



**SOWING THE SEEDS
OF INNOVATION
FOR SMALLHOLDER
FINANCE**

Recommendations for reaping rewards from new technologies and non-financial delivery channels

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Foreword

The global health and economic crisis provoked by COVID-19 is already disrupting food systems and supply chains, and affecting the economic life of farmers. Our world is also confronting a climate crisis, not only with hotter temperatures and rising seas, but also intensifying food shortages. At the same time, the global population is growing—meaning that agricultural production must increase by as much as 70% to feed a projected 9.1 billion people by 2050.

These pressing demands mean that we must do everything we can to support the world's farmers—including the smallholders in the developing world who produce much of the food we eat. There are many promising agricultural innovations, including advances in irrigation, new types of seeds and fertilizer, and digital technologies that provide up-to-the-minute information about growing conditions. To realize the promise of these innovations, however, farmers need access to capital and other financial services, such as payments, savings, and insurance.

Although some financial providers have deemed these rural farmers too “hard to reach,” their products find a way to reach us. Technology is offering exciting new ways to leverage the same channels and actors that power our food supply chains to deliver financial services. We are seeing the growth of cross-industry partnerships powered by digital data, which is allowing a wide range of new and traditional finance providers to join forces with agribusinesses and other companies that work in rural areas to provide credit and other services to farmers.

I'm very pleased that my Agriculture Finance Working Group, co-led by CGAP and IDH, The Sustainable Trade Initiative, has completed this report to showcase the potential of these innovative partnerships. I hope this research will provide useful lessons on a new way of doing business that will spur new investments in agriculture, increase financial inclusion, and guarantee a brighter future for the farmers who are feeding the world.



H.M. Queen Máxima of the Netherlands

UN Secretary-General's Special Advocate for
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Executive summary

As the global population grows, farmers must supply a greater variety of food products to an expanding middle class, while confronting the challenges of climate change and working to secure their own livelihoods. Evidence shows that smallholder farmers and small- and medium-sized agribusinesses (agri-SMEs) in the developing world—who provide the majority of the world’s food supply—do not have access to adequate financial services that could help them expand their enterprises and support their families. In addition to agricultural credit, farmers need access to savings, insurance, remittances, and payments, in order to manage everyday expenses, pay bills, send their children to school, and save for the future.

Historically, the few formal financial providers that have moved into rural areas have been constrained by the need to reach a minimum critical mass of rural customers to generate enough revenue to justify their operating costs. Given the prevailing business models, their reach has been limited to those rural areas with enough concentration of farmers ready for credit, which is generally the only service providers offer them. As a result, vast rural areas where most poor rural households live have been left unserved or under-served.

However, we see that companies across many sectors are using digital technology as a tool to develop new business models with great potential to help close the rural and agricultural finance gap affecting smallholder farmers and agri-SMEs. Many of these models are based on private-private partnerships between businesses in different industries, including agribusinesses, banks, payment companies, mobile network operators (MNOs), fintechs, fast-moving consumer goods (FMCG) companies, and e-commerce firms.

All of these businesses have been undergoing a rapid digitization process to increase efficiency in their operations. This makes it easier for them to integrate systems and processes with one another in a way that can greatly increase the value of services they offer to customers and improve the unit economics of delivering these services in more remote rural areas.



These collaborations can increase the efficiency and quality of financial services, risk assessments, and value chain transactions, by pooling the various capacities and knowledge of the different cross-industry partners to view the diverse needs of smallholders and agri-SMEs more holistically. By doing so, these collaborations are creating an ecosystem of valued services delivered through shared platforms, which exploits economies of scale and scope in an unprecedented manner and improves the viability of delivering financial services to smallholder farmers and agri-SMEs in rural areas.

At the same time, advances in farm technology (sensors, satellite imagery, and drones), along with precision farming, are helping to increase efficiency along the value chain. This enables better risk management and increases profitability for smallholders while helping them establish a digital footprint.

This study describes how these nascent collaborative business models are evolving rapidly, as providers learn by doing. However, we can now recognize some of the opportunities and risks these models present. From this analysis, we propose general insights on how to promote successful cross-industry partnerships and highlight specific steps that private- and public-sector actors can follow to continue expanding access to rural and agricultural finance in a way that is viable for providers and customers.

New Partnerships

Key to the success of this new generation of cross-industry partnerships is that partners invest in understanding enough about each other's businesses.

Collaborators must develop a shared vision of how partners' services reinforce each other, to ensure that incentives are aligned from the start in a way that ensures customers benefit and are protected.

New partnerships should leverage the pooling of knowledge and data to understand client needs more holistically. Pushing for partnerships that enable both agricultural and non-agricultural services seems more promising to establish scalable and sustainable rural financial ecosystems. The emerging

experience suggests rural clients value a broader suite of bundled farm and non-farm financial services, as this better meets their household needs.

As companies embark on new cross-industry partnerships, they need to recognize the importance of risks related to customer protection and monopolistic behavior. If these partnerships scale, companies will collect a great deal of customer data, and it is important for customers to understand and consent to the use of their data, especially in low-literacy environments. In addition, agents representing service providers need clear guidelines on transparent product pricing and description to avoid fraud and service misrepresentation.



Examples of partnerships

In Kenya, Vodafone subsidiary Safaricom has set up DigiFarm, an e-platform that allows farmers to receive agronomic advice, weather information, input credit, agricultural insurance, and remittances on their feature mobile phones. Safaricom is able to do this by partnering with banks, insurance companies, agribusinesses, and fintechs that deliver their services through the Safaricom platform. During 2019 DigiFarm reported serving 1.2 million registered farmers.

Pula is an insurtech partnering with larger, more traditional insurance companies, banks, and agribusinesses to deliver agricultural insurance to smallholders in Nigeria, Malawi, Zambia, and Kenya. Pula leverages its unique knowledge of smallholder yield patterns to adequately insure purchases of seeds and fertilizers by smallholders against pests and weather shocks. Partner insurance companies allow Pula to underwrite their insurance policies according to national regulations. Partner banks offer loans for those insured seeds and fertilizers, and agribusinesses that sell those seeds and fertilizer help distribute the insurance products via their vast agri-agent networks. The partnership creates greater value for smallholders. Pula now insures inputs and loans for 900,000 farmers in the four African countries it serves.

Mastercard is partnering with Neumann Kaffee Gruppe (NKG), a global coffee agribusiness, and several banks and merchant networks in Mexico and Colombia to provide payment infrastructure via mobile wallets, prepaid cards, and debit cards, which enables direct e-payment to smallholder farmers for the coffee they sell. Compared with cash, these cards make it cheaper and easier for companies to pay smallholders in remote areas and reduces the risk of theft or corruption. The e-payments they receive open up a wider variety of use cases for smallholders thanks to the vast merchant network associated with Mastercard. The most mature pilot in Mexico has over 1,300 smallholder farmers actively participating in the new partnership, as well as a larger number of indirect participants who work through middlemen.

In addition, Mastercard launched the Mastercard Farmer Network (MFN) in early 2017, a mobile platform to digitally connect small farmers in Kenya, Uganda and Tanzania. Developed by Mastercard's Lab for Financial Inclusion, it is a mobile platform that improves farmers' access to markets, increases price transparency, and digitizes payments by partnering with various agri-sector stakeholders, such as farmers, farmer producer organizations, buyers, financial institutions, and value-added services providers. The platform is live today with more than 250,000 farmers in the three countries covered.

Recommendations

By analyzing these nascent business models, the UNSGSA's Agriculture Finance Working Group has developed a set of recommendations for the private and public sectors to close the agricultural finance gap.

Private Sector

Companies wishing to engage in cross-industry partnerships should establish internal, innovation-focused teams responsible for generating ideas and identifying partners that will make it viable to deliver services in rural areas. Large and small companies have been able to develop these innovation teams, as exemplified by Mastercard and Pula.

Partnerships should enable aggregation of valued services that allow for greater operational efficiency, customer knowledge and value, and capacity to deliver services. By sharing select, non-confidential, gender-disaggregated data, partners can gain a more holistic understanding of different rural customer financial needs and potential services for greater value.

In an ideal partnership, the actors will bring different strengths to create a platform that adequately caters to smallholder needs:

- 1** Agribusinesses can bring greater smallholder knowledge and better service distribution channels to new partnerships.
- 2** Financial institutions can bring a wider set of farm and non-farm financial services for smallholder families and agri-SMEs through new partnerships.
- 3** MNOs, fintechs, card payment companies, FMCG companies, and e-commerce firms can bring customer acquisition, product development, and agent network management expertise to viably serve rural areas and smallholder families, adding to the mix of financial and non-financial services offered.

Public Sector

To pave the way, governments can:

- 1** Support research and development to design and test new business models for these cross-industry partnerships.
- 2** Create forward-looking regulatory and policy frameworks to encourage innovative partnerships and mitigate risks.
- 3** Enable rural service ecosystems by offering public services through rural platforms and agent networks shared with private partners.







CHAPTER 1

Introduction: A New Way to Finance Agriculture—Why Now?

In the past decade, there has been a renewed interest from both the public and private sectors to reduce the rural financing gap as part of efforts to enable agriculture development. Leaders in the public sector are encouraged by evidence suggesting that growth in agriculture is up to 3.2 times better at reducing headcount poverty in low-income countries compared to any other sector in the economy, including commerce, manufacturing, and construction (Christiaensen et al. 2011). This is because agriculture is a leading source of jobs for the poor. For example, 84% of the extreme poor in Africa live in rural areas and are employed in farming activities (Beegle, K. and Christiaensen, L. 2019). Also, growth in agriculture has been shown to spur growth in non-agriculture sectors, as the additional farm income increases the demand for other services such as clothing, electronics, and transportation (FAO, 2017). From the private-sector perspective, investments in agriculture that are more inclusive of smallholders and agri-SMEs make good business sense, as it helps the agricultural industry to meet the increasing global demand for agriculture products (FAO, 2012).

Today, the agriculture sector is increasingly adopting digital technologies to make its operations more efficient and productive. However, another important benefit of this digitization process is that it is making it easier for the agriculture industry to integrate with new commercial partners in other industries like telecommunications, finance, e-commerce, and government. Facilitated by digital technology, these new cross-industry collaborations can further

improve financial inclusion for smallholders and agri-SMEs. They can increase the efficiency and quality of financial services, risk assessments, and value chain transactions, by pooling the various capacities and knowledge of the different cross-industry partners. In doing so, these collaborations are creating an ecosystem of services that exploits economies of scale and scope in an unprecedented manner, making it viable to deliver financial services to more smallholder farmers and agri-SMEs and enable them to take part in and benefit from agriculture growth.

Digital technology is helping to develop new business models with great potential for serving smallholder farmers and agri-SMEs. Many of these models are based on private-private partnerships between different businesses, including agribusinesses, banks, payment companies, mobile network operators (MNOs), fintechs and e-commerce firms, and fast-moving consumer goods (FMCG) companies. These commercial partners pool knowledge and capabilities to understand farmers' financial needs holistically, tailor a wider suite of financial solutions for them, and viably deliver these solutions in more remote, sparsely populated areas. Most of these business models are new and in flux as they work to scale up. However, they are allowing different players to come together to serve farmers more efficiently and boost their own companies' bottom lines in the process. These innovations are leveraging new trends, as outlined on page 11.

Mobile phones. Existing value-chain actors are taking advantage of a significant expansion of mobile phone ownership among the rural population, including smallholders, to communicate with farmers and all value-chain actors on technical and financial matters. Various businesses like mobile money providers, microfinance institutions (MFIs), and agribusinesses are partnering to reach farmers through their mobile devices.

Agent networks. Various businesses and public sector organizations including MNOs, agribusinesses, e-commerce and FMCG companies, and public education and health departments are devising new ways to expand their agent networks, or service points, to distribute their products and services in rural areas. Partnerships between these different public and private service providers are allowing them to effectively share agent networks in a way that allows these agents to carry out a wider range of functions related to the provision of various financial and non-financial services and goods. This allows agents to generate more transactions and revenue per customer, which enables them to serve customers in less densely populated areas. Agent proximity to customers has been a strong predictor of uptake and use of digital financial services (DFS) (CGAP, 2019).

Digitized record-keeping. Agricultural value-chain actors are increasingly digitizing all transactions related to operations, production, processing, transport, and sales in order to increase operational efficiency and the traceability of products and services. This allows companies to collect and analyze transactional data from many rural actors to understand financial needs and better manage investment risks. In this digitization process, these companies are registering an increasing number of farmers' transactions. Similarly, DFS providers like MNOs and banks are also increasingly digitizing financial transactions from a growing number of people. Digital technology is enabling an easier merger of data sets owned by various service providers. This results in a holistic view of the financial and non-financial needs of smallholders and informs the creation of new products and services.

Agriculture technology. The latest technological advances in farm sensors, satellite imagery, and drones, combined with precision farming, are helping farmers to increase yields while reducing inputs, resulting in greater efficiency along agricultural value chains. These innovations enable better risk management and increase profitability for smallholders while helping them establish their digital footprint. Financial and non-financial players can use this farm-level data to determine creditworthiness as well as inform new financial products targeting smallholder farmers, like payments, savings, and insurance. For example, satellite images are reducing the need for frequent remote field visits, saving time and money for agribusiness, banks, and insurance companies.

Super-platforms. Internet-based companies offering multiple goods and services through e-platforms, including financial services, are advancing their outreach into rural areas. Where these super-platforms are most advanced, as in China, they are making it easier for smallholders to buy agricultural inputs, household goods, or appliances, and to sell agricultural goods or labor online. In addition, these platforms can offer financial services to smallholders in a way that reinforces the other services offered by platforms (e.g. credit for farm inputs, household appliances, or shipment services). As more smallholders use these super-platforms, the transactional data they generate can be used to assess their creditworthiness and other financial needs. As such, super-platforms hold potential to enable financial inclusion. Early evidence of this comes from China, India, Indonesia, and Kenya (CGAP, 2019).

The trends described above show a rise in opportunities to build broad digital service ecosystems in rural areas. One of the main challenges to speed up the development of these digital service ecosystems is that much of the transactional and farm-level data collected to date by different service providers is stored in separate "silos" that do not communicate with each other. The early experience of the new cross-industry collaboration models mentioned above suggests that sharing this data helps companies in several ways. For example, data-sharing helps companies design financial services for different smallholder segments, assess of investment and customer protection risks, and share distribution channels to viably deliver services. Advances in data analytics mean that huge amounts of data from different resources can be processed in real time, from which evolving algorithms could be built to provide actionable insights.

Closing the Gap: An Opportunity for Growth

The agriculture finance gap represents a missed opportunity for additional agriculture growth, financial inclusion, and poverty reduction. Evidence shows it is precisely those smallholder farmers who are financially excluded or underserved who are also the largest source of agricultural products in developing countries, and who make a significant contribution to agriculture growth (FAO, 2012; ISF, 2019). Providing them with the broad suite of financial services they need to build their businesses and improve their families' wellbeing will also help sustain and expand the global food supply.

There are two fundamental barriers to a more effective rural and agricultural financial system:

1. a lack of adequate financial services that meet the diverse needs of smallholders and agri-SMEs in sparsely populated rural areas, and
2. a lack of business models that make it viable for providers to deliver adequate financial services there.

Historically, the few formal financial providers that have moved into rural areas have been constrained by the need to reach a minimum critical mass of rural customers to generate enough revenue to justify their operating costs. In addition, the financial services offered have tended to be limited to credit only. Given their current business models, their reach has been limited to rural areas with enough concentration of farmers ready for credit. As a result, vast rural areas are left unserved—mainly those where most rural poor households are concentrated (See the Annex to learn more about the agricultural finance gap.)

Financial service providers operating in rural areas tend to have limited knowledge about the larger rural clientele and their other financial needs beyond agricultural credit. Consequently, it has been difficult for them to develop additional financial products and new business models to serve more smallholders and agri-SMEs in a viable manner.



Building on Early Successes

To reach greater scale, we need to find new ways to aggregate the delivery of more diverse services that smallholders value. This means traditional agricultural finance providers can benefit from partnering with mass market players that are new to rural economies, in a win-win arrangement. At the same time, public-sector players can play a key role, allowing private-sector players to leverage public services and infrastructure to deliver greater value, while also establishing regulatory frameworks that highlight customer protection to prevent abuse.

The remainder of this paper presents a high-level overview of the UNSGSA Agricultural Finance Working Group's recommendations for both public and private partners wishing to advance financial inclusion among smallholder farmers and agri-SMEs. It highlights promising new partnership models enabled by digital technology applications. First, we describe key characteristics of emerging new types of cross-industry partnerships that are overcoming key challenges in current agricultural finance models. We then suggest steps public and private sector stakeholders can take to capture the opportunities and mitigate the risks of these new partnerships. In the end, we discuss the service ecosystems these new types of partnerships can generate as they scale.



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CHAPTER 2

New Partnerships to Reduce the Agriculture Finance Gap

To date, the private agribusiness sector has played a major role in reducing the agriculture finance gap as this has promoted stability in agriculture supply—but much more investment is needed in order to meet total demand for financial services. The agricultural finance gap alone is estimated at US\$170 billion (ISF, 2019).

Agricultural value chain actors have in-depth knowledge of farmers' agriculture finance needs, their risk profiles, and market conditions, which gives them an advantage in managing loan-underwriting risks. Lead value-chain actors (e.g. those distributing seeds and fertilizers or those buying and trading agricultural products) can sometimes be the largest agriculture lenders in some countries, even when compared to the formal financial sector. They offer mostly short-term agriculture credit because of their deep knowledge of potential borrowers, the feasibility of agriculture investments, and their proximity to clients (ISF, 2016).

However, value-chain actors cannot meet all of smallholders' finance demand (credit, savings, payments, and insurance) as financial intermediation is not their core business, and their lending operations compete with many other important agribusiness core functions for resources. In contrast, formal finance providers could provide more capital to the agriculture sector, while at the same time offering a wider diversity of financial services beyond agriculture finance. However, they lack the client and market knowledge relevant for smallholders and agri-SMEs, as well as viable distribution channels (ISF, 2016).

Digital technologies are making it easier for partners in different industries to merge knowledge, processes and products. For example, agribusinesses are investing in satellite technology to improve precision agriculture, and FMCG companies are exploring blockchain technology to improve traceability. On the financial side, fintechs are developing app-based products tailored to customer needs, and financial institutions and telecoms are exploring opening their application programming interfaces (APIs) to third-party providers to add new services to their existing platforms. In addition, payment companies are developing machine-learning models that improve their understanding of client needs. By pooling all of these capacities through cross-industry partnerships, there is greater potential to reach more smallholders.

However, these partnerships are not easy to establish as there are significant transaction and opportunity costs for all the partners involved. Companies must invest money and human resources to assess joint business opportunities and identify the right partners, conduct negotiations, and define partnership rules around operation costs, fees for support services rendered, and data ownership agreements. All of these assessments need to be done without guarantee that the partnership will work and be profitable for all actors involved. The emergence of recent cross-industry partnerships are providing many insights as to how public and private partners may overcome these challenges.



New partnership pathways

Cross-industry partnerships that rely on digital technology are very recent and are rapidly evolving. Most of them remain relatively small-scale, including several in East Africa. Others have greater scale, such as China's Taobao. Below, we outline the different ways these partnerships are coming together, and explore their potential and risks.

Agribusiness and Financial Institutions

Agribusinesses are starting to provide not only agriculture credit, but also other financial services for general rural household needs—either by offering such services themselves or by partnering with other financial institutions.

For example, the Kenyan agricultural conglomerate ETG has set up its own digital platform, uLima, which links about 250,000 smallholder farmers working with ETG in loose value chains like maize, rice, and peas, with various financial institutions in Kenya. Partnering with financial institutions using uLima, ETG has been able to link farmers with bundled services, including inputs, credit for these inputs, and access to bigger markets to sell their crops. uLima can be accessed by smallholders, input traders, buyers of crops, and financial institutions through a smartphone app or USSD (feature phone network) menu, which has been operational in Kenya for over a year, providing information on crops, seeds, soil, livestock, agri-chemicals, weather, and market prices. In parallel, ETG has been working with various financial institutions in Kenya during 2018 to enable smallholder farmers to access a wider suite of financial products beyond credit, such as payments and savings services that can be delivered through the uLima platform. The approach recognizes not all smallholders want credit to purchase their inputs. Some smallholders just want a more efficient way of paying or saving for these inputs.

Similarly, the global commodity company ECOM partnered with local banks in Nicaragua and Ecuador in 2017 and 2018 to deliver long-term credit to revive smallholder coffee plantations that were affected by rust disease, which had wiped out their coffee plants. To secure its coffee supply, ECOM wanted to support coffee farmers in this effort but did not have the capacity to offer long-term loans directly. The solution was to partner with banks who were keen to offer the loans but did not have access to farmer data nor experience in providing long-term loans for agriculture. These banks included Banpro in Nicaragua and BanEcuador, which had short-term exposure to the agricultural sector but had not done this type of long-term loan for smallholders before. To this end, ECOM invested in setting up SMS Integrity, a global database of over 300,000 farmers with key data on the farmers' agronomic practices and yields over time. Partner banks had unprecedented access to this data, which allowed them to assess the economic feasibility of the proposed smallholder investments and the viability of long-term agriculture loans requested. Therefore, the loan underwriting risk was borne by the bank, and not the agribusiness company, as is common in more traditional value chain finance schemes. The data in SMS Integrity is also being used to tailor ECOM's agronomic advice.

Agribusinesses, Financial Institutions, Payment Companies and MNOs

In addition to agribusiness and banks, a range of new players are entering the agriculture finance ecosystem, acknowledging the market potential of serving rural households. Payment companies and MNOs are increasingly involved.

For example, Mastercard is partnering with Neumann Kaffee Gruppe (NKG)—a global coffee agribusiness—to provide payment infrastructure via mobile wallets, prepaid cards, and debit cards, which enables direct payment to smallholder farmers for the coffee they sell, while allowing smallholders to spend their e-money in a growing rural merchant network built by Mastercard. Pilots have been run in Mexico and Colombia.

In this partnership, Mastercard brings together several banks, who issue the cards through which farmers get paid, and merchant networks (i.e. rural shops) where smallholders can use their cards to purchase the basic goods and services they need. Along with reducing the risks of using cash, this model is creating a transactional history for farmers that can help Mastercard and its partners design additional credit and savings services for them, as well as loyalty benefit programs. These general payment services complement NKG's offer of short- and long-term agricultural loans, and ensures smallholders continue to see the benefit of selling to NKG and not its competitors.

Compared with cash, these cards make it cheaper and easier for companies to pay smallholders in remote areas and reduces the risk of theft or corruption. For example, in Mexico's Sierra Madre de Chiapas mountains, smallholder coffee farmer Elia Velázquez Domínguez was losing up to 10% of her crop value to a network of "cash only" middlemen. Thanks to Mastercard and NKG's program, Elia and her neighbor smallholders now have access to a streamlined, safe, secure, and digitized supply chain payments system, while given options to spend their hard-earned e-money on the things they need. The pilot in Mexico has over 1,300 smallholder farmers actively participating, as well as a larger number of indirect participants who work through middlemen. (Mastercard, 2019)

In addition, Mastercard launched the Mastercard Farmer Network (MFN) in early 2017, a mobile platform to digitally connect small farmers in Kenya, Uganda and Tanzania. Developed by Mastercard's Lab for Financial Inclusion, it is a mobile platform that improves farmers' access to markets, increases price transparency, and digitizes payments by partnering with various agri-sector stakeholders, such



as farmers, farmer producer organizations, buyers, financial institutions, and value-added services providers. The platform is live today with more than 250,000 farmers in the three countries covered.

Working with the International Center for Tropical Agriculture and the United States African Development Foundation, MFN will expand to provide participating farmers with additional value added services, including logistics, transportation, and best agronomic practices, among other services.

Similarly, the telecom group Vodafone is partnering with agribusiness Kenya Nut and the cashew farmer groups it works with, as well as banks like Kenyan Commercial Bank to create digital payment tools for farmers in Kenya. Through its subsidiary Mezzanine, the company has deployed the Connected Farmer mobile tool to enable efficiencies for farmers and agribusinesses in agricultural value chains. The digital tool substitutes traditional cash payments from partner agribusinesses to farmers for the purchase of crops with an integrated mobile money solution. This means a mobile wallet is given to farmers to receive crop payments. The wallet can also be used to buy goods from rural shops and receive loan disbursements from partner banks. In addition, farmers can receive agriculture market information on their phones with prices, volumes and quantities of crop needed by agribusinesses. The partnership is currently serving 80,000 smallholders in Kenya.



Also in Kenya, Safaricom, a Vodafone telecom subsidiary, has set up the DigiFarm suite of services. DigiFarm is a e-platform accessed by farmers with feature mobile phones that acts as a one-stop shop to receive agronomic advice, weather information, input credit, send and receive remittances, and obtain agriculture insurance. These services are offered by agribusinesses, financial institutions, and insurance companies through Safaricom's mobile network. During 2019, DigiFarm has reported serving 1.2 million registered farmers.

Safaricom is also updating its customer registry with customer photos to reduce fraud and give partner agribusinesses and banks a way to verify customer identity in order to facilitate account opening and value-chain transactions. This experience suggests that the success of digital ID systems relies on the existence of trusted personal relationships. Through constructive partnerships between MNOs and agribusinesses, an opportunity exists to scale up the use of digital identities to support delivery of relevant and trusted services to farmers.

Another interesting experience is the Khushaal Zamindar service, launched in 2015 by MNO Telenor Pakistan, with support of the GSMA (the global telecom industry association). Telenor uses thousands of transactional data points on many client activities, pooled from MNOs to segment the millions of Telenor clients. This pooled data helps distinguish the type of transactions mobile phone users make, e.g., sale of crops, payment of school

or medical fees, and purchases of fertilizer or food. This data helps Telenor better segment its clientele and determine whether a mobile phone customer is actually a smallholder farmer, and then design and offer specific services that are of value to him or her. Examples of these services include digital payment services (i.e., farmers can get paid for their crops digitally and spend their e-money in agro-dealer shops and general convenience stores), agronomic advice, knowledge exchange with other farmers, and tips to prevent crop loss through better storage techniques.

The agribusiness partners benefit from having smallholders use these digital payment options to lower the costs of handling cash payments. And MNOs benefit from an increased number of transactions per client on their platforms. Smallholders decide to register in the Khushaal Zamindar service after finding out the services it offers from local agents, radio announcements, and SMS messages. As of the first quarter of 2020, there were 10 million registered users. High activity rates, with over 2 million daily active users and 7.5 million monthly active users, suggest farmers value the benefits from the payment and advisory services mentioned.

Fintechs, Banks, and Insurance Providers

Finally, combinations of fintech and agricultural technology (agtech) companies, in partnership with incumbent financial institutions like banks and insurance companies, are rapidly increasing their ability to serve smallholders and could potentially change the role played by formal financial institutions. Large agri-finance players such as Rabobank are acknowledging the advantage of partnering with a number of fintech or agtech players that can do a better job at the retail level by coming up with high-quality product ideas, customer interfaces, and customer support systems that reach smallholder farmers and SMEs faster and more efficiently. Rabobank is starting to provide the back-end knowledge and financial infrastructure to help fin/agtechs connect to and deliver services to smallholders.

An example of a fintech that is adding value in the development of rural financial ecosystem is Pula Advisors, an insurtech company. Working in Nigeria, Malawi, Zambia, and Kenya, Pula provides agricultural insurance in partnership with major general insurance companies in each country, who don't have smallholder knowledge, but have the financial backing required by regulators to underwrite Pula's insurance product and can pool risks from a much greater clientele base.



Based on its deep understanding of smallholder production practices and yield patterns, Pula devised an actuary model that is more accurate in predicting farmer losses, as well as an agriculture insurance product focused on insuring the seed and fertilizers bought by smallholders against shocks like pests and drought. Pula also partners with agribusinesses, using its wide-reaching agri-dealer agent networks to distribute the insurance product. Adding another layer of convenience, Pula has partnered with traditional banks that offer farmers credit for the purchase of inputs, issuing loans via the same agent network. All partners use a common digital platform to register transactions related to input sales, insurance policies opened, and input credit contracts formalized.

Pula now insures inputs and loans for 700,000 farmers in the four African countries it serves.



The emergence of digital rural service ecosystems at scale

One of the most mature examples of a digital rural financial ecosystem is Alibaba's Rural Taobao program in China, launched in 2014. The program aims to improve the living conditions of China's rural regions by enabling the trade of high-quality goods, personalized services, and smart logistical solutions, all at fair prices.

The Chinese experience reveals the potential benefits for industries and customers as digital rural ecosystems scale up. While China's unique context means that other countries cannot exactly replicate its journey toward achieving such scale, the Taobao example provides a valuable opportunity to observe the outcomes that have resulted from extending the reach of this ecosystem.

Taobao began primarily as a digital e-commerce platform that matches sellers of all sorts of goods with buyers, including the trade of agricultural goods along value chains. Taobao incorporated digital payments in its platform to facilitate its core e-trade business. Later on, the digital payment solutions evolved into online financial services creating a growing ecosystem of services.

The ecosystem facilitated by the Alibaba Group gives rural customers access not only to those financial and e-commerce services provided *directly* by Alibaba, but also to services provided indirectly by partners that connect to Alibaba's APIs or Alipay accounts.

In rural areas, these partners include agribusinesses that buy produce from farmers through their own network of agri-agents. These agribusinesses then sell farmer produce through Taobao and other e-commerce platforms linked to the Alibaba Group to the rest of China, and in many cases can deposit payment to farmers via their Alipay accounts.

The Alibaba Group ecosystem has also enabled smallholder farmers to access additional financial services through financial institutions who partner with Alibaba or are connected to it through the national payment system. Alibaba has invested significant funds and human resources to develop partnerships with providers whose services are of high value to customers and are complementary to those offered in the e-platform (e.g., agriculture insurance and input credit, which facilitate the sale of agricultural inputs). These partners include agribusinesses, logistics firms, banks, credit cooperatives, and rural merchants.

Some of Taobao's agribusiness partners have made their own partnerships with regional banks, which can offer farmers loans, savings, and insurance that the Alibaba Group does not directly provide. Working with a bank, the agribusiness can offer these services to farmers through their agri-agents in the field. Farmers can go to an agri-agent (who uses an app developed by the bank) and make deposits and withdrawals from their Alipay account. They can also make purchases, send money to other bank accounts, or make payments on insurance policies or loans offered by the partner bank.

Bundling various services in Alibaba's Taobao e-platform while sharing agent networks has enabled partner financial service providers to increase the size of their rural and agriculture finance portfolios, providing additional financial solutions for customers beyond those offered by traditional banks and rural credit cooperatives. From 2014 to 2017, online retail sales in rural China increased from RMB 180 billion to 1.24 trillion, a compound annual growth rate of 91%, compared to 35% nationally (LiLuo, 2018). By 2016, the Alibaba Group had connected more than 2,300 rural financial institutions in the Taobao platform, served more than two million rural e-businesses, and provided business loans to 180,000 small and microenterprises in rural areas, lending 30 billion RMB (about US\$4.43 billion) in total (Ding, et al. 2018).



CHAPTER 3

Recommendations to Promote Successful New Cross-Industry Partnerships

The new types of partnerships described in the previous sections go beyond corporate social responsibility. Increasingly, leading service providers are recognizing and seizing the opportunities that rural financial markets in developing countries present for sustained and long-term growth.

These nascent collaborative business models are evolving rapidly as providers learn by doing. However, we can now recognize some of the opportunities and risks they present. From this analysis, we propose general insights on how to promote successful cross-industry partnerships and highlight specific steps that private- and public-sector actors can follow to continue expanding access to agricultural finance in a way that is viable for all partner providers and customers.

GENERAL INSIGHTS

Key to the success of this new generation of cross-industry partnerships is that partners invest in understanding enough about each other's businesses.

Collaborators must develop a shared vision of how partners' services reinforce each other, to ensure that incentives are aligned from the start. Assigning "champions" within companies to be responsible for exploring, identifying, and brokering the right partnerships is crucial to making them a reality. Once those partnerships are being negotiated, it is also important to be clear about what data needs to be shared and how, who owns the data generated through the collaboration, and how each partner can monetize that data. In addition, partners must develop and enforce protocols to protect the privacy of customers' data. There also needs to be an understanding of the costs each partner will incur, and opportunities to share some of these costs between partners. All of this represents a heavy up-front investment for each partner without guarantees of any payout. This can limit the appetite of many firms to seek these innovative partnerships in addition to the everyday management of their ongoing businesses. Also, it represents an opportunity for the public sector to help catalyze the process.

It is important to make the business case at the outset of the partnership. One useful tool to consider when doing this is the Service Delivery Model (SDM) analysis, a methodology developed and utilized by IDH Farmfit, which allows different players to get quick and clear insights into a potential agricultural partnership. The analytic tool extrapolates costs and revenue potential for multiple players within a value chain, clearly identifying where investment can drive improved profits for farmers, agribusinesses, financial service providers, and tech providers. It also disaggregates data by gender and recommends the business case for serving women. Through a continuous feedback and validation process of the model against actual results, the SDM analysis performs a risk reduction — clarifying the business case and creating a more attractive investment opportunity for financial services providers. Trust is a crucial factor in partnership success, and a common language provided by IDH Farmfit is essential to that end.

New partnerships should leverage the pooling of knowledge and data to understand client needs more holistically.

The emerging experience suggests rural clients value a broader suite of bundled farm and non-farm financial services, as this better meets their household needs. In parallel, the diversity of smallholder needs creates an opportunity for different providers to bundle services in a way that reduces unit costs for delivery in rural areas and enhances profitability. Data plays a major role in gathering timely and reliable information on the effect of using the services and adjusting them according to client feedback.



As companies embark on new cross-industry partnerships, they need to recognize the importance of risks related to customer protection and monopolistic behavior.

As partnerships scale, companies collect a great deal of customer data, and it is important for customers to understand and give consent on how providers use their data. In addition, service providers need to provide clear guidelines to their agents on transparent product pricing and description to avoid fraud and service misrepresentation. Also, as partner ecosystems scale, the dominance of any given platform raises the risk of monopolistic practices, as a dominant platform can in principle keep the products and services of potential competitors out of the market. Public-sector regulators of financial and trade markets have a key role to play to prevent this type of monopolistic behavior.



PRIVATE SECTOR RECOMMENDATIONS

How Businesses from Diverse Industries Can Build Shared Platforms that Better Serve Smallholders and Boost the Bottom Line

Companies wishing to engage in cross-industry partnerships should establish internal teams responsible for generating ideas on how the company's comparative advantages can leverage those of its partners to offer greater value to rural customers and make it viable to distribute services in rural areas. These innovation-focused teams should not only identify partners that complement the company's capabilities and services, but also broker with these potential partners to define rules regarding data sharing, customer insights, digital technology, and distribution channels while serving smallholder families, including female smallholders. Depending on the local context, this may require setting up internal incentives for company managers to proactively identify and pursue such partnerships.

Partnerships should enable aggregation of valued services that allow for greater operational efficiency, customer knowledge and value, and capacity to deliver services. By sharing select, non-confidential, gender-disaggregated data, partners can gain a more holistic understanding of different rural customer financial needs and potential services of greater value.

In an ideal partnership, what would different actors bring to a service platform that adequately caters to smallholder needs?



1. Agribusinesses can bring greater smallholder knowledge and better service distribution channels to new partnerships

To facilitate these partnerships, agribusinesses need to begin a process of digitizing their databases related to farm-level and agricultural trade information, making investments to include as many value-chain stakeholders as possible, especially those that tend to be excluded like smallholders and agri-SMEs. This data has tremendous value for building the type of service ecosystems described in previous chapters. Furthermore, agribusinesses can encourage farmer cooperatives to digitize and record their transactions, such as aggregation, fertilizer distribution, and payments to individual smallholder farmers. These digital records not only benefit agribusinesses by increasing their efficiency and farmer productivity, but also bring smallholder farmers close to formal financial institutions. Working through farmer cooperatives

or farmer producing groups can provide an opportunity to lend to large numbers of farmers at a lower transaction cost and reduced risk.

By developing the right partnership models with service providers in other industries, agribusinesses can merge their data and distribution channels with those of their partners, allowing for a more holistic understanding of smallholder and agri-SME needs to develop more valued services. Merging partner capabilities can also enable a reduction in service delivery costs and risks through the sharing of distribution channels. Ultimately, greater service value and closer distribution channels for smallholders will also increase customer satisfaction, loyalty, productivity, and profitability.



2. Financial institutions can bring a wider set of financial services for smallholder families and agri-SMEs through new partnerships

Banks should leverage digital technology to connect their services to other partners' digital and physical platforms—including those of e-commerce, agribusinesses, or FMCGs. Conversely, sometimes allowing other partners, like fintechs, to connect to banks' own digital platforms may greatly enhance the diversity and quality of services the banks can offer. This integration of services in a common platform will enable the aggregation of complementary products and services while enabling a viable expansion of services in rural areas.

This implies that financial institutions should not only digitize their processes but also select management information systems (MIS) that are easier to connect with others. For example, if financial institutions open their APIs (which process customer requests and responses to the company's MIS) this would enable external partners to integrate with the financial institution's systems and process some of their customer requests. In other words, it makes it easier for customers to access services offered by financial institutions together with services offered by partners.

Partnerships with these types of cross-industry providers benefit banks by expanding and diversifying their rural finance clientele to include smallholder families, and by generating more revenue streams by cross-selling financial products. This aggregation of services, in turn, can reduce the unit costs of serving smallholders directly and allows banks, over time, to continuously improve services to this clientele segment.

A great deal of resources are needed to build the capacity of farmers and farming cooperatives to make their enterprises operational, profitable and creditworthy. In such cases, financial institutions should be open to the possibility of sharing these costs with agribusinesses or other partner service providers, which are reducing farmer financing risk by providing agronomic advice, weather information, and market linkages.



3. MNOs, fintechs, card payment companies, FMCG companies, and e-commerce firms can bring customer acquisition, product development, and agent network management expertise to viably serve rural areas and smallholder families

The market potential of rural areas is attracting all kinds of service providers. Some are showing important comparative advantages in serving smallholders. MNOs can acquire customers at a lower cost, thanks to their ability to reach smallholders through their mobile platform. Fintechs can pool customer data from different sources and analyze it to design highly client-centered products.

Card payment companies are able to collect detailed transactional data on smallholders' various income and expenditure streams to shape a holistic view of their finances and help develop new products and identify new rural clients (e.g. rural SME merchants).

For example, Mastercard is working with Rabobank on a digital agriculture ecosystem aimed at reaching a million farmers in Kenya, Tanzania, Uganda, Ghana, India, and Egypt. A scaled-up version of Mastercard Farmer Network Platform, a digital interface for farmers in Kenya, it will increase their access to markets and financing. Rabobank is bringing in key links in the value chain, including buyers, farmers' cooperatives, and financial institutions. This project is part of the CEO Partnership for Economic Inclusion (CEOP), an initiative of the UNSGSA.

FMCG companies have valuable data and knowledge on the performance and needs of rural merchants trading their products. These merchants can be key customers demanding financial services, but also can act as rural agents to facilitate the uptake and use of financial services and allow smallholders to pay for consumer goods electronically.

E-commerce companies are opening new markets for smallholders by providing cost-effective ways to connect buyers and sellers of all goods and services and process their payment transactions. Data captured by e-commerce platforms can be very useful in assessing the viability of new investment opportunities for smallholders who need financing.

These types of companies should proactively build teams responsible for developing strategies that reach potential partners in the agribusiness and financial sectors with critical complementary data. Critical agribusiness data to look for includes yields, agri-trade, and agri-investments. Also bank data on customers' or SMEs' repayment histories or account balances is highly useful to build a risk profile. This information is highly complementary to the other types of transactional data that MNOs, fintechs, payment companies, FMCG companies, and e-commerce firms are collecting, which usually relates to non-agriculture transactions. Pooling all of these data sets together can help develop much needed agricultural and non-agricultural finance products like input credit, long-term credit, agricultural insurance, and payments and commitment savings for education and health purposes.

These technology companies can proactively seek partnerships that break data silos, especially in the case of farm-level and agri-trade data, which tends to be hosted by only a few agribusiness actors.



PUBLIC SECTOR RECOMMENDATIONS

How Governments Can Facilitate Cross-industry Collaboration

While partnerships between private-sector players have enormous potential to create innovative agricultural financing solutions, market uncertainty, sector unfamiliarity, and uncharted regulatory territory are significant deterrents. To pave the way, governments can:

1. Support research and development to design and test new business models

As described above, new partnerships require new assessments and rules on how data, knowledge, delivery channels, platforms, and costs will be shared. The time and financial resources they take to set up can be prohibitive, so supporting private actors with time-bound research and development subsidies focused on enabling business-model innovation targeting smallholders and agri-SMEs can speed up sustainable innovation in the short- to mid-term.

There are several examples of multi-donor initiatives that aim to catalyze these types of new partnership models. They include the AgriFin Accelerate program implemented by Mercy Corps across Africa, the Geodata for Agriculture

and Water challenge fund implemented by the government of the Netherlands, and the Innovation Fund for the Digitisation of Agriculture Value Chains implemented by GSMA and funded by the UK government. All of these programs aim to speed the process of research and development required to form new cross-industry partnerships that leverage digital technology to provide agricultural and non-agricultural finance solutions to smallholders and rural dwellers. This would complement critical government and donor efforts to provide an enabling regulatory environment for the development of agriculture and the provision of extension services, such as farm modernization and training on the adequate use of agricultural inputs.



2. Create forward-looking regulatory and policy frameworks

Innovative solutions often involve bringing together players from diverse industries or implementing technologies that change business processes. Regulatory frameworks can sometimes block this type of innovation. For example, new collaborative models can enable financial service providers to reach more smallholder farmers, but if they lack identity documents mandated by regulations

aiming to protect clients and prevent money laundering, providers will not be allowed to serve them. Regulations that simplify these processes, like universal electronic IDs, can greatly favor the expansion of cross-industry partnerships for agricultural finance, even if those regulations do not target the agricultural sector per se.



Key Prerequisites for Inclusive Fintech

Developed by the Office of the UNSGSA

For digital financial inclusion to flourish, the UNSGSA has identified nine key prerequisites.

Key prerequisites are the necessary set of policies and infrastructure needed for fintech to thrive and be inclusive. These can be provided by public or private actors and typically go beyond the financial sector.

They include:

- Connectivity
- Physical infrastructure (e.g. CICO agents)
- Digital IDs
- Fair competition
- Interoperability
- Cybersecurity
- Digital literacy
- Financial literacy
- Data privacy

For example, the government of India has worked closely with the private and public banking sector to jointly invest in the development of a digital payment infrastructure and unique digital ID system. This infrastructure can serve as an efficient delivery gateway for public and private payments to more people. Thanks to these public-private investments, plus policy changes that simplify requirements to open bank accounts, India has seen a rapid expansion in bank account ownership. This has resulted in a surge of DFS initiatives targeting smallholders and other rural dwellers. The bank account interoperability enabled by the unified payment system has been a useful tool to come up with agent network managers that aggregate various services from different partner providers. This is a necessary first step towards delivering better and more diverse financial services that smallholders in rural areas value.

Governments can also invest in developing capacities and skills for rural entrepreneurs to operate as multi-service agents. As an example, the Chinese government partnered with leading e-commerce providers to train rural entrepreneurs to become e-commerce agents, and develop basic business and internet literacy skills that allow them to capture opportunities in the growing digital economy. This enabled e-commerce firms in China to expand to more remote rural areas and to offer various financial and non-financial services through their platforms.

Regulations should also prevent potential risks concerning these new types of partnerships. The most important relate to consumer protection and market power. As partners' agents provide a greater number of services, regulators should require DFS providers to display pricing and terms and conditions for all the products offered at the agent level, to reduce misrepresentation, fraud, and abuse. Further, policymakers should establish channels for rural customers to report abuses, including those that leverage digital technology and social media (Hernandez, 2019).

As these partnerships grow significantly in scale, regulators should monitor their market power to avoid the growth of monopolies. Interesting regulatory lessons come from Kenya and China, where regulators have balanced innovation and risk in financial markets. They used a "test-and-learn" approach, allowing new ideas to scale up while studying risks posed to customers and anti-competitive behavior. For example, in Kenya the regulator promoted mobile money interoperability, allowing the emergence of competitors to the dominant Safaricom. Similarly, Chinese regulators pushed for mandatory linkage of mobile wallets with bank accounts. This forced the integration of the e-commerce-led models with the banking system to ensure better oversight (Meagher, 2019). These regulatory interventions have enabled the emergence of many of the new rural and agriculture finance partnerships described above, as they allow new players to connect to more established partners to leverage each other's capabilities.





3. Enable rural service ecosystems by offering public services through rural platforms and agent networks shared with private partners

The public sector often provides subsidies, education, health, and extension services to smallholder farmers and SMEs using existing physical networks (state bank offices, health clinics, schools, extension offices, etc.) with relatively good coverage in rural areas. Public agencies can join cross-industry partnerships to form rural service ecosystems by bundling their public services with those of private providers and sharing the physical or digital networks for delivery. This can contribute to a reduction of distribution unit costs for all partners and enhance the value proposition to smallholder farmers and SMEs through a wider set of valued financial and non-financial services.

For example, the government of India has progressively digitized the delivery of all the subsidies it provides to different population groups, such as low-income farmers, students, mothers, and elderly people. Various financial institutions partnered with agent network managers to pool these government-to-person payments with many other services offered by private providers, like airtime, remittances, credit repayments and disbursements, and even e-commerce.

This made multi-service agents more viable in rural areas, increasing their revenue more than 120% between 2015 and 2017 (Helix Institute, 2018).

Similarly, the government of Bangladesh's distribution of US\$10 million per year worth of education benefits to children in poor households has increased the exposure of DFS providers to a rural clientele, helping the viability of service delivery in rural areas (BCG, 2019).

The governments and policy makers could look beyond their borders and learn from successful examples elsewhere. With coordinated actions between public and private actors, we can capture the potential brought by digital technology to promote new cross-industry partnerships. If these new types of partnership models scale up significantly over time, these can lead to the formation of broad digital service ecosystems that allow poor rural customers to access different financial services for their agricultural and general financial needs, together with other goods and services, helping them improve their wellbeing.

Current Gaps in Agrifinance

There is a genuine unmet demand for financial services among smallholder farmers so that they can capitalize on investment opportunities. However, neither formal nor informal finance providers are currently meeting total needs—representing an enormous wasted opportunity. Various data points shown below provide evidence of this.

Even when taking informal credit into account, the short- and long-term credit gap for farmers in most developing countries is estimated at about \$170 billion per year. The unmet gap is widest for long-term agriculture credit, with only about 1% of the total demand being met in Sub-Saharan Africa (ISF, 2019).

Studies have shown that there is a large demand for savings services that is unmet by formal providers and is currently captured by informal ones.

Findex data gives a notion of the demand for general financial services in rural areas. For example, in Sub-Saharan Africa (see Figure 2), we can compare the percentage of people living in rural areas who are already using (and paying for) any type of savings and credit services (formal or informal) with the proportion of rural dwellers who used only mobile money or formal financial services. The gap between the two suggests the significant size of informal savings and credit markets and illustrates a history of rural financial transactions that are mostly unknown to the formal financial sector. Findex shows a similar trend for Latin America and South Asia.

In the absence of formal finance solutions, smallholder farmers rely mostly on informal sources of finance such as their social networks, family and friends, and some local lenders.

These informal finance sources are limited in terms of the diversity of products offered and their application to agriculture activities, and they generally come with relatively high costs. Thus, they do not compensate for the agriculture finance gap. However, they tend to be an important source of financial services as shown in Table 1, and reveal a latent demand that formal finance providers could tap if they developed adequate products and business models (Hernandez et al. 2018).

Digital financial services, including mobile money, can help providers reach the overall rural population. In Sub-Saharan Africa 19% of rural individuals have a mobile money account as reflected in Figure 2.

While mobile money account ownership is greater than the percentage of rural people with credit or savings accounts at formal financial institutions, it is far lower than the proportion who use informal credit and savings (see Figure 2). This suggests mobile money has still potential for growth among the rural population.

Consistent with overall rural trends, a significant percentage of smallholder farmers own a mobile phone and have mobile money accounts, but their informal financial activity reveals the potential for mobile money to serve more needs (see Table 1).

In some countries, mobile money accounts among smallholders surpass formal accounts in banks or MFIs as shown in Table 1. However, the use of informal finance is still greater than that of mobile money and the current digital product offering is limited almost entirely to money transfers, signaling a need for additional financial services.

The financial inclusion gender gap is another significant factor among smallholders. In Tanzania and Mozambique, for example, data shows that overall, women smallholders' rate of financial inclusion lags behind that of men (see Figure 3).

As women smallholders are a major potential client base, leaving them out of formal financial markets is a missed opportunity for service providers trying to add new clients in rural areas. It also results in significant socioeconomic losses for families and communities if women's productivity and potential are not channeled into formal savings or investments.

However, in some cases, women who are left out of the formal financial system are married to men who are fully included. As the household becomes wealthier, the financial inclusion gender gap within the household increases (see Figure 3). In addition to innovations in product design and tailored delivery strategies, promoting greater financial inclusion among female smallholders requires multisectoral policies that address many constraints faced by women – including discriminatory social norms and lack of education, IDs that meet know-your-customer requirements, and agronomic knowledge (Hernandez *et al.*, 2018).

Closing all these gaps will require a concerted, multisector effort by a variety of public- and private-sector actors.

Finance gap by region and type of financing

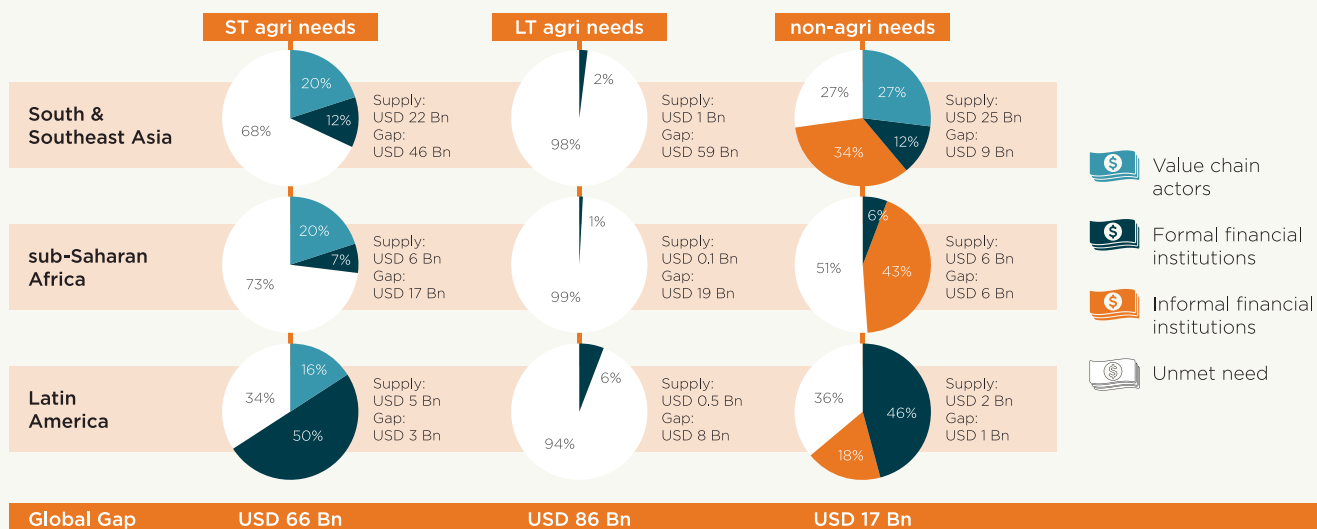


Figure 1. Gap between smallholder financing need and supply.
Source: Pathways to Prosperity, 2019

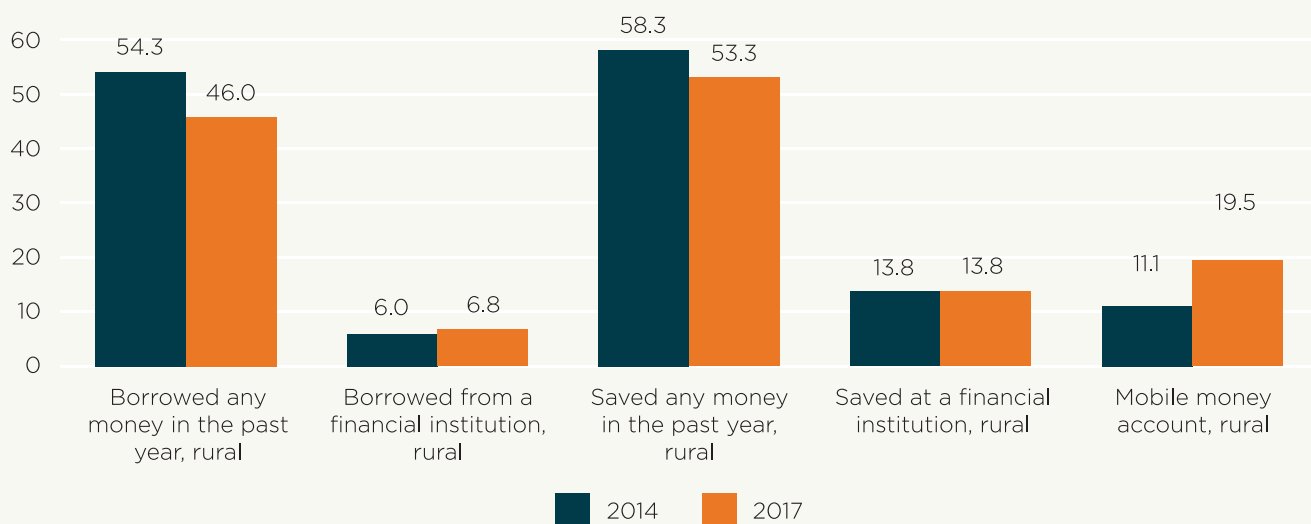
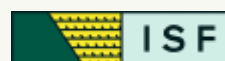


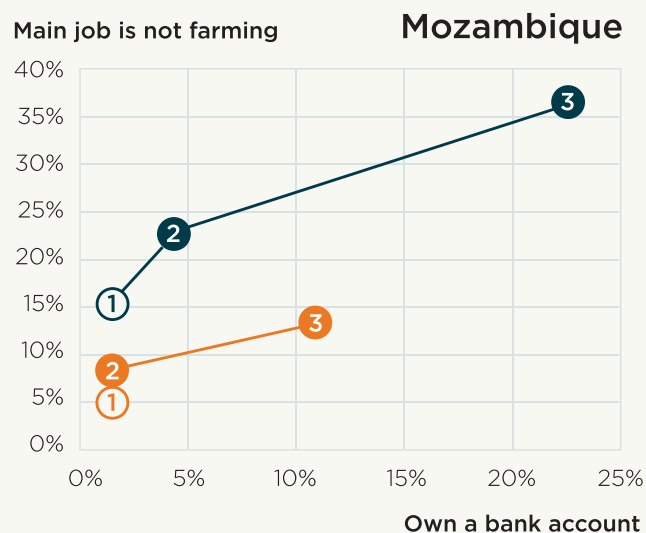
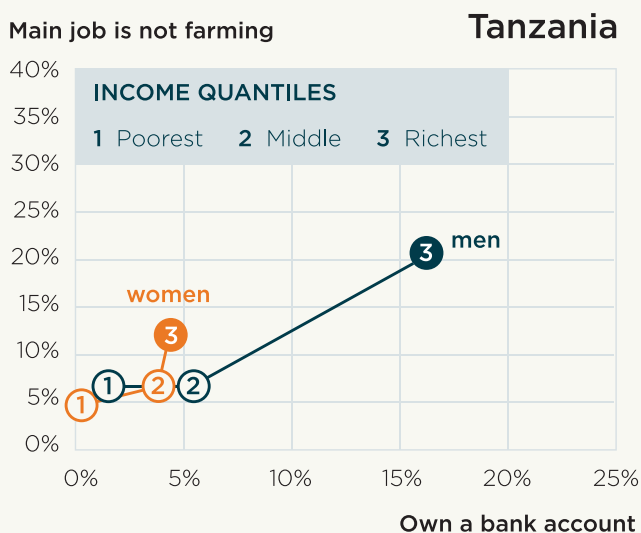
Figure 2. Percentage of the rural population in Sub-Saharan Africa that: a) used any form of credit and savings either formal or informal; b) used credit and savings from formal financial institutions; and c) had a mobile money account.

Source: Findex, 2017.

Survey year	2015	2015	2016	2016	2016	2016
Country	MOZ	UGA	TAN	CDI	NIG	BGD
Mobile phone ownership (percentage)	33	46	66	74	61	73
Informal finance: percentage who ever used any of the following (top 3 sources)						
Family and friends (savings or credit)	33	53	69	31	44	48
Savings and credit groups	17	26	11	15	24	11
Money guards (informal cash savings)	6	1	4	3	3	1
Formal finance: percentage who have an account in the following (top 3 sources)						
Mobile wallets (mobile money account)	0	21	49	27	0.3	19
Bank account	10	10	10	5	21	22
MFIs	3	2	3	4	1	27

Table 1. Percentage of smallholder farmers who own a mobile phone and use formal and informal financial services in Mozambique, Uganda, Tanzania, Côte d'Ivoire, Nigeria, and Bangladesh.

Source: Derived from Anderson and Sobol, 2018 and CGAP nationally representative smallholder database.



● Full dots mean that the difference between men and women in this quantile is **statistically significant** at the 90 percent level and above.

Figure 3. Men in Tanzania and Mozambique are able to diversify away from agriculture and acquire a bank account faster than women as their household income increases. This means that the gender gap in income diversification and financial inclusion widens as smallholder households become wealthier.

Source: Hernandez et al., 2018.

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