UNCDF MM4P

Learning in the Field:
Implementing Digital Bulk Payments in Agricultural Value Chains in Uganda

UNCDF MM4P | Uganda

Acknowledgement

This publication compiles learnings from the work of UNCDF MM4P in agricultural value chains in Uganda. It is part of the global learning agenda of UNCDF MM4P. The learning agenda includes four areas relevant to digital finance, namely: customer adoption; distribution; high volume payments (HVP); and partnerships for products and delivery.

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List of acronyms

ACE	Area Cooperative Enterprise
ARPU	average revenue per user
BTS	base transceiver station
DFS	digital financial service(s)
FSP	financial service provider
KCL	Kyagalanyi Coffee Limited
MM	mobile money
MNO	mobile network operator
MTN	Mobile Telephone Networks
U Sh	Uganda shilling*
US$	United States dollar*
UNCDF	UN Capital Development Fund
VAC	Village Aggregation Centre

**Conversion rate:* US$1 = U Sh3698.5 (*Source:* https://treasury.un.org/operationalrates/OperationalRates.php, 1 August 2018).

Note: This rate was used throughout this report to provide United States dollar equivalents for Uganda shillings.

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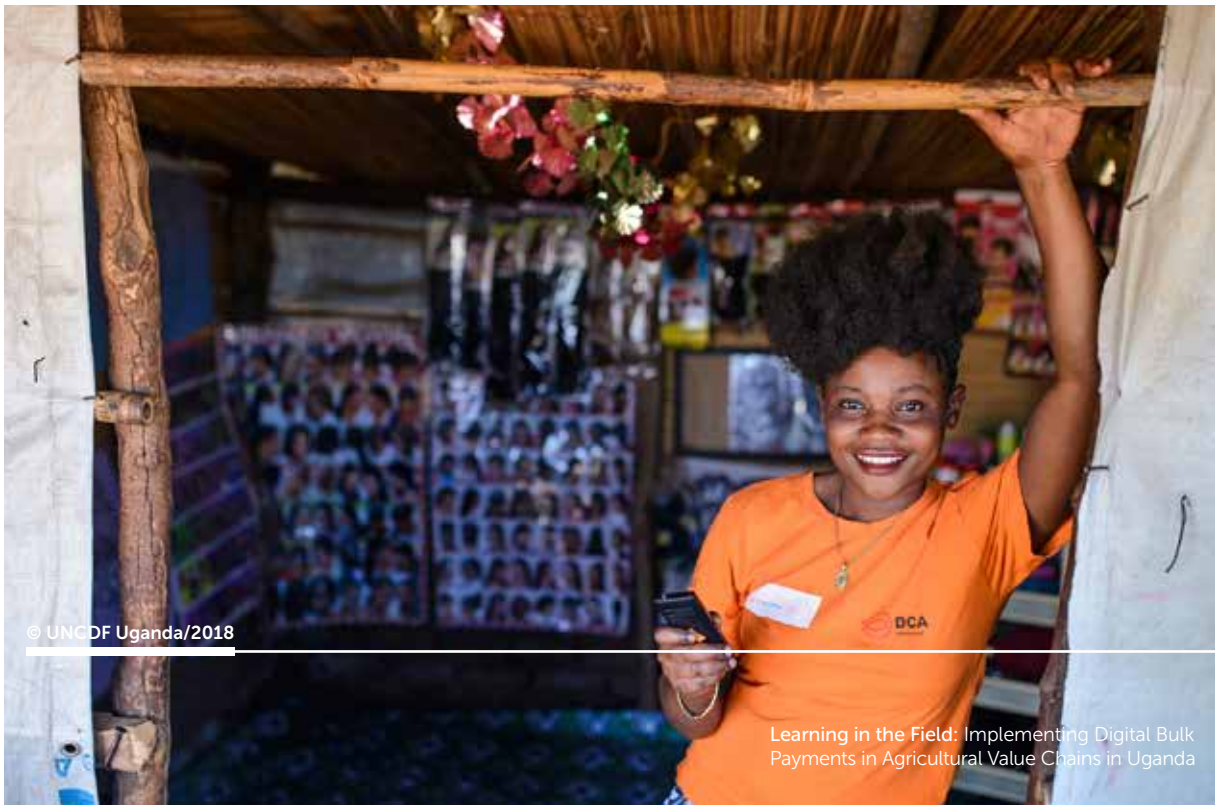
Introduction

Through its MM4P programme, the UN Capital Development Fund (UNCDF) has focused on improving the financial lives of vulnerable populations—especially rural people—in Uganda since 2014. Core to this effort has been a drive to digitize payments within agriculture. Agriculture is often the most important income source for people in rural areas, yet most agricultural payments remain cash-based and many people remain unbanked (Better Than Cash Alliance, 2017). In Uganda, agriculture is a cornerstone of the economy. With 84 percent of the population living in rural areas (World Bank, 2016c), agriculture contributes a quarter of the country's GDP (World Bank, 2018) and 70 percent of total employment overall (World Bank, 2017a). The sector is comprised of both cash crops, such as coffee, cotton and tea, as well as staple crops, such as maize, rice and beans, among many others (Uganda, n.d.).

The majority of agricultural activities in Uganda are undertaken by smallholder farmers—farmers who grow crops on less than two hectares of land (Mattern and Ramirez, 2017). As global food demand increases, a greater number of agribusinesses are directly procuring from smallholder farmers via agricultural value chains—the processes, people and organizations that move agricultural products from individual farms to final consumers (Lucini, Okeleke and Tricarico, 2016).

Digitizing payments within agricultural value chains offers a compelling opportunity to improve the financial inclusion of smallholder farmers as well as to create efficiencies for agribusinesses and other stakeholders. For the smallholder farmers who operate within these value chains, digitization offers an important opportunity to be formally financially included. Ninety percent of Ugandan smallholder farmers do not have an account at a financial institution, and 71 percent have never used mobile money (MM) (Anderson, Learch and Gardner, 2016). Yet, the benefits are clear: financial inclusion breaks down economic barriers and allows vulnerable people to better manage household risks and plan for their future (Cull, Ehrbeck and Holle, 2014).



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For the past four years, UNCDF has been stimulating private sector engagement in rural areas of Uganda through digital bulk payment projects across five agricultural value chains: coffee, dairy, maize, seed oil and tea.

In-depth research and active collaboration with stakeholders in these value chains have yielded important insights about the financial behaviours and preferences of smallholder farmers, the challenges that agribusinesses face, and the lessons learned and recommendations that emerged from implementing digitized bulk payment solutions:

Agricultural projects are often multi-year engagements that require dedicated resources: Due to the seasonality of certain crops, agricultural value chain projects may require active engagement for several years and span a number of growing seasons. To ensure success, ownership and commitment by all project partners are critical. Projects within these value chains require strong relationship-building with multiple actors over time. Continued management with dedicated resources and active engagement of partners is necessary to maintain these multi-year engagements.

Basic connectivity and digital financial infrastructure are a must: Without the proper connectivity and digital infrastructure in place, digitization efforts fail. Necessary conditions include the following: sufficient network coverage as well as mobile phone and SIM card ownership; adequate literacy and digital literacy among beneficiaries; enough digital finance agents located in nearby areas with sufficient liquidity to support the community; affordable services (especially when comparing digital services to cash); and, the ability to spend money digitally on additional use cases. If just one of these conditions is missing, digitization is challenging.

Strategic partners and actors can accelerate digitization efforts: Economic anchor partners—agricultural companies that can act as the primary driver of the digitization initiative—are necessary to ensure sustainability over the duration of a project and beyond. In addition to an anchor partner within a value chain, projects should also focus on stakeholders that yield influence and drive change within the chain. This stakeholder may not be the anchor partner or the financial service provider (FSP) but rather a group of people who liaise between different stakeholders, especially among smallholder farmers.

The value proposition may be unclear, so compelling use cases are necessary: As a standalone service, digital payments are of little value to farmers unless they provide compelling benefits, such as allowing them to avoid long-distance travel, to receive a discount or to access a loan. The greater the value that farmers see in using MM, the greater the likelihood that the uptake of digital payments will increase. Projects should look to support the digitization of productive use cases that would be beneficial for and embraced by farmers. Digitization of payments should be at zero or low cost to farmers and should be accompanied by some other services that add value.

The business case is stronger if the whole community is targeted: The gains made in digitizing payments in agricultural value chains are spread throughout a community and require the participation of the entire community to be sustainable in the long term. Projects should focus not only on the lives of farmers but also on those of community members at large. To achieve wider adoption, projects should work with community ambassadors—key people within the community who have influence and who can help promote the digitization effort.

Regulation and unanticipated regulatory changes can dramatically impact projects: Certain regulations, such as stringent know-your-customer requirements, can create challenges for rural agents and customers that ultimately hinder growth in a market. Furthermore, unanticipated regulatory changes—in this case, SIM registration requirements and new MM taxes—can also impact a project's progress in both the short and long term.

To capture experiences and lessons for the wider industry, this publication aims to share findings distilled from the experiences of UNCDF in each of the five selected agricultural value chains. In addition to lessons learned, this paper highlights the digitization challenges faced by smallholder farmers, private sector companies and providers of digital financial services (DFS) in addition to recommendations going forward. Box 1 highlights the progress made in Uganda, particularly in the area of bulk payments, and the areas that can still improve in order to achieve greater financial inclusion in the country.

BOX 1

Digitizing bulk payments to drive financial inclusion in Uganda

The shift from cash to digital payments is an important lever in low-income economies. Digitizing payments, especially bulk payments that are sent to many recipients, can positively impact companies and individuals alike. For companies, the digitization of bulk payments offers improved efficiency, increased revenue, greater transparency and security, in addition to stronger business relationships (Chaintreau and others, 2018). For individuals, the digitization of bulk payments provides time and cost savings, greater security, efficient cash management, convenience and a financial identity (Lucini, Okeleke and Tricarico, 2016). The latter can then facilitate access to credit and insurance, in addition to digital solutions for health, education and employment, among others.

Particularly for vulnerable and poor people living in rural areas, the digitization of payments offers an important gateway to financial inclusion. With poor banking penetration and limited infrastructure in rural areas, many people remain unbanked and underserved by formal financial services. Financial inclusion breaks down economic barriers and allows vulnerable people to better manage household risks and plan for their future. With access to DFS, people can save, borrow and build a financial history, which in turn provide them with better opportunities to transition out of informal economies.

Since 2009, when DFS were introduced in the country, Uganda has made substantial progress in financial inclusion, including in rural areas: 58 percent of rural adults had an account at a financial institution or an account through MM (compared to 59 percent of adults overall) in 2017, up from 20 percent in 2011 (World Bank, 2017b).

However, when it comes to smallholder farmers, there is room for improvement. For example, 9 out of 10 smallholder farmers in Uganda reported that they did not have a bank account in their name, and 7 out of 10 had never used MM (Anderson, Learch and Gardner, 2016). Similarly, only 13 percent of rural Ugandan adults reported that they had borrowed money to start or expand a farm, 29 percent had saved money to start or expand a farm, and 55 percent would be unable to come up with funds in the event of an emergency (World Bank, 2017b).

Digitization challenges in agriculture

While the digitization of agricultural value chains offers great potential to drive financial inclusion, many challenges exist for farmers, private sector companies and DFS providers that can ultimately impact success. Understanding beneficiaries is critical to digitizing any payment type—digitization efforts will not be successful if they do not effectively address real challenges and meet actual financial needs, behaviours and desires (Mattern and Tarazi, 2015). These challenges must be considered alongside barriers to digitization that are common in rural areas: low levels of literacy, including digital literacy, and low levels of mobile phone ownership. The supply side of digital payments must also be assessed for digitization efforts, which includes understanding payment infrastructure and access at the last mile, in addition to the specific pain points or challenges that private sector companies and DFS providers experience. In this section, a number of these existing challenges are elaborated, some of which UNCDF was aware of when designing the agricultural value chain digitization projects.

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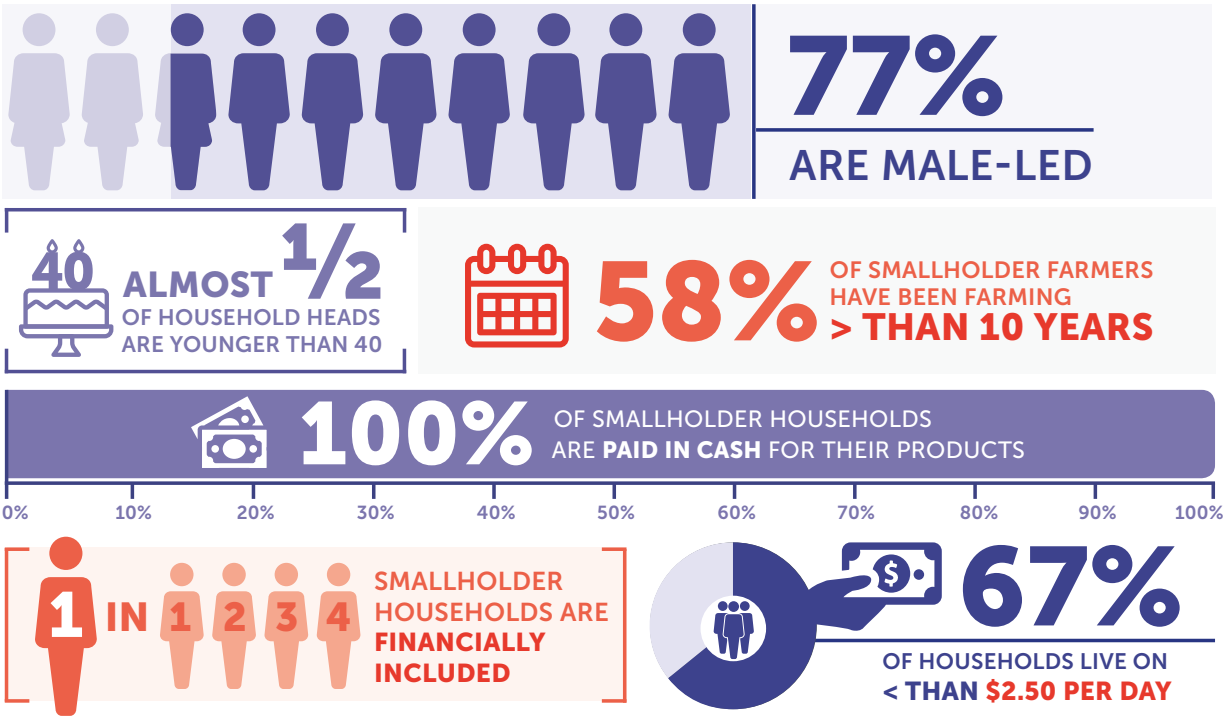
SMALLHOLDER FARMERS

UNCDF undertook primary research on smallholder farmers (and other key beneficiaries, like traders) within the five selected agricultural value chains to better understand the challenges smallholder farmers face in their daily lives. This research, conducted through a series of market surveys, focus-group discussions and interviews between 2014 and 2017, has revealed some important characteristics of smallholder farming households in Uganda. CGAP has also researched these households, and its findings are summarized in figure I.

FIGURE I
Smallholder households in Uganda: Findings from CGAP



Source: CGAP (2017)

Low levels of education and fluctuating income

UNCDF research found that education and literacy levels tend to be lower among smallholder farmers. Generally, respondents reported some level of formal education, which was often primary. For instance, 60 percent of coffee farmers and 35 percent of maize farmers said they have some level of primary education, while an additional 10 percent and 20 percent, respectively, said they have some level of secondary education. Within the tea value chain, literacy levels for fieldworkers and farmers are low when compared to factory workers, supervisors and traders. This result is similar to findings from CGAP, where one fifth of smallholder farmers had no formal education and 64 percent did not continue past primary school (Anderson, Learch and Gardner, 2016).

Agriculture is the main source of revenue for smallholder farmers, and income often fluctuates with the growing seasons. Most smallholder farmers grow a median of seven crops, with maize being the top staple crop and coffee the top cash crop (CGAP, 2017). Where collected, UNCDF research revealed income differences based on the crop. For example, seed oil farmers reported earning less than U Sh1.0 million (US$270) per year, with their lowest income per month in May and June. Respondents in the coffee value chain reported earning upwards of U Sh1.1 million (US$303) from coffee cherries in one region per year. Workers in the tea value chain reported greater earnings: fieldworkers reported earning between U Sh1.0 million and U Sh2.9 million per year (US$270–US$784), with supervisors earning between U Sh2.4 million and U Sh24.0 million per year (US$649–US$6,489). Box 2 captures these income differences by examining one farmer.

BOX 2

Client profile with annual income and expenses: Fred

Fred, age 37, has a five-acre farm, where he grows coffee, onions and other food crops. His wife and five children live on the farm, which is a 30-minute drive by gravel road from the Manafwa coffee washing station. Fred earns U Sh4.2 million (US$1,136) per year from four primary income sources, and his annual expenditure is also U Sh4.2 million.

Annual income by source (%)

Coffee (Aug.-Dec.) (48%) Milk (Daily) (23%) Onion trade (Feb.) (17%) Onions (Dec.-Apr.) (12%)

Annual expenditure by source (%)

Food (26%) School fees (25%) Livestock (14%) Workers (5%) Health (5%) Fertilizer (3%)
Airtime (3%) Seeds (1%) Remittances (1%) Pesticides (<1%) Other, misc. (16%)

Smallholder farmers' expenses are similar across value chains. These expenses include household supplies (including food), school fee payments, farm inputs, agricultural veterinary services and farm labour. These findings are echoed by those from CGAP (2017), which found that most smallholder farmers use their income to invest in their farm, in education and in their home.

Formal financial exclusion and limited usage

In the five agricultural value chains, only maize and tea traders reported having a bank account or regular access to a bank. While a minority of respondents within the seed oil value chain reported having a bank account, the majority said that they did not have an account either because it was too expensive or due to a lack of nearby locations, knowledge or documentation.

9 OUT OF 10 SMALLHOLDER FARMERS IN UGANDA SAID THAT
THEY DO NOT HAVE
A BANK ACCOUNT IN THEIR NAME.

(Anderson, Learch and Gardner, 2016).

Smallholder farmers still manage to save and borrow money. Respondents indicated that they use village savings and loan associations or savings and credit cooperatives. A sizeable proportion (38 percent) of seed oil farmers said they save with a village savings and loan association, and maize and dairy farmers explained that village savings and loan associations are influential in their community and provide positive peer pressure and a source of learning and empowerment. Within the dairy value chain, cooperatives have evolved to offer basic financial services beyond milk aggregation. Dairy farmers revealed their preference for savings and credit cooperatives over banks. This preference is due, they said, to the low to medium interest rates, the quick turnaround times and their willingness to accept milk as loan collateral. Most smallholder respondents did not have a loan, saying that they did not need a loan, that the cost of a loan was too high or that they did not know how to access a loan. These findings are in line with data from CGAP, where 81 percent of smallholder farmers did not have a loan (CGAP, 2017).

Mobile phone ownership but mixed awareness and usage of mobile money

CGAP (2017) indicates that more than two thirds of smallholder farmers own a mobile phone in Uganda, and UNCDF research found similar figures: 60 percent of seed oil farmers own a phone while 70 percent of tea farmers do. All the maize traders interviewed own at least one mobile phone, and many own two.

However, levels of awareness and usage of MM are mixed across the different value chains:

Seed oil – For seed oil farmers who reported owning a mobile phone, 56 percent of respondents use MM, with just over two thirds of them using MM at least once a month.

Maize – Maize traders' awareness of MM is high, though they said they use it more for personal than business transactions.

Dairy – Four out of five dairy respondents indicated that they use MM to send remittances, pay school fees or pay suppliers via person-to-person transfers, but they often require over-the-counter assistance to complete transactions. This was also the case for coffee farmers and maize traders, who explained that they prefer over-the-counter transactions for fear of getting a recipient's number wrong.

In the dairy cooperatives studied, the appetite for digital payments varies. For instance, the cooperative in Sembabule is enthusiastic about digital payments, with 80 percent of farmers using MM. In contrast, the Mitala-Maria cooperative is sceptical about the benefits of digitization for smallholder farmers.

Tea – More than 77 percent of respondents within the tea value chain expressed a strong willingness to transition to digital payments, likely because the majority of tea workers are migrants who send money to relatives living in other districts or countries.

Price sensitivity and preference for cash

In addition to mixed levels of awareness and usage of MM, smallholder farmers often cited MM transaction fees as a key usage barrier. Across all five of the value chains researched, farmers identified high transaction fees (particularly for cash-out transactions) as a concern in interviews and focus-group discussions. For instance, within the tea value chain, the only workers who show a strong willingness to pay MM withdrawal fees are supervisors. Farmers, traders, fieldworkers and factory workers all show only a moderate willingness to pay.

When asked, most smallholder farmers expressed a preference to be paid in cash—this was the case for seed oil and maize farmers as well as maize traders. Generally, respondents cited similar limitations or issues with MM in rural areas as the reason for this preference: network downtime or limited connectivity, lack of agents or liquidity, and transaction fees and limits. This concern is particularly acute for tea fieldworkers, who reported spending a significant amount of time locating an MM agent with enough float to accept a cash-in transaction, in order to send funds. This process can sometimes take several days if a large amount of money must be sent for an emergency.

AGRICULTURAL AND PRIVATE SECTOR BUSINESSES

Understanding the challenges that agricultural and private sector companies face is an important gateway to digitizing payments in agriculture. Providing digital solutions that solve or reduce pain points for agribusinesses increases the value proposition and the commitment level. Working closely with key players in the selected agricultural value chains, UNCDF identified a series of problems and issues that can be solved or improved through digitization.

Risk of cash theft or loss

Paying many farmers and workers at the same time means regularly transporting and handling large amounts of cash. The risk of theft or loss of cash is high for the employees and the payees of Ugandan agribusinesses—in fact, this problem was the most commonly cited by stakeholders. For example, coffee washing station managers from Kyagalanyi Coffee Limited (KCL) said they travel 70 kilometres every week to collect money in the range of U Sh90 million–U Sh150 million (US$24,334–US$40,557) from the bank in order to pay farmers (coffee suppliers) in cash. These risks were echoed by Mukwano, a seed oil exporter that pays 72,000 seed oil farmers in cash. For AgroWays, a maize off-taker, the concern is real and acute. In December 2017, two major incidents occurred: a maize trader was hijacked, robbed of U Sh12 million (US$3,245) and killed; and an AgroWays Area Cooperative Enterprise (ACE) location was robbed of U Sh82 million (US$22,171) while the money was being transported to pay farmers.

Lack of available cash

In addition to the risk of theft and loss, the lack of available cash for agribusinesses to make high volume payments can be challenging. Twice a month when salaries are paid, McLeod Russel, a tea grower and processor, charters a plane to fly bags of cash from Kampala to its different tea estates and drops the bags there (UNCDF, 2017). The bags are collected and taken to each estate's administrative offices, where a team counts the money and pays more than 8,000 total employees—a process that is lengthy and stressful. On paydays, regular security forces are supported by extra police officers. After digitization pilots, UNCDF analysis revealed that the cost to McLeod Russel of conducting digital payments was approximately 10.4 percent less than the cost of flying money from Kampala to the estates.

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Lost work time

Agribusinesses also mentioned lost work time due to existing payment processes as a common problem. For McLeod Russel, once the cash bags are dropped and counted, estate workers need to line up to collect their payment, losing one workday per month to do so. Before moving to digital payments, KCL staff had to travel to the bank each month to collect their salary, squandering at least a half-day of work each time. Since transitioning to digital payments, KCL has gained that lost half-day of work by its staff.

Lack of transparency

A lack of transparency of information or finances was another concern reported within some agricultural value chains. During harvest periods, AgroWays provides cash to its Village Aggregation Centres (VACs) to buy grain from farmers. AgroWays has little control over this purchasing process, leading to a lack of transparency and accountability of funds. Some VACs have used the money for their own gain (via moneylending and personal grain trading) before buying grain for AgroWays. After transitioning some of its farmers to partial digital payments, AgroWays has achieved greater visibility over these transactions among its traders, ACEs and VACs.

Similarly, KCL has achieved improved efficiency in coordinating the trucking of coffee from farmer collection points to its processing plant. With faster and more transparent information on coffee prices for farmers, delivery time to the collection points has decreased.

Limited digital records

Limited digital records can be an issue for businesses within agricultural value chains as well. Having received cash payments in prior years, traders, ACEs and VACs in the maize value chain had no record of business, making it hard for them to attract any financial institution funding. With MM payments, the size of the business of each value chain actor is now visible. This benefit was also seen in the dairy value chain, where cooperatives had been tracking milk delivery and sales in notebooks. By digitizing these records through an app, cooperatives will have the chance to seek financing, which had been unavailable due to limited data on collateral.

Lack of agricultural investment by smallholder farmers

A lack of investment by farmers can negatively impact overall production within an agricultural value chain. With no financial records, farmers miss out on building a financial history, which limits their access to formal credit. Ultimately, access to credit can both increase investment and ensure continued investment in agricultural inputs, such as seeds and fertilizer, which can in turn increase outputs. This issue was mentioned by Mukwano, a conglomerate that produces detergents, beverages and agricultural produce for seed oils. It observed that seed oil production in one region was operating at 30 percent capacity due to a lack of raw materials by farmers. Mukwano also saw a decrease in output per hectare of seed oil plants by more than 40 percent, which could be resolved by fertilizer use combined with modern farm inputs and methods. Digitization can help farmers build a financial history that can encourage greater agricultural investment, benefitting farmers and agribusinesses alike.

DIGITAL FINANCIAL SERVICE PROVIDERS

Like agricultural and other private sector companies, DFS providers—whether mobile network operators (MNOs), banks or others—face challenges when digitizing payments at the last mile, including limited infrastructure, service downtime, and lack of agents or liquidity.

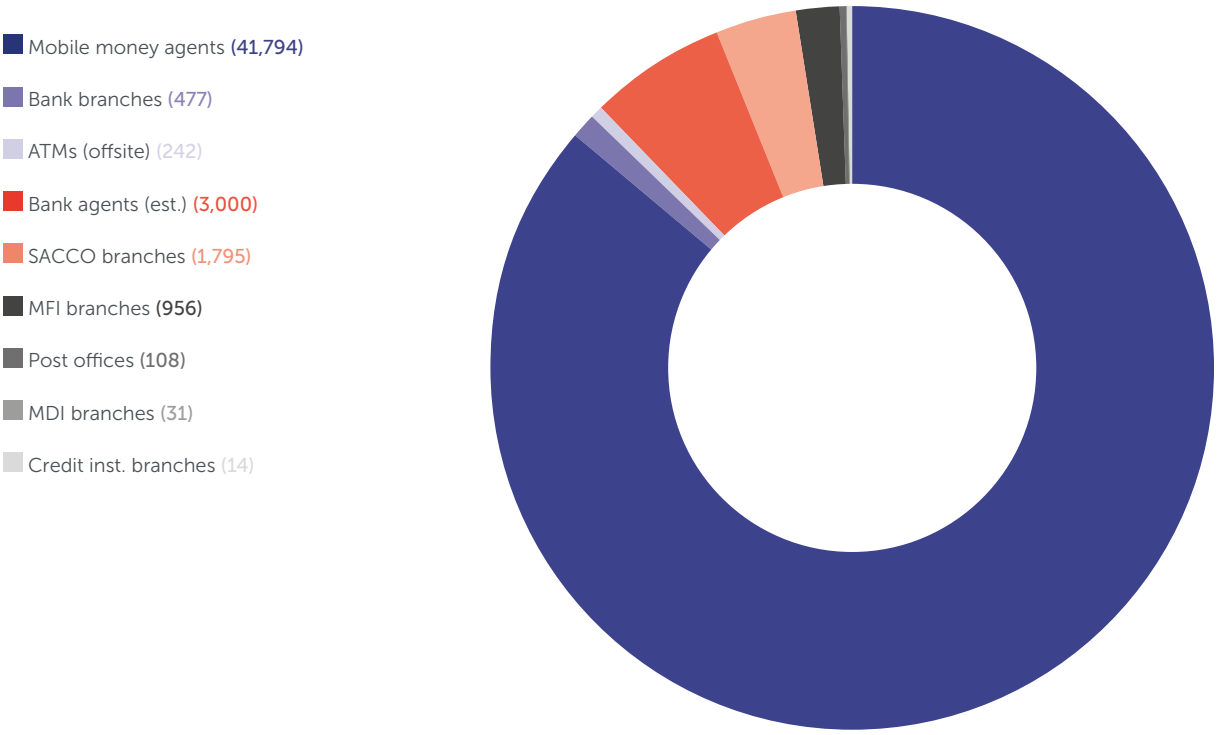
Limited infrastructure

Access to electricity is very limited—just 27 percent of the total population and only 18 percent of the rural population had access to electricity in 2016 (World Bank, 2016b). Transport is equally an issue, as limited or no access to transport connectivity, such as decent roads, hinders sustainable growth in a market (Iimi and others, 2016). The Rural Access Index found that some 16.3 million rural Ugandans are not connected to the road network (Transport & ICT, 2016). Furthermore, the Uganda National Roads Authority estimates that just 3.52 percent of roads are paved in the country, a lower proportion than in neighbouring Kenya, Rwanda and the United Republic of Tanzania (Kagina, 2017; Uganda Communications Commission, n.d.).

Mobile network coverage (2G access or higher) is relatively widespread in Uganda, and there are approximately 66 mobile subscriptions per 100 Ugandans (FSP Maps, 2015). Areas that lack coverage are primarily in northern Uganda, bordering Kenya and South Sudan.

Financial access points are dispersed across the country, with 72 percent of the population living within five kilometres of an access point (FSP Maps, 2015). As of 2015, there were more than 45,000 financial service access points in Uganda, of which the vast majority (92 percent) were MM agents, while 6 percent were either savings and credit cooperatives or microfinance institutions and just 1 percent were bank branches (FSP Maps, 2015; see figure II).

FIGURE II
Financial service access points in Uganda (2015)



Source: UNCDF internal reports and FSP Maps, 'Uganda,' 2016 data. Available from http://fspmaps.com/#/Uganda/finance/map@9.31,7.93,z6,dark.
Acronyms: MDI, microfinance deposit-taking institution; MFI, microfinance institution; SACCO, savings and credit cooperative.

Network expansion cost and downtime

Given infrastructure challenges, expanding and maintaining mobile networks in rural areas can be an expensive undertaking. This is especially true in areas where the rural population is dispersed and the return on investment may not be justifiable in the short term. For instance, in Kapchorwa District, Mobile Telephone Networks (MTN) Uganda could not financially justify the deployment of a mobile base transceiver station (BTS) (UNCDF, 2016).

Network downtime can also be a challenge in rural areas, which leads to transaction delays and can impact customer trust in the service (Wright, 2015). In the UNCDF research, network connectivity and downtime were cited by smallholder farmers as key concerns in four of the five value chains.

Lack of agents or liquidity constraints

A lack of agents or liquidity constraints can pose challenges for DFS providers in rural areas as well. Both can impact customer adoption, usage and trust. In northern Uganda, the proportion of the population located within five kilometres of an MM agent is much lower and has greater variability than in other regions, ranging from just 2 percent to 67 percent (FSP Maps, 2015). A lack of agents was seen in the research UNCDF conducted on the tea value chain, where agents were not yet available in sufficient numbers to serve the population in need.

> "REBALANCING IS A CHALLENGE. I CLOSE MY SHOP AND RUSH TO TOWN – MBALE OR TORORO. **THAT'S ABOUT 60 KILOMETRES FROM HERE."**
>
> – Twesigye, an agent in Lwakhakha, Manafwa

Where infrastructure is lacking in rural areas, liquidity constraints are exacerbated. As a GSMA report notes, "rebalancing float represents a high opportunity cost for rural agents since they lose both time and business when traveling longer distances to do so" (Frydrych and Aschim, 2014). For instance, of the agents interviewed in the coffee value chain in Kapchorwa and Manafwa Districts, 80 percent said they face rebalancing challenges because the points are too far away (30–50 kilometres) and take a long time to reach. Generally, Ugandan agents deny a median of two transactions per day due to insufficient cash or float (Bersudskaya and Kuijpers, 2016), and this rate may be higher for rural agents. The most commonly cited issues by agents in managing liquidity were unpredictable fluctuations in client demand, too much time taken at the rebalance point and lack of resources to buy a sufficient amount (Bersudskaya and Kuijpers, 2016).

Ecosystem approach to digitizing agriculture

Given the wide array of challenges just described to digitize payments in the Ugandan market, UNCDF developed an approach that considers the entire ecosystem during each phase of market development. As illustrated in figure III, this ecosystem approach covers Policy & Regulation, Infrastructure, Providers, Distribution, High volume payments and Customers.

FIGURE III
Ecosystem approach to market development applied by the UN Capital Development Fund

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UNCDF focuses on the following market aspects and players when designing projects:

Policy & Regulation – Working with regulators on their overall digital finance strategy and promoting enabling policies and regulatory updates, better data collection and analysis, and effective oversight.

Infrastructure – Promoting development, awareness and use of systems that facilitate and regulate connectivity, interchange of consumer identity data and privacy.

Providers – Providing technical and financial support to advance providers' understanding of underserved markets, notably rural populations and women, improve DFS products and adapt business models accordingly.

Distribution – Investigating key constraints and proposing solutions to distribution and customer service challenges.

High volume – Facilitating shifts from cash to digital payments that are performed regularly and in large quantities.

Customers – Identifying barriers to customer adoption and supporting client-centric approaches.

It is against this backdrop that UNCDF worked on agricultural value chains in Uganda to demonstrate whether digitizing payments within the sector could drive access to and use of DFS in rural areas. Depending on the agricultural product, value chains can be well-structured but are often complex with many stakeholders (CGAP, n.d.). They are also predominantly cash-based, leading to various business and logistical inefficiencies, including theft, fraud and lost time, as well as limited operational oversight (Tricarico and Loukos, 2017).

Considering its ecosystem approach and recognizing that the digitization challenges previously outlined would likely exist across all of the value chains, UNCDF sought to identify value chains where digitization efforts would be most successful, as described below.

Choice of value chains

To increase the likelihood that digitization efforts would be successful, UNCDF assessed the readiness of certain agricultural value chains in Uganda using a variety of factors. The first was the level of formalization. Initially, UNCDF selected the five value chains (coffee, dairy, maize, seed oil and tea) because they were more formalized, although organizational structure within each chain varied from tight to loose (see the appendix for more detail on the value chain structures). While the fish value chain in Uganda was also initially considered, ultimately it was not pursued due to high levels of fragmentation.

The second factor was the number of farmers in the value chain. UNCDF looked at what smallholder farmers were producing and targeted value chains that employed many farmers, thereby increasing the potential impact. Coffee, the biggest export crop in Uganda, was selected for this reason, in addition to maize and dairy. Maize is both a staple crop and a cash crop grown by many farmers, while dairy is a year-round activity with an estimated 1.7 million people involved.

The third factor was whether key stakeholders in the value chain were ready to partner and to embrace digitization. This was the case for seed oil, as Mukwano had expressed strong interest in partnering to digitize its business. Conversely, UNCDF decided not to proceed with the sugar value chain because private sector stakeholders were not ready to digitize and stakeholders in the value chain were relatively fragmented.

Finally, the tea value chain provided UNCDF with an interesting challenge and the opportunity to compare voluntary and obligatory payment solutions. While adoption of digital payment solutions in the other value chains was voluntary for smallholder farmers, an obligatory solution was proposed for McLeod Russel tea estate workers.

Choice of anchor partners

To ensure that digitization efforts would be sustainable over the long term, anchor partners were selected to work alongside UNCDF and help drive each project forward. These anchor partners are some of the largest agricultural companies in the country and are actively involved in their respective value chain. Furthermore, these companies have earned the trust of smallholder farmers and other value chain stakeholders. Each expressed an interest in digitization to help reduce challenges and issues within the value chain:

Kyagalanyi Coffee Limited: KCL is a private coffee exporter that works with around 4,500 farmers in the Mount Elgon area of eastern Uganda. KCL also operates six coffee collection stations in remote areas, where undried coffee is purchased directly from farmers in surrounding villages.

McLeod Russel Uganda Limited: McLeod Russel is a private tea company employing more than 8,200 farmers across six tea estates near the Rwenzori Mountains of western Uganda.

AgroWays (U) Limited: AgroWays is a grain management company that focuses on sourcing, processing, storing and marketing high maize food ingredients. The sourcing apparatus of AgroWays includes 10 collection centres and a growing network of village agents. These collection centres deal with and handle over 5,000 farmers who supply maize grain directly to AgroWays.

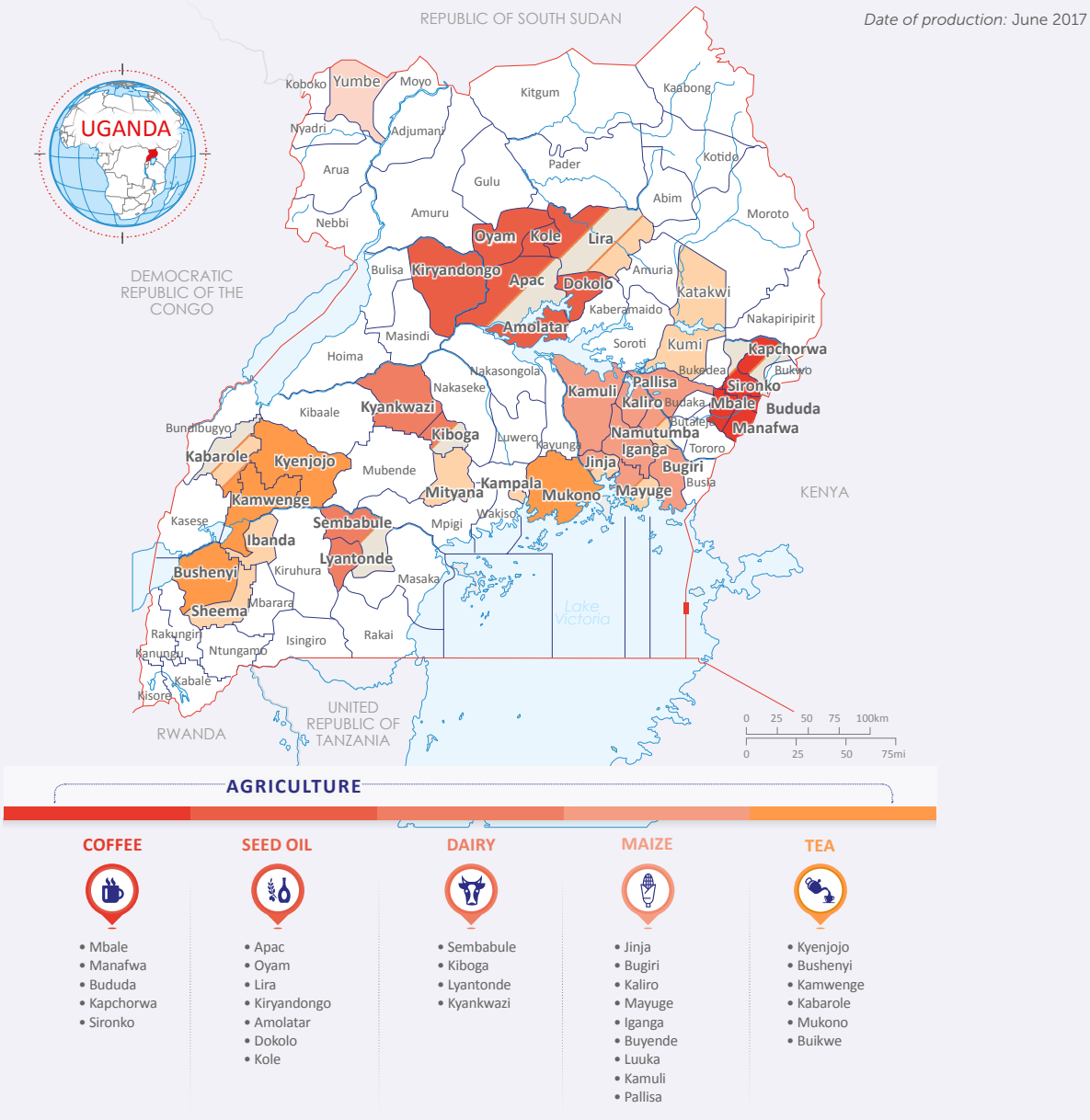
Mukwano Group of Companies: Mukwano, through its subsidiary AK Oils and Fats Uganda Limited, is actively involved in large-scale commercial agriculture and oil seed development projects. The agricultural activities are concentrated in Kiryandongo District in mid-western Uganda and the Lango sub-region in northern Uganda. Mukwano works with 72,000 seed oil farmers.

SNV: SNV is a non-governmental organization founded in the Netherlands that is focused on agriculture, energy, water and sanitation. In Uganda, SNV provided access to the dairy cooperatives and has helped onboard the cooperatives.

Case studies

Across Uganda, UNCDF designed and trialled different bulk payment solutions within the five agricultural value chains (see figure IV). Working with key stakeholders in each value chain, UNCDF identified challenges to better understand how digitization would reduce or remove those pain points, leading to greater operational efficiencies. Summaries of each of the five projects are provided below, in addition to profiles of beneficiaries.

FIGURE IV
Agricultural value chains in Uganda



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CASE STUDY
Digitizing the coffee value chain with Kyagalanyi and Yo Uganda

✔ **Primary reason value chain was chosen for pilot digitization:**
Country's largest export crop and many people involved

GROWING SEASONS	VALUE CHAIN STAKEHOLDERS	AREAS	ESTIMATED PEOPLE INVOLVED
One growing season per year	• Farmers • Traders • Cooperatives	Mount Elgon, Lake Victoria, Rwenzori Mountains and West Nile	2.8 million

Pilot area	Pilot period	Registered customers by booster teams	Active agents	Payment cycles made digitally	Farmers paid digitally	Increase in ARPU for payees enrolled by booster teams	Increase in coffee sales
Mount Elgon	2015–2018	27,794	105	6 seasons (continuous payments during season)	3,614	+175%	+30%

Note: Data provided above is from September 2017 to September 2018.
Acronym: ARPU, average revenue per user

Partners:

To digitize the coffee value chain, its first such project in Uganda, UNCDF partnered with KCL in 2015, a coffee company working with 4,500 farmers in the Mount Elgon area of eastern Uganda. KCL was forward-thinking about digital solutions for collecting farmer information and gaining business efficiencies, especially around payments and cash management. Yet, the basic requirements for digital payments were insufficient due to low GSM connectivity, low phone penetration among farmers, low digital literacy, a lack of MM agents and behavioural inertia. Furthermore, just one growing season per year meant that the project required long-term investment by the partners involved.

In Kapchorwa District, the MNO MTN could not financially justify deploying a mobile BTS (UNCDF, 2016). However, with support from the Bill & Melinda Gates Foundation, UNCDF worked with MTN to de-risk the investment, providing a guaranteed fund of US$100,000 if MTN incurred any losses from the mobile BTS. Yo Uganda, a payment aggregator working with MTN to develop the bulk payment app for the project, deployed a booster team to distribute SIM cards and affordable phones, recruit MM agents and educate farmers.[1] A pay-as-you-go solar kit developed with Fenix was also tested, but this use case was introduced too soon, as farmers struggled to make payments outside the coffee season.

Three years on, all KCL staff and transporters have moved to MM payments. As of September 2018, 3,614 farmers had voluntarily received payments digitally. In the first six months of the project, KCL observed a 30 percent increase in coffee purchases due to supply-chain efficiencies: with farmers having quicker and more transparent information on prices, delivery time to the collection points was faster. Additionally, the average revenue per user (ARPU) for MTN from farmers receiving payments and customers onboarded by the booster teams was much higher than the ARPU for the district population; farmers generated an ARPU 175 percent higher than MM users in the same district.

[1] A booster team is a group of people who enter rural communities to improve service delivery at the last mile through agent recruitment, increasing device penetration and providing customer education and support.

CASE STUDY
Digitizing the coffee value chain with Kyagalanyi and Yo Uganda (cont.)

As a result of the project, 100,000+ people are now connected due to the permanent installation of the network tower; the digital product MoKash was designed, tested and launched in this value chain, together with MTN; Yo Uganda received extra business from other players in the coffee, seed oil and dairy value chains; and, the value of providing even basic voice services to people living in remote areas was showcased.

BOX 3

Client profile in the coffee value chain: Moses

Moses is a 45-year-old farmer living in eastern Kapchorwa District. He is married with six children and earns an income by cultivating coffee and vegetables and harvesting honey on a half-acre of land. His biggest expenses are school fees and health care.

Moses is familiar with MM, and he is paid three times a month via MM for selling coffee to KCL. To cash out, Moses travels one kilometre by boda boda moto-taxi, costing him U Sh1,000 roundtrip (US$0.27), even though agents sometimes do not have enough cash to complete his transaction.

He uses MM to do the following:

- ✔ Top-up airtime
- ☐ Pay merchants for purchases
- ✔ Access credit
- ✔ Pay school fees
- ✔ Send money
- ✔ Save

MM has had many positive impacts on his daily life: *"I don't have to spend money travelling across the country to pay school fees for my son in Lira. I am not tempted to use the money when it's on the phone. Buying airtime is easier, and I can help my wife with airtime."*

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CASE STUDY
Digitizing the tea value chain with McLeod Russel

✔ **Primary reason value chain was chosen for pilot digitization:**
Comparison of voluntary and obligatory digital payments

GROWING SEASONS	VALUE CHAIN STAKEHOLDERS	AREAS	ESTIMATED PEOPLE INVOLVED
None: year-round production	• Tea workers • Out-growers • Traders/Transporters • Unions • Processors	Districts of Bushenyi, Kabarole, Kanungu and Kyenjojo of western Uganda and districts of Jinja and Mukono of eastern Uganda	140,000

Pilot area	Tea estates in pilot	Pilot period	Registered customers	Active agents	Payment cycles made digitally	Farmers paid digitally
Western Uganda	2	2016–2018	939	25	27	789

Partners:

To digitize the tea value chain, UNCDF partnered with McLeod Russel, a tea grower and processor employing more than 8,200 farmers across six estates near the Rwenzori Mountains of western Uganda. For McLeod Russel, cash management was a huge issue that involved flying cash twice a month from Kampala to its tea estates for salary payments. To address this challenge, the company agreed to trial bulk payment solutions at some of its tea estates. UNCDF analysis revealed that the cost to McLeod Russel of making digital payments was approximately 10.4 percent less than the cost of flying money from Kampala to the estates.

In 2016, UNCDF presented the business opportunity for digitizing tea value chain payments to three payment service providers. To foster competition, the MNOs Airtel and MTN, along with the payment aggregator Pegasus Technologies, were each selected to pilot a solution at one estate. Following the pilots, Airtel and MTN continued their activities at the tea estates.

Notwithstanding various challenges in the project, around 50 percent of the farmers in the initial two estates moved from cash to digital payments between August 2017 and May 2018. Furthermore, McLeod Russel is looking beyond payments to digitize all of its agricultural processes for greater efficiency and better control. Within this project, the MNOs were willing to adjust their pricing because of competition. For example, MTN reduced its bulk payment fees by 74 percent, and Airtel reduced its bulk payment fees by 33 percent and waived cash-out fees. Additionally, Airtel specifically recruited an account manager as part of its corporate sales section for this project. Airtel and MTN provided the farmers with free SIM cards as well, which helped to boost registrations.

CASE STUDY
Digitizing the maize value chain with AgroWays and MobiPay

✔ **Primary reason value chain was chosen for pilot digitization:**
Both a staple and a cash crop

GROWING SEASONS	VALUE CHAIN STAKEHOLDERS	AREAS	ESTIMATED PEOPLE INVOLVED
Two growing seasons per year	• Farmers • Traders • ACEs • VACs • Off-takers • Input suppliers	Eastern Ugandan districts of Bugiri, Buyende, Iganga, Kaliro, Kamuli and Namutumba	200,000 maize farmers

Pilot area	Villages and ACEs in pilot	Pilot period	Seasons covered	Registered farmers/ customers	Active agents	Payment cycles made digitally	Farmers paid digitally
Jinja and Iganga Districts	18	July 2017–Nov. 2018	2	56,500	176	6 (continuous payments during season)	27,700

Partners:

AgroWays (U) Ltd
"Meeting the demand for quality grains & Cereals"

MobiPay
AgroSys Limited

Working with one of the major staple crops in Uganda, the UNCDF project in the maize value chain kicked off in July 2017 with partners AgroWays and MobiPay. AgroWays, an off-taker, works with more than 20,000 maize smallholder farmers who supply grain. With its existing processes, AgroWays experienced a lack of transparency and accountability of funds at its ACEs and VACs, problems that were compounded by additional issues due to theft.

With a clear need to move to digital payments, UNCDF collaborated with the 'agrotech' MobiPay to customize a payment solution that targeted ACEs, VACs and maize traders. MobiPay was already active in the maize value chain and had existing structures working with farmers of eastern Uganda. In addition to the digital solution, UNCDF focused on (1) increasing the penetration of phones and SIM cards as well as the availability of MM agents and (2) improving digital literacy of the farmers.

To date, 56,500 farmers have been registered with MM and 27,700 farmers have been paid digitally for their grain. The transition from cash to digital payments is happening gradually, with farmers receiving their payments partly in cash and partly in MM.

This project helped to highlight the role that certain actors in an agricultural value chain can play to drive digitization. For instance, maize traders were identified as important influencers and drivers in the value chain. UNCDF completed additional research on traders to help identify a use case and worked with MobiPay to adapt a trader payment app.

CASE STUDY
Digitizing the maize value chain with AgroWays and MobiPay (cont.)

BOX 4

Client profile in the maize value chain: Betty

Betty is 43 years old and lives in Luuka District of eastern Uganda. She is married with nine children. Betty cultivates maize, beans and cassava on a three-acre plot, and her income comes from crop and pig farming. Her biggest expenses are school fees, household items, medical costs and farm inputs.

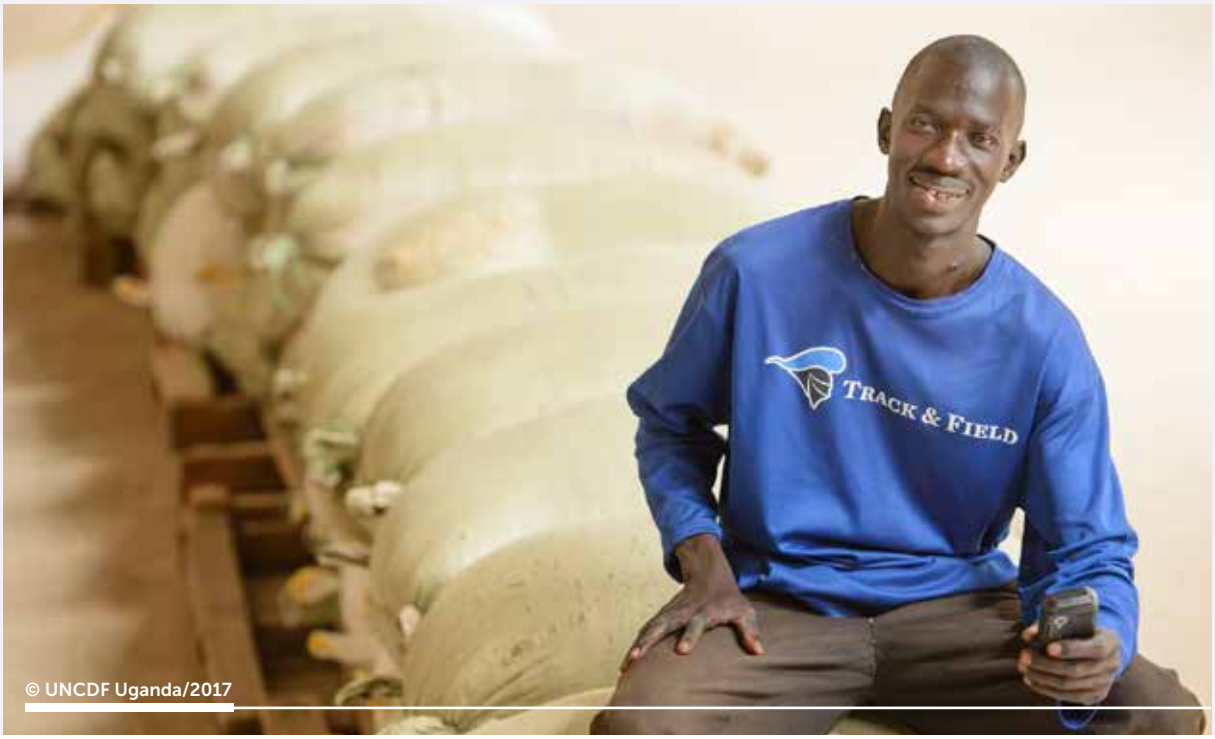
Betty has a history of saving—she has been a member of a village savings and loan association for three years and serves as treasurer. She also has experience with MM: twice per season, Betty receives a digital payment for supplying maize to a VAC, and previously she used MM for remittances.

Betty uses MM to do the following:

- ✔ Top-up airtime
- ☐ Pay merchants for purchases
- ☐ Access credit
- ✔ Pay school fees
- ✔ Send money
- ✔ Save

Betty does not cash out the full amount she receives; rather, she saves some in her account for emergencies as well as in her savings group. When she does cash out, she travels two kilometres to the nearest agent because she prefers an agent's assistance.

For Betty, the benefits of MM are clear: *"It's very secure to receive money digitally since it's password protected and no one ever gets to know whether one is paid or not. It improves and enhances [one's] saving habits to cater for emergencies and targeted saving for assets."* However, there is room for improvement. For Betty, cash-out transactions are very expensive, and her complaints and queries are not always addressed.



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CASE STUDY
Digitizing the seed oil value chain with Mukwano and Yo Uganda

✔ Primary reason value chain was chosen for pilot digitization: Stakeholders that are ready and interested in digitization			
GROWING SEASONS	**VALUE CHAIN STAKEHOLDERS**	**AREAS**	**ESTIMATED PEOPLE INVOLVED**
Two growing seasons per year	• Farmers • Traders • Off-takers	Northern and Eastern Uganda	500.000

Pilot area	Pilot period	Seasons covered	Registered customers by booster teams	Active agents	Payment cycles made digitally	Farmers paid digitally
Alebtong, Apac, Kiryandongo, Lira and Oyam Districts	July 2017–Nov. 2018	2	47,200	87	6 (continuous payments during season)	7,743

Partners:

The seed oil value chain in Uganda is dominated by smallholder farmers and employs more than 500,000 in northern and eastern Uganda. In 2017, UNCDF partnered with the commercial agriculture and oil-seed developer Mukwano and the MNO Yo Uganda to digitize the seed oil value chain.

Mukwano, through its affiliate AK Oils and Fats Ltd, works with 72,000 seed oil farmers. In addition to reducing the management burden of paying its farmers with cash, Mukwano also wanted to improve agricultural inputs and investments by farmers. Transitioning from cash to digital payments can accelerate the ability of farmers to access these services.

Earlier efforts by Mukwano to engage and negotiate with MNOs had few results due to poor product design and the inadequacy of the digital finance ecosystem. For instance, MNOs were unable to customize their DFS solutions to suit the structure of the seed oil value chain. However, with UNCDF, Mukwano is trialling a bulk payment solution in three sub-counties in northern Uganda. Yo Uganda has deployed booster teams to the area to support the development of an agent network, increase mobile phone penetration, and enhance customer awareness and digital literacy. From July 2017 to date, the booster teams have educated and registered 47,200 seed oil farmers.

CASE STUDY

Digitizing the dairy value chain with Heifer International, SNV, Agriterra and Laboremus Uganda

✔ **Primary reason value chain was chosen for pilot digitization:**
Year-round production and many people involved

GROWING SEASONS	VALUE CHAIN STAKEHOLDERS	AREAS	ESTIMATED PEOPLE INVOLVED
None: year-round production	• Farmers • Transporters • Cooperatives • Processors/Off-takers	'Cattle corridor' stretching from the south-western region through the central to north-eastern regions	1.7 million

Pilot area	Pilot period	Registered farmers/customers	Active agents	Payment cycles made digitally	Farmers paid digitally
Kiboga, Mbarara and Sembabule Districts	Feb. 2017–Nov. 2018	43,100	87	Every two weeks for 18 months	3,699

Partners:

In 2017, UNCDF launched a project to digitize payments to dairy farmers in Uganda. UNCDF worked with the non-governmental organization Heifer International to better understand the dairy value chain there. The advisory firms Agriterra and SNV provided access to dairy cooperatives in the 'cattle corridor' that expressed interest in shifting from cash to digital payments for their farmer members.

Core to this project was the assistance provided to dairy cooperatives with the digitization of their existing workflows. UNCDF partnered with Laboremus, a software company, to transition milk delivery and sales records, which are currently kept in notebooks, to digital platforms. The app, Emata, registers milk deliveries by farmers, calculates the payment amounts and handles the payments. UNCDF is also illustrating the value proposition of MM to farmers through partial digital payments. Booster teams have educated people in the area on MM and registered them.

To date, around 3,700 farmers have received their first partial digital payment and booster teams have registered some 43,100 people in the area with an MM account. Beyond the large number of registrations, the education provided by the booster teams had a big impact on the MM activity level of farmers and their resulting ARPU: the MM ARPU for dairy farmers was 299 percent higher than their neighbours over the course of a year.

CASE STUDY
Digitizing the dairy value chain with Heifer International, SNV, Agriterra and Laboremus Uganda (cont.)

BOX 5

Client profile in the dairy value chain: Sylvia

Sylvia is 28 years old, married and mother of three children. She is a dairy farmer who also rears goats on 35 acres in Kinoni, a sub-county of western Uganda. Sylvia's main income comes from dairy farming, and her main expenses are paying for casual labourers and medicine for her cattle.

Sylvia is paid via MM every two weeks for milk she supplies, but she usually cashes out the full amount. She travels 3–5 kilometres to visit an agent, who always help completes her transactions.

Sylvia uses MM to do the following:

- ☐ Top-up airtime
- ☐ Pay merchants for purchases
- ☐ Access credit
- ☐ Pay school fees
- ✔ Send money
- ☐ Save

Sylvia says she no longer carries cash to shop on market day because she can easily cash out at the nearest agent. She says she would recommend MM to others but only if the cash-out fees are reduced.

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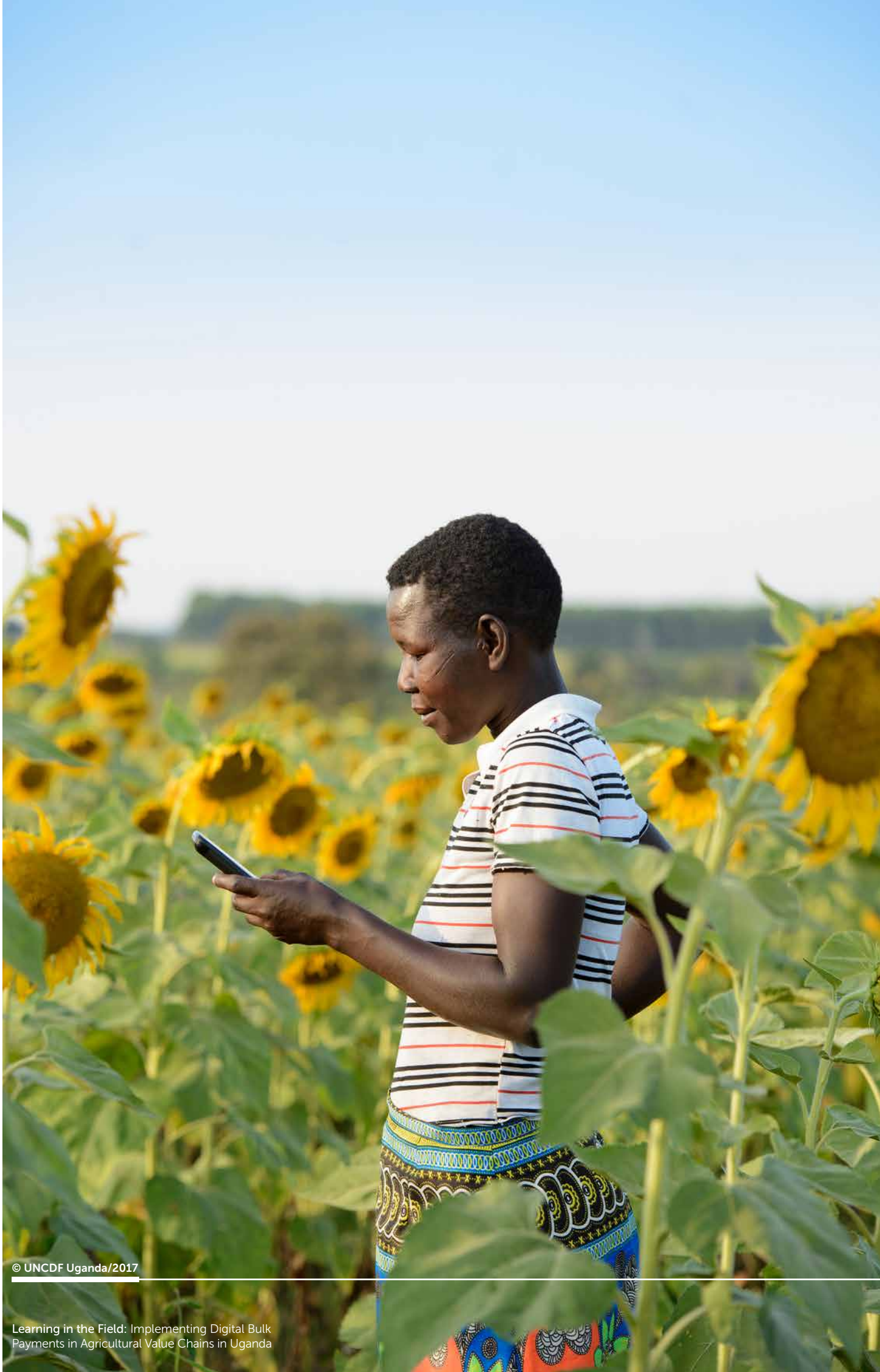

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Lessons from digitizing payments in agricultural value chains

The work of UNCDF on the digitization of payments in five agricultural value chains in Uganda has yielded some important lessons for key stakeholders and for the industry overall. This learning is organized below based on key stakeholders in the digitization process, though there are a few lessons mentioned that apply more generally across value chains and stakeholders.

Agricultural value chain projects require dedicated resources and active engagement over several years. Agricultural value chains are complex, often involving many different stakeholders. Projects within these value chains require strong relationship-building with multiple actors over time. To maintain these relationships, projects need continued management and active engagement with partners. Any existing relationships within value chains can be important assets and should be leveraged when possible. Furthermore, dedicated resources focused on managing the project and the multiple relationships involved are critical. UNCDF assigned a DFS expert to each value chain to ensure projects and relationships were well maintained.

Additionally, the seasonality of certain agricultural outputs means that value chain projects may need to last several years in order to span more than one growing and harvesting season. This was the case for the maize value chain project, where two growing seasons per year meant prototyping, testing and iteration took a long time. To ensure sustainability over the length of a project and beyond, economic anchor partners are necessary. Identifying at least one agricultural company to be the primary driver of a digitization initiative means that work will continue for the duration of multi-year engagements.

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Key actors in the agricultural value chain can drive digitization. In addition to an anchor partner within a value chain, projects should also focus on stakeholders that yield influence and drive change within the chain. Such a stakeholder may not be the anchor partner, which is often at the top of the value chain, but rather a group that liaises between different stakeholders, especially among smallholder farmers. For instance, in the maize value chain, traders were identified as important influencers and drivers in the value chain. Since traders pay smallholder farmers for their grain, targeting them as the entry point for digitization made strategic sense. UNCDF completed additional research on traders to help identify a use case and worked with MobiPay to adapt a payment app for traders.

Ownership and commitment by all project partners are critical. All project partners should feel some level of ownership over a project to ensure they remain committed. Otherwise, there is a risk that their participation will wane or that they will not prioritize it over the long term. That said, it is one thing for top-level management from agribusinesses and other companies to commit to a project and another for their executing team to implement. To ensure that commitment leads to action, partners should provide secure earmarked budgets at the start of a project (while contracts are being signed). Similarly, project teams need to be aware of any internal resistance to change among partner employees. UNCDF observed reluctance among staff in the tea, coffee and maize value chain projects. To address this issue, a shared vision and strategy should be established at the start of a project. In the experience of UNCDF, regular project meetings and high-level steering committees helped reinforce the benefits for all stakeholders in the value chain and ensured that these benefits were communicated to all levels of staff at each partner organization.

The community surrounding an agricultural value chain must be included. The gains made in digitizing payments in agricultural value chains are spread throughout a community and require the participation of the entire community to be sustainable in the long term. Projects should focus not only on the lives of farmers but also on those of community members at large. Focusing on the wider community ensures that other beneficiaries—such as women who may not be directly involved in farming—can participate in and benefit from financial inclusion. Furthermore, the number of people impacted by digitizing agricultural value chains is often significantly lower than those impacted by mass market financial services. To achieve broader community involvement and adoption, UNCDF worked closely with community ambassadors—key people within the community who have influence and who can help promote the digitization effort. Project targets should be set accordingly and should consider the community at large.

Digitization efforts should support productive, beneficial use cases. The value proposition for payment digitization should go beyond agriculture to consider other use cases that would have significant benefits for farmers. For example, UNCDF research found that the need to make school fee payments cut across all agricultural value chains and was the most significant expense for farmers. In contrast, UNCDF found that pay-as-you-go solar lighting products were not necessarily an automatic use case for farmers and their households. Projects should look to support the digitization of productive use cases that would be beneficial for and embraced by farmers.

POLICY & REGULATION

When it comes to digitizing payments, the regulatory environment in a country can impact the ultimate success of a project. For instance, research has found that the presence of an enabling national regulatory environment is an important predictor of success in MM services (Naghavi and others, 2016). While the Ugandan regulatory environment is enabling, the work of UNCDF on digitizing payments in agricultural value chains highlighted necessary aspects for success and areas where existing regulation hinders growth in rural areas.

SIM registration can hinder the pace of DFS growth and usage in the short term. In 2017, the Uganda Communications Commission required all MNOs to validate the customer records for all of their existing SIM cards. For customers, this requirement meant entering their national ID details through a USSD menu on their phone or visiting an MNO customer service centre with their national ID. Yet, a national ID has only been available in Uganda since 2015, when compulsory ID registration was established, and not everyone has one yet (Peters and de Groot, 2017). This situation has impacted DFS uptake: for example, agents and merchants in rural areas, who could previously register as individuals, found their account suspended due to the new regulation; and, refugees and smallholder tea migrants, who could not gain access to a national ID, were unable to receive cash disbursements and salary payments via MM (Peters and de Groot, 2017).

While SIM registration with a national ID is beneficial in the long term to ensure that MNOs comply with know-your-customer requirements and to deepen financial inclusion, this effort hindered DFS growth and usage in the short term.

INFRASTRUCTURE

Infrastructure is the backbone of any digital payment initiative. Poor levels of technological, financial and logistical infrastructure, especially at the last mile, can quickly damper digitization efforts and ultimately negatively impact financial inclusion. Through its digitization projects in agricultural value chains, UNCDF has learned that certain conditions must be met, that last mile infrastructure is not always guaranteed, and that processes may need to be digitized before payments.

Without the proper digital 'rails' in place at the start, digitization efforts fail.[2] Even though UNCDF was aware of this tenet from the start, it is important to note that necessary conditions and basic requirements need to be in place for people to switch and stick to digital solutions. Necessary conditions include the following: sufficient network coverage as well as mobile phone and SIM card ownership; adequate literacy and digital literacy among beneficiaries; enough digital finance agents located in nearby areas with sufficient liquidity to support the community; affordable services (especially when comparing digital services to cash); and, the ability to spend money digitally on additional use cases. Even if just one of these conditions is missing, creating a digital environment—where people have and use digital finance accounts regularly—is challenging.

The business case for last mile infrastructure is not always guaranteed and may require financial support. Some rural areas may need to work with limited infrastructure or require a subsidy to build better infrastructure. This was the case for UNCDF efforts in the coffee value chain, where no network connectivity in the rural Kapchorwa District of eastern Uganda meant a digitization effort for coffee farmers would not get off the ground. Financially speaking, MTN Uganda could not justify the deployment of a mobile BTS in the district (UNCDF, 2016). However, through support from the Bill & Melinda Gates Foundation, UNCDF worked with MTN to de-risk the investment, providing a guaranteed fund of US$100,000 if MTN incurred any losses from deploying the mobile BTS in this last mile location. The investment was a good one: within the first month, the site recorded transaction levels at maximum capacity and healthy revenue generation (UNCDF, 2016). Based on the temporary tower's consistent performance, MTN Uganda installed a permanent BTS in Kapchorwa District (M'Bale, Pillai and Were, 2018).

[2] Digital 'rails' refer to the systems and infrastructure on top of which digital solutions are built, including connectivity, digital tools, agents, etc.

Back-end processes need to be digitized before payments. Payment digitization brings value to agricultural companies but not enough to compel them to cover the costs or the management burden of digitization. Payments must be part of a broader solution that addresses a problem an agricultural company faces, which may require focusing on back-end processes. For many agricultural off-takers, optimizing their processes through digitization can be an excellent value proposition to support further digitization of payments for farmers. This was the case in the UNCDF dairy value chain project, where Laboremus and UNCDF developed the Emata app that is digitizing information that dairy cooperatives previously captured in notebooks.[3] Emata registers milk deliveries by farmers and calculates the payment amounts. Overall, this approach was an important lesson learned along the way.

PROVIDERS

Providers—whether FSPs, MNOs, fintechs or agricultural companies—are central to any digital payment project. Providers bring strong experience and local market context, which help projects succeed. Working with a variety of providers across the UNCDF projects revealed that partnerships are critical for success and that competition leads to better outcomes for smallholder farmers.

Partnerships are critical. Teamwork among multiple stakeholders is indispensable to the success of any digitization effort. Forming partnerships among private sector providers can be a challenge as they often look at each other through a lens of competition and at how to capitalize on opportunities. Such perceptions, compounded by a lack of information about who is best at doing what in a market, hinders the possibilities of forming strong and successful partnerships. UNCDF has played an important role as a neutral convenor, getting various parties to talk to each other and to appreciate what value the other can add to make a project successful.

Partnerships utilize the strengths of each stakeholder while minimizing the weaknesses of each stakeholder. FSPs play a critical role in the digitization of agricultural payments, but they lack the adaptability and agility to effectively market to and serve smallholder rural households.[4] For example, marketing campaigns that target a wide range of customers can inadvertently exclude those at the base of the pyramid. In the experience of UNCDF, larger corporations (such as MNOs) had a much longer turnaround time for decision-making, which impacted project deliverables. Additionally, business planning and financial calendars do not necessarily align with longer agricultural projects that span seasons, creating a disconnect that was experienced within the coffee and maize value chains in particular.

Similarly, fintechs play a key role in aggregation, distribution and management, but they lack experience in below-the-line sales and marketing. Fintechs that specialize in agriculture, known as 'agrotechs,' were more successful in the digitization journey, given their deep knowledge of the sector. Yet, innovation withers if it has nowhere to go. Collaboration ensures access to the digital rails laid by FSPs and MNOs, supporting innovation to reach scale. Collaborating with organizations such as MobiPay, Yo Uganda and MNO payment aggregators has greatly benefited UNCDF projects (see box 6 for more detail on one of these collaborations).

[3] Learn more about the Emata app here: https://www.facebook.com/labouga/videos/2047315295493464/

[4] Interview with DFS Expert Stephen Waiswa on 21 May 2018 in Kampala, Uganda.

BOX 6

MobiPay: Boosting digital payments in the maize value chain

Leveraging their existing relationships in the sector, agrotechs—fintechs that specialize in agriculture—can greatly impact the lives of smallholder farmers by customizing DFS. Based in Uganda, the agrotech MobiPay aims to improve lives through innovative technological solutions that drive agriculture, financial services and trade in Africa.

UNCDF worked with MobiPay to design a bulk payment solution that would help propel digital payment adoption in the maize value chain. MobiPay uses data-driven technological solutions, which capture farmers' production data and historical data, as well as offer secure electronic payments and settlement transactions for various clients and financial institutions.

With funding from UNCDF, MobiPay designed a revolutionary management information system, AgroBase, which is customizable across different industries. Initially, the system was built to work on desktops. This iteration had a short run since most bulk payers lacked laptops/desktops or struggled with technical literacy, so MobiPay next designed an Android app that worked on tablets.

Following the development of the Android app, research targeting maize traders showed that traders controlled over 60 percent of the maize trading business. However, traders were not using tablets, so MobiPay customized its tablet solution and created a USSD Trader app. The USSD app adds value to the traders' business by tracking creditworthiness based on trading history with farmers and offers digital payments.

UNCDF is optimistic that the newly tested USSD Trader app will unlock the barriers to digitization among maize traders and thus accelerate the uptake of DFS by traders and farmers.

Competition speeds up DFS market growth and leads to better results for users. Not only does competition among providers reduce dependency on one provider and spur innovation in digital finance, but it can also positively impact price, service quality and product diversity (Mazer and Rowan, 2016). This was the case in the UNCDF tea value chain project, where Airtel and MTN tested two different bulk payment digitization models for salary payments at two tea estates. During this process, McLeod Russel negotiated with both MNOs to determine pricing models for the solutions.

Similarly, when providers see profit potential, competition takes over. For instance, in the coffee value chain project, following the deployment of the mobile BTS by MTN in the Mount Elgon area of eastern Uganda, Airtel was motivated to invest in telecommunications infrastructure. It shifted from 2G to 3G services in nearby districts. The result was that neighbouring communities were given more choice in service provider offering.

DISTRIBUTION

Without a solid distribution strategy, most digitization projects fail to gain a sufficient number of users and an adequate level of usage to make digital payments sustainable. This issue is especially acute in rural areas, where limited infrastructure can make reaching smallholder farmers more difficult and more expensive. The UNCDF projects revealed some key lessons about distribution when digitizing agricultural value chains: booster teams are an important asset in rural areas; influencers in value chains are a potential entry point for digitization; and, liquidity and agent commissions remain challenging at the last mile.

Booster teams are a huge distribution asset in rural areas. One of the solutions that UNCDF introduced was so-called booster teams. Booster teams—groups of people who enter rural communities to improve service delivery at the last mile through agent recruitment, increasing device penetration and providing customer education and support—have been particularly valuable in rural areas. Unlike sales teams, booster teams tend to be more hands-on and spend additional time with customers discussing financial education and literacy. In the UNCDF projects, the presence and activity of booster teams triggered behavioural change that accelerated the growth of a digital payment culture. Furthermore, the return on investment for MNOs is higher when booster teams are present in a community—according to UNCDF data analysis, ARPU increases by 30 percent. Within the seed oil value chain, booster teams worked to educate 17,000 farmers on how to use MM and to start saving (de Groot, 2018b). In the dairy value chain, ten teams of 20 people were deployed, and they registered more than 25,000 people for MM in the surrounding area within nine months of project launch (de Groot and Waiswa, 2018). In the coffee value chain, booster teams' efforts positively impacted farmers' MM activity, increasing the ARPU from these customers for MTN by 175 percent compared to other active customers in the same district. Box 7 provides more detail on booster teams, particularly suggestions for how they can work most effectively.

Learning in the Field: Implementing Digital Bulk Payments in Agricultural Value Chains in Uganda

BOX 7

Factors for the success of booster teams

For booster teams to tackle complicated problems and to successfully improve service delivery at the last mile, providers need to establish clear objectives and boundaries for engagement. For UNCDF, the objective was to expand DFS in agricultural value chains. To that end, UNCDF focused booster teams' activities on increasing customer education and device penetration, as well as registering customers for MM.

Based on its efforts, UNCDF identified the most salient factors for successful use of booster teams. **These factors were instrumental in empowering UNCDF to make as much progress as it did through booster teams in agricultural value chains:**

1. For all activities on which booster teams are involved, their efforts are meant to be a nudge, not a push, for change. Booster teams should focus on problems that are just outside of a provider's reach, such as customer education or literacy. Booster teams should build upon a provider's existing operational or distribution systems—they are not meant to build or redesign them.

2. The provider must be sufficiently motivated to solve the problem the booster teams are tackling—in this case, rural expansion. In Uganda, declining growth rates in urban areas motivated providers to look for other methods to continue growing. Once urban expansion and usage begin to show decreasing returns, providers are likely to be more amenable to rural expansion.

3. The provider must consider whether there is sufficient talent in the market to staff the booster teams. In Uganda, the booster teams were recruited in developed ecosystems where experienced talent was available. After several years of high-level DFS operation in Uganda, there was a pool of talented digital finance professionals who were recruited as technical experts. In less developed ecosystems, such expertise may be hard to find.

4. Providers organize their MM teams in different ways. Some have a dedicated MM team, while others place the agent network component in the sales and distribution team and the product development component elsewhere. These different structures can impact how nimble and responsive a provider is during the experimentation phase of projects to better reflect the requirements of stakeholders in specific agricultural value chains.

Source: The text in this box is excerpted from a forthcoming UNCDF publication on booster teams in Uganda.

Some entry points for digitization are still too nascent, while others require further exploration. UNCDF found that in rural communities where it engaged, bill and retail merchant payments were not feasible for the time being. The reason is that there are no formal utility services to pay for in rural areas, and most retail purchases made by rural inhabitants are in tiny amounts—any fee passed to the farmer would be prohibitive in these instances. However, the role of traders from various agricultural value chains in digitization efforts should be explored further. Traders yield influencing power in loosely organized value chains, such as maize. As such, they can be the right entry point for digitization: if digital payments solve influencers' cash pain, they can become important promoters, onboarding farmers and community members. Traders are often the first line of credit for farmers, and at times their relationship is more social than commercial.

Agent liquidity and commissions are still challenges at the last mile. UNCDF projects revealed that there are still mismatches in agent commission structures. Finding the right balance remains a challenge because the costs for FSPs to do business in rural areas are higher, while the incentives for agents in rural areas are lower. Similarly, rebalancing rural agents is still difficult because traditional options do not necessarily work at the last mile.

CUSTOMERS

As the end users of a digital payment solution, customers can make or break the success and sustainability of a product based on how they perceive its value and usefulness. Those looking to digitize payments in agricultural value chains should work closely with farmers to ensure that projects have strong value propositions that address real pain points; that they work with existing financial behaviours and education of farmers; and that they consider social and cultural norms in the project design.

Compelling value propositions for farmers are critical. As a standalone service, digital payments are of little value to farmers unless they provide compelling benefits, such as allowing them to avoid long-distance travel, to receive a discount or to access a loan. The greater the value that farmers see in using MM, the greater the likelihood that an increase in digital payment uptake will occur. A safe place to store funds for emergencies emerged as a strong value proposition from the UNCDF research with farmers. For example, feedback from maize farmers during the pilot indicated that they appreciate MM as a tool to save, especially in anticipation of the needs of the next maize season. By first solving farmers' immediate challenge or pain point—such as increasing productivity, reducing post-harvest loss or lessening livelihood shocks—cash digitization will follow. This was the case for coffee farmers, who found greater convenience by checking coffee prices daily through their phone before deciding where to supply their coffee. Before using this option, farmers would have to travel to different coffee washing stations to determine their prices, which incurred travel time and costs. Similarly, quick wins in digitization are not the answer—they can unravel in the crop season unless the value proposition is strong. Digitization of payments should be at zero or low cost to farmers and should be accompanied by some other services that add value. Box 8 shares the case of MoKash, a first mover in Uganda, which used lessons from customer feedback to build a successful digital product.

BOX 8

MoKash: Building a compelling value proposition from customer feedback

MoKash, a digital credit and savings product, was launched in Uganda in August 2016 as a strategic partnership between MTN Uganda and the Commercial Bank of Africa. One year after launch, MoKash had 2.5 million customers, of whom 1.2 million were actively saving, with more than 1 million loans issued with a total value of approximately U Sh30 billion (US$8 million). **Below are key lessons gathered from customer feedback from other markets that helped MoKash succeed:**

1. **Provide customers with clear information on how to use the product:** Ensure customers have easy access to terms and conditions and understand them; ensure information on the product is easily accessible and available in local languages.

2. **Provide suitable choice for loan duration for different profiles (e.g., farmers with seasonal incomes):** Start with a standard product that can be customized to cater to certain segment needs (e.g., farmers' need for longer-term loans).

3. **Ensure scoring criteria are clearly and repeatedly communicated to address numerous queries on how to save with the product, and also communicate that MM and airtime usage are required to access a certain loan amount:** Ensure customers understand loan eligibility criteria; encourage users to first query their loan limit and then request a loan within their approved limit to avoid the frustration of soliciting several amounts and being refused.

4. **Consider that, for existing similar products, there has been higher uptake of loans than savings and, as such, promotional campaigns have encouraged savings:** Depending on the main target of the product, promotional campaigns should emphasize either savings or loans or both.

5. **Create awareness of the credit reference bureau and its operations, especially within rural unbanked populations, to ensure the loan recovery process is well understood:** Clarify for customers the process/steps in case of default (e.g., extension of loan duration, additional interest paid, blacklisting—if default means being blacklisted at the credit reference bureau, make that explicit to customers).

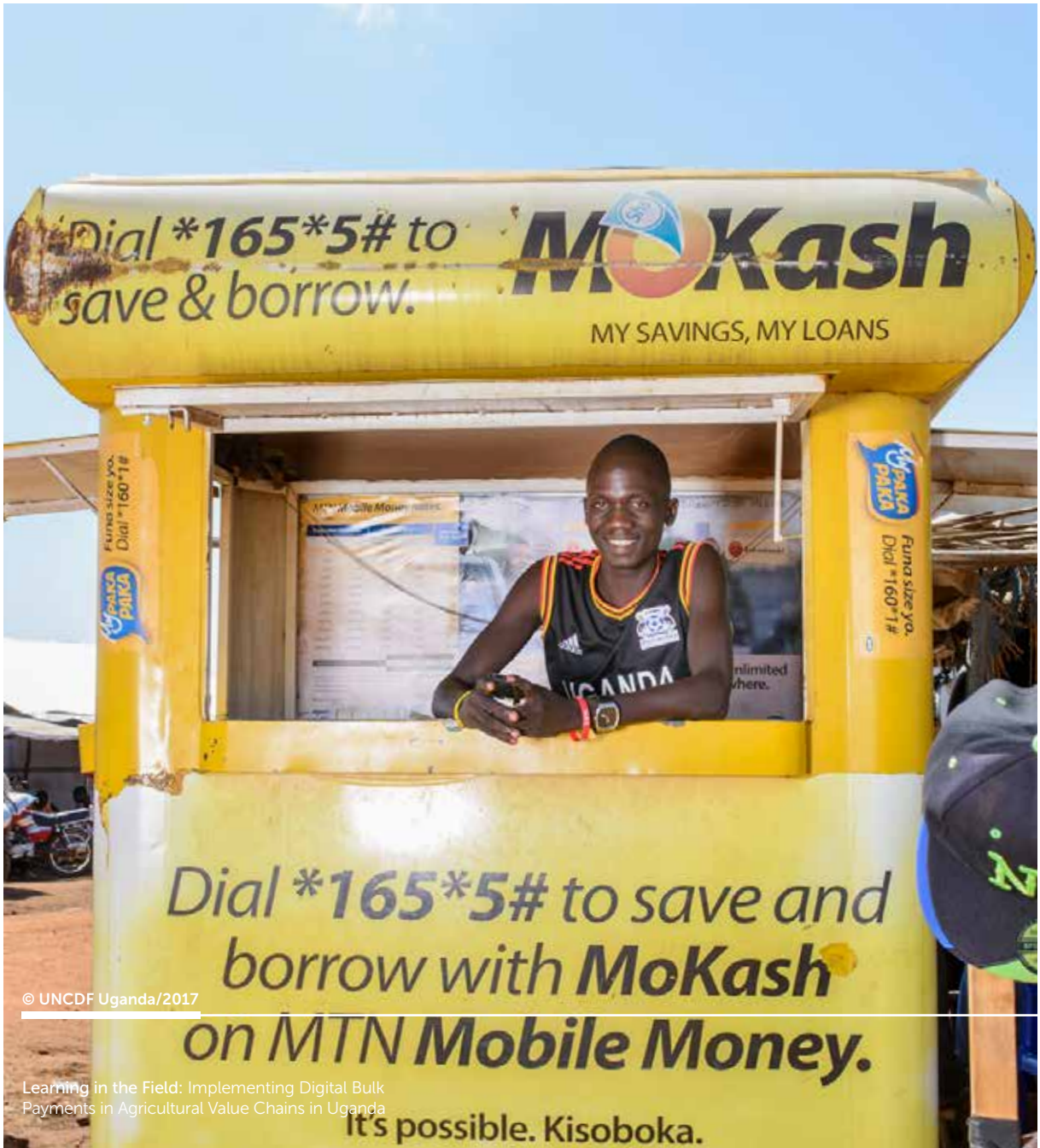
6. **Translate terms and conditions into all common languages to ensure all customers can read them, especially information pertaining to fees, interest rates and the loan recovery process:** Identify the most frequently used languages by customers; at the very least, ensure terms and conditions and basic product information/communication (e.g., short message service) are available in those languages; according to customers' literacy, consider if IVR (interactive voice response) is needed; ideally, develop the entire product in all common languages.

As a first mover in Uganda, MoKash looked to the experiences and best practices of digital credit and savings products from Kenya and the United Republic of Tanzania, to ensure key lessons and success factors were applied to the product.

Source: The text in this box shares excerpts from a UNCDF case study on MoKash (Musat and Dagneaux, 2017).

Designing the digital solution is not the biggest challenge. When it comes to a digitization project for an agricultural value chain, the design of the payment solution is not the main challenge. In fact, challenges are more likely to occur around farmers' existing financial behaviours and education. For instance, with smallholder farmers growing a median of seven crops, agricultural communities extend across different value chains (CGAP, 2017). Understanding farmers' behaviours within this broader context will clarify how to position digital payments to ensure they are perceived as more valuable than cash alternatives. This understanding can often be achieved through human-centred design, financial literacy training and user testing. For instance, KCL collaborated with the design firm IDEO to test Mo'Agro—a shop that accepts MM for agricultural inputs and other necessities—with smallholder farmers at two coffee washing stations. Using human-centred design principles over a three-day period, IDEO iterated options for the product mix and ran price sensitivity experiments (IDEO, n.d.)

Project design must be informed by social and cultural norms. To better reach different segments and encourage wider adoption, especially when targeting women, the design of a digitization project needs to consider the social and cultural norms of the community. These norms—or contextual factors—are pre-existing conditions that impact uptake and usage of financial services over which the individual, policymaker or FSP has no or very little control; these factors include income, life stage, gender, societal functioning, religion, macroeconomic environment and policy environment (Rinehart and others, 2018). In all of its projects in Uganda, UNCDF observed gender and social norms that impacted women's mobile-phone access in addition to their financial behaviour.



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Recommendations

In addition to lessons learned, the UNCDF agricultural value chain digitization projects revealed a series of issues and related recommendations that those working to digitize bulk payments and drive financial inclusion for vulnerable people should consider moving forward:

Sudden regulatory and policy changes can have a tremendous impact. While UNCDF is knowledgeable about the policy and regulatory environment and requirements in Uganda, two unanticipated changes impacted work on agricultural value chains: the SIM registration requirements established in 2017 and the MM tax introduced in 2018. While the former is beneficial in the long term, these activities hindered DFS growth and usage in the short term. The latter will affect pricing, which will in turn impact usage, especially for price-sensitive rural people (Lonie and Makin, 2016). Projects should be mindful of the regulatory environments in which they operate and consider how certain regulatory changes will impact their work.

Tiered know-your-customer requirements should be adopted to drive adoption and growth in rural areas. For rural people who lack the formal requirements to become MM agents, the development of a tiered regulatory framework for agent acquisition would help enable DFS growth in rural areas. Furthermore, the recent integration of MNOs in the national ID database by the National Identification and Registration Authority should ease the registration process for rural people and lower entry barriers.

Human-centred design principles should be used to better understand the real needs of customers. To truly address the needs of underserved customers, human-centred design principles—such as using iterative product testing and quickly gathering customer feedback—should be integrated whenever possible into any digitization effort. Human-centred design ensures that there is a clear understanding of customers and that solutions are designed from the customers' perspective.

A combined approach to digitization should be taken by working horizontally with farmers (or other primary beneficiaries) and with the wider community, where digitization efforts may be more feasible. It is often the primary beneficiaries, in this case the smallholder farmers, who compose the hardest group to which to illustrate the opportunity and ultimately to digitize. In order to address this issue, projects should take a combined approach and simultaneously target other groups in the community where digitization is more straightforward. These groups can help drive behaviour change downwards, increasing uptake among beneficiaries.

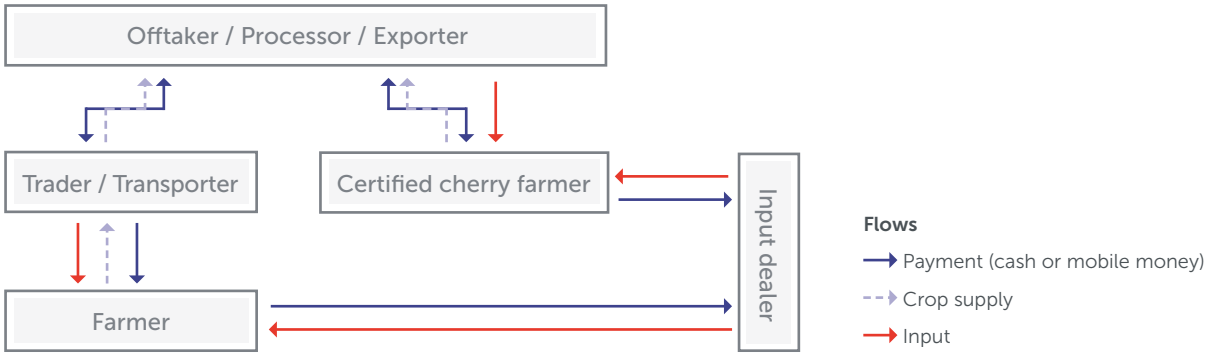
FSPs should use booster teams. For FSPs looking to increase growth in rural areas or with specific segments, booster teams should be incorporated into their activities. In contrast to traditional above-the-line communication activities, booster teams are more hands-on with customers, spending more time on recruitment and focusing more on financial education and literacy. In the UNCDF projects, the presence and activity of booster teams triggered behavioural change that accelerated the growth of a digital payment culture.

In conclusion, driving payment digitization, especially in rural areas, can be a difficult endeavour. Through its agricultural value chain projects, UNCDF experienced many different challenges, some of which persist today. Yet payment digitization is feasible, and UNCDF has already seen potential gains realized through increased financial inclusion for smallholder farmers and greater efficiency and productivity for the private sector. Digitization requires patience and dedicated collaboration among many partners. It involves a great deal of iteration and learning by doing. The experiences of UNCDF have demonstrated that projects may not go as planned and failures are a reality. However, these experiences also provide lessons, which UNCDF has been able to share with different agricultural value chains in Uganda.

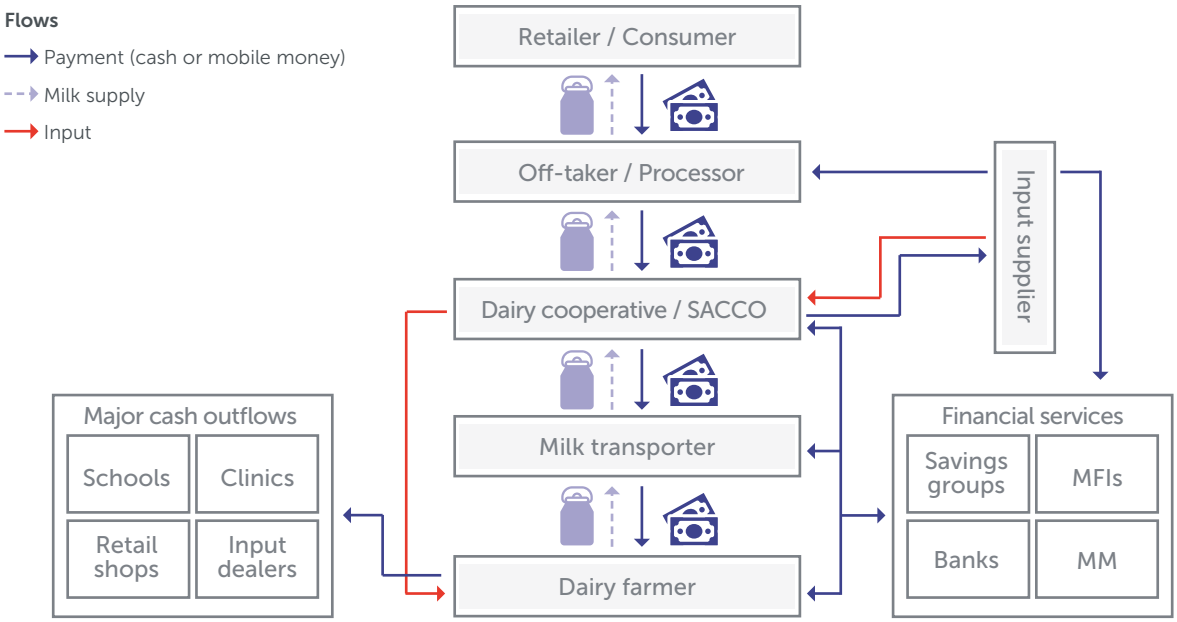
UNCDF hopes that the wider industry will find its experiences, lessons learned and recommendations helpful for bulk payment digitization efforts in other agricultural value chains or in other sectors. There are huge benefits to reap for both smallholder farmers and stakeholders in the value chains, and UNCDF encourages others to continue to drive financial inclusion through these types of projects.

Appendix: Value chain structures

Coffee value chain

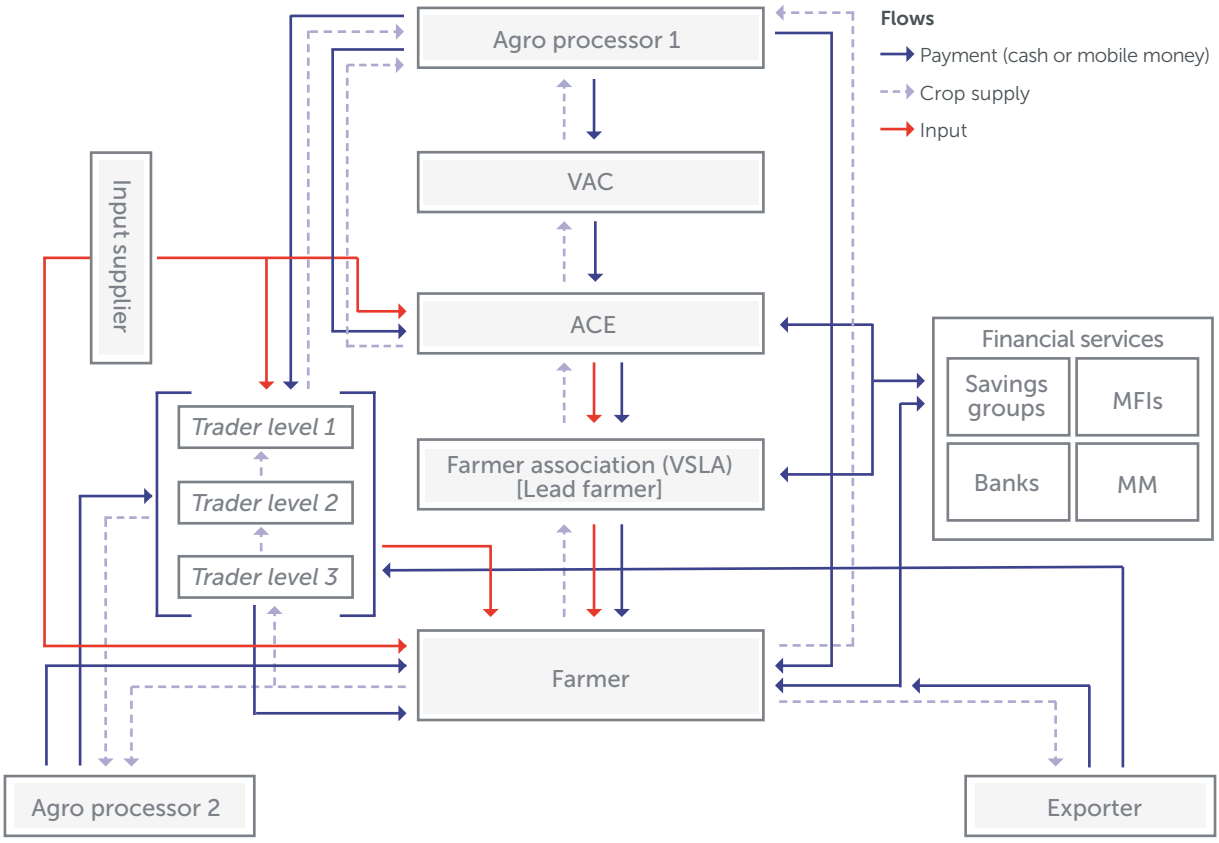


Dairy value chain



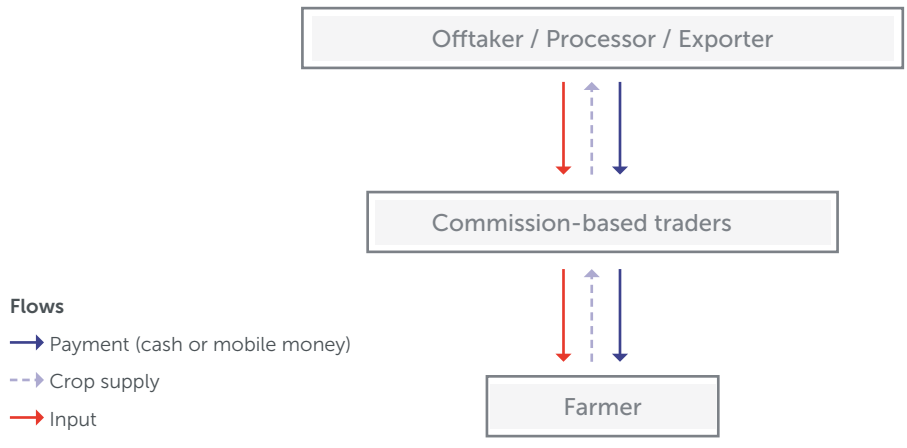
Acronyms: MFI, microfinance institution; SACCO, savings and credit cooperative.

Maize value chain



Acronyms: MFI, microfinance institution; VSLA, village savings and loan association.

Seed oil value chain



References

Anderson, Jamie, Colleen E. Learch, and Scott T. Gardner (2016). National Survey and Segmentation of Smallholder Households in Uganda. Washington, DC: CGAP.

Bersudskaya, Vera, and Dorieke Kuijpers (2016). Agent Network Accelerator Survey: Uganda Country Report 2015. Nairobi: Helix Institute of Digital Finance.

Better Than Cash Alliance (2017). The Role of Digital Payments in Sustainable Agriculture and Food Security. Singapore: Asia-Pacific Economic Cooperation Secretariat.

CGAP (n.d.). Digitizing Agricultural Value Chains. Available from http://www.cgap.org/blog/series/digitizing-agricultural-value-chains. Accessed August 2018.

---------- (2017). Understanding the Demand for Financial, Agricultural, and Digital Solutions from Smallholder Households: Insights from the Household Survey in Uganda. Washington, DC.

Chaintreau, Marjolaine, and others (2018). The Future of Supply Chains: Why Companies Are Digitizing Payments. New York: Better Than Cash Alliance.

Cull, Robert, Tilman Ehrbeck, and Nina Holle (2014). Financial Inclusion and Development: Recent Impact Evidence. Focus Note, no. 92 (April). Washington, DC: CGAP.

de Groot, Naomi (2018a). Muddy Gumboots: Digitizing Payments in Agriculture in Uganda – Lessons Learnt from the Field, 30 January. Available from http://www.uncdf.org/article/3231/muddy-gumboots.

---------- (2018b). Seed Oil Exporter Testing Digital Payments in Uganda: Going Digital to Increase Quality and Continuity of Sunflower Seeds, 27 February. Available from http://www.uncdf.org/article/3331/seed-oil-exporter-testing-digital-payments-in-uganda.

de Groot, Naomi, and Stephen Waiswa (2018). Congratulations, You've Received a Bonus! Airtime Purchases as a Convincing Use-Case for Dairy Farmers, 24 April. Available from http://www.uncdf.org/article/3583/congratulations-youve-received-a-bonus.

Frydrych, Jennifer, and Hege Aschim (2014). Extending Reach: Mobile money in rural areas. London: GSMA.

FSP Maps (2015). Uganda Finance Map. Available from http://fspmaps.com/#/Uganda/finance/map@9.310000,7.930000,z6,dark.

Grossman, Jeremiah (2017). Study on Know-Your-Customer Requirements for Digital Financial Services in Uganda. New York: UN Capital Development Fund.

IDEO (n.d.). Deriving Value Through Mo'Agro. Available from http://ecosystems.ideo.org/mo-agro.html#top. Accessed August 2018.

Iimi, Atsushi, and others (2016). New Rural Access Index: Main Determinants and Correlation to Poverty. Policy Research Working Paper, no. 7876 (November). Washington, DC: World Bank.

Kagina, Allen C. (2017). Uganda's Economic Outlooks: The National Road Infrastructure Development Programme. Presentation at the 5th CPA Economic Forum. Kampala, 20 July.

Lonie, Susie, and Paul Makin (2016). Digitizing Agricultural Value Chains: Building Value for Farmers, 22 January. Available from http://www.cgap.org/blog/digitizing-agriculture-value-chains-building-value-farmers.

Lucini, Barbara Arese, Kenechi Okeleke, and Daniele Tricarico (2016). Market Size and Opportunity in Digitising Payments in Agricultural Value Chains. London: GSMA Intelligence.

Mattern, Max, and Rossana Ramirez (2017). Digitizing Value Chain Finance for Smallholder Farmers. Focus Note, no. 106 (April). Washington, DC: CGAP.

Mattern, Max, and Michael Tarazi (2015). Designing Digital Financial Services for Smallholder Families: Lessons from Zimbabwe, Senegal, Rwanda, and Cambodia. Washington, DC: CGAP.

Mazer, Rafe, and Philip Rowan (2016). Competition in Mobile Financial Services: Lessons from Kenya and Tanzania. Washington, DC: CGAP.

M'Bale, Amani, Rashmi Pillai, and Nathan Were (2018). Digitizing Agricultural Payments: Lessons from Uganda's Coffee Value Chain. Washington, DC: CGAP.

Mumbere, Daniel (2018). Uganda Removes Taxes on 'Depositing and Sending' Mobile Money, 17 July. Available from http://www.africanews.com/2018/07/17/uganda-removes-taxes-on-depositing-and-sending-mobile-money//.

Musat, Isabelle, and Aurélie Wildt Dagneaux (2017). Disrupting the Savings and Lending Market in Uganda: The Story of MoKash. New York: UN Capital Development Fund.

Naghavi, Nika, and others (2016). Success Factors for Mobile Money Services: A Quantitative Assessment of Success Factors. London: GSMA.

Peters, Bram, and Naomi de Groot (2017). National SIM Verification in Uganda, 12 June. Available from http://www.uncdf.org/article/2506/national-sim-verification-uganda.

Rinehart, Kate, and others (2018). Why Are Financial Services Not Used More? A Conceptual Framework for Drivers of Financial Service Usage. Available from https://indd.adobe.com/view/70e93a78-a8b8-437a-a20e-bc96f0f4debc.

Transport & ICT (2016). Measuring Rural Access: Using New Technologies. Washington, DC: World Bank. Licence: Creative Commons Attribution CC BY 3.0.

Tricarico, Daniele, and Panos Loukos (2017). Opportunities in Agricultural Value Chain Digitisation: Learnings from Uganda. London: GSMA.

Uganda (n.d.). Agriculture. Available from http://gou.go.ug/content/agriculture. Accessed August 2018.

Uganda Communications Commission (n.d.). Communication Sector Performance for the Quarter Ending December 2017. Available from http://www.ucc.co.ug/wp-content/uploads/2017/09/Quarterly-Market-Report-4Q17-V002.pdf. Accessed May 2018.

UN Capital Development Fund (2016). Wan Yala Naabi Ku Lerra Network!, 12 April. Available from http://www.uncdf.org/article/1573/wan-yala-naabi-ku-lerra-network-migration.

---------- (2017). Payments in Agro Value Chains: The Tea Value Chain in Uganda, 13 November. Available from http://www.uncdf.org/article/2774/payments-agro-value-chains-tea-value-chain-uganda.

World Bank (2016a). A Year in the Lives of Smallholder Farmers, 25 February. Available from http://www.worldbank.org/en/news/feature/2016/02/25/a-year-in-the-lives-of-smallholder-farming-families.

---------- (2016b). Access to Electricity (% of Population). Available from https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS.

---------- (2016c). Rural Population (% of Total Population). Available from https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS.

---------- (2017a). Employment in Agriculture (% of Total Employment) (Modeled ILO Estimate). Available from https://data.worldbank.org/indicator/SL.AGR.EMPL.ZS.

---------- (2017b). Global Financial Inclusion (specific data series cited below). Available from http://databank.worldbank.org/data/reports.aspx?source=1228.

Account, Rural (% Age 15+) [Uganda] (Account.t.d.9)
Borrowed to Start, Operate, or Expand a Farm or Business, Rural (% Age 15+) [Uganda] (Fin21.t.a.9)
Coming up with Emergency Funds: Not Possible, Rural (% Age 15+) [Uganda] (Fin24b.t.a.9)
No Account Because of Lack of Necessary Documentation (% Age 15+) [Uganda] (Fin11c.A)
Received Payments for Agricultural Products: In Cash Only (% Payment Recipients, Age 15+) [Uganda] (Fin43c1.t.a.S)
Saved to Start, Operate, or Expand a Farm or Business, Rural (% Age 15+)[Uganda] (Fin15.t.a.9)

---------- (2018). Closing the Potential-Performance Divide in Ugandan Agriculture: Fact Sheet, 19 June. Available from http://www.worldbank.org/en/country/uganda/publication/closing-the-potential-performance-divide-in-ugandan-agriculture-fact-sheet.

Wright, Graham (2015). Five Trust Issues That Are Undermining Mobile Money: Surprisingly, Says MicroSave, Fraud Is Not Customers' Biggest Concern, 25 June. Available from https://nextbillion.net/five-trust-issues-that-are-undermining-mobile-money/.

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ABOUT UNCDF

UNCDF is the UN's capital investment agency for the world's 47 least developed countries (LDCs). With its capital mandate and instruments, UNCDF offers "last mile" finance models that unlock public and private resources, especially at the domestic level, to reduce poverty and support local economic development. This last mile is where available resources for development are scarcest; where market failures are most pronounced; and where benefits from national growth tend to leave people excluded.

ABOUT MM4P

UNCDF developed the MM4P programme to ensure that the opportunities and benefits of digital finance would reach low-income people in difficult markets. UNCDF provides a mix of technical, financial and policy support to policymakers, regulators, providers, distributors and users of digital finance in order to expand access to and usage of services that contribute to achieving the Sustainable Development Goals.

For more information, contact MM4P Uganda at mm4p.uganda@uncdf.org

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