash-out. On deposit side, it works with banks to help them with last-mile access to rural areas. Thus, it acts as the marketing front-end for its partner banks, who pay marketing fees, which is around 9 percent of the deposit.

Agricultural buyers are expected to replace cash payments with e-payments only if the e-payment solution is accepted by and affordable to rural households. SmartMoney is uniquely positioned to offer these actors tailored institutional payment services and generates revenue from these actors (which are SmartMoney's "institutional customers"). For agriculture companies, the solution provides the added benefit of strengthening farmer loyalty, as E-Village provides tangible value to rural farming households (free of charge savings and payment services). SmartMoney is able to negotiate a minimum fee of 3 percent of each institutional payment transaction.

Rural staff, training and transport are the major costs. SmartMoney incurs cost on training retail customers to use their payment solution and imparting financial literacy to them. SmartMoney also invests in training the agribusinesses. It incurs capital expenditure on vehicles (for awareness visits to churches, motorcycles) and marketing material. The enterprise also invests in updating its MIS, and is seeking to use in-house data of agribusinesses for rebalancing and reconciliation. SmartMoney has received donor funding from the MasterCard Foundation for Rural Prosperity and the Africa Enterprise Challenge Fund.

Impact

SmartMoney increases overall savings capacity by allowing rural farmers and households to pay for goods and services at local businesses with their mobile phone, thereby reducing the need to travel with cash to make payments. This allows users to not only save productive time, but also allocate more money to savings. An M&E team on behalf of the MasterCard FRP / KPMG estimates the costs savings to amount to USD 120 per retail household per year. Farmers can benefit through free and convenient access to mobile money transfer service, using it to make a number of transactions such as paying school fees at the schools that have partnered with SmartMoney.

SmartMoney services more than 100,000 farmers in Uganda and around 40,000 in Tanzania.

Agribusinesses can also benefit from cost savings by removing expenses associated with handling cash. Cash handling costs are typically 7 percent-20 percent percent of annual turnover in the countries where SmartMoney works, as compared to the 3 percent percent fee charged by SmartMoney to its partners. SmartMoney also increases efficiency, employee safety and transparency for large rural financial institutions by eliminating cash handling and disbursal.

For larger cash-out needs, SmartMoney retail shops provide robust liquidity because they take in cash for the sale of goods. These shops earn no commission, but they have multiple other benefits as a SmartMoney service centre. When liquidity is properly managed, disbursing cash-outs helps them manage their cash balances downward, reducing their risk of theft and their trips to a financial institution to deposit cash. Conversely, making electronic deposits to a financial institution allows them to manage their electronic float. Other SmartMoney shops that provide a wholesale function are strategically positioned at the junctions or crossroads between the village and the densely populated corridor on the main road. The village shop can place a voice call to the 'wholesale' shop

to order three boxes of laundry detergent and then make a SmartMoney transfer to pay for the soap and a one-way motorcycle taxi transport. A key benefit is that the sole employee/owner does not need to close the village shop in order to physically procure more stock and the 'wholesale' shop increases its sales volume.

The increased foot traffic of SmartMoney users presents the opportunity to cross-sell agricultural financial products and services, increase membership, and improve loan tracking for any loans they disburse on SmartMoney. They also benefit from information provided on SmartMoney's radio, print and billboard advertising.

Challenges and Lessons

The major challenge for SmartMoney is building trust with small-holder farmers who are skeptical about formal financial services. To overcome this barrier, SmartMoney works with rural trust networks including agriculture companies, catholic and protestant churches, and NGOs to build trust within local communities. SmartMoney also faces barriers such as low density of population, poor infrastructure of electricity and roads, and regulatory ambiguity in mobile money.

Road Ahead

SmartMoney is opening 750 new customer accounts per day, and further expansion to additional districts in Uganda is already underway. SmartMoney also plans to apply for a banking license so that it is able to have more flexibility to invest customer deposits, and on-lend customer deposits. It has detailed cash flow data on rural merchants who use the e-money to accept retail payments and to restock, as well as on its institutional customers such as agribusinesses. In addition, it has established relationships with larger customers who have expressed the demand for loans. This data from savings and payment services provide an excellent foundation for future lending.

CASE STUDY: FARMDRIVE



FarmDrive

Founding year: 2014

HQ: Nairobi, Kenya

Countries of operation : Kenya

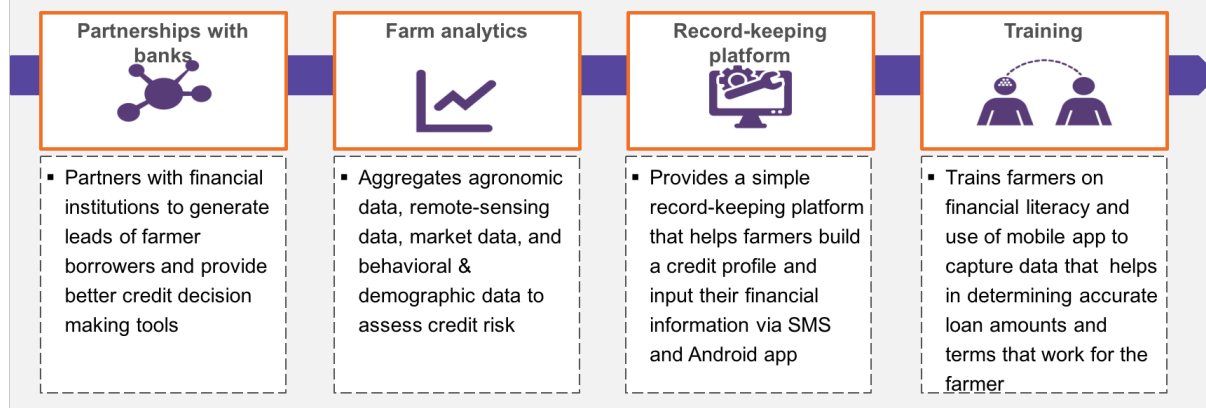
Orientation: For-profit

Employees: 7 staff + 2 directors

Turnover: USD 17,000 (~KSh 17 million)

There is very little aggregated data about smallholder farmers, particularly about their financial performance and history. The lack of data makes it difficult for financial institutions to conduct credit assessments on farmers, hence they are viewed as high risk, locking them out of formal financial systems. Currently, only 1% of commercial loans in East Africa go to agriculture.

FarmDrive works at the intersection of technology, agriculture and finance. FarmDrive offers products to farmers and banks to ease lending. FarmDrive has pioneered an innovative way to use data that is generated in smallholder farmers' value chains for enabling their financial inclusion. By harnessing the power of data analytics and mobile technology, it aggregates and analyzes pertinent information about smallholder farmers from dynamic traditional and alternate data points - including produce off-takers, agro-dealers and the farmers themselves.



Operating Model

A significant amount of data is generated by smallholder farmers when they transact during the farming process, for instance, when they purchase inputs from the local agro dealer or when they sell at the farm gate. This data, which is very crucial in cash flow management and making lending decisions, is most often lost, as there are no mechanisms to capture and aggregate it. Given their proliferation in Kenya, mobile phones can be leveraged to digitize the process of capturing this data, and address the data gaps that lead to financial exclusion.

FarmDrive, a company based in Kenya, builds risk assessment models for financial institutions to evaluate farmers for making lending easier and less risky. FarmDrive's platform harnesses the power of data analytics, machine learning and mobile technology to build innovative credit scoring models giving financial institutions an operationally efficient and cost effective way to identify and assess farmers' risks. FarmDrive has SMS and android apps that enable farmers to record revenues and expenses. It builds innovative comprehensive credit profiles used for real-time credit assessment to enable banks to serve smallholder farmers through digital financial services. It aggregates agronomic data (soil and water), remote-sensing data (weather, humidity, precipitation data), market data, behavioral data, and demographic data. It provides financial institutions credit profiles and loan terms based on the aggregate data to assess farmers' credit risk. It helps farmers, who lack access to capital, business records and fixed assets, to be evaluated on metrics that are suitable to them and information that is readily available. FarmDrive also facilitates insurance bundled with the credit from partner banks.

FarmDrive provides a simple record-keeping platform that allows farmers to input their financial information via SMS and an Android app and build a credit profile. The farmers' data combined with existing agricultural data is used to develop a

Digital records enable farmers to gain valuable insight into their farming operations, and maximize potential of their farms.

comprehensive credit profile, to be used for the farmers' credit assessment by financial institutions when they need funding. In addition, FarmDrive also uses the records to understand each farmer's specific financial requirement and provide tailored information via SMS. The turnaround time for loan decision by banks through FarmDrive platform is 72 hours. approval to disbursal.

Farm Drive has a wide variety of partners including: investors (Engineers without Borders and Mercy Corps); capacity building (Open Capital advisors, ACRE Africa -to create insurance products); and financial institutions (Musoni Kenya).

FarmDrive has also partnered with the ACP-EU Technical Centre for Agricultural and Rural Co-operation (CTA) to build the capacity of Kenyan young farmers and stakeholders and help them access finance. In partnership with CTA, FarmDrive has organized 20 mobile training sessions dubbed "Apps4Ag Learning Opportunities". These sessions help young farmers learn how to use FarmDrive's financial management tool to keep records of their farming activities, receive

agronomic recommendations, and benefit from mobile money payments, access to loans and other digital financial services. The workshops are being held across different regions in Kenya. They provide hands-on experience to a total of 500 young farmers and other agricultural stakeholders. FarmDrive has created comprehensive credit profiles for the young farmers, who can apply and eventually receive credit from lending partners through their mobile phones.

FarmDrive works with 15 farmer youth leaders from the local community to spread awareness about its services. These leaders also provide training to the farmers on how to use mobile phones and educate them about the risks of borrowing. FarmDrive's training teams help farmers gain financial literacy and skills to use the mobile app. The data helps the enterprise in determining accurate loan amounts that work for the farmer's crop, acre size, planting date, and income.

Financial Sustainability

FarmDrive earns revenues from finance providers for their use of the credit profiles (fixed fee) and from farmers (percentage of loan amount as transaction fee). It incurs negligible capital expenditure as the operations are largely digital. Its operating expenses include cost of training farmers on the use of mobile application, and the cost of creating the credit profiles. Currently, average training/profiling cost per farmer is KSh 130 (USD 1.3).

FarmDrive has participated in the Village Capital and Unreasonable Institute Accelerators. The data accuracy mitigates the risk for financial institutions and helps them maintain very low NPAs (3 defaults out of 350 loans facilitated by FarmDrive till now). As financial institutions are able to price their loans better, they are able to minimize the risk premium and still charge farmers lower than traditional loans on an average. Thus, FarmDrive is able to create a win-win situation for both, finance providers and borrowers.

Farmdrive's algorithm determines the loan amount, loan term and other parameters for financial institutions to lend to farmers. As more financial institutions and farmers are onboarded, operational costs are expected to decrease with economies of scale.

Impact

FarmDrive catalyzes financial institutions to lend more to smallholder farmers by de-risking the process through clear and transparent records. Farmer clients of FarmDrive are benefiting from financial awareness, financial management tools, farming-related recommendations, access to finance and links to profitable markets. The increase in lending to smallholder farmers positively affects the economies and food security of these regions, and has a huge economic impact and multiplier effect.. For example, working closely with Musoni Kenya, a tech -driven MFI, FarmDrive has helped facilitate a loan portfolio of more than \$25,000 to some of these farmers who have never

received credit before. They now are able to lease tractors to plough their farms in 30 mins, an activity that would take them 2 weeks manually, they no longer reuse seeds from previous harvests as they can afford quality seeds and fertilizer. FarmDrive has onboarded 2,500+ farmers since December 2015 and expects to serve around 10,000 by end of 2016. 60 percent of these smallholder farmers are women, who are less financially empowered because traditionally, women do not own assets. Providing a digital platform for loans that are not tied to asset ownership levels the playing field for women to access credit.

Challenges and Lessons

Lack of understanding of IT among farmers is a major challenge for the adoption of FarmDrive's solutions. To address this issue, FarmDrive has made available its tools in two languages (English and Kiswahili), and on multiple platforms, so that farmers can avail of its services with minimal training and support across different formats. Access to data is also a challenge since few available datasets are digitized. FarmDrive is also struggling to achieve a critical mass, both on the supply and demand sides so that it achieves economies of scale to sustain its business.