THE FUTURE OF MICROFINANCE FOR KENYA'S SMALLHOLDER FARMERS

Musoni Kenya and Kilimo Booster

THE FUTURE OF MICROFINANCE
FOR KENYA'S SMALLHOLDER FARMERS
MUSONI KENYA AND KILIMO BOOSTER
GLOSSARY

ATM	a machine that dispenses cash or performs other banking services when an account holder inserts a bank card
ICT	Information and Communication Technologies
IT	Information Technology
KILIMO BOOSTER	Kilimo means "agriculture" in Swahili
KYC	Know-Your Customer - the process of a business identifying and verifying the identify of its clients
MNO	Mobile Network Operators
PAR	Portfolio at risk
M-PESA	is a mobile phone-based money transfer, financing and microfinancing service, launched in 2007 by Vodafone for Safaricom and Vodacom, the largest mobile network operators in Kenya and Tanzania
SMS	Short Message Service is a text messaging service component of most telephone, World Wide Web, and mobile telephony systems. It uses standardized communication protocols to enable mobile phone devices to exchange short text messages
USAID	U.S. Agency for International Development
USSD	Unstructured Supplementary Service Data. The application, sometimes referred to as "quick codes" or "short codes," allows clients to quickly and easily access their loan information by sending a text-based query via their mobile phone
WCO	Wealth Creation Officer
3G	a mobile communications standard that allows mobile phones, computers, and other portable electronic devices to access the Internet wirelessly
4G	a mobile communications standard intended to replace 3G, allowing wireless Internet access at a much higher speed

Digital Development for Feed the Future is a collaboration between USAID's Global Development Lab and Bureau for Food Security and is focused on integrating a suite of coordinated digital tools and technologies into Feed the Future activities to accelerate agriculture-led economic growth and improved nutrition. Feed the Future is America's initiative to combat global hunger and poverty

MUSONI KENYA AND KILIMO BOOSTER
COUNTRIES OF OPERATION

Branch Nairobi-Gikomba & Zimmerman

Branch Central-Thika

Kariobangi

Naivasha

Kiambu

Muranga

Eldoret

Embu

Nakuru

Molo

Kisii

Narok

Donholm

Kitengela

Matuu

Machakos

Rongai

Migori

Kawangware

● **AREAS OF FOCUS**

● **BRANCH OFFICES**

OPENING DATES

2010
Branch Nairobi - Zimmerman, Kiambu

2011
Branch Nairobi - Gikomba, Branch Central - Thika, Naivasha, Kitengela, Nakuru, Rongai, Kawangware, Kariobangi, Machakos Muranga, Narok

2014
Kisii, Donholm

2015
Product Pilot Branch

2016
Matuu, Molo, Eldoret

2017
Migori, Embu

This case study is part of a series highlighting the integration of digital technologies into agricultural programs. Over the past ten years, and particularly over the past five, the use of mobile phones and Internet-based, digital tools in farming activities has skyrocketed. This is largely due to the widespread adoption of mobile phones in developing and emerging markets, coupled with the increased spread of 3G and 4G connectivity. What has emerged is a broad set of digitally based applications that have driven greater financial inclusion, more precision in agriculture, better data collection and analytics and more effective information dissemination. Agricultural organizations and programs are increasingly embracing these tools to advance their goals. Each case study in this series looks at different approaches to adoption and how the tools are impacting organizational culture, operations, and programming.

BACKGROUND

Established in 2010, Musoni became the first completely cashless microfinance institution in the world, by enabling customers to receive and repay their loans via Safaricom's M-PESA system, rather than in cash. Musoni has grown quickly, with a reach extended across Kenya, through 21 branches. As of July 2017, Musoni had disbursed 207,823 loans to 91,454 clients.

Since 2011, through initial funding from the MasterCard Centre for Inclusive Growth, Musoni has partnered with the Grameen Foundation, a global non-profit organization that leverages innovative, technology-based approaches to empower poor families throughout the world, to enhance its technological capacity and increase their reach to smallholder farmers. The partnership was expanded in 2016 through support from Feed the Future Partnering for Innovation, a U.S. Agency for International Development (USAID)-funded program that helps the private sector to scale and market agricultural innovations for smallholder farmers. With this expansion, it has focused on enhancing Musoni's technological capacity and increasing their reach to smallholder farmers.

The partnership between Grameen Foundation and Musoni began with a human-centered design inspired research process, intended to uncover the needs and behaviors of their farmer clients. Through this process, Grameen and Musoni engaged several different groups, including Musoni clients, clients of other microfinance institutions, and those who were not current recipients of any microfinance institution. The partners then identified three unique segments of smallholder farmers that could benefit from this loan product - ranging from farmers with a small amount of land and no livestock, to farmers with a large amount of well-utilized land and high profit. These groups expressed several common needs: a repayment schedule that fits with farming cycles, rather than one requiring immediate repayment; diversified farm endeavors; and ways to overcome agricultural shocks like disease or pests as quickly as possible.

The partners then used this research to design a loan product specifically for smallholder farmers. This was Kilimo Booster (*kilimo* meaning "agriculture" in Swahili), a loan product with flexible terms and a customizable grace period based on a farmer's seasonal cash flow.

BOX 1.
KILIMO BOOSTER PRODUCT DETAILS

Amount	Group loans	KES 5,000 - KED 500,000 ($50 - $5,000)
	Individual loans	KES 100,000 - 3,000,000 ($1,000 - $30,000)
Loan Term	3 - 12 months	
Grace Period	Up to a maximum of 6 months, depending on the nature of enterprise	
Repayment Frequency	Monthly for agri-trade borrowers with regular income; payments tagged to the cash flow for farmers with irregular income; interest portion paid monthly	
Interest Rate	Group (flat)	22 % annumm
	Individual (flat)	18% per annumm
Other Fees	3% one-off payment for loan processing for the borrowed amount.	

Source: Grameen Foundation 2015

The key differentiating factors between Kilimo Booster and other agricultural finance products are twofold:

1. With Kilimo Booster, the payment schedule is tied to each individual farmer, with a grace period of one month to six months for individual clients, depending on that client's unique agricultural activities[1]; and

2. The turnaround time between loan application to loan disbursement is greatly decreased, to under 72 hours (Box 1).

Building on this work, and through funding from USAID provided in 2016 and 2017, the Grameen Foundation has continued to support the sustainable growth of Musoni's Kilimo Booster product. Specifically, Grameen and Musoni have been working together to develop a loan application software that will streamline the loan application process and shorten turnaround time for approvals and disbursements, thus more effectively and efficiently meeting the financial needs of Kenya's smallholder farmers.

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1   Note that for group loan recipients, no grace period is provided

A Kilimo loan enabled Alice to start poultry farming. Today, she has 182 chicken producing more than 150 eggs daily. Her vision for the future is to build a chicken coop that can house 1,000 birds so that she can increase her egg production.

They have also been working together on a client-facing Unstructured Supplementary Service Data (USSD)[2] application - sometimes referred to as "quick codes" or "short codes" - which allows clients to quickly and easily access their loan information by sending a text-based query via their mobile phone.

THE DIGITAL LANDSCAPE

Musoni, per its vision statement, strives to be "the most efficient microfinance institution in Kenya by being cashless, paperless, and data-driven to offer the best value, most flexible and most customer-oriented financial services in the market." The name Musoni itself captures this vision - *m* for "mobile" combined with the Swahili word *usoni*, which means "future." This "mobile future" for Kenya, and Musoni's ability to operate in such a way, is highly dependent on Kenya's unique digital landscape.

As Musoni clients are required to have access to both a mobile phone and an M-PESA account, the widespread, near-ubiquitous nature of the M-PESA platform in Kenya, and high levels of mobile phone access and connectivity support Musoni's digital model and operations. Safaricom's M-PESA mobile money service was launched in Kenya in 2007, allowing users to send and receive money via a simple SMS message. M-PESA has spread rapidly, and today is used by at least one individual in 96 percent of Kenyan households, with over half the population now using the system at least once a month, and men and women using the service with the same frequency (Suri and Jack 2015; GSMA 2015a). These individuals have access to 110,000 agents who provide deposit and withdrawal services - a massive agent network compared to the country's only 2,700 ATMs (Suri and Jack 2015). Since its launch, M-PESA has grown to reach 22 million registered users[3] and accounts for 18 percent of Safaricom's total revenue (Communications Authority of Kenya 2017; GSMA Intelligence).

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2   USSD (Unstructured Supplementary Service Data) is a Global System for Mobile (GSM) communication technology that is used to send text between a mobile phone and an application program in the network.
3   According to Communications Authority of Kenya as of March 2017

BOX 2.
MUSONI'S FEMALE LOAN RECIPIENTS

PRODUCT	SEPT 2016	DECEMBER 2016	MARCH 2017
% female among total clients receiving loans	60%	61%	63%
Kilimo Booster Group Loan	64%	72%	73%
Kilimo Booster Individual Loan (higher value agricultural loan)	23%	29%	30%

Source: Grameen Foundation (data collected quarterly)

Mobile phone access and connectivity are also both quite high in Kenya. In 2015, there were an estimated 36.3 million mobile connections in Kenya, equivalent to about 78 percent of the population (GSMA Intelligence). The number of unique mobile subscribers, in 2014, was estimated at 42 percent of the population, with very little difference in subscriber penetration between men and women: 44 and 41 percent respectively (GSMA 2015b). Both 3G and 4G coverage is expanding, estimated at 19 percent of the country in 2015. Three mobile network operators (MNOs) are now active in the country: Airtel, Orange, and Safaricom, and the competition has led to a 70 percent price drop in airtime in the last four years (GSMA Intelligence). Moreover, Kenya has one of the lowest gender gaps in mobile phone ownership, meaning that in general, Musoni loans could be accessible to both men and women farmers alike. According to a 2015 report by GSMA, in low- and middle-income countries, women on average are 14 percent less likely to own a mobile phone than men (GSMA 2015b). Yet in Kenya, by 2015, the gap had decreased to only 7 percent (from 22 percent in 2010, when GSMA conducted its initial study) - a decrease likely contributed to the introduction and widespread adoption of M-PESA, which has driven women to want to purchase mobile phones and learn how to use them (GSMA 2015b). For Musoni, this has resulted in a higher (and growing) percentage of female clients than men throughout Musoni's portfolio of services and to an even greater extent, within the Kilimo Booster portfolio (Box 2).

Grace Mwangi takes a smallholder farmer through loan application using the Digital Field Application technology.

Loan officers are not agricultural experts. Some may have some expertise, and Musoni trains them, but they're not agronomists, so they can't know if what the farmers are telling them is true or reasonable… and it's hard for a loan officer to challenge what the farmers were telling them [if it seems unreasonable]."

Raphael Wolf, Project Manager, Grameen Foundation

MUSONI'S APPROACH TO DIGITAL INTEGRATION

Through support from the Grameen Foundation and USAID, Musoni developed two technological updates. The first is a tablet-based, **digital field application for customer enrollment and cash-flow analysis.** The second is a **client-facing USSD application** that allows users to query the system directly for their loan balances and records of their most recent statements, rather than relying on information from their loan officers[4]. Musoni credits the use of digital technologies,

including these applications, as foundational and necessary in managing their operations more effectively and efficiently, improving services to clients, and expanding their reach to Kenya's rural unbanked.

Challenge

The initial individual loan application process for a Kilimo Booster loan was lengthy and complex, requiring time-intensive manual calculations. The Individual Loan Application Form (pictured at right) consisted of a detailed Excel document with eight tabs. To fill out this form, the loan officer had to calculate a potential farmer client's month-by-month cash flow by hand, by capturing detailed information about their farm activities, farm business expenditures and income, household expenditures, and assets. This could take up to five separate visits to a potential client's home or farm. While loan officers would double check their work, the possibility of human error was high. Even the smallest typo or miscalculation could result in a loan application being denied or a loan officer needing to return for another home visit to verify information.

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4   Musoni's loan officers, known internally as Wealth Creation Officers, , are the client's primary point of contact. They are responsible for identifying and enrolling clients, conducting loan appraisals, facilitating group meetings and trainings, managing loan disbursal and repayment. Because of the strong personal relationships that many loan officers develop with their clients, and their role not just as loan officer but as information provider and facilitator, many Musoni clients call their loan officers *mwalimu* – Swahili for "teacher."

Additionally, as highlighted by a member of Musoni's IT team, when the results from the cash-flow were not what the farmer was looking for, this process enabled the loan officer to go back manually into the cash-flow and work backwards to change the results.

TABLET-BASED DIGITAL FIELD APPLICATION FOR CUSTOMER ENROLLMENT AND AUTOMATED CASH-FLOW ANALYSIS

The Kilimo Booster Individual Loan Application Form, used initially by WCOs to hand-calculate cash flows for farmer applicants.

Solution

To address the pain-points in this process, Grameen worked with Musoni on developing a customized tablet-based field application, which incorporates an automated cash-flow analysis model. This application was custom-built, working through Musoni Services, a technology solution provider and software company whose Musoni System provides the backbone of Musoni Kenya's operations. The application aims to reduce the amount of manual inputs required, improve the accuracy of the cash-flow estimation, and decrease the amount of time required for the loan application process. With the updated tablet-based process, the loan officer now only asks the farmer applicant a short series of questions and inputs the answers directly in the tablet. The application software then generates a financial summary, including the grace period and loan terms. Importantly, the application can be run in both online and offline modes, making it suitable for use even in areas with limited connectivity (Accion 2015).

Impact

As an example of the efficiency gained through the digital field application, the loan officer now needs only to ask what crop the farmer is growing and on how much land, and the cash flow model automatically calculates the expected yield and market price for that crop, based on locally-specific data. In the previous process, to get to this result, the loan officer would not only need to ask the farmer what crop they are growing and how much land they are growing it on, but also their expected yields and expected sale price for that group. The automated cash flow model built into the digital field application thus eliminates the need for the farmer to make these estimates on their own, and for the loan officer to consider whether or not the estimates are accurate. It also eliminates the possibility for the loan officer, or the farmer, to manipulate the data to get a certain cash flow result. With this innovation, the turnaround time between application and loan disbursal has been reduced by 50 percent.

Lessons Learned

While Grameen and Musoni staff recognize that the automated cash flow model is not a perfect way of calculating the loan-readiness of a potential client, it was developed through the support of a locally hired agronomist and was ground-truthed with a sample of farmers before being released for use by the entire organization. The testing and piloting process then included submitting a number of test applications, assuming different types of farmers with varying scenarios, followed by live testing in a couple

BOX 3.
FEEDBACK FROM LOAN OFFICERS

Of 16 loan officers surveyed, 14 indicated that the new tablet-based software is easier to use (the remaining 2 did not provide a response). Explanations that loan officers provide include:

- "Faster, more efficient"
- "User-friendly with helpful drop-downs"
- "Fewer details needed compared to previous app version"
- "Previously, lots of paperwork (8 forms)
- "Easy decision-making on funding"

13 of 16 surveyed indicated that they had brought in more clients since the adoption of the new software (2 of the remaining 3 did not provide a response as they either have only used the new software or do not use it at all).

16 of 16 surveyed indicated that the use of the mobile technology affects clients' likelihood to choose Musoni rather than a competitor, due to the speed and ease of disbursement, convenience, and low interest rates.

Source: Fintrac Partnering for Innvoation Impact Survey, May 2017

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of branches, before rolling it out across the entire network. The data collection and loan application process can now be completed in a single visit of less than one hour, rather than in up to five, often lengthy, repeat visits to an applicant's home or farm. Feedback from loan officers has also been very positive (Box 3). In addition to efficiency gains, loan officers also saw the tablet-based software as a "status symbol," and thus demonstrated a willingness and excitement to quickly master its use and operations (Accion 2015).

The application submission and processing portions are now streamlined as well. Rather than submitting an Excel sheet via e-mail, and thereafter sending a physical file, via courier, to the head office for credit analysis, the loan officer can submit the loan application via their tablet. This means that loan officers can submit applications in the field, right after filling it out, rather than waiting until they return to the office and taking the time to input all of the data on the Excel spreadsheet, prior to e-mailing it. Moreover, Musoni staff is able to start processing the application immediately, and once processed, the loans can also be disbursed quickly via M-PESA.

CLIENT-FACING USSD APPLICATION

Challenge:

While the tablet-based digital field application was intended to streamline the internal application process, Musoni also looked to Grameen for support on streamlining the process by which loan recipients engaged directly with the organization. Previously, when a loan recipient wanted to check their loan balance, they would reach out directly to their loan officer to

do so. Yet each loan officer maintains a portfolio of hundreds of clients, making it difficult to loan officers to respond directly to each of these queries on a regular basis.[5]
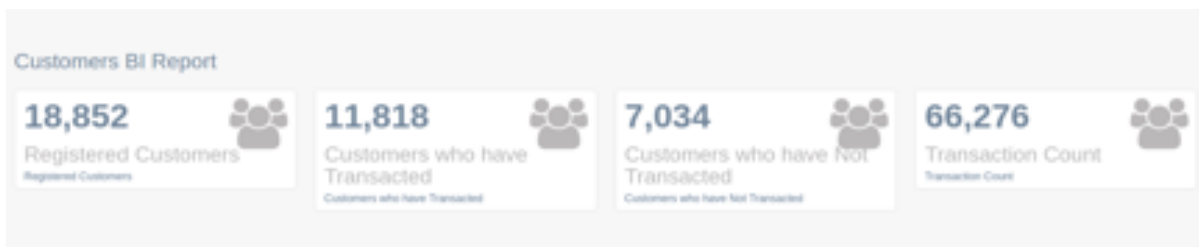
Solution:

To solve for this challenge, and to increase visibility and transparency for Musoni clients, Musoni worked with the Grameen Foundation to develop a client-facing USSD application. USSD, or Unstructured Supplementary Service Data, is sometimes referred to as "quick codes" or "short codes," and essentially facilitates the sending of a text between a mobile phone and an application program in the network to make a particular request or command. Typically, a USSD message would start with an asterisk (*), followed by a number or digits, and end with a number sign (#). The digits within the USSD code would then trigger a particular response from the network. For example, with Musoni's USSD application, a client would dial in an eight-digit code (*645*79#), enter their individual four-digit pin, and follow a series of short simple steps to receive a text message with the requested information - in this case, information about that client's account balance or loan payment status. In order to design their USSD application,

Musoni launched a competitive application process to find an appropriate technology vendor. Based on a defined set of parameters (including local registration in Kenya and an eye towards innovation), Musoni selected the technology vendor Tangazoletu, a company that had previously worked with Safaricom on their BillPay Service, Lipa Na M-PESA. After a three-month testing process, the USSD application was launched in December 2016, allowing Musoni customers to query their account balances and loan information on their own, using their mobile phones, rather than relying on their loan officers for information.

Impact

Initial client enrollment numbers have been high, as evident in the image below. IT staff at Musoni headquarters in Nairobi are actively tracking registration in the USSD application and pushing towards higher registration. The IT team sends updated numbers to Branch Managers on a weekly basis, encouraging Branch Managers to follow up with their loan officers who might not be marketing the product to their customers. Eventually, Musoni plans for Branch Managers and loan officers to have access to this dashboard themselves, which will eliminate the need for these weekly reports to be sent out. dashboard

Customers BI Report

| 18,852 | 11,818 | 7,034 | 66,276 |
| Registered Customers | Customers who have Transacted | Customers who have Not Transacted | Transaction Count |

An excerpt from Musoni's USSD dashboard, showing registrations and transactions as of May 2017. The total customer base at this time was approximately 23,000, leaving approximately 4,148, or 18 percent, of the customer base who have yet to register for the USSD.

5   16 loan officers interviewed through an impact survey conducted by Fintrac Partnering for Innovation in May 2017 indicated portfolio sizes that ranged from 46 to 550, with an average of 260.

"The good thing about Musoni is that, they quickly send the money to your phone so you can get it faster. It's private and secure. No one will know that you have received money."

themselves, which will eliminate the need for these weekly reports to be sent out.

LESSONS LEARNED

The dashboard allows Musoni to track client registration and client transactions, including how many people have used the system and the number of transactions per customer, both overall as well as by branch and by loan officer. However, the dashboard also does not easily allow Musoni to see how many clients have queried the system within a specific time window, or what proportion of clients can be considered consistent or active users. Currently, this data can only be determined through manual analysis, though Musoni hopes to add this analysis to their dashboard in the future. For the time being, however, their focus remains on increasing enrollment into the USSD system to the greatest extent possible.

Client enrollment also varies in different Musoni branches depending on how long each branch has been operating. Nakuru, for example, is one of Musoni's older locations, and has USSD client enrollment numbers that are lower than other branches. The

Nakuru Branch Manager suggests that this may be because many of their clients are on their second or third Musoni loans, are already comfortable with reaching out to their loan officers to check loan balances, and may be resistant to change. This contrasts to a newer branch, such as Eldoret, where clients might be introduced to the USSD platform at the same time that they apply for their first loan.

According to the Branch Manager from Eldoret, while most of Eldoret's clients have enrolled in the system, not all of them have embraced it. The Branch Manager suggests a couple of reasons why this might be the case. For example, clients may lack the literacy (or digital literacy) to use the platform or might prefer the personal engagement with their loan officers. Or they might not feel that the platform is necessary, as they generally know their loan balances, either through their own records or through ongoing conversations with their loan officer. One farmer client in the Eldoret region, for example, noted that she does not use the USSD platform because the Treasurer of her group keeps a paper logbook, with loan balances reviewed on a weekly basis in their group meetings.

There also appears to be some confusion between the USSD platform and messages sent out to clients via Musoni's core banking system. In an impact survey funded by USAID in May 2017 found that 67 percent of farmers surveyed indicated that they were using the USSD platform to check their balances, and 79 percent indicated that they find the platform easy to use. Yet further conversations with the farmers revealed that many of these farmers were confusing the USSD platform with the automated, regular SMS messages that are sent out each time a payment is due. This suggests that the term "USSD" in itself may be a driver of some of the confusion, as it is quite technical in nature and difficult for farmer clients to understand and distinguish between other technical processes.

Musoni recognizes that the USSD platform is still a work in progress. Yet the decision to create the USSD platform was a deliberate one, despite the automated messages sent out by the core banking system. While the automated messages from the core banking system are helpful to clients, they are a "push" service only, meaning they are sent out to clients at specific times without the ability for clients to query at a different point (for example, if a client is repaying their loans outside of the normal cycle). Additionally, having a separate USSD platform provides Musoni with more flexibility to deliver additional services via mobile, without having the constantly make changes to the core banking system (which would be a risky and time-consuming process). Additional functionalities to be added to the USSD platform include enabling existing Musoni customers with good loan repayment history to use the application to apply directly for an emergency loan, which they would receive instantly and re-pay within one month. Other functionalities include allowing existing customers to "refer a friend" for follow up by the loan officer, as well as facilitating additional two-way communication between loan officers and customers, for feedback, queries, information dissemination, and customer training. The USSD platform will also enable Musoni to more effectively run SMS-based marketing campaigns, as these were previously managed by an external vendor.

Moses stands proudly next to his dairy cow, purchased with a Kilimo Booster Loan from Musoni. He buys dairy cows, fattens them and sells them to other small holder farmers enabling his neighbors to also have a regular source of income.

BOX 4.
FARMER SURVEY RESPONSES TO QUESTION "WHAT CHALLENGES HAVE YOU FACED WITH RECEIVING OR REPAYING YOUR LOAN VIA MOBILE PAYMENT?"

RESPONSE	PERCENT
No challenges	83%
Lack of comfort with mobile banking	6%
Limited connectivity to cell network	3%
M-PESA transaction fee	3%
M-PESA network frequently goes down	1%
Other	4%

Source: Fintrac Partnering for Innovation Impact Survey, May 2017

Working with Grameen, Musoni plans on embarking on a campaign to educate customers about the USSD platform and its benefits, starting with a new name for the platform itself, likely a catchy, Swahili word that would be understood more clearly by clients.

EVIDENCE OF IMPACT

The previous section examined the two technological updates undergone by Musoni to improve the efficiency of their operations through digital means. While the previous section focused on two specific examples of Musoni developing new digitally-enabled products, this section will now turn to an analysis of these products within the broader context of Musoni's operations, including other digital approaches such as mobile payments and digitally-enabled dashboards. Together, each of these technologies are utilized by Musoni in support of their efforts to be as cashless, paperless, and data-driven as possible.

"We believe in technology to acheive customer efficiency. Our mission and vision is pegged to technology-to be the most efficient institution in Kenya."

Pearson Njeru, Chief Operations Officer, Musoni

"Cashless"

Musoni's operations are fully integrated with M-PESA, and thus, fully cashless. Potential clients are required to have a mobile phone and M-PESA account, with loans being disbursed and clients making repayments via M-PESA. Though Musoni notes that some clients count on the support of a family member or neighbor to access or use M-PESA, mobile payment does not appear to be a major constraint to applying for or receiving a Musoni loan (Box 4).

Some constraints related to mobile payment fall outside of Musoni's control. For example, in April 2017, the M-PESA service went down for a period of 24 hours. Safaricom acknowledged the outage and resolved it quickly, however, during this time period, Musoni clients were unable to receive or repay their loans. While this did present a challenge, Musoni staff note that within the context of their operations, clients understood that this was a challenge of Safaricom's, not Musoni's. Musoni's loan officers worked closely with their clients to help them make their payments once the service turned back on, and luckily, this is the only time that the M-PESA platform has had such an outage.

Another key benefit of Musoni's cashless operations is noted by various Musoni staff members who previously worked with other, more traditional microfinance organizations in Kenya. With a traditional microfinance organization in Kenya, loan payments are made in cash at weekly or biweekly group meetings, with up to 45 minutes being spent on collecting and tracking payments. By contrast, Musoni clients are required to make their payments via M-PESA one day before their biweekly group meetings. This means that in the group meetings, which are facilitated by loan officers, there is no need for extensive time to be spent collecting monies, addressing missed payments, and reconciling bank slips. This time can instead be spent going through trainings on financial literacy and good agricultural practices, and meetings still end up being far shorter than those of traditional microfinance organizations. For farmers in particular, this is a tremendous benefit. As many recipients of Musoni's Kilimo Booster product maintain a number of income-generating activities, both on-farm and off, the extra time not spent collecting and tracking cash payments can be used more effectively, such as managing their farms or other agricultural

activities, caring for their children, or maintaining their households.

"Paperless"

Musoni's progress towards being fully paperless is more complex. While the updated tablet enrollment and digitized cash flow analysis have brought the organization closer to this vision, there are a number of factors that prevent Musoni from fully reaching it.

First, regulations in Kenya require some of their records, such as client signatures on finalized loan documents and KYC[6] documents, to be maintained in hard copy. Second, while they are in the process of developing an electronic document management system, until that system is launched, client paperwork that is sent from Branch offices to Nairobi headquarters (and vice versa) is always done so in hard copy, rather than digitally. Finally, while there is a general perception by clients that Musoni's use of tablets and digitized process makes the organization appear more technologically savvy and professional than other microfinance institutions, many clients still request to see paper copies of their loan applications and paperwork, as a "backup" to the digital versions.

When interviewed about her experience with the Kilimo Booster loan product, one female loan recipient noted that while she was very happy with the loan, she wasn't sure if she should be concerned about Musoni's legitimacy as a financial organization. She specifically recalled the last time her women's group had taken out a microfinance loan before, in which they were required to involve a lawyer and the village chief, and wasn't sure why Musoni didn't have these same requirements.

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6   Know-Your Customer - the process of a business identifying and verifying the identify of its clients

An issue that Musoni had identified, but did not know how to solve, was the better prioritization of the WCO's time in supporting their many clients. Musoni worried that WCO's were spending too much time on the road, and not enough time with their clients – and too much time with clients who potentially did not need as much support – but did not know how to solve for this problem. This is where Grameen came in. After looking at the data on how many groups WCOs were meeting with per week, as well as which groups they were meeting with, Grameen noticed that WCOs were meeting with every group on a biweekly basis – even those that were consistently at 100% repayment. Grameen worked with Musoni on a pilot to test a theory that for those groups, perhaps a monthly, rather than biweekly, meeting would suffice. The results were as follows:

- 27 groups were targeted for the pilot (based on an analysis of data). 22 of them accepted the monthly visits without concern; the other groups had both positive and negative reactions. 1 group opted to revert to bi-weekly meetings.
- No issues or repayment trends were noted for 23 out of 27 groups. The other 3 reported minimal arrears which were cleared up once the loan officers followed up.
- No group was classified as "high-risk" even after the pilot; total PAR (portfolio at risk) for the pilot group was 1.1%
- Loan disbursement rated were not affected by the shift from biweekly to monthly visits (75 loans disbursed to the pilot groups before the pilot, 81 loans disbursed to the same groups during the pilot)

While the perceived risk of transitioning all existing groups from biweekly to monthly visits was too high – it would require a concerted effort to drive this behavior change, and with limited resources, this was not considered a priority item. Yet for some new groups in newly opened branches (that are not yet accustomed to biweekly visits, the monthly visit has been applied).

Yet other clients noted that the disbursement and repayment of funds via M-PESA actually adds a level of legitimacy to the organization, as M-PESA provides an external records of payments.

"Data-Driven"

Musoni strives to be data-driven, but this too has been a journey. In the branch offices, Branch Managers use a whiteboard to track performance of their teams, updating daily each loan officer's number of loans, repayments, and any customers who have not paid.

One Branch Manager described this as an "eye-opener for everyone," and a way for the loan officers to stay accountable to the company and to themselves.

In addition to this analog version, Branch Managers and loan officers can also access a number of online dashboards and reports to track ongoing progress and performance, and to address challenges as they come up. Branch Managers can access these dashboards from their laptops, and loan officers can access the dashboards either from their tablets or from shared desktop computers in the branch offices. Loan officers use these dashboards to track loan repayment progress of their clients, particularly checking reports prior to their biweekly meetings with group loan recipients to find out who has or has not paid (as group clients are required to remit payment via M-PESA one day before their biweekly meetings). One branch manager noted that while he accesses his reports daily (and sends daily updates to his loan officers), data for decision-making

is something that is generally done by the main office. While branch managers are able to query the system directly for reports, or request reports from the main office, he typically does not do so and waits for reports to be sent from the main office.

Yet the Grameen Foundation is pushing Musoni to be more data-driven. According to Brigitta Nyawira, Grameen's Project Manager, Musoni has a wealth of data about their clients, loans, and operations, particularly through the new, digitized loan application process. As a result, there are many ways that Musoni could be improving on how they use this data for decision-making and to improve their understanding of their reach and operations. One example is using the data collected on group loan repayment to make better use of loan officers' time (Box 5). Additionally, Brigitta specifically cites the enormous potential of the data being collected by the digitized cash flow analysis. Compared to the prose and long sentences

BOX. 6 GRAMEEN FOUNDATION'S SOLUTIONS INNOVATION PROCESS
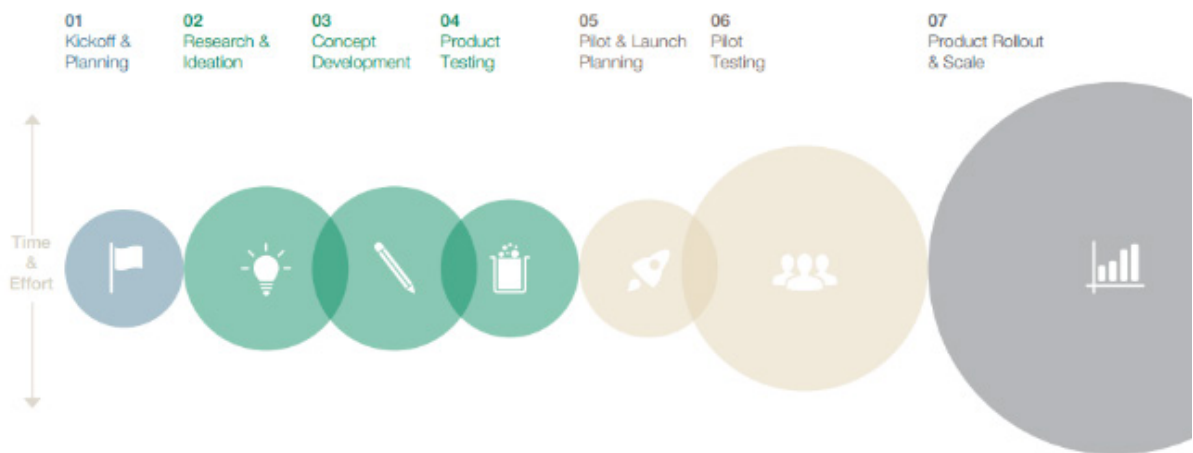
Grameen Foundation's Solutions Innovation Process, a user-centered design approach, including seven phases, was used to help Musoni better understand the challenges and needs of Kenyan smallholder farmers, before developing the Kilimo Booster product.

Source: http://www.grameenfoundation.org/what-we-do/financial-services/solutions-innovation-process

Grace Mwangi takes a smallholder farmer through loan application using the Digital Field Application technology.

that Musoni collected in their initial, Excel-based loan application, the tablet-based, automated model now collects data in a format that can be searched and analyzed.

Musoni still lacks the expertise and time to fully leverage the data they are collecting. But they are driven to improving their analytical expertise. One way they are doing so is by hiring a Data Scientist for a six month Fellowship that started in May 2017, whose focus will be on unlocking the potential of Musoni's data as well as on capacity-building and training of Musoni staff. Musoni is hopeful that through the support of the Data Scientist, their team will be better prepared to maximize the use of their data. For example, understanding the types of crops and animals Kilimo Booster clients are farming and what kind of inputs they are using can inform Musoni in developing new products and new services for clients. Additionally, analyzing the trends and data collected around customers can enable Musoni to pre-qualify customers

.for new loans, such as emergency loans, using existing data in their systems.

LESSONS LEARNED

This section outlines lessons learned from the experience of Musoni, with the support of the Grameen Foundation, in integrating digital tools and approaches into their operations. It is organized around the Principles for Digital Development, a set of principles developed by international development donors and their implementing partners that seek to institutionalize lessons learned in the use of information and communication technologies (ICTs) in development projects. The discussion below highlights the most significant and relevant applications of the Digital Principles to Musoni's work, focusing on three of the nine total principles. It is intended to be an illustrative, rather than comprehensive, portrayal of how the Digital Principles apply in practice.

PRINCIPLE ONE:
DESIGN WITH THE USER

The way in which Musoni developed their USSD platform demonstrates a clear attempt at designing their new technologies with the input of end-users. Prior to developing the platform, Musoni conducted an SMS-based survey of their clients (nearly 5,000 in total) to determine whether a USSD or app-based solution would better meet the needs of clients. While the results of this survey were skewed slightly towards an app-based solution, Musoni opted for the USSD platform for a number of reasons. First, while a slight majority of customers surveyed (55.5 percent) noted that they had a smartphone, Musoni was unable to verify whether they fully understood what a smartphone was, or whether or not they were able to take advantage of the smartphone's "smart features." Second, an app-based solution would require internet connectivity, which would incur higher costs for the farmer users, and would be problematic in rural areas with undependable connectivity.

Building on this initial client-centric research, once the USSD application was developed, Musoni staff held several workshops to get feedback from clients on the new application and tested it for three months before bringing it fully on board. Ultimately, as discussed in the earlier section on Digital Integration, the USSD platform has had high levels of initial adoption. Yet feedback from the first six months of use prove that

additional challenges remain, which Musoni is still working to address, while simultaneously working towards introducing additional functionality.

Even earlier in the Grameen/Musoni relationship, Grameen's initial support to Musoni in designing the Kilimo Booster loan product successfully embodies this principle. In designing the product, Grameen Foundation guided Musoni through an intensive, human-centered design based research process to better understand the unique seasonal financial needs of Kenya's agricultural households (Grameen Foundation 2015). This included weeks of focus groups and interviews with both current Musoni and other Kenyan farmers who were not current clients of Musoni or any other institution. The results from the research, based around Musoni's strengths as a digitally enabled microfinance organization, and the unique challenges of Kenya's farmers, ultimately led to the development of the Kilimo Booster product.

PRINCIPLE THREE:
DESIGN FOR SCALE

Throughout Musoni's process of developing the tablet-based loan application software and USSD platform, technology implementation and integration process, Grameen provided important support in helping Musoni develop a structured process for testing and piloting each new tool, before scaling it up to the entire organization.

While Musoni did have an initial process for testing before starting to work with Grameen, staff from both organizations cites a key impact of the relationship in developing an enhanced process to do so. The new testing process including a plan for rigorous testing, documentation of results, and small pilots before expanding a new tool or process throughout the organization. Grameen also worked with Musoni on developing a long-term vision, including a clear picture of the end-to-end story of how the organization hopes to use digital technologies in the future. For example, while the decision was made to first digitize the cash flow analysis for the Kilimo Booster product, Musoni hopes to eventually digitize the cash flow analysis for its other products, including business loans, in the future - and can apply the lessons learned from the Kilimo product in doing so. This is one of the projects that the incoming Data Scientist will be thinking through for the Musoni team.

PRINCIPLE NINE:
BE COLLABORATIVE

Grameen impressed upon Musoni the importance of engaging all stakeholders from the very beginning of the process. This includes everyone from headquarters staff (such as the management team, credit team, and risk managers), to branch managers and loan officers, to end users, and even technology vendors. Grameen's project manager recalls that in the beginning of the process of developing the tablet-based loan application software, the team had a very clear vision of what they wanted the technology to look like. But when they went to the vendor, they were told that from a technological standpoint, this just wasn't possible and was not as easy as they envisioned it to be. As a result of this feedback, the Grameen/Musoni team learned that when designing a technological solution, involving even the technology vendor from the very beginning is crucial. By doing so, the vendor can help you to understand early on what is possible, what potential constraints there are, and provide recommendations on how to achieve your vision -- without moving too far down the road before having these conversations.

Elizabeth started cattle and goat farming after taking an agricultural loan from Musoni. Proceeds from her livestock have enabled her to smooth her income to provide for her family.

CONCLUSION

Musoni's approach to digital integration demonstrates a commitment to reaching, to the fullest extent possible, its vision of being cashless, paperless, and data-driven, to better serve its clients. Through the support of Grameen Foundation and USAID, Musoni has made progress towards achieving this vision, while also recognizing that their approach to leveraging digital tools and technologies is an ongoing journey that requires constant reflection and growth. Clearly, the collaboration between the two organizations has been a fruitful one, demonstrating the impact of partnerships between the public and private sector. As evidence of this, Musoni and Grameen Foundation have already secured additional funds through the MasterCard Foundation Fund for Rural Prosperity to continue scaling the agricultural loan, through a partnership that will continue for the foreseeable future.

Moreover, in working with Grameen, Musoni has developed a more nuanced understanding of the processes required to successfully integrate digital tools and approaches into their operations, beginning from the initial research and design phase (and ensuring that this phase is conducted in a way that reflects the needs and feedback of end-users) and moving towards a deliberate, detailed process of testing and piloting before extending the reach of a particular tool into the organization's operations as a whole.

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