FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

Mozambique Cell Phone Savings Pilot Project

Baseline Report

May 2015

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Mozambique Cell Phone Savings Pilot Project: Baseline Report

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2 ACRONYMS

ASC	Commercial farmer
ASCA	Accumulative Savings and Credit Association
BFS	Bureau for Food Security
BI	Bilhete de Identifidade
CGIAR	Consultative Group on International Agricultural Research
CRT	Cluster Randomized Trial
FOSC	Farmer Owned Service Center
FTF	*Feed the Future*
GPS	Global Positioning System
ID	Identification
IFPRI	International Food Policy Research Institute
IRB	Institutional Review Board
MTn	Mozambican Meticais
NGO	Non-governmental Organization
OPV	Open Pollinated Variety
PID	Personal Identification
PIN	Personal Identification Number
RCT	Randomized Controlled Trial
SAFRA	Strengthening Agribusinesses and Fostering Rural Alimentation
SIM	Subscriber Identity Module
SMS	Short Message Service
TIA	Trabalho de Inquerito Agricola
USAID	United States Agency for International Development

3 BACKGROUND

While smallholders in Mozambique are often connected to output markets, input markets are weak and smallholders invest very little in inputs that would significantly increase their agricultural productivity. Adoption rates of even basic agricultural inputs, such as improved seeds and fertilizers, are very low. Smallholders also lack access to formal mechanisms to save cash from harvest, inhibiting their ability to make crucial investments in the preparation, cultivation, and growing stages of the next crop cycle. Part of the reason for these low adoption rates is that inputs are often difficult to access; the most recent round (2008) of the TIA (*Trabalho de Inquerito Agricola*), a nationally-representative, agriculturally-focused survey conducted by the Ministry of Agriculture with support from Michigan State University, reports that the average farmer lives 34 kilometers away from the nearest source of fertilizer. **The Mozambique Cell Phone Savings Pilot Project aims to increase smallholder productivity by reducing transaction costs faced by farmers when accessing input markets through a more direct input distribution channel and mobile money technology adoption to allow rural households to save and make transactions securely.**

Mobile money has the potential to facilitate the transfer of cash from the end of one productive season to the beginning of the next, increasing the availability of resources for investments by smallholders which would lead to higher expected yields. It also has the potential to reduce transaction costs in input marketing for both farmers and traders by providing a safe and simple way to make transactions. Combined with more direct input distribution channels and an increase in farmers' knowledge about the benefits associated with adequate input use, mobile money technology can have an impact on farmers' demand for inputs and ultimately, their agricultural productivity. The impact evaluation focuses on an encouragement design in a randomized controlled trial. The encouragement design is aimed at increasing farmers' input use by implementing an intervention that can address three key bottlenecks for adoption: (i) knowledge gaps about input use and benefits, (ii) high transaction costs to access input markets, and (iii) lack of liquidity at the time inputs are needed. Obviously, the successful implementation of such an intervention is conditional on the availability of a reliable supply of inputs, cellphone services, and a mobile money agent network, so we also discuss how we are working to improve their availability in the study associations.

3.1 FEED THE FUTURE INTERVENTION

During the first year of the impact evaluation, the main value chain intervention taking place within USAID's Zone of Influence in Mozambique in the area and funded by USAID|Mozambique is *AgriFUTURO*. *AgriFUTURO* is conducting two relevant activities: (i) *business development services* with all of the farmer owned service clusters (FOSCs) and commercial farmers (ASCs) with which it works,[1] and (ii) *AgriCredito*, a project that expands the availability of credit to associations with which *AgriFUTURO* is working. Since the idea of using cell phones to bolster savings is very much in line with the goal of *AgriCredito*, the officer in charge of developing *AgriCredito* in the study area will assist in implementing the Cell Phone Savings

[1] Since the form of *AgriFUTURO*'s business development services is the most important element to the impact evaluation described here, we reserve a discussion of how *AgriFUTURO* will work with the relevant FOSC (*IKURU*) in Section 4.4.

Pilot Project (Pilot Project). From a timing perspective, *AgriFUTURO*'s support to the project will take place largely during the dry season, between May and December, and so its timing is broadly consistent with the needs of the project. We are working with *AgriFUTURO* to make sure that the support necessary takes place, as we begin to discuss in Section 4.4.

3.2 LESSONS FROM THE 2013 FEASIBILITY STUDY

The Feasibility Study in 2013 assessed the feasibility of cell phone savings interventions with 290 farmers belonging to 14 associations[2] in the districts of Namialo and Nacololo in the province of Nampula in Mozambique. The 2014 Pilot Project aims to cover 58 to 60 associations in the province of Nampula in Mozambique. This project will incorporate lessons from the 2013 Feasibility Study, among which are:

- *Modifications to the randomization strategy*: Randomization in the feasibility study was done at the individual farmer level, while this study will randomize at the association level. The main advantages of this approach are a reduction in the implementation costs and a reduction in the risks of contamination between treatment and control groups. The cost of adopting an association-level randomization is that this requires a larger number of associations participating in the intervention.
- *Design and implementation of training sessions on mobile money*: A two-pronged approach is necessary. We will conduct both centralized trainings for a subset of individuals from the farmers groups; and association-level village trainings. The centralized trainings will contain much more detailed content and will be conducted with group leaders/lead farmers and advanced cell phone/mobile money users in the associations. Once these sessions are complete, the project will also conduct village level trainings akin to those conducted during the feasibility study. These village-based trainings will include all participants and will include general information and technical support services. Individuals who participated in the intensive training will be identified to the association, so that farmers know who to speak to regarding any difficulties using their mobile accounts.
- *Access to cell phone units*: The feasibility study shows significant demand for low cost cell phones. Supplying low cost cell phones during the feasibility study helped overcome lower cell phone ownership rates in some groups (in the feasibility study 31% of participants did not own a cell phone, and 23% decided to purchase a low cost unit.) Ideally, the units should have dual SIM card slots to allow users to switch easily between service providers, since coverage varies by provider. We negotiated with Vodacom, the partner this year, to provide these units themselves.
- *Build-up and strengthening of mobile money agent networks*: We believe one of the main bottlenecks for the feasibility study was the lack of up a reliable agent network in the study areas. Starting earlier with agent recruitment, devoting more time and additional resources, and exploring the use of additional short-term incentives to agents in the study area will be necessary. Additionally, we will work with additional groups in the area where the feasibility study took place.

[2] Farmers in this area are generally grouped under *associations*, which are village-level associations similar in size and functions to what are usually denominated farmer groups or rural producer organizations among development practitioners. Associations are commonly grouped under higher-tier organizations for the purposes of bulk marketing and other activities, which are denominated *forums* in the study area.

Expectations regarding the time that is required to recruit suitable agents is better understood, and we believe that Vodacom is better aware of the costs and time necessary to build up an agent network in rural areas. By starting this process earlier, and by working with a more committed cell phone provider as a partner, the risk of a lack of agents in the area of the intervention is reduced.

- *Pre-paid inputs intervention*: The treatment option to pay for agricultural inputs with mobile money can be improved by streamlining the input options suggested to farmers. Design of menus and graphic material to offer potential types of inputs, plus a reduction in the inputs list to the most essential ones can increase take-up of the mobile money payment option. A strong focus on getting farmers to use improved seed (hybrids, OPVs) and fertilizer might be a positive step for year one, and then potentially focusing on further inputs for year 2 (plowing, precision seeding). The impact evaluators (e.g. IFPRI) will explicitly coordinate with input providers (typically the ASCs or the FOSCs that the association works with) to focus on inputs that will contribute the most to increasing productivity. In the 2013 Feasibility Study, the FOSC (IKURU) that participated was willing to break fertilizer into smaller packages to sell to smallholders, which will be followed in 2014 and is an improved model over larger amounts that farmers might not be able to afford.
- *Recurrent incentives for farmers*: To increase the probability of adoption of the mobile money technology by participants, incentive mechanisms among treated groups should be put in place both immediately after crop sales in 2014 until the beginning of the rainy season, and again in 2015. Regular text messages with reminders or information about mobile money service potentially can also help raise the take up rate, both among associations receiving the treatment and the associations in the control group.

3.3 PILOT PROJECT

3.3.1 Assessment

The 2014 Pilot Project is motivated by the hypothesis that low agricultural productivity among farmers in rural Mozambique is in part caused by the difficulties faced by farmers to access input markets, particularly the distance to distribution centers and the lack of liquidity during the planting season due to the inability to adequately save funds obtained at harvest. Meetings with stakeholders, focus groups with farmers, and the data collected and lessons learnt from the 2013 Feasibility Study revealed that input use among smallholders in the districts of Namialo and Nacololo (Nampula province) is extremely low, and agricultural input suppliers are in the city or main towns far away from the villages where farmers live. FOSCs such as IKURU do offer inputs to farmers, but because demand is low input marketing activities are rare, and any input sales have to be previously arranged and take place at the forum level, which in many cases is hours away from the farmers' village.[3] The background research also revealed that most households still resort to informal savings mechanisms (for example, anecdotal evidence from our formative work suggests farmers bury their money, if they save at all). In spite of being Mozambique's

[3] IKURU is organized as local forums, which are akin to groups of farmer groups and act as the entry point for province level IKURU staff. Each forum is made up of a set of associations, which are farmer groups which are formed at a village level.

most populous province, Nampula only had four banks in its rural districts by 2011, and no mobile banking system (one exists in Manica, run by *Banco Oportunidade*).

In this context, lowering farmers' transaction costs through more direct input distribution channels and the introduction of mobile money technology to substitute for formal and accessible banking services to rural households offers an excellent opportunity to increase their access to inputs and, in turn, their crop yields. **The primary objective of the Pilot Project is to improve agricultural productivity through the increase in input access and use and decrease in the use of informal savings strategies. The secondary objective of the project is to increase mobile money adoption and saving rates among rural households in Nampula**.

3.3.2 Interventions

In order to attain these objectives we will implement: (i) farmer trainings on mobile money technologies, (ii) farmer trainings on benefits associated with the use of agricultural inputs, (iii) input marketing conducted at the association level (it usually is done in towns or at the forum level), and (iv) discounts for inputs that are paid with mobile money. Ideally, with a large sample of associations we would separate and combine the mobile money elements of the intervention from the input marketing elements into different treatment arms, and keep a pure control group so we can clearly identify their individual and joint impact. However, given the limited number of associations we have access to we have to limit the intervention to a single treatment arm and a control group in order to maintain statistical power to identify an effect. Given this, we opted to give all farmers in the study (treatment or control) access to (i), the farmer trainings on mobile money technologies, and give (ii), (iii), and (iv) (input use trainings, association-level input marketing, and discounted inputs) only to farmers in the treated associations. This allows us to identify the effect of improving input access to farmers in the presence of mobile money technologies.

The outcome pathways associated with the intervention are shown in Figure 1. The mobile money component of the farmer trainings is intended to tackle the barriers to adoption imposed by the introduction of a new technology (mobile money), while the input trainings are designed to tackle the knowledge barrier about either not understanding the importance of inputs or the way to properly use inputs, and clearly establish the link between adequate input use and higher yields and quality of crops. The input access components aim to tackle the input availability barrier. Inputs at the association level for the treatment group will be made available through several rounds of scheduled visits by IKURU to the treated associations between the time of harvest and next season's planting. The mobile money input discount will be set at 10 percent, and will take the form of a rebate. The discounts for inputs give farmers a price incentive to purchase inputs, the association-level access to inputs reduces transaction costs associated with purchasing inputs at the forum or town, the early scheduling allows for farmers to buy

Mozambique Cell Phone Savings Pilot Project

Theory of Change

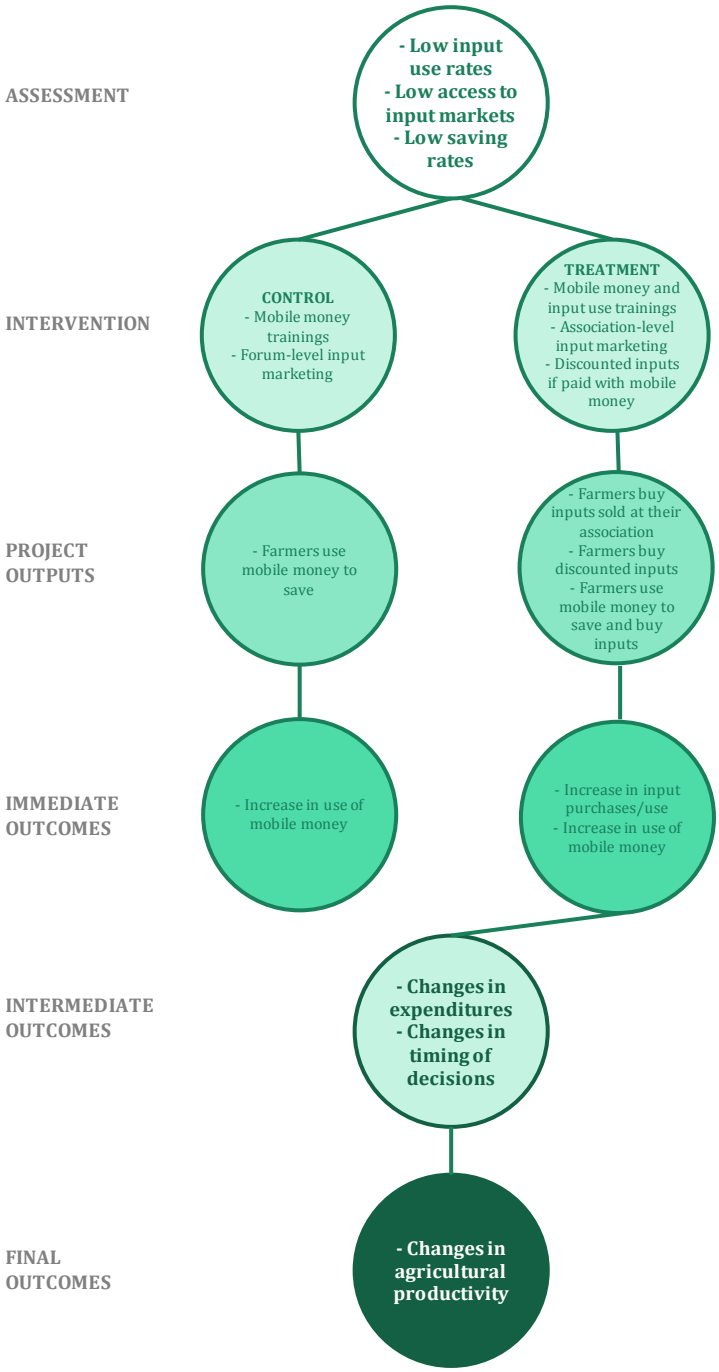


Figure 1- Theory of Change for Cell Phone Savings Pilot Project

while they still have cash from their harvest, and the mobile money requisite tie this incentive to the adoption of the new technology (mobile phones) to increase demand for its use.[4]

The 10% discount is substantial to the farmer, but is also commercially viable for the FOSC (IKURU). If the interventions are successful in increasing input purchases and input use, we would expect that in the long run farmer productivity will increase due to higher yields and better optimization of production decisions, while decreasing at the same time the use of informal saving strategies. This hypothesis is conditional on the local availability of inputs, so we have negotiated an agreement with IKURU to make sure that they participate in the village training sessions; we are helping IKURU with lists of inputs that are available and prices as we did last year; and IKURU will implement several rounds of visits to each treated association to attempt to sell inputs for purchase with cash or with mobile money. Since there is close cooperation between IKURU and Vodacom, it will be suggested that Vodacom accompany IKURU in visiting villages.

From an input access perspective, we are doing the following to ensure access for the treatment group of associations. During the village trainings, farmers in the treatment associations will be informed about the inputs IKURU sells, how to use them, and what their expected impact is, and they will also be informed about the discount they will receive if they purchase inputs using mobile money. A schedule of (at least) 2 visits per association will be prepared and farmers in the treatment group will be informed where they will be able to purchase inputs from IKURU through cash or mobile money. One visit will happen closely after harvest, and the second before the time of land preparation and planting for the next season. Farmers in the control group will not be visited at their associations, but will be able to purchase inputs using cash or mobile money in the regular way (i.e. coordinating purchases at the forum level shortly before planting or going to shops in town.)

3.3.3 Outcomes, indicators, and expected results

Figure 2 illustrates the link between outcomes, indicators, and expected results for the treatment group.

Mobile money usage: The first set of outcomes of interest pertain to take up and use of mobile money. To measure this set of outcomes we will rely on the service provider administrative data on transactions and balances in mobile money accounts. Since the project will open up accounts for all participants in both groups, take up in itself will not be an informative measure of adoption, but instead we will look at the frequency, type and size of transactions. We will initially measure whether or not farmers actually sign up for mobile money; doing so would constitute a "basic" version of take up. We also plan to use further,

[4] In previous versions of the IE design protocol we had proposed to add a pre-pay conditionality to the mobile money input purchase. This was consistent with the original project rationale of having mobile money operate as a commitment savings device. However, in practice we found significant concerns among some associations about using a pre-pay, specifically concerns about IKURU delivery of inputs in a timely fashion. A pre-pay in which the farmer pays money on a given date and receives the good or service several weeks or months later requires a lot of trust between farmer and vendor, and a good sales tracking system. Since IKURU has no experience in actually conducting a pre-pay system, and due to the trust issues we encountered, we found it preferable to just require farmers to pay using mobile money to get the discount, and to ensure very early delivery of inputs. It should be noted that inputs bought in the initial rounds of visits to the associations right after harvest will work in a similar way to a commitment savings device, and will overcome any timing problems with input availability.

more restrictive versions of this variable. For example, we could define take up as having conducted at least one transaction beyond the initial 50 MTn sign up bonus.[5]

We will also measure usage in other ways as the administrative data allows. For example, we will measure the number of mobile money transactions each month following the intervention; as well as the overall size of the transactions conducted. Savings can be measured as the average balance in the mobile money account each month. To measure input sales transactions on mobile money, we will obtain administrative records from IKURU's account with Vodacom; we will also obtain independent records on input sales from IKURU.

Input purchases: Input purchases done with mobile money can also be tracked with Vodacom administrative data, while direct (non-mobile money) input purchases will be registered through IKURU administrative records on input sales to members of the participating associations, and self-reports from the project participants collected during the household survey data collection.

Input Use: Input use will be collected through self-reports from the project participants collected during the household survey data collection.

We anticipate higher input purchase and input use in the treatment group receiving mobile money trainings, input use trainings, the association-level access to inputs, and the discount when they pay with mobile money, compared with the control group that only receives mobile money trainings. Moreover, we anticipate the treatment group will receive their inputs earlier than farmers in the control group because of the way association-level visits are scheduled (with one visit soon after harvest and crop sales), which could affect other agricultural decisions.[6]

While our impact evaluation questions, design and sampling strategy (described below) are focused (and statistically powered) to detect reasonable impacts of the interventions on input use and mobile money use, we will obtain some evidence of the effect they have on our "final" outcomes, primarily agricultural production or productivity.

Agricultural productivity: We will measure agricultural productivity using self-reports from participants collected during the household survey. To estimate agricultural productivity we will measure both the quantity produced and price earned for each crop cultivated. We will also measure the extent to which farmers change their agricultural decisions more generally, for example, whether they adopt greater diversity or risk in crop choice, whether they make higher investments in inputs such as labor (and to what extent its composition, family versus hired, changes), and whether the amount of time the household can wait from harvest until selling the output is affected. We will also measure access to input suppliers other than IKURU. Our theory of change suggests that agricultural productivity would be a "final" outcome, but

[5] We used 50MTn as the initial sign-up bonus in the feasibility study and plan to do so again in the pilot project. This bonus will occur at the trainings in both groups. This is also a sustainable component of the intervention, for example, Vodacom (in Mozambique) provides users an opening balance to enable them to learn to use M-PESA with no risk.
[6] Note that we have good reason to believe that levels of input use among the control group will be quite low, based on results from our experience doing surveys in northern Mozambique.

it would likely hinge on a successful agricultural intervention also occurring. As such, we are primarily examining statistical power below in terms of input use, mobile money take up, and savings.

Expenditures: Additionally, we will measure general household expenditures. Doing so will enable us to complement the analysis on expenditures on agricultural related inputs with an understanding of changes to spending on broader set of outcomes including education, food and health related expenditures, as well as examining whether there are heterogeneous treatment effects for those with a greater share of their expenses on non-essential goods and services.

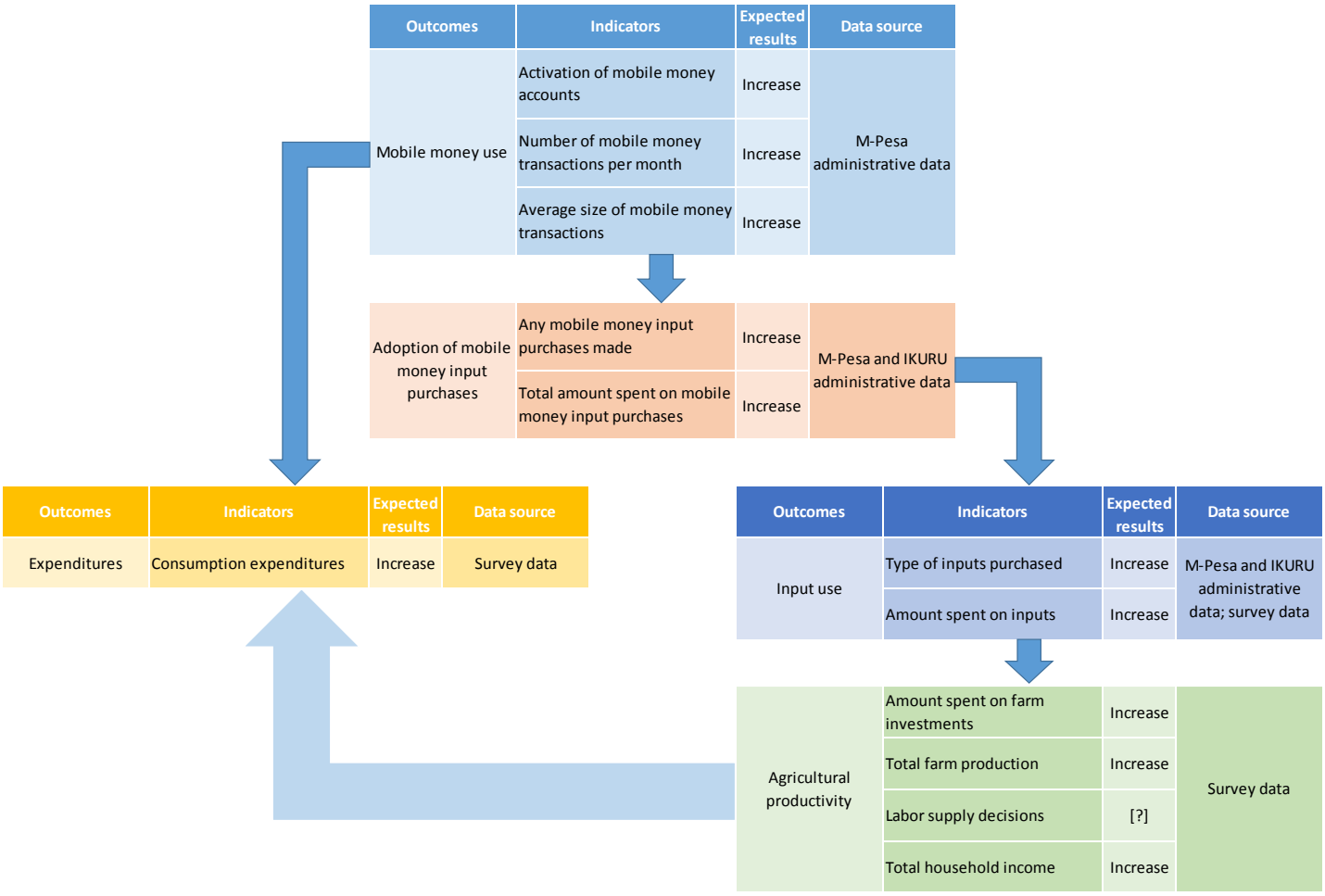


Figure 2- Theory of change for treatment group: Outcomes, indicators and expected results

4 EVALUATION DESIGN

The primary research questions the impact evaluation seeks to answer are listed below.

1. How effective is improving input market access and lowering transaction costs of using inputs (reduction in input use learning costs, reduction in access costs to input supply locations at relevant points of the farming season, mobile money input purchase discount) in increasing the use of inputs among smallholders in the study area?
2. Does an improved access to inputs lead to changes in agricultural productivity? If so, what drives these changes? Is it increased crop diversification, increased use of inputs, changes to household labor decisions or some combination thereof?
3. Are the potential benefits of an increase in input demand and input sales for the FOSC (IKURU) enough to offset the costs associated with a more direct input marketing and distribution strategy (scheduled visits at the association level versus informal arrangements at the forum level)?
4. Does the improved input marketing and discount treatment help increase the use of mobile money accounts?

These questions fit into the Improved Agricultural Productivity category of the FTF Learning Agenda.[7]

4.1 CLUSTER RANDOMIZED TRIALS

We plan to conduct the impact evaluation on the Pilot Project using a cluster randomized trial (CRT). CRTs are a type of randomized controlled trial (RCT) in which groups of subjects, rather than individual subjects, are randomized in order to evaluate the impact of a particular intervention, policy or project. Relative to individual level RCTs, CRTs reduce the risk of biases in the evaluation due to spillover and crossover effects between individuals, and are a natural fit when the intervention is applied at the group level. The latter is definitely the case with this project, since both the design and implementation plan rely heavily on actions taken at the association level such as information sharing, community mobilization, trainings and extension, and access to inputs and agents. In this context a CRT is the most appropriate method for the impact evaluation.

However, the desirable properties of CRTs come at a statistical cost. Since randomization in the CRT will occur at the association level, the study requires a large number of associations to attain sufficient statistical power to demonstrate impacts. Typically this will be more challenging, administratively and financially, than conducting a study randomizing at the individual level. More importantly, since the unit of analysis of the study is the individual (household) while the unit of randomization is the association, the dependence between individuals of the same association reduces the effective sample size (each additional individual in the same cluster adds little additional information, since outcomes are correlated among individuals within the same association), which must be accounted for when calculating the study sample size through power calculations. All farmers from the association will be invited to participate in the study. Association sizes of IKURU comprise approximately 19 members on average; we will use 15 members as an average size for computing our power calculations.

[7] http://agrilinks.org/library/feed-future-learning-agenda

4.2 IMPACT EVALUATION DESIGN

For the purposes of the evaluation, the associations will be randomly allocated into a treatment and a control group (see below for proposed timing of randomization):

- *Control group*: This group will receive leader trainings and general village trainings on how to use mobile money, but will receive no training or incentives whatsoever regarding input use. Their access to inputs remains unmodified from the usual business practices of the FOSC (IKURU) in the area, which is to informally coordinate input sales at the forum level at no specific times.
- *Treatment group*: Same trainings on mobile money as the control group, plus an input use training that explains how to use and what are the benefits of using improved seeds and main fertilizers. Farmers in the treated associations will also get access to inputs through scheduled visits by IKURU to their associations (villages), with at least two visits being scheduled for each of them (one right after harvest, and one around the time land preparation and planting begin in the following season.) Finally, farmers in the treatment group will be given a 10 percent (rebate) discount if they pay for inputs from IKURU using their mobile money accounts. We will directly measure (through records on input sales) increased input purchase; we will also measure (reported) input use in the follow-up survey. Using an extensive expenditure module, we will be able to measure whether there is an increase in expenditures as a result of increasing the intensity of input use in the follow-up survey. The increase in expenditures would take place through increased income from crop production, which would translate into higher consumption so long as the marginal value of consumption for the household was greater than zero.

While the incentives will only be given to the treatment group, access to mobile money and the ability to pay for inputs using mobile money (without discounts) will also be offered to those in the control group. Specifically, access to mobile money to the control group means that during the mobile money intervention the farmers will be assisted to set up mobile money accounts. All individuals will receive the small (50 MTn) bonus for initializing the service, which will specifically be used in the trainings for practicing the use of mobile money. Individuals in the control group will be able to buy inputs from IKURU at their standard price using mobile money or using cash, but will have to do so at the forum by coordinating with IKURU independently in the same way they have done in the past. They will receive no discount for their input purchases regardless of the mode of payment they choose to use.

Outcomes will be collected through the three rounds of household surveys, and supplemented by administrative data on the accounts from the mobile money service provider and input/output sales records from the farmer service organization.[8] Given this is a randomized design, standard ordinary least squares can be used to measure the impact of the treatments. Clustering at the group level will be necessary due to random assignment at this level.

[8] As stated in the initial concept note on this project, we will drop the third survey if either we cannot come to an agreement about how to proceed as the SAFRA project is initiated, or if evidence from 2014-5 suggests that this method of trying to stimulate input use really cannot work. We would make that determination in collaboration with USAID|BFS.

4.3 CROSS-RANDOMIZATION: TRANSACTIONS

A concern resulting from the 2013 Feasibility Study was that little actual use of mobile money occurred. Two hypotheses about the low use of mobile money relate to the lack of an agent network and a possible lack of understanding of the product (in that case, mKesh). In this project we want to test other methods of stimulating mobile money use that do not require training.

As the agent network will be of much higher quality in this project, we want to also be sure that farmers will use mobile money. A concern we have is that if transactions do not occur early in the project, agents may lose interest in continuing to be agents and would not accept deposits. Mobile money requires agents to keep a "float" of electronic money, which means that the only way that they can make money on the float is through mobile money transactions. If enough transactions do not occur, agents may decide to stop serving as agents, likely without informing Vodacom.

A method of stimulating initial transactions to provide small, random cash transfers to a small share of the sample, and then track whether or not people withdraw those transfers or use them in some way. We plan to provide transfers of about $5 (150MTn) to 10 percent of the sample on two occasions during the farming off-season (e.g. in July and August). We will randomize across both the treatment and control group, but will keep the overall group of farmers receiving random transfers relatively small; we are considering giving such bonuses twice to about 35 farmers in the treatment and the control group (70 total).[9]

This feature is meant to initially stimulate both the use of mobile money and make farmers more potentially comfortable to save through mobile money. Data on transactions would be generated through Vodacom and so we can quickly analyze whether they stimulate transactions—deposits, withdrawals, purchases, or transfers—soon after the bonuses are paid. We primarily plan to use these bonuses—paid in money rather than airtime at least initially—is to stimulate the use of agents. If transactions do not occur within the agent network, the concern is that agents will find the opportunity costs of their liquidity being tied up in mobile money as too high, and will stop acting as agents. If giving small gifts to randomly selected farmers actually stimulates transactions, this strategy or the similar one described in the footnote could help Vodacom stimulate business, and we will suggest it as such. We will also collect information in the initial survey about with which household members the farmers have discussed mobile money; we therefore could measure how transfers to one association member might affect mobile money usage among people directly and indirectly linked to people receiving random transfers.

We will briefly discuss power calculations related to creating transactions using this mechanism at the end of the section on power calculations.

[9] We recognize that this method is somewhat unsustainable. However, it is similar to something that Vodacom finds intriguing; they could enter individuals who transact in a new area—or a specified geographic area with new agents—over a specified period of time in a lottery to win a specific amount of money (e.g. 500 MTn). If this idea is successful they will likely try an idea such as this one to stimulate agent business.

4.4 TARGET AREAS AND POPULATION GROUPS

In 2013, in collaboration with USAID|Mozambique, IFPRI and Kambeny Financial Services designed a feasibility study that worked with IKURU, a Farmer Owned Service Center (FOSC) serviced by *AgriFUTURO* in Nampula province. In 2014, as previously mentioned *AgriFUTURO* will continue to work with IKURU, which provides access to associations and inputs for the treated associations. To go a bit further in discussing the business development services that *AgriFUTURO* might provide to IKURU, we have engaged IKURU to ask *AgriFUTURO* to assist them in designing some light trainings for all treatment association leaders on the use of inputs and to help them ensure that inputs are available to treatment groups at the right time for production next season.

During the second year of the impact evaluation, it is hoped that the new agribusiness project (SAFRA; Strengthening Agribusinesses and Fostering Rural Alimentation) will commence. We operate under the assumption that IKURU will also be supported by SAFRA. Unfortunately, at present it is not clear what form the SAFRA project would take, and will not really be clear until the contract has been awarded and the contractor begins to develop a workplan. We choose to work with IKURU precisely because we believe it is important to work with associations who are likely to be supported by SAFRA for two reasons. First, if our primary treatment model leads to improved input use, then it provides a potentially important lesson to SAFRA that can be immediately scaled up. Second, IKURU provides an entry point for SAFRA- without working with organizations such as IKURU, SAFRA would have to work with village leaders to find potentially interested individual farmers, which would be a (very) time consuming process. Since IKURU has a broad footprint in the USAID FTF Zone of Influence, we strongly believe they will also receive support from SAFRA. Since USAID Mozambique is encouraging this pilot project, we expect to receive support in asking that the introduction of SAFRA will not materially affect the research design. We would ask that the treatment and control groups are maintained for the 2015-6 growing season. However, if working with IKURU is either deemed impossible by the future SAFRA contractor or if SAFRA is further delayed in implementation past the 2015-6 season, which seems possible at this point, we will discuss stopping the pilot after the mid-line survey listed later in the workplan with USAID|Bureau for Food Security. If there is a gap between the end of *AgriFUTURO* and the beginning of SAFRA, we will discuss how or whether to proceed with both USAID|Mozambique and USAID|Bureau for Food Security.

Given the concerns listed above, the 2014 Pilot Project needs to take place in an area with reasonable cell phone service coverage with an existing (or good potential for building it up) network of mobile money agents, where there exist farmers or associations that would potentially be working with USAID projects, and where inputs are available. The associations that participated in the 2013 Feasibility Study will also be part of the pilot project, we will stratify random assignment on whether or not the association participated in the Feasibility Study. The individuals to be targeted by the 2014 Pilot Project will be farmers (men and women) that are linked with the associations within IKURU.

4.5 SUPER AGENT'S ROLE

The main component of the Pilot Project should be managed by a super-agent (Vodacom) who will collaborate with *AgriFUTURO*.[10] The activities we expect the super-agent to conduct are proposed as follows:

1. To work with IFPRI, and IKURU to check which associations are within Vodacom coverage zones dependent on the relevant cellphone network.
2. To coordinate with IFPRI and the Mission to define the critical information that needs to be collected in the baseline survey for the bulk registration process;
3. To (bulk) register farmers for the pilot project;
4. Ensure that cell phones can be made available for sale for the village trainings held with all association members, to be sold to farmers. Ideally these phones should have dual SIM card slots and will be offered at an affordable price for farmers.
5. In collaboration with IFPRI, to provide a set of central one-day trainings to association leaders in group leadership, using mobile money, savings, and other topics so they can act as resources when participants have questions about how to use their phones. Four trainings were held. Both association leaders and young association members were recruited for the training, to ensure that respected members and relatively technology savvy members exist in all associations. See below for information on the recruitment.
6. To hold village training sessions in collaboration IKURU that follow the association leader trainings. The village trainings should use experiential learning and encourage trained village leadership and the technologically savvy association members to help with questions and small groups. Association leaders trained in the central training should be mobilized to help with the village trainings and encourage association members to sign up for mobile money/the project.
7. To expand the existing agent network by recruiting agents in areas nearby the associations, by determining trustworthy individuals in the area through the village trainings, and then recruiting them.
8. To recruit and retain mobile extensionists or mobile agents to regularly visit specific associations, at least for the duration of the Pilot Project, under the understanding that these extensionists would be temporary. These extensionists will be available to assist farmers with the logistics regarding their input purchases.
9. To provide administrative data records for the mobile money accounts activated through this project on an ongoing basis.

[10] Vodacom will fund their own involvement. IFPRI and Vodacom Mozambique have signed a Partnership Agreement. Vodacom will also provide support for the trainings in the form of an experienced trainer and training materials. IFPRI and AgriFUTURO will also sign a Partnership Agreement as AgriFUTURO will, at least in the first year of the project, manage the official in-country account for paying the discounts to farmers and any other bonuses. This account will either be transferred to the International Potato Center, a sister center of IFPRI with legal standing in the country, or to IFPRI properly at the end of AgriFUTURO, if IFPRI's legal standing has changed by then.

4.6 SERVICE ORGANIZATION'S ROLE

The second part of the implementation will be the responsibility of IKURU, but will be monitored by IFPRI staff and consultants. We will sign a contract with IKURU to ensure that the following activities occur:

1. To provide the project with lists of association members in areas that were identified as being in M-Pesa coverage zones, restricted to areas within the Feed the Future Zone of Influence and therefore the areas in which *AgriFUTURO* is supporting IKURU in business development services; the list will be shared with *AgriFUTURO* before randomization to ensure they are supporting IKURU in all listed areas;
2. To provide Vodacom and IFPRI with lists of association leaders and to suggest potential young association members (or technology leaders) for those associations;
3. To collaborate with IFPRI in coming up with appropriate lists of inputs that could be sold to farmers in a mobile money arrangement, and to provide those inputs;
4. To schedule, announce and conduct two rounds of visits to the associations in the treatment group with the purpose of marketing inputs. The first visit should occur shortly after harvest, and the second visit shortly before land preparation/planting for the next season begins;
5. To offer payment for crops by mobile money as well as input purchases by mobile money;
6. To support the leader and village trainings conducted by Vodacom and IFPRI;
7. To generally support the associations and to act as an information conduit between Vodacom, IFPRI and the associations.

5 SAMPLE DESIGN

5.1 CLUSTER RANDOMIZED TRIAL: STATISTICAL POWER

To determine the number of clusters (associations) needed for the CRT, we have conducted preliminary power calculations based on results of our 2013 Feasibility Study to ensure that we design a sample in which we can detect impacts on outcomes of interest with a great deal of confidence. However, our sample size is determined by the number of associations available that meet our criteria and what we believe we can accomplish within the time frame; as becomes clear, the sample we are suggesting should be adequate to demonstrate impacts on input use, mobile money take up and savings if they occur, as well as to differentiate between groups. For the purposes of power calculations, we operate under the assumption that there are approximately 15 members per association; this number is both realistic and relatively ideal since statistical power does not increase much as the average cluster size increases, particularly beyond 20.

The sample for the project are 57 IKURU associations in Monapo, Meconta, Angoche, and Mogovolas districts that are within Vodacom's coverage area.[11] These 57 groups are members of 4 different forums, which we use as strata in randomization. Consequently, previous participation is accounted for as two

[11] We initially were planning to also include Murrupula district, but only found 2 associations that were within Vodacom's present coverage area using high quality maps, so we dropped it.

specific forums were included in full during the feasibility study. We then randomly selected associations to participate to create as balanced a sample as possible.

For power calculations, we use the standard formula for clustered RCTs:

$$\delta = \frac{(z_{\alpha/2} + z_{\beta})\sqrt{2\sigma^2(1-(m-1)\rho}}{nm}$$

Where δ is the effect size, z represent the critical values (used as 0.95 and 0.8 for α and β respectively; σ^2 is the expected variance, m is the average cluster size, n is the number of associations per treatment arm, and ρ is the intracluster correlation coefficient. Throughout we assume that m is 15 and that $\rho = 0.2$; the latter assumption is conservative given that we will stratify the sample into several groups. We discuss variance, the number of associations, and the effect size below.[12]

We estimate power calculations based on pairwise comparison of the two groups. We assume that mobile money usage will be nearly zero when we begin the intervention. Since we also assume that the number of associations and average association size are effectively fixed, we test how the key parameter, the variance or standard deviation of outcomes affects power calculations. For discrete outcomes, we test the minimum detectable effect between the treatment and control groups.

We structure our further discussion of power calculations as follows. First, we examine discrete variables, for which we use "take up" as an example. Then we examine continuous variables. After this discussion, we discuss specific measures of take up and the types of continuous variables in which we are interested.

We initially assume that the intracluster correlation is 0.2 (which corresponds to a design effect of 4.8).[13] The minimum detectable difference between the control and the treatment group will depend upon the take up rate in the control group. We assume a range of plausible take up rates and the minimum detectable effect under the intracluster correlation noted above. For 28 associations per treatment arm, the additional amounts of take up necessary depend upon the control group take-up rate; if take up is low among the control group (10 percent), a 15 percentage point increase over the control group is needed to identify an effect. If it is relatively high (25%), we need a 19 percentage point increase. We also present minimum detectable effect for 15 and 20 associations per arm, in case some associations cannot be reached by the training. As the estimate of the intracluster correlation is somewhat conservative, we are likely to detect smaller impacts on take up.

Table 1- Prospective Statistical Power for Various Intervention Designs

Number of groups per treatment	Assumed Control Group Take Up Rate	Minimum Detectable Effect- Take Up Required in Treatment Group
28	10%	25%
28	15%	32%

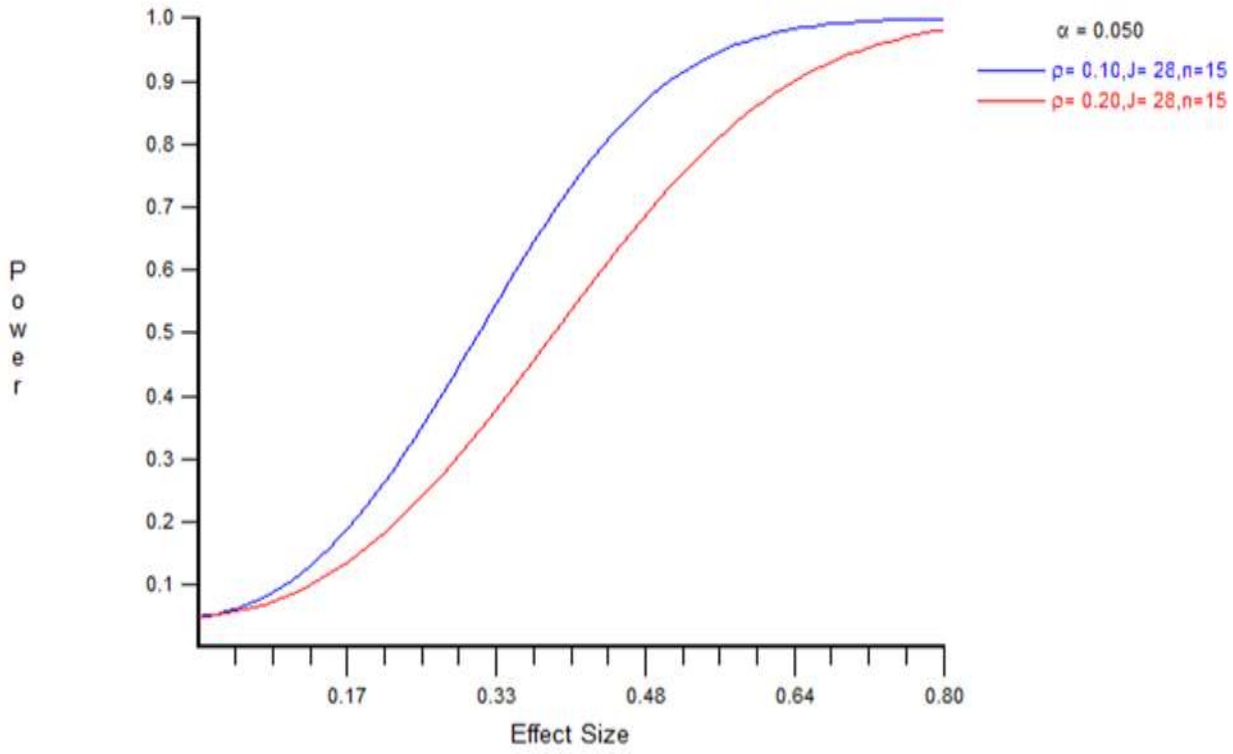
[12] We have changed the expected association size since information about the likely size of each association has improved.

[13] This is a relatively standard assumption when assuming high correlation within associations. Since we are using four districts, the assumption is actually quite conservative.

28	20%	38%
28	25%	44%
20	10%	28%
20	15%	35%
20	20%	41%
20	25%	47%
15	10%	32%
15	15%	39%
15	20%	45%
15	25%	51%

We next consider standardized continuous variables, quite generally. We are therefore measuring the number of standard deviations difference we should be able to detect. For graphical presentation, we use 28 associations per arm as that is the "final" treatment group size; if associations fall out of training then the curves would shift downward somewhat.

Figure 3- Statistical Power for Various Effect Sizes, in Standard Deviations



Under the assumptions we make above, at the 0.8 power level, we can observe an 0.48 standard deviation increase in any (standardized) continuous variable relative to any other group. This number might seem large for many applications, but we will argue below that for the types of variables we are measuring it is likely reasonable. If the intracluster correlation is actually lower, at 0.1, we can measure a 0.36 standard deviation change.

At this point, it is worth considering the primary types of discrete variables related to take up we are interested in measuring. We will first measure take up through signing up for an M-Pesa account. Within groups being trained, simply attending either the youth leader training or the information session at the association level would be considered sign up. For the control group, we will ask at baseline whether people have M-Pesa (or mKesh) accounts specifically.[14] This is the broadest measure of take-up that one can envision. Other measures, which would define take up more narrowly, would be making at least one transaction on M-Pesa; making at least one quarterly transaction, etc. We will measure take up in all three ways noted and possibly in other ways as well.

One will also use the administrative data to measure savings as well, at least among those actually using mobile money. As farmers will be provided a small initial amount of money in their mobile money accounts to practice transactions (50 MTn), a very basic measure of savings through M-Pesa would be whether or not they deposit extra money at all.[15] All of the power calculations for "take up" apply for this measure.

Finally, we provide estimates for take up of specific inputs, another discrete variable. Baseline fertilizer usage in the feasibility study was 3%, and baseline improved seed usage was around 30%. In line with the calculations above for "take up" with 28 associations per arm, we should be able to detect an effect of a 14 percentage point increase in fertilizer take up and a 23 percentage point increase in improved seed take up. Although these are large estimates, they are discrete variables- so they only require use. We will again work with IKURU to provide smaller amounts of fertilizer to farmers—they prepared smaller bags than the typical 50kg bag last year and are doing so again—so these effects could plausibly be observed.[16]

We are primarily interested in continuous measures related to input use and consumption expenditures, and secondarily interested in savings. For these measures, the 0.48 standard deviation threshold would need to be met to measure differences between groups. Input use would be measured as either the amount or the value of seeds or fertilizer used, or the sum of the two values, and would primarily be measured in the household surveys. We would also measure the total value of inputs used. All of these variables also require the 0.48 standard deviation threshold. Finally consumption expenditures would primarily be measured in the surveys, and would be measured as the value of consumption; we would expect to observe a change if one occurs only in the final survey.

For input use, there is good reason to believe that these thresholds can be met. Using the feasibility study data, the standard deviation for fertilizer use was 24.7, implying that a 12 kg increase on average in

[14] If farmers already have an mKesh account, trainings will offer them an M-Pesa account and the phones being sold by Vodacom will be dual SIM.
[15] We would not count a deposit immediately used for an input purchase as savings.
[16] Smaller packages would be offered to all associations.

fertilizer use across the treatment group would be statistically identified. This impact would be somewhat smaller than that found in an input subsidy program in Manica province by Carter, Laajaj, and Yang (2014), where improved seed use and fertilizer use is a bit more prevalent than in Nampula province. Similarly, improved seeds, used by more households, had a 26.7 standard deviation, implying that a 13 kg increase would be statistically identified. Perhaps more possible among improved seeds would be to statistically identify an impact on the value of seeds purchased; there, the standard deviation was 160 in the feasibility study, indicating we could identify a change of 80 MTn on average for the treatment group. Additionally, using an inverse hyperbolic sine transformation as in Carter, Laajaj, and Yang (2014) could yield improved identification of impacts by compressing standard deviations.

In terms of savings, we will be able to measure difference in savings (or mobile money balances) on a regular basis. Recall, our hypothesis is that the main point in time when farmers have money is when they sell crops, so we would expect that to be the time when they are most able to save any money. Since savings start at low levels, making the 0.48 standard deviation threshold would not seem problematic if farmers begin to use the system.

5.2 CROSS-RANDOMIZATION: STATISTICAL POWER

Since the cross-randomization will take place at the individual level, we can take our projected maximum sample size and estimate impacts we would expect to observe mobile money transactions as an indicator variable. Let's assume that each of the 57 associations there are 15 farmers, so there are 855 total farmers, and we randomly select 70 for the treatment, which is a bit less than ten percent. For the indicator variable (e.g. any deposit is made), if the baseline percentage of farmers (in the "control" group) transacting on mobile money during a specific time period (e.g. one week within the occurrence transfers) is 5 percent, we will be able to identify an 18 percent transaction rate in the treated group, or higher (in other words, we need to observe 13 transactions from treated farmers to be able to attribute them to the bonuses, relative to a background of 39-40 transactions taking place among all other farmers). This is an average across the treatment and control groups; the treatment group would certainly have an additional incentive to potentially use mobile money to purchase inputs with the additional bonus; in the first round we would watch for this possibility. If we find that the transaction rate in the "control group" is actually lower, then even fewer transactions would lead to a statistical difference between groups. In other words, the design is not that powerful, but can potentially teach us something about how to catalyze mobile money transactions.

5.3 QUALITATIVE ANALYSIS

The qualitative analysis to be conducted in the 2014 Pilot Project is designed to complement and inform the implementation of the experimental impact evaluation and help interpret its results. Focus groups and in-depth interviews will be conducted before and after the implementation of the interventions in order to find better answers to the following questions:[17]

1. Challenges faced by farmers who made or attempted to make mobile money transactions.

[17] The qualitative work completed before the Pilot Project was conducted among farmers in the Feasibility Study associations in early March, 2014 and was funded by the Policies, Institutions, and Markets program of the CGIAR.

2. Challenges faced by mobile money agents
3. Challenges faced by IKURU in implementing the improved input marketing model
4. Reasons for non-adoption
5. Framing of the savings incentives to farmers
6. Identification of most relevant input(s) for discount incentive
7. Availability and use of inputs
8. Feedback on trainings
9. Unintended effects of the interventions

We will randomly select at least 10 associations in which to conduct informational interviews. We will use a strict interview guide that we develop upon our reflections after the implementation.

5.4 TIMING

The new agribusiness activity (SAFRA) is slated to start in mid-2015, and so the timing of this project could be ideal for providing input into the way that SAFRA uses mobile money in promoting commercial agriculture in Mozambique. Initial results should be available by the new project start-up phase. The Pilot Project has two main components: an implementation activity and an impact evaluation. Conditional on acceptance of USAID/BFS, we plan to begin both activities in 2014. The activity is taking place alongside *AgriFUTURO*, as discussed above, in associations supported through business development services provided to IKURU.

The FTF Activity to be evaluated is a pilot project that will take place in 2014-2015, structured to inform SAFRA, the replacement of *AgriFUTURO*, about effective models to promote the use of mobile money. This activity will largely be completed by October 2015, as SAFRA is projected to be starting up. Since the primary outcomes of the Pilot Project are input use, mobile money adoption, and saving rates, we will conduct a survey in August-September 2015 after the sales season to measure both savings and repeat usage of mobile money for output sales in 2015, as well as input use, production, and consumption expenditures. We will work with IKURU to make sure that they do not extend the new input marketing model to the control group until after the 2015-6 season if it appears it could be particularly successful. Prior to the quantitative survey, we will conduct qualitative interviews to understand how well the implementation performed and partially to inform the follow-up survey. Because changes in farm production plans and saving strategies such as farm improvements, new crop choices, re-allocation of the household's labor supply, or savings in durable assets involve longer term decisions, we expect that any effect on agricultural productivity and longer term savings strategies will be detectable (if large enough) in a longer period of time. For this reason we include a potential second season survey, occurring in August-September 2016, in the plan and the budget.

6 BASELINE SURVEY

To build up a sample for the intervention and the baseline survey, IKURU provided an initial list of sixty associations of small farmers in the survey area. Of these, 51 participated in leader and group level trainings in input sales and mobile money access, while the remaining 9 associations either did not consent

to participate, or were in areas in which cellular networks were largely unavailable though maps suggested that networks would be available.

The baseline survey took place in August and September of 2014 across two regions- Northern and Southern- of the Nampula province in northern Mozambique. Within each region, farmer associations form larger producers' forums, principally to market outputs. Households from two such forums were interviewed in each region: Meconta and Monapo in the north; Angoche and Mogovolas in the south. Within each association, the sample frame included all households with one or more members present at the group-level training, and then additional households that were suggested by the association leader. Table 1 presents the number and percentage of farmers' associations and surveyed households for each producers' forum.

Table 2- Survey sample by region, producers' forum

	Farmer associations		Households	
	Obs.	%	Obs.	%
North Region	23	45.1	380	46.97
Meconta	11	21.57	178	22
Monapo	12	23.53	202	24.97
South Region	28	54.9	429	53.03
Angoche	11	21.57	154	19.04
Mogovolas	17	33.33	275	33.99
Total	**51**	**100**	**809**	**100**

The survey sample is approximately evenly divided between northern and southern regions. The northern producers' forums are evenly represented, while in the southern region a somewhat higher proportion of farmers' organizations (and hence households) are members of the Mogovolas forum. This is largely a result of lack of cellular network access in some of the areas around Angoche which prevented a number of associations in the original sample design from being able to participate in the trainings.

Following the research design the farm groups were randomly assigned to treatment and control arms, with treated groups receiving a direct input marketing intervention. Table 3a presents the number of households in each treatment arm. As well as interviewing households where members had attended group mobile money trainings, the survey protocol called for the enumerators to interview an additional quota of households for each farmers' association where members did not attend the trainings to allow us to capture potential spillover effects, presented in Table 3b.[18]

Table 3a- Input marketing treatment assignment

[18] From observation, it was often the case that a spouse would attend the training along with the head of household. Since the intervention is primarily informational and marketing and targeted at the household level the analysis considers the intensity of treatment to be uniform across households.

	Direct Input Marketing Treatment				
	Treatment		Control		Obs.
	Number	%	Number	%	
Full Sample	**375**	**46.35**	**434**	**53.65**	**809**
Meconta	82	46.07	96	53.93	178
Monapo	101	50.00	101	50.00	202
Angoche	81	52.60	73	47.40	154
Mogovolas	111	40.36	164	59.64	275

Table 3b- Direct attendance of mobile money training

	1+ Member Attended Mobile Money Training				
	Yes		No		Obs.
	Number	%	Number	%	
Full Sample	**566**	**69.95**	**243**	**30.04**	**809**
Meconta	122	68.54	56	31.46	178
Monapo	145	71.78	57	28.22	202
Angoche	110	71.43	44	28.57	154
Mogovolas	189	68.73	86	31.27	275

Table 3c- Training attendance within marketing treatment group

	1+ Trained member		Spillover		Obs.
	Number	%	Number	%	
Treatment Sample	261	69.60	114	30.40	375

In all, 809 households were interviewed, of which 375 (46%) were households which received direct input marketing, while 434 (54%) were in the control group. Within the sample, 566 (70%) of households included one or more members who had attended the group trainings on mobile money, while 243 households were non-attendee or 'spillover' households. The proportion of attending to spillover households was approximately equal across producer's forums.

Of those households within the treatment assignment, 261 (70%) received the direct input marketing treatment, while 114 (30%) were in spillover households The ratio of trained to untrained households is balanced, with no statistically significant difference between treatment and control households.[19]

[19] Probit regression of treatment status on an indicator for trained members (z = -0.21).

7 SUMMARY STATISTICS

7.1 HOUSEHOLD CHARACTERISTICS

Table 4a presents a disaggregation of sample households by gendered household type, while Table 4b presents the mean size of households in the sample along with selected demographic and educational characteristics of the household head. Households in the survey area are typically patrimonial and monogamous, which is reflected in the high proportion of male and female adult households and relatively low average household size of just under 5 members. Household heads are just under 40 years old on average, with wide dispersion, and are male in most households. While a high proportion report at least some primary education, secondary education rates are low, with only 63% of household heads reporting command of the national language of Portuguese. Over half of household heads own their own cell phone (though a higher proportion may borrow one from family members or neighbors), while a similar proportion report income from activities outside of the family farm. The former finding is quite interesting, especially as this percentage is higher than in the FTF/Feedback baseline survey (37 percent) and since cell phone sales were not as successful with Vodacom as with mPesa in the feasibility study, suggesting that households are purchasing cell phones in fairly rapid numbers on their own.

Table 4a- Household Characteristics

	Gendered Household Type	
	Number	%
Female head, no adult male	58	7.17
Male head, no adult female	51	6.30
Male & female adult members	700	86.53

Table 4b- Household Characteristics

		Mean	SD	Min	Max	Obs.
Household Size		4.92	2.06	1	11	809
Household Head	*Age*	39.33	12.92	17	84	809
	Male	0.91	0.29	0	1	809
	Literate	0.76	0.43	0	1	809
	Primary Education	0.89	0.31	0	1	809
	Secondary Education	0.17	0.37	0	1	809
	Speaks Portuguese	0.63	0.48	0	1	809
	Owns cell phone	0.56	0.50	0	1	809
	Non-farm income	0.56	0.50	0	1	809

We next examine the ownership of specific pieces of agricultural equipment (Table 5). Ownership of basic assets other than hoes (which were owned by every household in the sample) are relatively low. Less than half of households own the next most common asset (axes). Not surprisingly, few households own machinery or transportation equipment, few households even own machetes or shovels.

Table 5- Ownership of Agricultural Equipment

Asset Ownership	Number	%
Machinery	21	2.60
Transportation Equipment	67	8.28
Hoe	809	100.00
Axe	377	46.60
Machete	171	21.14
Shovel	128	15.82
Rake	79	9.77
Sickle	244	30.16

Finally, we examine household expenditures on a total basis (Table 6). The average household reports an annualized food expenditure of approximately 475 USD which accounts for approximately 50% of overall household expenditures (excluding implied expenditures through auto-consumption of crops). Both measures have typically high variance. These figures translate to average daily per capita expenditures of about 61 cents. To estimate poverty incidence in the sample, we use the poverty line calculated in the Feed the Future Mozambique Baseline report (Feed the Future FEEDBACK, 2014) of 19.3 meticais per day which corresponds to the Ravallion poverty line of $1.29/day in PPP terms (Ravallion, Chen and Sangruala, 2008). We find that 71% of the households in the sample can be considered poor by that measure. The proportion of households in poverty is slightly higher than in the Feed the Future FEEDBACK report, likely as this sample does not include any urban households or larger farmers.

Table 6- Annual Household Food & Total Expenditures (in MTn)

		Mean	SD	Min	Max	Obs.
Food Expenditures	*Household*	474.70	524.80	25.80	3096.19	809
	per capita	122.73	151.00	2.87	1720.11	809
Total Expenditures	*Household*	957.82	1013.13	59.81	5584.16	809
	per capita	221.14	261.86	6.65	2608.61	809
Prevalence of poverty	*< $1.25 per day*	0.71	0.45	0	1	809

7.2 FARMING CHARACTERISTICS

We next study variables related to inputs (Table 7). Traditional farming practices remain dominant, with almost all households reliant on labor by immediate family members. A further 50% of households report using festive exchange labor, with only 7% of households reporting having paid laborers in the previous year. Planned labor use for the coming season suggests that this allocation will remain almost unchanged.

Table 7- Current and intended input use

		Mean	Std. Dev.	Min	Max	Obs
Family Labor	*Currently uses*	0.96	0.19	0	1	809
	Plans to use	0.95	0.22	0	1	809
Paid Labor	*Currently uses*	0.07	0.26	0	1	809
	Plans to use	0.08	0.28	0	1	809
Festive Labor	*Currently uses*	0.50	0.50	0	1	809
	Plans to use	0.56	0.50	0	1	809
Traditional Seeds	*Currently uses*	0.97	0.17	0	1	809
	Plans to use	0.98	0.14	0	1	809
Improved Seeds	*Currently uses*	0.11	0.32	0	1	809
	Plans to use	0.18	0.39	0	1	809
Organic Fertilizer	*Currently uses*	0.01	0.11	0	1	809
	Plans to use	0.01	0.11	0	1	809
Inorganic Fertilizer	*Currently uses*	0.02	0.13	0	1	809
	Plans to use	0.02	0.13	0	1	809
Pesticide	*Currently uses*	0.13	0.33	0	1	809
	Plans to use	0.15	0.36	0	1	809
Herbicide	*Currently uses*	0.00	0.04	0	1	809
	Plans to use	0.00	0.06	0	1	809
Treadle Irrigation Pump	*Currently uses*	0.00	0.04	0	1	809
	Plans to use	0.00	0.06	0	1	809
Mechanized Irrigation Pump	*Currently uses*	0.02	0.13	0	1	809
	Plans to use	0.01	0.12	0	1	809

Similarly, 97% of households report using traditional seeds, with only 11% reporting use of any improved seed varietals. Almost no households suggest they will use any kind of fertilizer, with only 2% of households reporting any use. A few households plan to use pesticides (13%), which is likely very crop dependent. Clearly there are returns to just using improved seeds (if OPVs) and potentially fertilizers as basic inputs, based on returns to proper fertilizer use found in the recent literature (e.g. Duflo, Kremer, and Robinson, 2011).

Looking at current and planned labor inputs in more detail, a similar pattern emerges (Table 8). Households use slightly fewer than three family workers on average, for approximately one third of the year. Notably those households who report using paid labor report much larger numbers of workers,

between 8-9 over much shorter periods (24 days on average) suggesting larger scale commercial farming, with an average annual expenditure of 107.44 USD.

Table 8- Labor inputs into Agriculture, by Labor Type

		Mean	Std. Dev.	Min	Max	Obs
Family Labor	*Number of workers*	2.86	2.47	1.00	60.00	780
	Number of days (per worker)	110.41	62.65	2.00	300.00	780
	Planned number of workers	2.94	1.66	1.00	20.00	768
	Planned number of days	114.91	66.28	1.00	360.00	768
Paid Labor	*Number of workers*	8.59	10.52	1.00	75.00	58
	Number of days (per worker)	24.16	43.90	1.00	240.00	58
	Input expenditure (USD)	107.44	169.81	0.10	992.37	58
	Planned number of workers	8.65	12.28	1.00	80.00	68
	Planned number of days	22.99	46.57	1.00	360.00	68
	Planned input expenditure (USD)	102.11	149.38	6.62	826.97	68
Festive / Exchange Labor	*Number of workers*	14.48	55.92	1.00	1000.00	407
	Number of days (per worker)	15.04	24.33	1.00	220.00	403
	Planned number of workers	11.66	12.24	1.00	130.00	454
	Planned number of days	18.77	28.90	1.00	250.00	452

The low adoption rates presented in Table 7 are reflected in the statistics for the quantities of inputs applied. Table 9 presents average amounts used and expenditures for the previous year, as well as planned usage for the coming 12 months, considering quantities and expenditures.

Table 9- Use of Non-labor inputs

		Mean	Std. Dev.	Min	Max	Obs
Traditional Seeds	*Amount used in previous year (kg)*	43.72	38.23	3.50	258.00	753
	Expenditure in previous year (USD)	10.50	11.97	0.10	87.66	124
	Planned use next year (kg)	52.85	42.55	5.00	298.50	764
	Planned expenditure next year (USD)	13.93	15.51	0.10	132.32	206
Improved Seeds	*Amount used in previous year (kg)*	44.04	268.81	0.01	2500.00	86
	Expenditure in previous year (USD)	13.64	17.75	0.13	99.24	69
	Planned use next year (kg)	17.02	26.86	0.00	156.00	139
	Planned expenditure next year (USD)	20.48	37.59	0.83	315.90	130
Pesticides	*Amount used in previous year (kg)*	2.70	8.37	0.00	80.00	95
	Expenditure in previous year (USD)	11.61	15.60	0.17	115.78	89
	Planned use next year (kg)	2.00	2.37	0.00	20.00	116
	Planned expenditure next year (USD)	12.02	15.08	1.65	138.93	111

In terms of quantities, the 10 percent of households using improved seed varietals report using similar amounts to traditional seeds on average, but with much greater variance. For both types of seeds respondents report planning to spend more on these inputs in the coming year, subsequent surveys will enable us to confirm whether these intentions were realized. Pesticide use also is subject to substantial heterogeneity, with 28 percent of respondents reporting using less than one liter in the previous year. We also collected data on use of other inputs (organic & chemical fertilizer, herbicide) but these are omitted due to the extremely small sample sizes (less than 2 percent of respondents) which preclude meaningful inference.

One of the potential channels for the intervention to operate is through the diversity and production of key crops. Table 10 presents the proportion of farmers in the sample producing the most common crop types at baseline, as well as the proportion of those producers who report sales.

Staple crops such as maize and cowpea beans account for a considerable proportion of household production in the sample. With the exception of sesame (93%) overall commercialization rates for crops such as peanuts (54%), maize (21%), and cassava (19%) are low. While this may to some extent reflect under-reporting (perhaps omission of informal farm-gate sales) it does suggest that there is significant potential for improving integration in local markets. Similarly very few farmers in the sample report growing cash crops such as cotton (3.8%), sugarcane (3.8%) and soy (0.12%). One potential spillover of the input intervention could be increased commercialization as farmers interact more with input providers who also purchase outputs. This should be explored in subsequent analysis.

Table 10- Production & Sales of Major Crops

	Proportion who produce (%)	Proportion of producers reporting sales (%)
Maize	63.16	21.14
Rice	14.34	21.55
Millet	0.37	33.33
Sorghum	18.42	4.70
Cassava	76.64	19.35
Peanuts	80.10	54.63
Sesame	35.23	92.63
Butter beans	0.25	0.00
Cowpea beans	69.59	11.90
Pigeon Peas	44.62	9.97
Lentils	25.96	67.14
Common Bean	0.25	0.00
Soy	0.12	100.00
Other Beans	7.29	0.00
Peas	3.21	23.08
Cotton	3.83	96.77

Sweet Potato	1.61	84.62
Sugarcane	3.83	64.52

The importance of crop sales, particularly peanuts and sesame, to household incomes is reflected in crop revenues (Table 11). Mean revenues from peanut sales were approximately 4490 MTn (approximately 149 USD) while for sesame the figure was 6547 MTn (approximately 217 USD) among those reporting sales. Similarly the gap between the estimated value of production and sales revenues for staple crops such as maize and sorghum is large, though care should be taken in interpreting these production values, since they are reliant on reported sales prices which may mask quality and other differences between sellers and non-sellers.

Table 11- Mean Sales Revenue & Estimated Production Value of Major Crops

	Sales Revenue		Estimated Production Value	
	MZN	USD	MZN	USD
Maize	1649.24 (2961.27)	54.56 (97.96)	2728.84 (2970.39)	90.27 (98.26)
Rice	2180 (2171.65)	72.11 (71.84)	2714.31 (2655.6)	89.79 (87.84)
Sorghum	664.29 (634.24)	21.97 (20.98)	1207.66 (995.76)	39.95 (32.94)
Cassava	2367.63 (2402.04)	78.32 (79.46)	2991.32 (2822.73)	98.95 (93.37)
Peanuts	4490.38 (26789.3)	148.54 (886.16)	7690.89 (24234.51)	254.41 (801.65)
Sesame	6547.72 (8485.13)	216.59 (280.68)	10987.56 (61376.98)	363.46 (2030.29)
Cowpea beans	1332.62 (1934.39)	44.08 (63.99)	19208.92 (206070.6)	635.41 (6816.6)
Pigeon Peas	1456.33 (1610.52)	48.17 (53.27)	1877.44 (2779.46)	62.1 (91.94)
Lentils	2686.47 (3601.29)	88.87 (119.13)	3514.36 (9556.59)	116.25 (316.12)

Notes: Sales revenues and production value are all conditional on growing the crop. If households sold the crop, the sales price is used to estimate the production value, for non-sellers the median price for the area is used.

7.3 Statistics on Cell Phone Ownership and Usage

The baseline survey asked about cell phone ownership and usage as well as mobile money ownership and usage. The questionnaire first asked whether or not the household head either owned a cell phone or could access a cell phone. 58 percent of household heads owned a phone, which is higher than found in the FTF FEEDBACK baseline survey conducted in the previous year; though the project certainly influenced this number, we would not have expected 100 percent due to sporadic availability of phones for sale during the trainings. A larger percentage of household heads (68 percent) suggested they could access phones if needed.

Table 12- Cell Phone Access

	Owns phone		Does not own, can access		Owns or can access phone	
	N	%	N	%	N	%
No	335	42.03	259	77.31	259	32.50
Yes	462	57.97	76	22.69	538	67.50
Total	797	100	335	100	797	100

Considering reasons that household heads reported they do not own a phone, the majority answered that a phone is too expensive, while 17 percent reported that they did not require or were not interested in purchasing a phone. Future qualitative work should explore this preference dimension further. Few households were concerned about the lack of electricity or the lack of a signal.

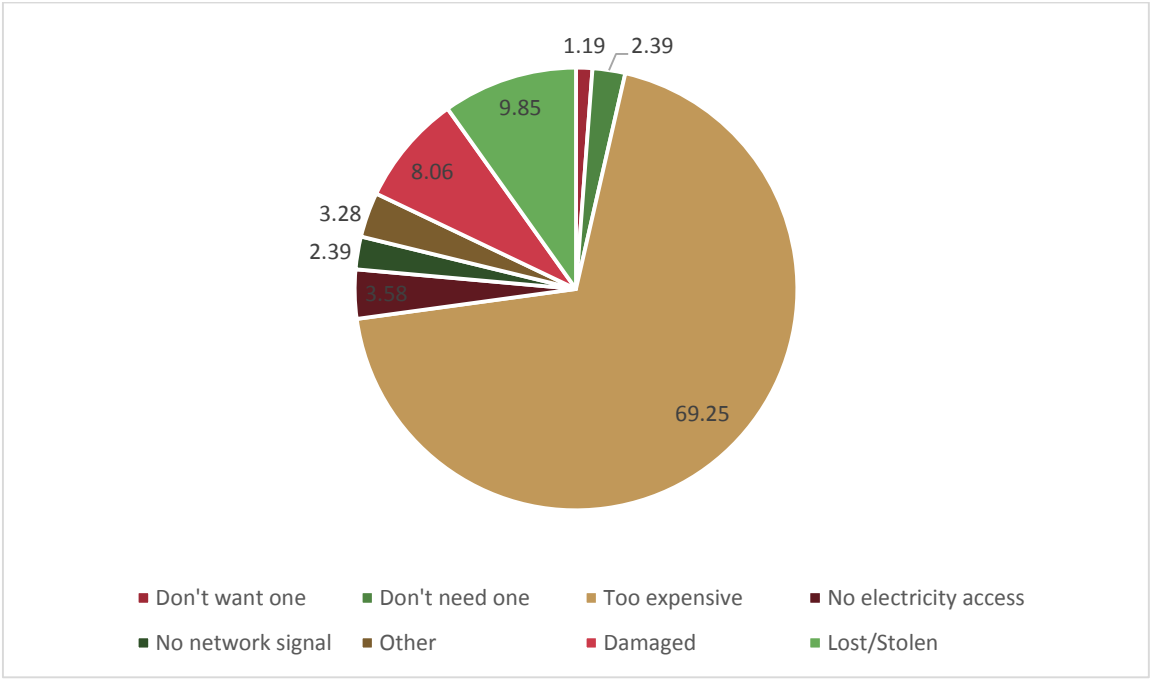


Figure 4- Reasons for not owning a cell phone, Nampula, 2014

Turning from owning cell phones to mobile money, we then asked if households have ever used mobile money, other than in the trainings (Table 12). We find relatively high usage, at 56 percent of those who own or have access to a mobile phone, equivalent to 33 percent of the overall sample. This proportion is quite positive, given that infrastructure remained weak for mobile money in most of Nampula and that agent networks are still being developed in many areas.

Table 13- Mobile Money Usage

	Own Phone		Can Access		Owns or Can Access	
	N	%	N	%	N	%
No	170	42.08	34	43.59	204	43.59
Yes	234	57.92	30	56.41	264	56.41
Total	404	100	64	100	468	100

Conditional on phone ownership, we asked about the number of SMS messages and phone calls made or received by each individual. There is wide dispersion, but heads tend to use the phone a bit more for phone calls than for SMS messages, at least on average. This finding is a bit surprising as the cost of sending SMS messages is lower than for phone calls; however the finding appears clear. That said, farmers are clearly using their phones when they have phones; as a result it would seem that there is potential to harness them for improving productivity.

Table 14- Texts, Calls in previous 7 days

	Mean	Std. Dev.	Min	Max	Obs
SMS Sent	8.84	15.20	0	210	325
SMS Received	9.10	10.02	0	60	325
Phone Calls Made	13.07	15.56	0	140	537
Phone Calls Received	13.50	16.38	0	180	537

Among farmers who did not use mobile banking, we asked why (Figure 5). We find some interesting variation, and work to add for the qualitative part of the study. Based on the training experience, the complexity of the system and the lack of proximity of agents were expected to be the primary causes. While these were identified by a number of respondents (20% and 14% respectively), more than half of respondents stated they do not use it for other reasons that were not coded in the tablet survey: we plan to ask about these reasons in qualitative work to commence soon. People do seem to trust the system, however, which is good news for increasing the customer base.

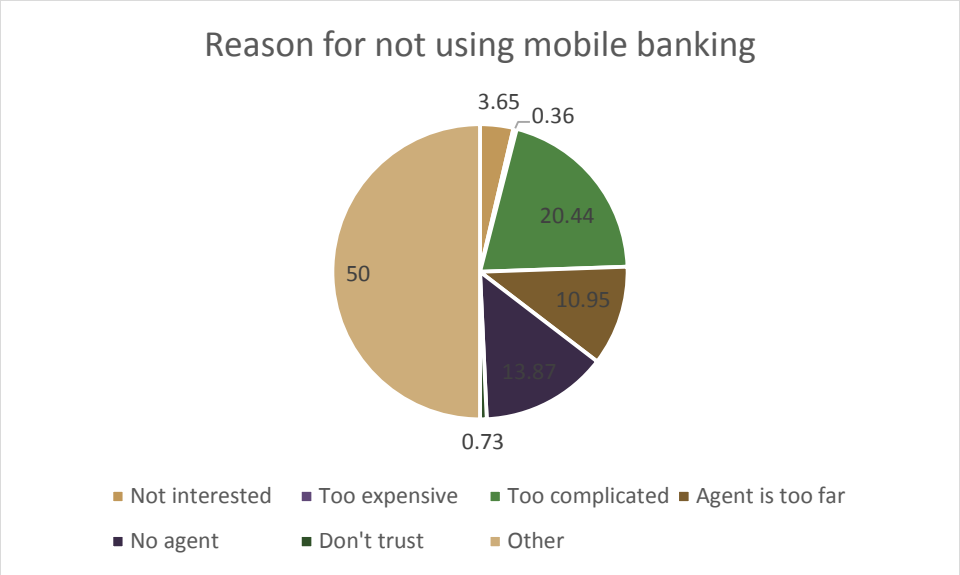


Figure 5- Reasons for not using mPesa (reported)

Finally, we measure (based on self reports) the current amount of phone credit and the mobile money balance for each individual reporting a positive balance (Table 14). Not surprisingly, we find that people do not carry much of a balance of phone credit. The average balance is only 15MTn and the maximum is only 130 MTn, or around $4.30. Some people have added to their mobile money accounts since training, however; the average balance is 123 MTn among the 136 individuals who reported positive balances.

Table 15- Current Credit, Mobile Banking Balance, Conditional on a positive balance

	Mean	SD	Min	Max	Obs.
Credit (MTn)	15.76	18.67	1	130	218
Mobile Money Balance (MTn)	123.55	373.91	1	3000	136

8 Comparison of Mean Outcome and Control Variables by Treatment Arm

Our next goal is to check for balance among both observable characteristics that we would not expect to be influenced by the project, and among primary outcomes that it was possible to measure in the baseline survey. We omit variables that will largely be generated through administrative data from IKURU or otherwise.

8.1 HOUSEHOLD CHARACTERISTICS

We initially test for balance among selected household characteristics (Table 16). Comparing these characteristics across treatment and control group, the treatment assignment is balanced in terms of household size, gender, education level, literacy, cell phone ownership and participation in non-farm activities. However, we find a significant different in the age of the household head. Members of the control group are on average 2.38 years younger than those in the bonus treatment assignment.

Table 16- Tests of balance on Household Characteristics

	Control		Treat			
	Mean	SD	Mean	SD	p-value	sig.
Household Size	4.85	2.04	5.00	2.09	0.31	
Age	38.23	12.76	40.59	13.01	0.01	***
Male	0.92	0.27	0.89	0.32	0.10	
Literacy	0.78	0.42	0.74	0.44	0.16	
Primary Education	0.89	0.31	0.89	0.31	0.94	
Secondary Education	0.18	0.38	0.16	0.36	0.50	
Speaks Portuguese	0.66	0.48	0.59	0.49	0.06	*
Owns cell phone	0.58	0.49	0.54	0.50	0.26	
Has non-farm income	0.57	0.50	0.54	0.50	0.43	

To better understand this significant difference at the mean, we plot kernel densities of the age of the household head by treatment status (Figure 6). Plotting the density allows us to observe the greater concentration of younger household heads in the control group (solid line) relative to the treatment group (dashed line). This presents a concern for inference in subsequent analysis, since if the ages of the household head are not balanced across treatment assignments, the effect of age could confound the interpretation of the treatment effect.

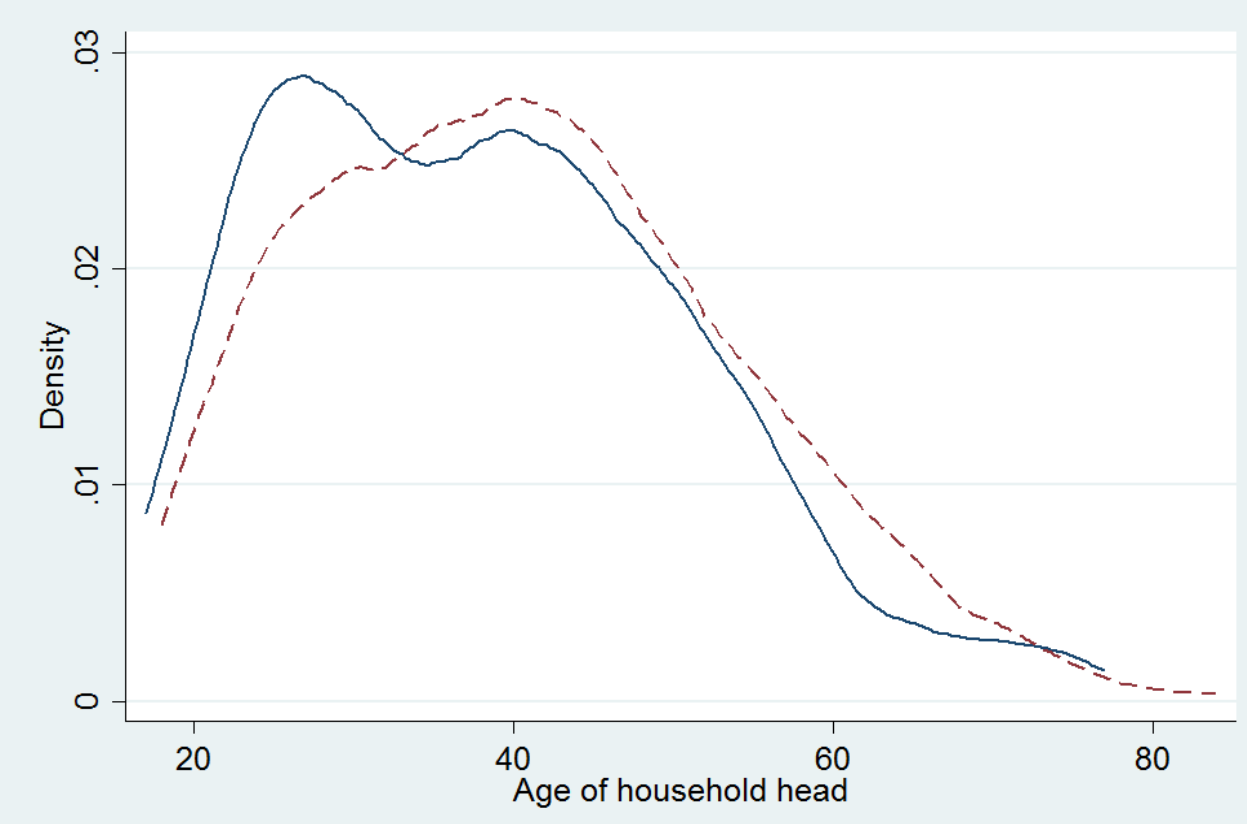


Figure 6- Distribution of Age of Household Head, by Treatment Assignment (Dotted line=input treatment group)

Given the nature of the treatment however, this concern is unlikely to be lead to misinterpretation of results. The key treatment is an incentive to use mobile money. Our prior assumption, confirmed by anecdotal observation and communications from field staff is that younger farmers are on the whole much more familiar with using cell phone technology, and as a result more likely to take up and use mobile money services. If this is indeed the case, one would expect older individuals to be less likely to use mobile money when purchasing inputs which would imply that our estimation of a treatment effect would likely be downward biased- i.e. *under*- rather than *over*-stated. While concerning, the important point is that we can both control for age in regressions explaining input purchase to test whether results are biased; and second, results will not be biased towards false positives; the small difference in the distribution of the age of the household head should not lead to mistaken identification of treatment effects where none are present. This age difference is also likely what is driving the slight difference in the proportion of heads who are fully able to communicate in Portuguese.

8.2 Input Use

We next examine whether current use of inputs is balanced between the treatment and control groups (Table 17). Whereas we find differences for the proportion of households using or planning to use family

labor, nearly all households do, so this difference is not of much concern. All other characteristics below are balanced across the treatment and control groups.

Table 17- Balance test for input usage

		Control		Treat			
		Mean	SD	Mean	SD	p-value	sig.
Family labor	*Currently uses*	0.95	0.22	0.98	0.14	0.01	**
	Plans to use	0.93	0.26	0.97	0.16	0.00	***
Paid labor	*Currently uses*	0.09	0.29	0.05	0.22	0.03	**
	Plans to use	0.11	0.31	0.06	0.23	0.01	***
Festive labor	*Currently uses*	0.52	0.50	0.49	0.50	0.35	
	Plans to use	0.57	0.50	0.55	0.50	0.53	
Traditional seeds	*Currently uses*	0.97	0.17	0.97	0.17	0.96	
	Plans to use	0.98	0.15	0.98	0.14	0.66	
Improved seeds	*Currently uses*	0.12	0.33	0.10	0.30	0.30	
	Plans to use	0.20	0.40	0.17	0.38	0.36	
Organic fertilizer	*Currently uses*	0.01	0.11	0.01	0.11	0.82	
	Plans to use	0.01	0.10	0.02	0.13	0.38	
Inorganic fertilizer	*Currently uses*	0.02	0.14	0.01	0.10	0.25	
	Plans to use	0.02	0.13	0.02	0.14	0.98	
Pesticide	*Currently uses*	0.13	0.34	0.12	0.33	0.79	
	Plans to use	0.15	0.35	0.15	0.36	0.71	
Herbicide	*Currently uses*	0.00	0.05	0.00	0.00	.	
	Plans to use	0.00	0.07	0.00	0.05	0.65	

We next conduct a balance test for the indicator variables for whether or not households produced certain crops and the amount of production, where available, in kilograms (Table 18). Across the eighteen principle crop types in the production section, we find no statistically significant differences in the varieties of crops produced or the quantity produced. Since prices used for constructing the value of output have strong correlations within associations (due to construction), there are no concerns related to components of agricultural output or the gross value of agricultural output. Consequently, we feel confident that impacts on agricultural output variables will be unbiased, even when considering unconditional means.

Table 18- Balance test for Major Crop Production

		Control		Treat			
		Mean	SD	Mean	SD	p-value	sig.
Maize	*Produces?*	0.63	0.48	0.64	0.48	0.76	
	Production (kg)	399.79	494.59	434.79	515.60	0.45	
Rice	*Produces?*	0.15	0.36	0.13	0.34	0.45	

	Production (kg)	310.77	315.68	294.39	247.59	0.76
Millet	*Produces?*	0.01	0.08	0.00	0.00	-
	Production (kg)	-	-	-	-	-
Sorghum	*Produces?*	0.18	0.38	0.19	0.40	0.47
	Production (kg)	145.68	131.52	157.34	107.58	0.59
Cassava	*Produces?*	0.79	0.41	0.74	0.44	0.12
	Production (kg)	542.65	500.37	537.71	413.49	0.90
Peanuts	*Produces?*	0.81	0.39	0.79	0.41	0.34
	Production (kg)	690.90	1856.21	557.46	819.93	0.26
Sesame	*Produces?*	0.37	0.48	0.33	0.47	0.18
	Production (kg)	188.04	203.47	391.59	2077.46	0.22
Butter beans	*Produces?*	0.00	0.07	0.00	0.00	-
	Production (kg)	-	-	-	-	-
Cowpea beans	*Produces?*	0.68	0.47	0.71	0.45	0.44
	Production (kg)	141.96	128.84	170.03	232.68	0.11
Pigeon Peas	*Produces?*	0.47	0.50	0.42	0.49	0.11
	Production (kg)	140.69	136.55	179.20	306.99	0.14
Lentils	*Produces?*	0.24	0.43	0.28	0.45	0.28
	Production (kg)	181.45	225.04	152.13	141.18	0.29
Common bean	*Produces?*	0.00	0.05	0.00	0.05	0.92
	Production (kg)	-	-	-	-	-
Soy	*Produces?*	0.00	0.05	0.00	0.00	-
	Production (kg)	-	-	-	-	-
Other beans	*Produces?*	0.08	0.27	0.07	0.25	0.71
	Production (kg)	82.05	36.41	86.15	69.95	0.81
Peas	*Produces?*	0.03	0.16	0.04	0.19	0.44
	Production (kg)	70.94	58.46	132.78	83.41	0.10
Cotton	*Produces?*	0.04	0.19	0.04	0.19	0.89
	Production (kg)	961.65	1657.04	803.57	921.80	0.75
Sweet potato	*Produces?*	0.02	0.13	0.02	0.13	0.99
	Production (kg)	-	-	-	-	-
Sugarcane	*Produces?*	0.04	0.20	0.03	0.18	0.38
	Production (kg)	670.14	910.23	307.27	170.71	0.20

Finally, we consider both annualized food expenditures and total household expenditures (Table 19). We find that per capita total expenditures are slightly imbalanced, with the treatment group having lower average expenditures, and hence a slightly higher proportion of households below the poverty line. Total expenditures are balanced, suggesting that the effect is being driven by the slightly larger average household size in the treatment group. As a result it will be sensible to control for differences in baseline expenditures between groups in measuring impact estimates to ensure we capture differences in baseline household well-being, which could affect the impact estimates, in some specifications.

Nonetheless, since the statistical significance is weak, we suspect that it will not cause problems with impact estimates.

Table 19- Balance Tests for Household Expenditures (in MTn)

		Control		Treat			
		Mean	SD	Mean	SD	p-value	sig.
Food Expenditures	*Household*	492.31	517.42	454.33	533.19	0.30	
	per capita	119.68	159.26	104.68	140.62	0.16	
Total Expenditures	*Household*	1004.40	1020.42	903.93	1003.28	0.16	
	per capita	238.58	289.09	200.96	225.01	0.04	**
Poverty line		0.68	0.47	0.74	0.44	0.08	*

In sum, we find a few statistically significant differences between the treatment and control groups, at least in terms of averages. The age of the household head and total expenditures are slightly imbalanced, but we find little of concern in terms of variables that relate to agricultural inputs and outputs. Consequently, we feel confident that the randomization was "successful" in that it will lead to unbiased estimates of the treatment effect; in this case offering the opportunity to purchase inputs using mPesa.

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MOZAMBIQUE: INPUTS & MOBILE MONEY PROJECT

ENUMERATOR MANUAL: BASELINE SURVEY

Introduction

The Mozambique Cell Phone Savings Project is a joint research project conducted by the United States Agency for International Development (USAID) and the International Food Policy Research Institute (IFPRI).

In many rural areas in Mozambique utilization rates of agricultural inputs are low. Often households do not purchase seeds, invest in fertilizer or make other basic investments to improve the production of their farmland. Two possible reasons for this are a difficulty of accessing markets for these inputs, and the lack of financial services to enable households to pay for them.

The objective of the survey is to collect baseline data on agricultural households in the area, to provide information on the extent of input use and the ability of farmers to access markets for these inputs. It will also collect information on the use of mobile money services.

The survey includes detailed questions in areas including: the composition and demographics of the household; the employment and earnings of household members; agricultural land owned or worked by household members; crop production and livestock management; access to financial services; access to cell phones and participation in recent input marketing and mobile banking trainings. The complete list of survey modules is as follows:

(A) Household Identification
Location of the household, Farm group membership, Identity of primary respondent

(B) Composition of the Household
Demographics of the household; members' education levels; cell phone ownership

(D) Employment and Other Activities
Employment outside of family farm; income from non-farm employment

(E) Agricultural Production: Land
Size of plots owned; irrigation practices; key crops

(F) I. Agricultural Production: Cereals, Legumes & Other Crops
II. Agricultural Production: Fruits & Tree Crops
Total production by crop; income from crop sales; individual sale information

(G) I. Current Input Use
II. Planned Input Use
Use of inputs in current season; planned future input use

(H) Livestock
Ownership of livestock; income from livestock sales

(I) Assets
Domestic and agricultural goods owned by the household

(J) Household Expenditures
Food and non-food expenditures over past 7 days, 1 month, 1 year

(K) Community Groups
Membership of community groups

(L) Financial Access
Access to credit; financial literacy

(M) Transfers
Money received from relatives within Mozambique

(N) Mobile Money & Cell Phone Use
Access to cell phones; use of mobile money services

(O) Participation in Trainings
Identification of members who attended marketing/mobile banking trainings

Confidentiality

All data collected by you for the survey will be completely confidential. This data should not be discussed with anyone other than your field supervisor. You should not share information from the survey -- including the names of respondents (the individuals who are interviewed) – with anyone. Completed or partially completed surveys should be kept on your person and not shown to anyone other than the field supervisor for any reason.

To ensure confidentiality, enumerators are not allowed to interview anyone they know. If you are assigned a household where you know someone, you should inform your field supervisor. The field supervisor will re-assign that household to another enumerator, and you will be assigned a different household.

The data collected from the farm groups will be consolidated into aggregates for the creation of reports. Data collected with individual or household identifiers will only be used by approved individuals. All identifying information will be removed and anonymized following IRB procedures prior to any publication or dissemination of data outside of the research team.

Role of the Enumerator

The enumerator plays a key role in ensuring the success of the data collection. The enumerator should follow the procedures described in this manual closely and conduct themselves in a professional manner at all times to ensure that the data collected is of good quality and that survey respondents are treated appropriately and with respect.

The enumerator's responsibilities include:

- Locating the assigned households and completing Module A, *Household Identification Cover Sheet*, for each household
- Explaining the survey to the household, answering questions and obtaining informed consent to participate in the data collection
- Identifying all members of the household who are eligible to be interviewed
- Interviewing all eligible members, including returning to the household if eligible members were absent on the first visit
- Entering the respondent's answers to questions are recorded accurately and legibly on the survey form
- Submitting the interview data to the field supervisor and discussing issues with the field supervisor

- Tracking and reporting progress in completing assignments.

Detailed instructions on how to complete these tasks are provided in this manual.

Conducting the Interview

General guidance

The enumerator is a direct representative of the project to the households assigned to them. It is important for the enumerator to make a favorable impression on household members. Enumerators should follow these basic guidelines:

- Dress appropriately for field work
- Address all members of the household and community in the appropriate manner, with politeness and respect
- Visit households during appropriate hours during the day. If the enumerator needs to re-visit a household (for example to interview an eligible member who was not initially present) the day and time of the second visit should be discussed in advance with the household
- Treat all information collected during the interview as strictly confidential. Do not discuss survey responses with anyone outside the household except the field supervisor, and do not share completed or partially completed interview documents with anyone other than the field supervisor.

Approaching the Household

As a potential stranger to the household, it is important to observe all the appropriate local customs which govern how to approach other people's houses.

- Knock or approach the house in an appropriate manner
- Ask to speak with the head of household

DEFINITION: The Head of Household is the person whom household members identify as the head or primary decision maker in the household

- Introduce yourself politely. Clearly explain that you are there to conduct a survey of the household and that you have permission from the appropriate national and local authorities to do so
- Always ask permission before entering a house
- Be patient. Household residents may be suspicious of the interview. Clearly explain who you are, the purpose of the survey, that all information is completely confidential, and that their

participation is optional and they may choose to end the survey at any time.

- Be friendly. Respondents who are at ease are more likely to participate in the survey process, and to provide more accurate information than if they are uncomfortable
- Read the Informed Consent statement. Ensure that respondents understand it fully, and answer any questions they may have. It is the right of the respondent to refuse to participate in whole or in part. Obtain appropriate signatures before proceeding with any part of the survey questionnaire. Do not attempt to cajole an individual who has refused consent.
- If asked, explain that households cannot be compensated from their time. Instead, express gratitude at their willingness to participate and provide information that will help decision-makers better understand the situation in their area.

Neutrality

Most respondents are polite and will tend to give answers they think the enumerator wants to hear. It is therefore very important that the enumerator remains absolutely neutral as he/she asks questions. The enumerator should not, either by facial expression or by tone of voice, allow the respondent to think he has given the right or wrong answers to the questions.

Pace of the interview

The enumerator should ask questions slowly and give the respondent time to think to ensure that he/she understands what is being asked. If the respondent is not allowed to think and formulate his/her opinion the response may be “don’t know” or he/she may give an inaccurate answer. If the respondent seems to be responding slowly there is no need to hurry or to discontinue the interview.

Confidentiality

Do not interview people in a group. The interview should only be conducted with appropriate household members. Friends, neighbors, or other non-household members should not be present during the household interview.

Translation

The survey questionnaire provided is in Portuguese. If all the respondents speak fluent Portuguese, read the questions directly in Portuguese. Explain the text and answer the respondent’s questions to ensure that the respondent understands what is being asked, but do not paraphrase or alter the content of the questions. If the respondents speak only Macua or another local language which you are fluent in, you can translate the questions for the respondent, but ensure that the responses on the survey form are recorded in Portuguese. If there are issues resulting from translating to or from a local language, make a note in Portuguese on the survey form, and discuss the issue with the field supervisor following the interview.

Interview Instructions

The survey form should be completed in sequence, by completing each row of questions from left to right, before proceeding down to the next row. Do not complete the form vertically. Sections should only be skipped if the relevant member of the household is not available to complete them at that time.

The survey form includes enumerator instructions. These are in **bold** and *italicized*. Do not read these instructions to the respondent. In many cases you will skip certain questions based on the response given. These are indicated by the symbol "**>>"** followed by an instruction telling you which question to skip to.

The sample survey form below provides a simple example of how to follow skip instructions

Example section with skips

ID Code	Does the respondent have a cell phone? Yes …….1 No ……..0 **>> EX03**	What is their cell phone number? **>> Next Row**	Why don't they own a cell phone? Too expensive……1 Not interested……2 Don't know……98
	EX01	**EX02**	**EX03**
101	0		2
102	1	12345678	
103	0		98

- *If the individual responds "No" to question EX01, we skip to EX03*
- *If the individual responds "Yes" to question EX01, we complete EX02, then skip to the next row (i.e. to the next individual)*

Unanswered questions which are not asked (i.e. skipped questions)

Questions that are not asked because of a skip pattern, or because the respondent does not meet certain question's response criteria (i.e. children) should be left blank.

Unanswered questions which are asked

There may be cases in which a respondent will not answer a question, either because they refuse to answer or because they do not know the answer. In such cases the following codes should be used:

Refuse to answer……NR

Do not know……..DK

However, these codes should be used very rarely. Supervisors will warn interviewers if they feel that the interviewer is unnecessarily or too frequently using these codes, as excessive use may indicate a lack of effort on the interviewer's part to collect the required information from the respondents. Be cautious, and only use these codes when absolutely necessary.

Issues

Conducting surveys in the field is different from research conducted in a controlled setting. You may encounter unexpected issues which you are not prepared for. If you encounter such a situation, or believe that there may be circumstances which may affect the quality or accuracy of the data collected make a written not on the survey form of the issue and discuss it with your field supervisor following the completion of the interview.

The Survey Form

Informed Consent

It is crucial that participants in the survey consent to participate freely and with an informed understanding of what the interview process will involve, how the information will be handled, and how their personal privacy will be maintained. You must complete the Informed Consent form prior to beginning the interview or asking any questions. If a main respondent is not available at the beginning of the interview (for example, if the main female decision-maker is engaged in child care) when they are available you must obtain their informed consent before soliciting any responses from them.

After introducing yourself, read the informed consent statement. Make sure that the participants understand it, using clear language to explain any terms that they may be unfamiliar with. Solicit questions, and make sure you provide full answers before proceeding. Once you have addressed all questions, obtain the signatures of the main male and female respondents (if both applicable). The main respondents should be at least 18 years of age, and be the primary decision-makers in the household.

Module A: Household Identification

A01- Province

Enter the Province in which the survey is taking place. For the baseline survey, all interviews should be carried out in Nampula.

Answer Codes

1. *Nampula*

A02- Forum

Select the marketing forum to which the household belongs.

Answer Codes

1. *Meconta (North)*
2. *Monapo (North)*
3. *Angoche (South)*
4. *Mogovolas (South)*

A03a- Association

Select the farmers' group association to which the household belongs. The list of groups for the region will be preloaded into the survey device.

A03b- Name of Association Leader

Select the name of the individual who is the leader of the farmers' group association. The list of leaders' names will be preloaded into the survey device.

A04- Name of head of household

Enter the first and last name of the household head.

DEFINITION: The Head of Household is the person whom household members identify as the head or primary decision maker in the household

A05- Cell phone number of head of household

Record the primary and secondary (if applicable) cell phone numbers of the household head. These should be 9-characters in length, beginning with the digit '8'

A06- GPS Location

Using the GPS capture function of the tablet, record the GPS position of the household. This should be done outside of the dwelling in a clear area away from any trees or other overhead obstructions. The accuracy level of the GPS should be 20m or better.

A07- Has the household been interviewed previously?

If the household has been previously interviewed (i.e. because multiple household members were part of the training list) record it here.

Answer Codes

1. *Yes*
0. *No*

A08- Enumerator Code

Enter your unique enumerator code to confirm your identity as enumerator. This code will be assigned to you in the course of the training.

A09- Date of first visit

Record the date of the initial interview

A10- Was there a second visit?

If a follow up or 'callback' visit was carried out (ie. because the initial interview was interrupted or paused) record it here. If not, select 'No' and proceed to A13.

Answer Codes

1. *Yes*
0. *No*

A11- Date of second visit

If the answer to A10 was 'Yes', record the date on which the second visit occurred.

A12- Reason for second visit

Record the reason why a second visit was carried out.

Answer Codes

1. *Member left*
2. *Meal time*
3. *End of day*
4. *Other, specify: _____*

A13- Final outcome of interview

Upon completing the interview, record the final status of the data.

Answer Codes

1. *Complete*
2. *Incomplete*
3. *Absent*
4. *Refused*
5. *Could not locate*

A14- Supervisor Code

Following completion of the interview and recording of the outcome in A13, ask your supervisor to enter their personal code to verify the status of the interview.

Module B: Composition of the Household (Individual Level)

B00- How many people live in the household?

Record the total number of members of the household

DEFINITION: A member of the household is a person who has been present in the household for at least six months (or who was born into the household) who "eats from the same pot" as the other household members. This can include non-family members, such as lodgers, domestic workers or agricultural laborers.

Complete one row for questions B03-B19 for each person. For example, if the respondent answered "8" household members to question B00, you should complete information for rows 101-108, one for each household member

B01- What is the main language spoken in the household?

Select the language that is most frequently spoken in the household. This does not need to be common to all members, instead use the language spoken most often. Complete the question using the answer code. If "Other, specify" is selected, write the name of the language in the space provided

Answer Codes

1. *Portuguese*
2. *Macua*
3. *Other, specify _____*

B02- What is the name of the household member?

Answer questions B02-B18 in sequence for each member, starting with the main respondent. The ID Codes in the left hand column of the table should be used to identify individuals throughout the rest of the survey

Write down the first given name and first surname of the household member

B03- What is the sex of [NAME]?

Refer to the person using the NAME entered for question B02. Complete the question using the answer code

Answer Codes

1. *Male*
2. *Female*

B04- What is the relationship of [NAME] to the main respondent?

Complete using the answer codes below.

Answer codes

1. *Main respondent*
2. *Spouse*
3. *Son / daughter*
4. *Son-in-law / daughter-in-law*
5. *Grandson / granddaughter*
6. *Father / mother*
7. *Brother / sister*
8. *Nephew / niece*
9. *Cousin*
10. *Brother-in-law / sister-in-law*
11. *Father-in-law / mother-in-law*
12. *Other relative*
13. *Domestic employee*
14. *Worker*
15. *Other relationship*

B05a- What is the age of [NAME] in years?

Enter the age of the individual in years. Write the response as a number, ie. “23” NOT “twenty-three”. For children born in the last 12 months, the age should be recorded as 0. If the respondent does not know their age, use the code “999”.

B05b- Age in months

Record the age in months for children who are less than 5 years old. Answers should be in the range 0-60. For older members, skip this question

B05c- What is [NAME]’s date of birth?

Complete this for all members of the household. Record the date of birth in the form DD MM YYYY, so October 30th 1984 should be recorded as “30 10 1984”. If the respondent does not know their date of birth, it should be recorded as “99 99 9999”

B06- ID Type

Ask if the individual has a Bilhete de Identifidade. If they do, record this as the document type, if not specify another.

Answer Codes

1. *BIlhete de Identifidade (BI)*
2. *BI Pending Receipt*
3. *Cartao de eleitor*
4. *Cedulla*

B07- ID Number

Record the ID Number of the document selected in B06.

B08- Can [NAME] read or write?

The definition of being able to read or write refers to a basic level of literacy, specifically a simple sentence. If the respondent is only able to sign their name, but cannot read a simple sentence select option 2 “Can only sign name”.

Answer Codes

1. *Cannot read or write*
2. *Can only sign name*
3. *Can read only*
4. *Can read and write*

Note: Ask questions B09-B20 only if the respondent is 5+ years old. For 0-4 year olds, skip to the next person

B09- [NAME] is going to school at the moment?

Write the "yes" code if the person is currently attending in any type of education program. This includes public or private primary, secondary school or university, technical/vocational training, adult literacy classes or education programs/schools organized by religious groups or NGOs. If the person is not attending any of these institutions currently, enter the code for "No"

Answer Codes

1. *Yes*
0. *No*

B10- What is the highest level of education that [NAME] has completed?

Select the highest level of education that the person has completed.

Answer Codes

0. *No schooling*
1. *Primary: Level 1-5*
2. *Primary: Level 6-7*
3. *Secondary: Level 8-10*
4. *Secondary: Level 11-12*
5. *University or higher*
6. *Technical studies or vocational track*
7. *Adult literacy*
8. *Religious education*
9. *Don't know/No answer/Not applicable*

Note: Make sure that the names and ID codes used on this page are exactly the same as those on the previous page. For children under 5 years old LEAVE A BLANK ROW ON THIS PAGE- DO NOT CHANGE THE ROW/ID CODE used for each member

ID CODE	What is the name of the household member?		Age
B01	**B02a**	**B02b**	**B05a**
101	John	Smith	32
102	Jane	Smith	28
103	Baby	Smith	3
104	Jack	Smith	67

ID CODE	What is the name of the household member?	Can [NAME] speak Portuguese?	Is [NAME] a member of a farmer's organization?

			Yes……..1 A little bit……2 No……3	**"Yes" – A02 Code** **"No" – 888**
B01	**B02a**	**B02b**	**B11**	**B12**
101	John Smith		1	103
102	Jane Smith		0	102
103				
104	Jack Smith		1	888

B02- What is the name of the household member?

Complete B02 using the same names used on the previous page.

Note: Make sure that the names and ID codes used on this page are exactly the same as those on the previous page.

B11- Can [NAME] speak Portuguese?

Respond "Yes" to this question if the individual is able to carry out a normal conversation in Portuguese. Select "A little bit" if the respondent is able to use some basic words and phrases in Portuguese. Select "No" if the respondent does not speak any Portuguese.

Answer Codes

6. *Yes*
7. *A little bit*
8. *No*

B12- Is [NAME] a member of a farmer's organization?

If the respondent is a member, complete using the preloaded codes. The answer for the main respondent should be the same as the answer provided in A02. If the respondent is not a member of a farmer's association, record code "888".

B13- Does [NAME] have a cell phone number?

Answer "Yes" to this question if the individual has a cell phone number. If the person has their own SIM card, but shares the phone also answer "Yes". Only answer "No" if the person has no cell phone number. If the person answers "No", return to the previous page and complete the row for the next member of the household.

Answer Codes

1. *Yes*
0. *No*

B14- Does [NAME] have a working cell phone?

Answer “Yes” to this question if the individual owns a working cell phone handset.

Answer Codes

1. *Yes*
0. *No*

B15- How many SIM cards does [NAME] own?

In rural households respondents will frequently own multiple SIM cards to be able to use different networks on a single SIM phone. Ask the respondent how many active SIM cards they own (ie. how many useable cards).

B16- Does [NAME] have a Vodacom cell phone number?

If the respondent has a cell phone number with Vodacom (ie. an active Vodacom SIM card) record “Yes” here. If not, record “No” and proceed to question B19.

B17- What is the number of this Vodacom SIM card?

The number should begin “84” followed by seven digits. If the respondent has more than one functioning Vodacom SIM card, record the number of the one they use most frequently.

B18- How frequently does [NAME] use this number?

Ask the respondent how frequently they use the number referred to in B16

Answer Codes

1. *Always*
2. *Sometimes*
3. *Never*

B19- Does [NAME] have any other cell phone number?

Record “Yes” if the respondent has any non-Vodacom active SIM cards.

Answer Codes

1. *Yes*
0. *No*

B20- What is this number?

Record the number of the SIM card referred to in B19. If the respondent owns multiple active non-Vodacom SIM cards, record the number of the card used most frequently.

Module D: Employment & Other Activities

D01- Member ID

At the beginning of this section, copy the ID codes of each member in Module B aged 10 years old or more. Copy the codes in the same sequence as they appear in Module B (ie. in ascending order)

Beginning Module D

ID CODE	What is the name of the household member?	Age
B01	**B02**	**B04a**
101	John Smith	32
102	Jane Smith	28
103	Baby Smith	3
104	Jack Smith	67

Member ID number (Only write codes for HH members more than 10 years old)	Name of member	During the past 12 months, did you have any job or work outside of your own farm? Yes…..1 No……0	How many jobs did you have?
D01	**D02**	**D03**	**D04**
101	John Smith	0	
102	Jane Smith	1	2
104	Jack Smith	0	

D02- Name of Member

Copy the name of the household member that matches to the Member ID number entered in D01. In the electronic version of the survey, this will be carried out automatically.

Note: Make sure that the member ID and the person's name are THE SAME as in Module B.

D03- During the past 12 months, did you have any job or work outside your own farm?

For each person listed in D01/D02, ask whether the person has worked in any job outside of the household's farm in the past year. This includes any activity from which the person received an income in the form of salary, wages or in kind. *If the individual responds "No" proceed to the next person*

Answer Codes

1. *Yes*
0. *No*

D04- How many jobs did you have?

Enter the number of different jobs that the individual worked in during the past 12 months

Note: Questions D05-D09 should be answered for each job that the individual had in the previous year, starting with the most important. Complete one row for each job. If the person had more than 3 jobs outside of the farm, fill out the information for the first two most important jobs, then consolidate the information for all remaining jobs into the third row.

D05- In what sector does this economic activity belong?

Ask the respondent the sector the work pertains to, then complete the form using the appropriate code. If the response does not match any of the listed categories, record it as "Other".

Answer Codes

1. *Agriculture*
2. *Handicrafts/Weaving/Spinning/Pottery*
3. *Milling*
4. *Construction*
5. *Brickmaking*
6. *Charcoal burning*
7. *Trade (selling other people's products)*
8. *Collecting and selling firewood*
9. *Other*

D06- What type of job was this?

Select the type of employment. Government employee includes any national or local government organization that paid the respondent wages or a salary

Answer Codes

1. *Self-employed*
2. *Wage employee*
3. *Government employee*
4. *Unpaid family worker*
5. *Other*

D07- Approximately how many months did [NAME] work on this job during the past 12 months?

Answer should be the number of calendar months

D08- On average, how much money did [NAME] make in cash in a month in this job during the past 12 months?

The amount should be the average amount in cash received in a typical month during the last year- not the income received in the previous 30 days.

D09- On average how much money did [NAME] make in kind in a month in the job during the past 12 months

As for D08, the amount should be the average amount received in a typical month, though in this case for payments made in kind, using goods. Examples of in kind payments could be meat, flour, cooking oil, cell-phone airtime, etc. Estimate the value of the goods received, asking the respondent to provide additional information as necessary.

Module E: Agricultural Production: Land

EName1- Which member of the household knows the most about farming?

Ask the respondent which member of the household they believe knows the most about farming and write down their name as it appears in Module B

ECode1- ID Code of member

Write the ID code of the person identified

Ename2- Which member is answering these questions?

Write the name and ID code of the person responding to the questions in this module

ECode2- ID Code of member

Write the ID code of the person identified

E01- How much land does your household control or own?

Prompt the respondent for the total area of land that is owned or controlled by the household. Note the area unit using the codes below. If the respondent specifies a unit other than m^2 or hectares, write the name of the unit under E01other.

Answer codes

1. *Hectares*
2. *m^2*
3. *Other (specify)*

E02- In the past 12 months how much land did the household cultivate?

Complete the area and area unit for the amount of land cultivated by the household in the past year. If the respondent does not know, ask them to estimate the area.

Answer codes

1. *Hectares*
2. *m^2*
3. *Other (specify)*

Note: The area entered for E02 should be less than the area entered for E01 (the area being cultivated should be less than or equal to the area owned or controlled by the household)

E03- In the past 12 months, how many plots did the household cultivate?

Enter the number of plots the household owns or controls
DEFINITION: A plot is a continuous area of land, in which a common crop management system is used for one or more crops

Note: Complete E04-E10 horizontally for each plot listed in E03, in order of importance. If the household has more than 5 plots, list the most important 4, then consolidate the information for the remaining plots into the 5th row

E04- Plot code

Order of plot importance

EName3- Which member of the household owns the plot?

Enter the name of the person who owns the plot. If the plot is owned jointly, write "Jointly", for other situations use the appropriate code

ECode3- ID Code

Enter the ID code of the person who owns the plot from Module B. If the head of household and their spouse own the plot jointly, use code "200".

Answer codes

200. Husband & Wife jointly
201. Leased from other villager
202. Leased from person outside village
300. Other

EName4- Which member of the household decides what to grow?

Enter the name of the person who decides what to grow in the plot. If the plot is owned jointly, use code "200"

ECode4- ID Code

Enter the ID code of the person who decides what to grow in the plot (using code from Module B). If the head of household and their spouse decide what to grow in the plot jointly, use code "200".

E05- What is the area of this plot?

Enter the area of the plot. If the respondent does not know the area of the plot, ask them to estimate.

Answer codes

1. *Hectares*
2. *m^2*
3. *Other (specify)*

E06- Is any part of this plot in the lowlands?

Answer codes

1. *Yes*
0. *No*

Note: If the response is "No", skip to question E08

E07- Is the entire plot in the lowlands?

Answer codes

1. *Yes*
0. *No*

E08- Is the plot irrigated?

If any form of irrigation is used on some part or all of the plot, record answer "Yes", if no irrigation is used record "No"

Answer codes

1. *Yes*
0. *No*

E09- What is the soil quality of the plot?

Ask the respondent for their opinion of the soil quality of the plot.

Answer codes

1. *Good*
2. *Medium*
3. *Poor*

E10a-d- During the past 12 months, what were the 4 crops that you produced the most of on this plot?

List the crops grown on the plot in the last year. If more than four crops were grown, list the four that the respondent considers to be most important to the income of the household. If the plot is fallow this year, use code "500": Not cultivated this year

Answer codes

Cereals, Legumes & Other crops

101. *Maize*
102. *Rice*
103. *Sorghum*
104. *Cassava*

105. Peanuts
106. Sesame
107. Butter beans
108. Cowpea beans
109. Pigeon Peas
110. Holoco beans
111. Common bean
112. Soybean
113. Other beans
114. Pigeon peas
115. Cotton
116. Vegetables (all kinds)

Fruit & Tree crops

201. Mango
202. Papaya
203. Coconuts
204. Cashew nuts
205. Avocado
206. Pineapple
207. Bananas
208. Guava
209. Orange

Other

300. Other crop type
500. Not cultivated this year

Module F1: Agricultural Production: Cereals, Legumes & Other Crops

F100- According to your experience, how was the rain this season compared to a normal year?

Ask the respondent's opinion of rainfall in the previous year

Answer codes

1. *Very little rain (drought)*
2. *Little rain*
3. *Slightly less than normal*
4. *Normal*
5. *Slightly more than normal*
6. *Much more than normal*

7. *Too much rain (flooding)*

F101- Crop code

This is a unique number used to identify each crop type. Complete one row for each crop selected in Module E.

F102- Did you produce this crop in the past 12 months?

Starting with crop 101 Maize, ask this question of each of the listed crops. If the person responds "Yes", complete F103-F117 for that crop before proceeding to the next crop. This question refers to all of the household's plots

Answer codes

1. *Yes*
0. *No*

Note: If the response is "Yes" complete F103-F116 for that crop, if the response is "No" proceed to the next row

Note: Ensure that if a cereal or legume crop was entered in any plot in E10, the respondent answers "Yes" in the appropriate row

F103- Who decided to produce this crop?

Use the ID code from Module B, or one of the additional codes listed below

Answer codes (additional)

201. *Husband & wife together*
202. *Friend / neighbor*
203. *IKURU agent*
204. *Other extension worker*
205. *Other*

F104, F104u- How much of this crop did you produce?

Enter the quantity produced, as well as the unit, using the answer codes below.

Answer codes

1. *Kilogram*
2. *Gram*
3. *Unit*
4. *Pile*
5. *Liter*
6. *Milliliter*

11. *Sack (100 kg)*

12. *Sack (90 kg)*
13. *Sack (70 kg)*
14. *Sack (60 kg)*
15. *Sack (50 kg)*
16. *Sack (25 kg)*
17. *Sack (12.5 kg)*

21. *Can (25 L)*
22. *Can (20 L)*
23. *Can (10 L)*
24. *Can (5 L)*
25. *Can (1 L)*

31. *Cup (300 ml)*
32. *Bag (30 ml)*

50. *Other*

F104s- Crop state

For applicable crops, specify the state of the crop referred to by the previous measurement.

Answer codes

1. *Fresh*
2. *On the cob*
3. *Grain*
4. *With shells*
5. *Without shells*
6. *Dried, with shells*
7. *Dried, without shells*

F105- When did you begin harvesting the crop?

Ask the respondent to estimate the date on which they began harvesting the crop (day and month)

F106- When did/will you finish the harvest?

Ask the respondent to estimate the date on which they completed (or will complete) harvesting the crop

F107- Did you sell any of this crop?

This includes any form of sale for payment including, but not limited to: farm gate sales; sales to neighbours/local middlemen; to input sellers, middlemen or crop processors, as well as to large firms, supermarkets or exporters.

Answer codes

1. *Yes*
0. *No*

Note: If the answer to F107 is "Yes", complete questions F108-F116, if the answer is "No" proceed to the next row

F108- Which family member controls the money from selling this crop?

Record the ID number of the family member who controls the money from the sale of this crop. If the husband and wife control it jointly use code "200"

Complete questions F110-F116 for sales of the crop in fresh condition (ie. not dried, shelled). If any sales were made of the crop in another condition, repeat questions F110-F116 for that condition, specifying the state of the crop in F109

F109- Specify the state of the crop

If the crop was sold in a state other than fresh, specify the state here.

Answer codes

1. *Dried*
2. *With shell/husk*
3. *Shelled/husked*

F110- How much of the crop did you sell?

Complete the total quantity sold in the previous year (all sales). Ensure that this amount is not greater than the total amount of the crop that the household produced.

Answer codes

1. *Kilogram*
2. *Gram*
3. *Unit*
4. *Pile*
5. *Liter*
6. *Milliliter*

11. *Sack (100 kg)*
12. *Sack (90 kg)*
13. *Sack (70 kg)*
14. *Sack (60 kg)*
15. *Sack (50 kg)*
16. *Sack (25 kg)*
17. *Sack (12.5 kg)*

21. *Can (25 L)*
22. *Can (20 L)*
23. *Can (10 L)*
24. *Can (5 L)*
25. *Can (1 L)*

31. *Cup (300 ml)*
32. *Bag (30 ml)*

50. *Other*

F111- Who did you sell the crop to?

Specify the purchaser of the crop. If there was more than one purchaser, select the most important in terms of value of the sale

Answer Codes

1. *Neighbor*
2. *Family member*
3. *Shop*
4. *Itinerant vendor*
5. *Association / Cooperative*
6. *Market vendor*
7. *Company / Wholesaler / Vendor outside Mozambique*
8. *NGO*
9. *IKURU*
10. *Other*

F112- How much money did you receive for this sale?

Record the total amount of money in MTn received from all sales of the crop in this state.

F113- When did you agree on the main sale of the crop?

Specify the date on which the most important sale of the crop was agreed

F114- When did you receive payment?

Specify the date on which payment for the most important sale of the crop was received

F115- When did you provide the output?

Specify the date on which the household provided the production to the buyer.

F116- Did you sell the crop in any other state?

If the crop was sold in any state other than fresh, specify the state in F109 and complete F110-F116 with information for sales made in that state.

Answer Codes

1. *Yes*
0. *No*

Module F2: Agricultural Production: Fruits & Tree Crops

F200- In the past 12 months did you grow any tree or fruit crops?

If the response is "No", ensure that no fruit or tree crops were reported in E10 and proceed to Module G

Answer codes

1. *Yes*
0. *No*

F201- Crop Code

F202- How many trees of this [CROP] do you have?

Include all living trees owned or controlled by the household. If there is a large number, ask the respondent to estimate.

If the response is >0, answer questions F203-F214 for that crop. If the response is 0, confirm that the crop was not reported in E09 and proceed to the next row.

F203- In the past year how many times did you gather fruit from the tree?

If the respondent does not know the precise number, asked them to estimate. For example, if the respondent says, "Twice a month, throughout the year" the answer should be 2x12 = 24.

F204- How much fruit did you collect each time on average?

Record the average amount that the respondent collected each time they gathered fruit from the tree

Answer codes

1. *Kilogram*
2. *Gram*
3. *Unit*
4. *Pile*
5. *Liter*
6. *Milliliter*

11. *Sack (100 kg)*
12. *Sack (90 kg)*
13. *Sack (70 kg)*

14. *Sack (60 kg)*
15. *Sack (50 kg)*
16. *Sack (25 kg)*
17. *Sack (12.5 kg)*

21. *Can (25 L)*
22. *Can (20 L)*
23. *Can (10 L)*
24. *Can (5 L)*
25. *Can (1 L)*

31. *Cup (300 ml)*
32. *Bag (30 ml)*

50. *Other*

F205- Did you sell any of the [CROP] during the past 12 months?

This includes any form of sale for payment including, but not limited to: farm gate sales; sales to neighbors/local middlemen; to input sellers, middlemen or crop processors, as well as to large firms, supermarkets or exporters.

If the response is "Yes", complete F207-F214 for that crop. If the response is "No" proceed to the next crop.

Answer codes

1. *Yes*
0. *No*

F206- Which family member controls the money from selling this crop?

Record the ID code from Module B. If the husband & wife control the money jointly, use code "200".

F207- How much of [CROP] did you sell?

Complete the total quantity sold in the previous year from all the household's plots. Ensure that this amount is not greater than the total amount of the crop that the household produced.

Answer codes

1. *Kilogram*
2. *Gram*
3. *Unit*
4. *Pile*
5. *Liter*

6. *Milliliter*

11. *Sack (100 kg)*
12. *Sack (90 kg)*
13. *Sack (70 kg)*
14. *Sack (60 kg)*
15. *Sack (50 kg)*
16. *Sack (25 kg)*
17. *Sack (12.5 kg)*

21. *Can (25 L)*
22. *Can (20 L)*
23. *Can (10 L)*
24. *Can (5 L)*
25. *Can (1 L)*

31. *Cup (300 ml)*
32. *Bag (30 ml)*

50. *Other*

F208- Who did you sell to?

Select the appropriate category for the buyer of the crop. If the household sold to more than one of these categories, select the most important in terms of value of total sales to that buyer.

Answer Codes

1. *Neighbor*
2. *Family member*
3. *Shop*
4. *Itinerant vendor*
5. *Association / Cooperative*
6. *Market vendor*
7. *Company / Wholesaler / Vendor outside Mozambique*
8. *NGO*
9. *IKURU*
10. *Other*

F209- How much money did you receive from the sale of this crop?

Record the total amount received for all sales of the crop in the past 12 months from all buyers.

F210- When did you agree on the main sale?

Ask the respondent to estimate the date of the most important sale of the crop.

F211- Did you receive payment at the same time?

If the respondent was paid at the same time as they agreed the sale, proceed to F213. Otherwise, provide the date payment was received to F212.

Answer codes

1. Yes

0. No

F212- When did you receive payment?

If the respondent answered "No" to F211 record the date payment was received.

F213- Did you provide the output at the same time?

If the output was provided at the same time as the transaction was agreed, select "Yes" and proceed to the next crop. If the output was delivered at an earlier or later date, complete F214.

Answer codes

1. Yes

0. No

F214- When did you provide the output?

Enter the date when the output was provided.

Module G1: Agricultural Inputs (Current Use)

Module G is divided into two sections. G1 asks about CURRENT input use over the PAST 12 MONTHS, G2 refers to FUTURE input use over the NEXT 12 MONTHS

G02- Did you use any [INPUT] on your farm during the past 12 months?

Ask question G02 of each input. If the household reports using that input, complete G03-G13 before proceeding to the next row. If the household does not use that input, proceed to the next input.

G03- Which parcels did you use [INPUT] on?

Record the number of each parcel that the input was used on in the previous 12 months using the parcel numbers from Module E.

G04- How much did you use?

This question should only be asked for inputs 100-108 & 111 (Other). For inputs 100-102 (types of labor) the response should be given in terms of worker days (ie. # of workers X # of days worked). For inputs 103-108, 111 use the unit codes below.

Answer codes

1. *Kilogram*
2. *Gram*
3. *Unit*
4. *Pile*
5. *Liter*
6. *Milliliter*

11. *Sack (100 kg)*
12. *Sack (90 kg)*
13. *Sack (70 kg)*
14. *Sack (60 kg)*
15. *Sack (50 kg)*
16. *Sack (25 kg)*
17. *Sack (12.5 kg)*

21. *Can (25 L)*
22. *Can (20 L)*
23. *Can (10 L)*
24. *Can (5 L)*
25. *Can (1 L)*

31. *Cup (300 ml)*
32. *Bag (30 ml)*

50. *Other*

G05- Who decided to use this input?

Enter the ID from Module B of the member of the. If the husband & wife decide together use code "201"

G06- Did you purchase this input?

Note: Do not ask this question for input 100, "Family labor"

Answer codes

1. *Yes*
0. *No*

Note: If the response to G06 is "Yes" complete G07-G13 for that input. If the response is "No" proceed to the next input

G07- How far did you have to travel to get this input?

Record the answer in minutes

G08- How many purchases did you make?

Report the total number of purchases of this input in the previous year

Note: Complete G09-G13 for each purchase mentioned in G08, in order of importance. If the household reports more than three purchases, list the three most important transactions

G09- Who did you purchase this input from?

Answer codes

1. *Neighbor*
2. *Family member*
3. *Shop*
4. *Itinerant vendor*
5. *Association / Cooperative*
6. *Market vendor*
7. *Company / Wholesaler*
8. *Vendor outside of Mozambique*
9. *NGO*
10. *IKURU*
11. *Other (specify)*

G10- How much money did you spend on this input?

Report the total amount spent for this purchase, in MTn.

G11- When did you agree on the purchase?

Ask the respondent to recall or estimate the date on which the purchase was made

G12a- Did you receive the input at the same time?

If the input was received at the same time as the purchase was agreed, select "Yes". If it was received after the agreement, select "No"

Answer codes

1. *Yes*
0. *No*

G12b- When did you receive the input?

Ask the respondent to estimate the date that they received the input

G13a- Did you deliver the payment at the same time?

If the input was paid for at the same time as the purchase was agreed, select "Yes". If it was received after the agreement, select "No"

Answer codes

1. *Yes*
0. *No*

G13b- When did you deliver the payment?

Ask the respondent to estimate the date when they provided payment for the input

Module G2: Agricultural Inputs (Future Use)

As for G1, complete G14-G17 row for each input in order. Remember, this section refers to input use for the NEXT 12 MONTHS. Once you have completed G14-G17 for all rows, complete G18 which is a hypothetical question about input preferences

G01- Input Code

G14- Are you planning to use this input in the next 12 months?

Ask the respondent if they intend to use the input on their farm in the next 12 months. If the answer is "Yes" complete G15-G17. If the answer is "No" proceed to the next input

Answer codes

1. *Yes*
0. *No*

G15- How much are you planning to use?

Specify the amount of input they intend to use. For 100-102 [LABOR] this should be specified in worker-days. For 103-107, use the production units from Module F

G16- To use this amount of [INPUT] will you need to purchase it?

If the answer is "Yes", complete G17. If the answer is "No", proceed to the next input

This question should only be asked for inputs 103-110

Answer codes

1. *Yes*
0. *No*

G17- Who will you purchase this [INPUT] from?

This question should only be asked for inputs 103-110

Specify the person or organization who will provide the input

Answer codes

1. *Neighbor*

2. *Family member*
3. *Shop*
4. *Itinerant vendor*
5. *Association / Cooperative*
6. *Market vendor*
7. *Company / Wholesaler*
8. *Vendor outside Mozambique*
9. *NGO*
10. *Other*

G18- If you were given 1,000 MTn which you could only spend on inputs, how much would you spend on each of the following inputs?

This is a hypothetical question which asks the respondent to allocate a budget of 1000 MTn across 7 categories of inputs. Complete the amount in MTn for each input, ensuring that the sum across all categories is equal to 1000

Input Categories

a. *Hired labor*
b. *Traditional seeds*
c. *Improved seeds*
d. *Fertilizer*
e. *Pesticide*
f. *Herbicide*
g. *Processing services*

Module H: Livestock

H00- Does anyone in your household own any livestock?

Answer codes

1. *Yes*
0. *No*

Note: If the respondent reports that the household does not own any livestock, proceed to Module I

H01- Livestock Code

H02- Does the household own any [ANIMAL]?

If the household owns the animal, complete questions H03-H10, if not proceed to the next row

H03- How many [ANIMAL] do you own?

Record the number of animals. If the respondent does not know exactly, ask them to estimate

H04- Which household member owns the [ANIMAL]?

Record the ID Code from Module B. If the husband and wife own the animals jointly, use code "200".

H05- How many [ANIMAL] did you sell in the last 12 months?

If the response is zero, proceed to H08

H06- How long ago was the last sale?

Provide the number of days, weeks or months since the last sale took place

Answer codes

1. *Days*
2. *Weeks*
3. *Months*

H07- How much money did you receive from ALL SALES of [ANIMAL] in the last 12 months?

Record the total amount of all sales in MTn, without deducting costs.

H08- How many [ANIMAL] did you buy in the last 12 months?

If the response is zero, proceed to the next row

H09- How long ago was the last purchase?

Provide the number of days, weeks or months since the most recent purchase of the animal

Answer codes

1. *Days*
2. *Weeks*
3. *Months*

Module I: Assets

Complete I01-I04 for each household or farm good owned by the household

I01- How many [ASSET]s in working condition do you own?

If the household owns one or more of the good in question in working condition, select "Yes" and complete I02-I04 for that asset. If the household does not own any, select "No" and proceed to the next asset.

Answer codes

1. *Yes*

0. No

I02- Did anyone in the household buy an [ASSET] in the previous 12 months?

If anyone in the household purchased it in the past year, select "Yes" and complete I03-I04. If not, select "No" and proceed to the next asset

Answer codes

1. Yes
0. No

I03- How many [ASSET] did they purchase in the past 12 months?

Specify the number of the good purchased in the past year

I04- What was the total value of all the [ASSET] purchased in the last 12 months?

Specify the total value of all goods of that type purchased by the household in the preceding 12 months

Module J: Household Expenditures

J1- Expenditure Code

J2- In the past [RECALL PERIOD] did you purchase or pay for any [ITEM]?

For the first recall period (7 days) ask the respondent in turn if anyone in the household has made any expenditure on the item in the previous 7 days. If they have, ask question J03 for that item. If they have not, proceed to the next item. Once you have completed the questions for this recall period, proceed to the next (30 days) then finally the last (12 months). Make sure that the respondent knows the time period being referenced for each item (7 days for codes 101-104; 30 days for codes 201-223; 12 months for codes 301-317).

J3- How much did you spend in total on these [ITEM]s in the last [RECALL PERIOD]?

For items which the household reported purchasing in J02, record the amount they spent. Make sure that the respondent provides the expenditure for the appropriate recall period for each item (7 days for codes 101-104; 30 days for codes 201-223; 12 months for codes 301-317).

Answer codes

1. Yes
0. No

Module K: Community Groups

K01- Does this group [GROUP] exist in your community?

For each group listed, ask the main respondent if there is such a group in the community. If they respond "Yes", complete K02-K06 for that group. If they respond "No" proceed to the next group.

Answer codes

1. *Yes*
0. *No*

K02- Are you an active member of this group?

If the main respondent is an active member of the group, complete K03-K06 for that group, if not, proceed to the next group.

Answer codes

1. *Yes*
0. *No*

K03- How long have you been a member for?

Record the year in which the respondent joined the group, ie. "2007" NOT "7 years ago".

K04- What position do you hold in the group?

Record the individual's position in the group, using the codes below

Answer codes

1. *Chair*
2. *Vice-chair*
3. *Treasurer*
4. *Secretary*
5. *Other board member*
6. *Commission member*
7. *Ordinary member*
8. *Other non-board member*

K05- How often do you attend group meetings?

Complete using the answer codes below

Answer codes

1. *Always*
2. *Very often*
3. *Sometimes*
4. *Rarely*

5. *Never*

K06- On average how many hours a month do you spend in group related activities?

Ask the respondent to estimate how many hours a month he/she spends in group-related activities.

Module L: Financial Access

L01- In the last 12 months, did anyone in the household request a loan?

Ask the respondent if anyone in the household requested a loan or attempted to borrow money in the previous 12 months. This includes both loan requests to formal institutions such as government institutions, banks or microfinance groups, as well as informal requests to local traders, money lenders or friends/family.

Answer codes

1. *Yes*
0. *No*

Note: If the response to L01 is "No", proceed to L08

L02a- What did you or any other household member request the loan for?

Specify the reason why the household requested the loan. If the household requested more than one loan in the preceding year, select the most important loan

Answer codes

1. *Purchase food*
2. *Purchase other goods*
3. *Doctor / Medicine*
4. *Special occasion (birth/wedding/funeral/etc.)*
5. *Purchase inputs*
6. *Purchase land*
7. *Other, specify*

L02b- In the last 12 months, did anyone in the household receive a loan?

Ask the respondent if anyone in the household received a loan or successfully borrowed money in the previous 12 months.

Note: If the response to L02b is "No", proceed to L11

Loan ID

If the household reports receiving loans in the past 12 months, complete L03-L08. Complete one row for each loan, in order of importance. If the family received more than five loans, complete the information for the five most important loans

L03- Credit source

Enter the code for the source of the loan

Answer codes

1. *ASCA*
2. *IKURU*
3. *Producers association*
4. *Family / friends*
5. *Bank*
6. *Output trader (person who purchases crops/livestock)*
7. *Input trader (person who sells inputs)*
8. *Microfinance organization*
9. *Other (specify)*

L04- Amount received

Record the total amount received for the loan. If the loan was disbursed in installments, sum the installments and record the total value.

L05- Amount currently due

Record the total amount currently due to pay off the loan (including interest/other charges)

L06- Loan period

Specify how long the loan was offered for (in days).

L07- Do you wish you could have received a bigger loan?

This is a hypothetical question. Ask if the respondent would have wanted a larger loan if it were available.

Answer codes

1. *Yes*
0. *No*

L08- Did you wish you could have had a longer repayment period?

This is a hypothetical question. Ask if the respondent would have wanted a longer period in which to pay off the loan if it were available (at the same cost).

Answer codes

1. *Yes*
0. *No*

Note: Questions L09-L11 are only for those who did not answer "Yes" to both L01 & L02. If the answer to these questions was "Yes" and you have completed L03-L09, skip to question L12

L08- Why did you not request credit?

This question should only be asked if the respondent responded "No" to L01. Record the response using the answer codes below

Answer codes

1. *Did not need credit*
2. *Too expensive*
3. *Could not repay*
4. *Lack of collateral*
5. *Did not want to risk collateral*
6. *Too complicated*
7. *Did not know where to request a loan*
8. *Other (specify)*

L09- Do you think you would have received the loan if you had requested it?

This question should only be asked if the respondent responded "No" to L01. This is a hypothetical question to ask if the respondent thinks they would have received a loan if they had requested one.

Answer codes

1. *Yes*
0. *No*

Note: If the answer is "Yes", proceed to L12. If the answer is "No" continue to L11

L10- Why do you think you would have been denied?

This is a hypothetical question. Ask the respondent why they think if they had made a loan request, they would have been denied

Answer codes

1. *Lack of collateral*
2. *Insufficient income*
3. *Outstanding debt*
4. *Other (specify)*

Note: After answering this question, proceed to L12

L11- Why were you denied the loan?

This question should only be asked if the response to L01 was "Yes" and the response to L02 was "No". Ask the respondent why their loan request was denied

Answer codes

1. *Lack of collateral*

2. *Insufficient income*
3. *Outstanding debt*
4. *Other (specify)*

L12- Do you have an account with a bank that you use for savings?

This includes any account which is used for the purpose of saving money (ie. it could refer to a current account, so long as the purpose of the account is to accrue savings)

L13- Are you a member of ASCA or another type of savings group?

Answer codes

1. *Yes*
0. *No*

L14- Do you have a savings box in your house?

Answer codes

1. *Yes*
0. *No*

L15- In a good month, how much are you able to save?

Specify the amount in MTn.

L16- Which of the following statements best describes your current cash savings?

Record the answer using the codes below. "Regular consumption needs" refers to the usual amount that the household requires to pay for food, clothing and other basic necessities

Answer codes

1. *More than enough*
2. *Enough for regular consumption needs and small unexpected expenditures*
3. *Just enough for regular consumption needs*
4. *Not enough for consumption needs*

L17- How much do you hope to save over the next 12 months?

Specify the amount in MTn.

L18- How much do you think you will actually save?

Specify the amount they believe they will actually save. ***Note: This L18 should be less than or equal to L17. If L18 is less than L17, answer question L19. If L17 equals L18, proceed to L20***

L19- Why do you think you will save less than you would like to?

Provide the reason the respondent thinks their actual savings will be less than they would hope to save

Answer codes

1. *Lower income than hoped / poor harvest*
2. *Increases in prices*
3. *Unexpected expenses*
4. *Spouse uses savings*
5. *Other family member uses savings*
6. *Difficult to keep track of money*
7. *Theft*
8. *Other, specify*

L20- How important is having savings to you?

Answer codes

1. *Very important*
2. *Somewhat important*
3. *A little important*
4. *Not important*

L21- What ways of saving are you able to make use of?

Select all that apply

Answer codes

1. *Keep money in household / cash-box*
2. *Local savings group / merry-go-round*
3. *Mobile money account*
4. *Microfinance organization*
5. *Bank account (Checking)*
6. *Bank account (Savings)*

Note: Questions L22A-L22D are hypothetical questions. The respondent is required to consider two options. If the respondent chooses the second option to any question, skip to question L28

L22- Would you prefer to be given?

Read the following instruction to the respondent: *"Imagine you are going to be given a gift from a trusted source. You will receive it either tomorrow or in one month. If you wait one month you will receive more. Would you prefer to be given:"*

L22A:

Answer codes

1. *1,000 MTn tomorrow*

2. *1,100 MTn in one month*

L27B:

Answer codes

1. *1,000 MTn tomorrow*
2. *1,200 MTn in one month*

L27C:

Answer codes

1. *1,000 MTn tomorrow*
2. *1,400 MTn in one month*

L22D- How much would you have to be paid to wait?

Ask this question only if the respondent choose the first option for each question in L22A-C. This question is trying to determine the minimum amount that a person would accept that they would choose to wait one month from now to receive, instead of receiving 1,000MTn tomorrow.

L23- Do you ever pay for a product or service in advance?

Ask the respondent if they ever pay money for a good or service which they will receive at a later date.

Answer codes

1. *Yes*
0. *No*

L24- Have you ever received advance payment for a product or service that you offer?

Ask the respondent if they ever receive advance payment for a good or service which they will deliver at a later date.

Answer codes

1. *Yes*
0. *No*

Module M: Transfers

M01- Do you have relatives living outside of [PROVINCE] but inside the country?

Answer codes

1. *Yes*

0. *No*

M02- How many groups of such relatives do you have?

Record the number of households of relatives living in other provinces within Mozambique

Note: Complete M03-M12 for each group of family members living in other provinces, starting with the most important. If the household knows more than five groups, list the five most important ones.

M03- What is the name of your relative?

Record the name of the main member (head of household) of this family group

M04- What is the kinship of this relative with the main respondent?

Answer codes

1. *Spouse*
2. *Son / daughter*
3. *Mother / father*
4. *Uncle / aunt*
5. *Grandparent*
6. *Brother-in-law/Sister-in-law*
7. *Cousin*
8. *Other (specify)*

M05- Where does this relative live?

Record the province using the codes below

Answer codes

1. *Maputo (Capital)*
2. *Matola*
3. *Beira*
4. *Chimoio*
5. *Quelimane*
6. *Tete*
7. *Lichinga*
8. *Pemba*
9. *Gurue*
10. *Xai-Xai*
11. *Other (specify)*

M06- Does this relative have a cell phone?

Answer codes

1. *Yes*

0. No

M07- Did you receive money from him / her in the past 12 months?

If the response is "Yes", complete questions M08-M12. If the response is "No" proceed to the next group.

Answer codes

1. Yes
0. No

M08A- How many times did you receive money from him / her in the past 12 months?

Record the number of times that the household received money from this group of relatives in the last 12 months

M08B- How much was the total amount received (in CASH) from this household?

Record the total amount of money received from this relative's household in the past 12 months.

M09- How long ago did you receive the most recent disbursement?

Specify how long ago the most recent cash transfer was sent

Time Units

1. *Days*
2. *Weeks*
3. *Months*

M10- How much was the most recent disbursement (in MTn)?

Record the amount that was sent in the most recent transfer from this group of relatives. Do not deduct transport or other costs.

M11A- How many minutes did it take you to pick up the money?

Record the amount of time it took to pick up the money in minutes

M11B- Mode of Transport

Select the mode of transport used to collect the money

Mode of Transport

1. *Walk*
2. *Bike*
3. *Motorbike*

4. *Car*
5. *Other*

M12- How much did you pay in transport costs to pick up the money?

Record the total amount paid in transport costs to travel from the household to the location where the money was received.

Module N: Mobile Money & Cell Phone Use

<u>If a member of the household participated in a cell phone banking training, this section should be completed by that member of the household if they are available. Otherwise, this section should be asked to the head of household</u>

N01- Do you own a cell phone?

<u>If the response is "No", skip to question N06</u>

<u>Answer codes</u>

1. *Yes*
0. *No*

N02- Why don't you own a cell phone?

<u>Answer codes</u>

1. *Don't want one*
2. *Don't need one*
3. *Too expensive*
4. *No electricity access*
5. *No network signal*
6. *Other*

N03- If phones were less expensive, what is the maximum you would pay for one?

<u>Ask this question only if the response to N02 was (3)- Too expensive</u>

Ask the respondent to specify the most they would be willing to pay to purchase a cell phone, if they were less expensive

N04- Do you use a cell phone?

For these individuals who do not own a cell phone, this question is designed to ask if they use anyone else's cell phone (a family member, friend, neighbor's, etc.)

<u>Answer codes</u>

1. *Yes*

0. *No*

<u>If the answer to N04 is "No", proceed to N37.</u>

N05- Whose cell phone do you use?

If the individual responded "Yes" to N04, record the ID of the family member whose cell phone the individual uses. If the person was not a member of the household, use the answer codes below.

<u>Answer codes</u>

200. Friend
201. Neighbor
300. Other, specify

N06- Have you ever heard about banking services using a cell phone?

This question should be asked to all households. Even if a person is listed as having attended the training, they may respond "No" here (if for example they forgot the purpose of the training).

<u>Answer codes</u>

1. *Yes*
0. *No*

N07- What can you do using your cell phone?

Ask the respondent about the capabilities of their cell phone. Select all that apply.

<u>Capabilities list</u>

1. *Store money / bank account*
2. *Save money / savings account*
3. *Agent withdrawals*
4. *ATM withdrawals*
5. *Buy phone credit*
6. *Send funds*
7. *Receive funds*
8. *Make purchases*

N08- Which services have you heard of?

Ask the respondent if they are familiar with either of the services. Mark all that they are familiar with

<u>Mobile banking providers</u>

1. *mPesa*
2. *mKesh*

N09- Do you use any of these services?

If the respondent is familiar with either service, ask if they use that service. Select all that apply

Mobile banking providers

1. *mPesa*
2. *mKesh*

N10- Why don't you use mPesa?

Ask this question ONLY if the individual selected mPesa in N08 but NOT in N09

Select the most important reason why the individual does not use mPesa

Answer codes

1. *Not interested*
2. *Too expensive*
3. *Too complicated*
4. *Agent is too far*
5. *No agent*
6. *Don't trust the system*
9. *Other, specify*

Questions N11-N22 should only be asked if mPesa was selected in question N09

N11- What phone number do you use for your mPesa account?

Record the phone number associated with the individual's mPesa account. The number should be 9 digits, beginning with "84"

N12- What is the current balance in your mPesa account?

Ask the respondent the current balance in their account. If they do not know, they can estimate- it is not necessary for them to check it in the system

N13- Do you know the name of your nearest mPesa agent?

Ask if the respondent can identify the name of the mPesa agent nearest to them

Answer Codes

1. *Yes*
0. *No*

N14A- How far away is the nearest mPesa agent?

Ask the respondent how many minutes it takes to reach their nearest mPesa agent

M14B- Mode of transport

Specify the mode of transport used to reach the mPesa agent

Mode of Transport

1. *Walk*
2. *Bike*
3. *Motorbike*
4. *Car*
5. *Other*

N15- When is the last time you visited an mPesa agent?

Answer Codes

1. *Today*
2. *This week*
3. *This month*
4. *Within 3 months*
5. *Within 12 months*
6. *Never*
9. *N/A*

N16- The last time you visited an agent, could you complete the transaction?

Do not ask this question if the response to N15 was "Never" or "N/A"

Ask the respondent whether they were able to carry out all of the transactions they wished to the last time that they visit an agent

Answer Codes

1. *Yes*
0. *No*

N17- Why not?

Ask this question if the response to N16 was "No", otherwise proceed to N18

Specify the reason the individual was unable to complete the transaction

Answer Codes

1. *Agent unavailable*
2. *Agent did not have money*
3. *Network problems*
4. *Did not have ID*
5. *Other, specify*

N18- How long did it take to complete the transaction?

Ask this question only if the response to N16 was "Yes", otherwise proceed to N19

Answer Codes

1. *Less than an hour*
2. *Half a day*
3. *A day*
4. *Several days*
5. *A week or more*
9. *Could not complete*

N19- Do you ever share your PIN with anyone?

Ask the respondent if they have ever told or otherwise shared the Personal Identification Number (PIN) for their mPesa account to any other person

Answer Codes

1. *Yes*
0. *No*

N20- Who else knows your PIN?

Complete if the response to N19 was "Yes"

Answer Codes

1. *Spouse / partner*
2. *Son / daughter*
3. *Other household member*
4. *Other relative*
5. *Friend / neighbor*
6. *mPesa agent*
7. *Other, specify*

N21- Does anyone else use this phone?

Answer Codes

1. *Yes*
0. *No*

N22- Who else?

Ask if the response to N21 was "Yes"

Mark all that apply

Answer Codes

1. *Spouse / partner*
2. *Son / daughter*
3. *Other household member*
4. *Other relative*
5. *Friend / neighbor*
6. *mPesa agent*
7. *Other, specify*

N23- What is your main cell phone number?

Specify the cell phone number most often used by the respondent (this does not need to be the number associated with their mPesa account, if applicable). The number should be nine digits, beginning with "8"

N24- Do you use any other networks?

Select any other networks that the respondent uses

Cell Networks

1. *Vodacom*
2. *mCel*
3. *Movitel*

N25- How often is your main cell phone switched on?

Answer codes

1. *Always*
2. *Usually*
3. *Sometimes*
4. *Rarely*
5. *Never*

N26- How often is the cell phone charged?

Answer codes

1. *Once a day*
2. *Every 1-3 days*
3. *Once a week*
4. *Once a month*
5. *Less than once a month*

N27A- How far do you have to travel to charge your cell phone?

How many minutes does the respondent have to travel to charge their cell phone (if charged at home, record "0")

N27B- Mode of transport

Mode of Transport

1. *Walk*
2. *Bike*
3. *Motorbike*
4. *Car*
5. *Other*

N28- For how long have you been using this phone?

Record the amount of time (in months) that the person has used this phone

N29- Have you ever sent a text message using this phone?

Answer codes

1. *Yes*
0. *No*

N30- What is the main language you use to send text messages?

Select the language that the respondent uses most often in texts

Answer codes

1. *Portuguese*
2. *Macua*
3. *Other, specify*

N31- How many text messages did you send/receive in the last 7 days?

Specify separately the amount that the respondent sent and received

N32- How many phone calls did you make / receive in the last 7 days?

Specify separately the amount that the respondent made and received

N33- Do you currently have credit on your cell phone?

Answer codes

1. *Yes*
0. *No*

N34- How much do you have?

Answer this question if the response to N33 was "Yes"

Specify the amount in MTn

N35- How much do you spend in an average month on credit?

Ask the respondent to estimate how much they spend in a typical month on credit for their own phone

N36- What is the quality of the signal on your main cell phone number?

Answer codes

1. *No reception*
2. *Bad (difficult to make or receive calls/messages)*
3. *OK (can sometimes make or receive calls/messages)*
4. *Good (can usually make or receive calls/messages)*
5. *Excellent (can almost always make or receive calls/messages)*

After completing N36, proceed to Module O

N37- If you have to send a text message is there any phone that you can use?

Answer codes

1. *Yes*
0. *No*

If the response is "Yes" complete N38-N39. Otherwise, proceed to Module O

N38- Who would lend this phone to you?

If the person is a member of the household, record the PID code from Module B. Otherwise, use the codes below

Answer codes

200. Friend
201. Neighbour
300. Other, specify

N39A- How far would you have to travel to get this phone?

Specify the amount of time in minutes

N39B- Mode of transport

Mode of Transport

1. *Walk*
2. *Bike*
3. *Motorbike*
4. *Car*
5. *Other*

Module O: Participation in Trainings

<u>The respondent for this module should be the same respondent as for Module N</u>

O01- Did you ever hear about a training in mobile banking in your association?

<u>Answer codes</u>

1. *Yes*
0. *No*

O02- Did you attend this training?

<u>Answer codes</u>

1. *Yes*
0. *No*

<u>If the response to this question is "No", proceed to O06</u>

O03- Were you given the opportunity to buy a cell phone at this training?

<u>Answer codes</u>

1. *Yes*
0. *No*

O04- Did you purchase a Vodacom phone?

Record whether the respondent purchased a cell phone, whether for themself or someone else.

<u>Answer codes</u>

1. *Yes*
0. *No*

O05- Who did you purchase the phone for?

<u>Answer this question if the response to O04 was "Yes", otherwise proceed to O07</u>

If the phone was purchased by the respondent for themself, or for another member of the household, use the PID code from Module B. Otherwise use the codes below.

<u>Answer codes</u>

200. *Other family member*
201. *Friend / neighbor*
300. *Other, specify*

O06- Why did you not attend the training?

<u>Answer this question only if the response to O02 was "No". Otherwise, proceed to O07</u>

<u>Answer codes</u>

1. *Not interested*
2. *Not invited / did not know*
3. *Busy with harvest*
4. *Busy with other work*
5. *Too far to travel*
6. *Too expensive to travel*
7. *Other, specify*

O07- Did any member of your association attend a training on mobile money in Nampula?

Answer codes

1. *Yes*
0. *No*

O08- What is the name of that member?

Answer this question only if the response to O07 was "Yes". Otherwise proceed to O09

Enter the member's name

O09- Did you ever hear about a training from IKURU about inputs?
Answer codes

1. *Yes*
0. *No*

O10- Did you attend any training by IKURU?

Answer codes

1. *Yes*
0. *No*

If the response is "Yes", complete O11-O13. If the response is "No" proceed to O14

O11- How many trainings by IKURU did you attend?

Specify the number of training sessions the respondent attended personally

O12- When was the most recent IKURU training that you attended?

Specify the date of the most recent training which the respondent attended

O13- What material did they talk about in the IKURU training?

Do not read the list below. Prompt the respondent to discuss the content of the training, and mark all of the responses they mention

Answer codes

1. *The importance of inputs to production*

2. *Buying seeds*
3. *The benefits of seeds*
4. *Buying fertilizer*
5. *Buying other services*
6. *The benefits of other services*
7. *How to use mPesa*
8. *Purchases using mPesa*
9. *Discounts for using mPesa*

After completing O13, complete the interview following the instructions below

O14- Why did you not attend the IKURU training?

Specify the most important reason for not attending

Answer codes

2. *Not interested*
3. *Not invited / did not know*
4. *Busy with harvest*
5. *Busy with other work*
6. *Too far to travel*
7. *Too expensive to travel*
8. *Other, specify*

Completing the Interview

Upon completion of the interview (Modules A-O) please remember to thank the respondents for giving up their time to assist with the project. Take time to answer any questions that the respondents may have about the interview process, the use of the data, or other concerns. If necessary, review the information from the informed consent document with the household. Remind them that personally identifiable information about the household will not be published or otherwise publicly disseminated.

Upon leaving, notify your field supervisor that the household has been interviewed. Inform them of the status of the interview (i.e. complete, incomplete, refused, etc.) and if any further action is required (i.e. a second interview). Also notify your supervisor if you encountered any problems during the course of the survey, or if there are areas of the questionnaire where inconsistent responses were provided. The supervisor will review the data you have collected and may follow up with you if they have any concerns, or if further action is necessary.