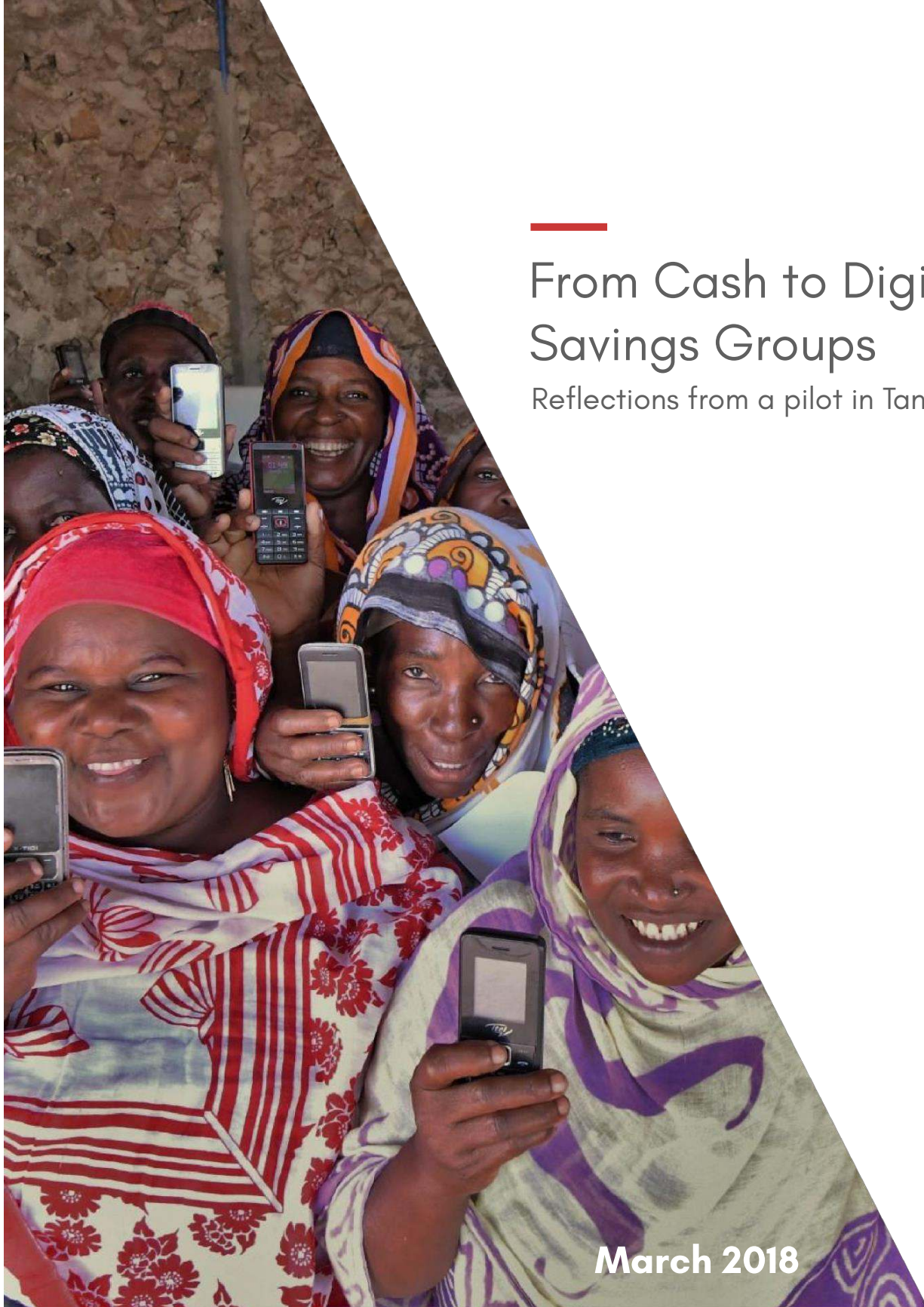


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# From Cash to Digital Savings Groups

Reflections from a pilot in Tanzania



March 2018



AGA KHAN FOUNDATION



BILL & MELINDA  
GATES foundation

## EXECUTIVE SUMMARY

Savings groups<sup>1</sup> play an important role for individuals who lack options to save large amounts of money or have limited to no options to borrow. Over and over again, Aga Khan Foundation (AKF) saw the potential of savings groups to enable members (many of them women) to purchase assets and gradually grow their businesses. However, most savings groups are cash and paper-based. Their traditional weekly meetings are long and cumbersome. The concerns that AKF heard from their group members most often were worries that holding large amounts of cash attracted a real danger of theft. Between 2012 and 2015, for example, groups reported 75 theft cases. These totaled 0.1% of total savings, and only 52% of the total amount stolen was recovered. Ultimately, these concerns drove AKF to experiment with alternatives to cash.

In 2015, AKF and Selcom, a payments aggregator – with technical support from BFA – built and tested a software platform aimed at enabling savings groups in Southern Tanzania to operate digitally. The platform allows group members to save, request loans, make loan payments to the group, and receive loans and share-outs<sup>2</sup> through mobile money. It eliminates the need for physical lock boxes to store cash, improving the safety of funds and addressing one of the biggest concerns related to traditional group operations. Moreover, digitization reduces the length of the groups' meetings, giving members precious time back. The need for paper-based bookkeeping is eliminated since all transactions are tracked on the platform. This also allows members access to real-time savings and outstanding loan balances as well as group level information. Therefore, accountability and transparency are expected to have improved. Lastly, the digitizing of savings groups was expected to reduce the need for training time, which in turn translates into opportunities to train more groups.<sup>3</sup>

Digital divides exist between and within countries.<sup>4</sup> Certain segments such as women, older or rural populations are less likely to access and use information and communications technologies. AKF and BFA hypothesized that learning with others on the same journey may result in members assisting one another to understand and

<sup>1</sup> Savings groups or rotating savings and credit associations (ROSCAs), are referred to as tandas in Latin America, susus in West Africa and the Caribbean, and chamas in Tanzania and Kenya.

<sup>2</sup> At the end of a savings cycle, members receive their savings, with interest—this is referred to as the share-out.

<sup>3</sup> The motivations for introducing the platform were to improve safety of groups' cash, reduce costs associated with training, and to introduce members to the digital financial ecosystem. While we describe the expected benefits of the digital platform with respect to safety of funds and transparency, this study did not set out to measure these benefits.

<sup>4</sup> Internet Telecommunications Union. "2016 ICT Facts and Figures." <<https://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2016.pdf>>

become more comfortable using mobile phones and mobile money and eventually lead to greater trust in mobile financial services.

The five research hypotheses were:

- **Hypothesis 1:** Cooperative learning through digital saving group (DSGs) activities creates more independent use of and greater interest in using digital financial services.
- **Hypothesis 2:** Cooperative learning through DSG activities creates greater trust in formal financial services.
- **Hypothesis 3:** Digitally transacting decreases time costs for group members.
- **Hypothesis 4:** Digital financial services will reduce pressure on savings group members to lend frequently as a means to reduce risky cash holdings at the village level.<sup>5</sup>
- **Hypothesis 5:** Digitally transacting group members maintain the same interest and commitment to the group as in cash-based groups.

It should be mentioned that in addition to digitization, a few other key changes were introduced to DSGs:

- **Instead of meeting weekly, as cash savings groups (CSGs) do, DSGs meet every other week.** This change was introduced under the assumption that DSG members would no longer need to meet to save, as they would have the option to deposit into the platform anytime.
- **Fines for missed meetings or late payments were not collected for much of the pilot.** CSGs typically collect fines to incentivize members to attend meetings regularly and on time. Collection of fines could not be integrated into the platform during cycle one, thus groups did not collect fines for much of the pilot cycle.
- **Members can contribute as much as they would like.** In DSGs, members can contribute as much as they would like to whenever they can do so. In CSGs, given the difficulty of accounting, members were restricted to deposit up to a maximum amount.
- **Social funds were not collected.** Most CSGs ask members for an additional deposit that is collected as a “social fund.” This money is typically used for emergency health grants or loans, or for group activities, such as trading. Since this additional collection could not initially be integrated into the platform, DSGs did not have a social fund during cycle one.<sup>6</sup>

<sup>5</sup> The study did not ultimately examine this hypothesis due to insufficient evidence to support the hypothesis.

<sup>6</sup> We learned that two DSGs may have instituted a “social fund” that was collected in cash.

The main research methodology comprised a randomized control trial (RCT) in which 23 groups participated. The groups were randomly assigned to either control (continue to operate as CSGs) or to treatment (DSGs) groups. The quantitative data collected from face-to-face individual interviews was supplemented with qualitative deep-dive interviews and retrospective and attitude questions for DSG members. Study participants were female savings group members in the Mtwara and Lindi Regions of Southern Tanzania. Within each group, female group members were randomly assigned to be interviewed twice: at the baseline, before the pilot started, and at the endline, after one savings cycle was completed. Thanks to the additional differences between DSGs and CSGs (listed above), the RCT should be interpreted as the net effect of being in a DSG and being subject to these other factors.

The results of the study fall into three main themes:

- Theme 1: Adoption of the DSG model by group members
- Theme 2: Effect of DSGs on the savings group operations and members' attitudes towards the group
- Theme 3: Impact of DSGs on digital knowledge and usage

It should be highlighted that the study is strictly about DSGs in their first digital savings cycle.

### Adoption of the DSG model by group members

#### *Group and community members were initially skeptical about using a new digital product*

Digitizing savings groups was initially met with concern by group members and members of the community. Although some members were excited at the outset of the digital cycle, many were apprehensive about the changes that it would bring and questioned whether money would be safe.

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*"Upon hearing of the product for the first time, I was doubtful and reluctant to engage in it. I had never heard of any such group that would use the phone to conduct their transactions." -Fazia*

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Other members felt pressure from community members that felt that the system would cheat them.

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*"They were afraid of this new product as they were booed by other people in the village that would say and shout many negative things to them." -Simon*

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### *Novelty and risk aversion initially drove some group members away*

Some group members were driven away and decided to “sit out” a savings cycle. This impact went beyond the natural turnover that is seen in all savings groups. The survey established that 35% of members did not want to join DSGs, while only 17% of members left CSGs before or during the pilot cycle.

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*“When we first heard of the digital product, most group members [...] were not sure if this would be another form of theft conducted in a more sophisticated manner. A number of members decided to drop out and observe from the side before deciding to get involved.”*

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Nearly all members who left the DSGs did so before the digitized savings cycle even started, thus it is hypothesized that it was not the actual interaction with the platform that drove them away, but rather risk aversion and prior concerns about not being able to cope with the technology.

### *DSG members who persevered gained confidence with the platform*

Learning is not easy. But with training and the help of a reference sheet, many members who stayed with the group could use the platform either on their own, or with help from other group members or agents. At the endline, 74% of DSG members stated that they were able to deposit savings without assistance.

### *The share-out was a key moment in solidifying trust in the digital platform*

At the end of a savings cycle, members receive their savings, with interest—this is referred to as the share-out. For DSGs, the first share-out represented a crucial moment to build trust in the platform and even changed attitudes towards saving with a DSG as demonstrated by qualitative interviews.

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*“[Initially] we were reluctant to buy shares, attend meetings and even discuss group issues. Even loans were minimal due to small contributions. We were afraid for the safety of our money. But after the share-out, we were all happy with the product. We have seen that our money is safe and that we can actually benefit a lot from the group if we just trust it and contribute more to it.”-DSG member*

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### *Some members who stepped aside for the first cycle want to rejoin DSGs for the second cycle*

Seeing the success of the first cycle convinced some of the members who dropped-out in cycle one to re-join DSGs in cycle two. Of members that left DSGs in cycle one, 70% said that they would consider joining a DSG again at the endline survey.

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*"I learned that there were others like me, and some were even further back from me [in terms of education], but they were still members of the group. [...] I was afraid my money would be stolen. But now, after seeing how the share-out came about for the members, I am very interested."-Hafsa, DSG member who initially dropped out*

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## **The effect of digitization on savings group operations and members' attitudes towards the group**

It was hoped that digitization would bring members several important benefits related to the safety of their funds and to time savings. While the study did not set out to measure whether funds were safer in DSGs than in CSGs, this was one of the leading motivations for AKF to experiment with DSGs. The study found that members noticed and appreciated these benefits.

### *DSGs strongly improved the perceived safety of funds*

DSG members were more likely than CSG members to consider money collected and stored in the savings group to be safe, and this finding is highly statistically significant ( $p=.013$ ).<sup>7</sup> Further, 100% of DSG members agreed or strongly agreed that money stored on the digital platform is safer than money stored in a lockbox. DSG members also cited safety as the top reason (54.2% of DSG respondents) for wanting to join a DSG for a second cycle.

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*"I trust the [DSG] a lot, since it has proven to be safer than the [CSG]. Once you buy shares in the [DSG], your money stays there, and no one has access to it."-DSG member*

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### *DSGs saved members time through reduced frequency and length of meetings, and ease of counting cash and bookkeeping*

The team hypothesized that transacting digitally would decrease the time cost for group members (Hypothesis 3). As noted above, DSGs met half as often as CSGs as members only came together once every two weeks to disburse loans. During qualitative interviews, members reported that they appreciated the time savings and flexibility to look for money allowed by less frequent meetings. The latter saved up to 30 minutes to one hour, every other week.

<sup>7</sup> The p-value helps to determine the statistical significance of results. In this report, a p-value of 0 to .05 indicates a high level of significance, while a p-value between .05 and .10 indicates a marginal level of significance. Results above .10 are considered insignificant. In this case, it would mean that there is a 2% chance that people think there is no difference in safety between funds saved on the platform versus in cash.

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*"Meeting twice a month is much better than meeting on a weekly basis. Weekly meetings don't allow us room to work and accumulate funds. For instance, I have to travel to Mtwara to buy fish for my business, and at times, I may stay there for up to 3 days. With weekly meetings, it was difficult to plan for both." - Alyia, DSG member*

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The length of the meetings that took place was also shorter for DSGs, since with digital contributions there was no need to count cash and record contributions. At the endline survey, the percentage of members who reported that their meetings were less than one hour long was highly significantly more ( $p < .001$ ) amongst DSG members, at 42% of DSG respondents compared to 5% of CSG respondents. Based on qualitative interviews, members reported that the share-out was considerably faster, and many group members expressed their appreciation for this saved time.

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*"The share-out itself took only a short time to complete as it is pre-calculated by the system. But with the [CSG], it took a very long time as the secretary had a lot of physical calculations to make." - Zawai, DSG member*

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### *Digitization reduced feelings of shame, worry, guilt and stress, created by the thought of missing meetings or contributions*

One concern that the study set out to measure was whether fewer meetings would decrease social cohesion, potentially as a result of fewer meetings, less group activities or lower attendance rates (Hypothesis 5). The savings group model depends on group members feeling internal pressure to save on a regular basis. We found that digitization, coupled with the lack of fines, decreased the number of negative feelings related to missing a meeting (marginally significantly at  $p = .056$ ) or contribution (highly significant at  $p = .013$ ). This finding may point to a potential lowering of group cohesion and duty towards the group and fellow members. In qualitative interviews, groups mentioned that they would like to reinstate fines for missing meetings to encourage steady attendance, even though quantitative findings show that DSG members do not miss more meetings than CSG members. All except two groups have reinstated fines in the second cycle.

### *Group activities initially decreased, but some are making a comeback with workarounds*

Oftentimes, savings groups pursue activities such as trading as a group, discussing issues related to health, finance, challenges in members' lives, or technology. These activities are not part of the savings group methodology, but groups pursue them of their own accord. To assess the potential changes in social cohesion (Hypothesis 5), we evaluated whether digitization changes the involvement in group activities.

Overall, there was a slight decrease in the total number of activities and discussions that DSGs pursued (the number of activities conducted by CSGs reduced from 3.6 to 2.9 between the baseline and endline study, and the number of activities conducted by DSGs reduced from 4.4 to 2.4), and this finding was highly significant ( $p=.045$ ). The only two activities that were negatively impacted were group trading and discussions about health.

CSGs often use the social fund for trading even though it is designed to help members out in an emergency. As DSGs were initially unable to collect the social fund through the platform and preferred not to collect a separate cash social fund, they had no available cash for group trading. Many members expressed their desire to start collecting the social fund again, and two groups started collecting it in cash during the pilot cycle. In addition, all except three groups are now collecting a cash social fund in the second cycle and the remaining three want to do so but are waiting for this to be integrated into the DSG product.

### *Trust in the group and group members may be eroded by digitization in the initial cycle, but this finding is driven by members that left*

Following digitization, trust in fellow group members seemed to decrease (DSG members were marginally significantly less likely to agree with the statement that savings groups are trustworthy ( $p=.08$ ) and thought fewer (nearly one less) fellow members are trustworthy ( $p=.052$ )), although this result seemed driven by responses from members who left the group before the cycle started. After the share-out, many members said in qualitative interviews that in fact, they trusted fellow members more.

The social aspects and functions of savings groups are well recognized. Thus, it is important to draw attention to any potentially negative implications of digitization to prevent them as much as possible by encouraging activities that enhance group cohesion.

An additional research Hypothesis 4 was that CSG members may be pressured to take out loans in order to decrease the risks associated with holding a large pot of cash and that digitization may reduce this lending pressure. The initial survey found no evidence that lending pressure was ever an issue for the groups we studied. Thus, this Hypothesis was dropped.

Many of the findings related to adoption of and attitudes towards digitization, as well as group activities and trust need to be seen in context. The pilot was the first of its kind in Tanzania, and members and their communities were exposed to these ideas for the first time. Thus, reluctance, uncertainty and some hesitation within the group were to be expected. As the platform is being updated and improved and as group members



move on to a second savings cycle, we anticipate a multitude of positive changes. Furthermore, once DSGs become commonplace, the villages and communities where these operate are likely to improve their perception and offer them moral support.

## The impact of DSGs on digital knowledge and usage

*We hypothesized that digitization of savings groups, through exposure, continuous use and peer learning would also have an impact on digital learning, as well as on attitudes towards financial services, thus making strides towards closing the digital divide between men and women, as well as rural and urban populations. The findings are indeed positive and promising, but expectations and hopes about savings group digitization as an easy fix for the digital divide need to be tempered.*

### *Digitization increased the level and ease of use of mobile phones*

Related to Hypothesis 1 that cooperative learning will create independent use of and greater interest in using digital financial services, the RCT measured whether digitization would lead to greater usage and comfort with a range of mobile phone functions ranging from sending and receiving short message service (SMS) messages to taking photographs or using social media. Being part of a DSG has a positive impact on the usage of basic mobile phone functions. The RCT found that DSG members were highly significantly more likely to know how to send ( $p=.004$ ) or receive SMS ( $p=.046$ ) and were also more likely to find it easy to send ( $p=.001$ ) and to receive (marginally significant,  $p=.057$ ) SMS and to talk on the phone daily ( $p=.002$ ). Digitization did not impact knowledge of more advanced mobile phone functions (such as taking photos or using Facebook and WhatsApp). This was likely due to the fact that the platform did not utilize these functions. In addition, the majority of members owned basic phones, which do not offer these advanced functions.

### *Digitization increased ease of use of mobile money, but resulted in no significant changes in use cases or frequency of use*

In addition to evaluating knowledge of mobile phone usage, Hypothesis 1 sought to understand whether digitization would increase usage or comfort with mobile money beyond the savings group platform. With approximately three-quarters of the sample population adopting mobile money prior to the intervention, mobile money usage did not increase with statistical significance. However, membership in the DSG increased the percentage of members that considered using mobile money to be easy—it caused a 50% increase in the odds of a member saying that they are very comfortable using mobile money, with marginal statistical significance ( $p=.08$ ). Digitization also increased the likelihood of using mobile money as a savings instrument ( $p=.079$ ) with marginal

significance.<sup>8</sup> Other mobile money use cases, such as bill pay or using mobile money in stores, and transaction frequency were not impacted by digitization.

### *DSG members had a slightly improved perception of mobile money*

The team hypothesized that routinely using mobile money for group-related transactions would improve DSG members' outlook on the trustworthiness of mobile money services and mobile money agents (Hypothesis 2). From the baseline, mobile money was already perceived as a safe and trustworthy option for storing and sending money, especially when compared to cash. Therefore, the impact of digitization on trust in mobile money was minimal, and not statistically significant. However, after the pilot, DSG members were more likely to perceive mobile money charges as being fair: digitization was responsible for a 68% increase in the odds of considering mobile money charges to be fair, and the result was marginally statistically significant ( $p=.066$ ). Being part of a DSG also had a highly statistically significant and positive impact on using mobile money for long-term savings ( $p=.006$ ), although in qualitative interviews members referred to "saving" as keeping money on a wallet for only several days to one week.

These results may seem modest, but, given the context of Southern Tanzania, more dramatic impact would not be realistic, especially within the time frame of a 10-month savings group cycle. While the Lindi and Mtwara regions have experienced promising development in agriculture, access to markets and financial inclusion over the past few years, both are still ranked among the least developed regions in the country. Most of the savings group members that we interviewed owned basic mobile phones, thus lack of real expansion of use cases, especially those that would require a smartphone, is not surprising. Changes in behavior such as paying for goods or bills with mobile money could not take place in the ecosystems in which group members live, where merchants don't accept such payments.

In summary, this study found that savings group digitization improved the perception of safety of funds and resulted in measurable time savings, which were appreciated by group members. This was established by the quantitative survey and confirmed during qualitative interviews. Digital learning and improved attitudes towards digital financial services were an added benefit, albeit its pace and magnitude were modest. There is potential for negative impacts such as group members leaving the group due to skepticism about the platform's safety or fear of not being able to learn to use the platform, and there is a risk of diminished social functions or cohesion of the group. It is hypothesized that such effects are likely to be strong in the beginning and to diminish with time as more and more groups successfully participate and complete at

<sup>8</sup> Note that respondents' understanding of savings may mean briefly keeping money in the wallet, as in qualitative interviews most said they "saved" money in the wallet for several days to one week.

least one cycle. However, further research is necessary to confirm whether this is the case, and these concerns must be carefully considered and dealt with.

With relation to the hypotheses, the study established the following:

*Hypothesis 1: Cooperative learning through DSG activities creates more independent use of and greater interest in using digital financial services.*

- The study found that DSG members were able to text more and with greater ease, use mobile money with greater ease, and use mobile money for money storage more relative to members in CSGs.
- Digitization did not affect uptake of mobile money, likely due to high uptake to begin with.
- However, expectations and hopes about savings group digitization as an easy fix for the digital divide need to be tempered. The study found no change in use of advanced mobile phone functions, such as taking photographs, using the internet or using social media, although this was likely due to the fact that the platform did not utilize these functions and that the majority of members owned basic mobile phones which do not offer these advanced functions. Nor did digitization impact frequency of mobile money use nor use of mobile money for bill pay or for store purchases. The latter was not surprising as savings group members live in cash-based ecosystems.

*Hypothesis 2: Cooperative learning through DSG activities creates greater trust in formal financial services.<sup>9</sup>*

- Membership in the DSGs increased the likelihood that members perceived mobile money charges to be fair and increased the likelihood that members perceived mobile money to be a safe and preferred long-term savings option.

*Hypothesis 3: Digitally transacting decreases time costs for group members.*

- Digitization reduced the frequency and length of group meetings, and this change was highly statistically significant.
- DSG members also spent marginally significantly less time on activities related to their savings groups, such as preparing for meetings or collecting savings contributions.

<sup>9</sup> Formal financial services is defined as mobile money. Although banks were initially included in this hypothesis, the intervention did not change members' interactions with banks, bank agents, or knowledge of banks. Thus, perceptions of banks did not change, and we focus on changes related to mobile money in the report.

*Hypothesis 4: Digital financial services will reduce pressure on savings group members to lend frequently as a means to reduce risky cash holdings at the village level.*

- The initial survey found no evidence that lending pressure was ever an issue for the groups we studied. Thus, this research question was dropped.

*Hypothesis 5: Digitally transacting group members maintain the same interest and commitment to the group as in cash-based groups.*

- DSG members were more likely to leave a group, however qualitative and quantitative survey evidence suggest that this was driven by novelty and risk aversion to the DSG. This result also appears driven by literacy levels and age.
- Meeting attendance was not impacted by digitization.
- DSG members experienced less negative feelings associated with the thought of missing a meeting or missing a savings contribution. Given that internal pressure is important to savings group discipline and commitment, this will be important to study in future DSGs.
- Finally, DSG members reported participating in fewer group activities, such as trading as a group, discussing issues related to health, finance or personal challenges. This may suggest the potential for reduced social cohesion, although the group's ability to trade was impeded by the lack of ready cash via the social fund.

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## ACRONYMS AND ABBREVIATIONS

AKF	Aga Khan Foundation
CSG	Cash savings group
DSG	Digital savings group
OLS	Ordinary least squares
RCT	Randomized control trial
SMS	Short messaging service
TSH	Tanzania Shillings
USD	US Dollars
USSD	Unstructured Supplementary Service Data

## INTRODUCTION

There are one million people in savings groups across Tanzania,<sup>10</sup> and another 5.7 million around the world.<sup>11</sup> Many savings groups are formally promoted and managed by non-governmental organizations, but they have also organically proliferated around the world for decades,<sup>12</sup> serving as vehicles for financial management and social support. They are persistent and popular because of their ease of use and social foundation.

However, most savings groups operate entirely with cash, which poses problems related to safety and scalability. Most groups save bundles of cash accumulated during nine to 12-month (or longer) savings cycles in metal lockboxes in the village. As groups graduate to new cycles, their savings contributions increase and they accumulate significant sums, which makes them all too tempting and easy to carry away.

Jamina,<sup>13</sup> a 40-year old cashew farmer in Lindi, Tanzania, has been a member of two savings groups for the past decade. In these 10 years, her groups have experienced theft twice. But Jamina and other women (and men) like her continue to save in groups because they provide a structure for long-term savings and a facility for accessing loans, both of which are otherwise unavailable.



Depositing the cash in the bank rather than in a lockbox is not really feasible. While most banks accept deposits from savings groups, traveling to a bank every week would take considerable time and funding. Furthermore, traveling these distances would put contributions at risk – especially at share-out times when substantial sums have accumulated.

<sup>10</sup> Estimates are based on conversations with AKF, CARE, CRS, Plan and various organizations involved in vicobas in 2013

<sup>11</sup> Estimate from thesavix.org accessed 2018

<sup>12</sup> These groups, referred to as rotating savings and credit associations (ROSCAs), are referred to as tandas in Latin America, susus in West Africa and the Caribbean, and chamas in Tanzania and Kenya.

<sup>13</sup> All names used in the report were changed to protect privacy.

Savings groups not only provide access to financial instruments, they also create an opportunity for friends and neighbors to catch up and pursue business ideas together. Savings groups also serve as commitment devices for longer-term goals such as investments in housing improvements, business growth, or educational opportunities.

The Aga Khan Foundation (AKF) recognized the need for quick and flexible access to savings and credit among farming communities in Lindi and Mtwara, Southern Tanzania. In 2010, AKF initiated its first savings group in the area, which grew to 5,500 groups in 2013, and reached 9,200 groups in 2015. These groups consist of 20-25 members each, of which 66% are women. They have cumulatively saved approximately 1.5 billion Tanzania Shillings (TSH), equivalent to 70 million US dollars (USD) at the time, which they have since invested in their lives and families.

### The potential of digitization

Group members have long sought solutions to the problems created by accumulating and transacting in cash. This prompted AKF and Selcom, a payments aggregator in Tanzania, to partner with BFA to build and test a software platform to digitize savings groups in 2015. The team hoped the platform would allow savings group members to use mobile money to save and make payments as well as request loans. With the platform, groups would be able to use digital channels to make savings contributions and credit disbursements, thereby eliminating the need for physical lockboxes to store bundles of cash at the village level, and allowing for real-time updates of individuals' savings balances and outstanding loans.

The digital platform could also address other challenges cash savings groups (CSGs) face, improving overall transparency and accountability:

- **Burdensome bookkeeping:** In CSGs, bookkeeping tends to fall on one individual (the secretary) who keeps tally of all saving and loan balances for group members. This job is not only time-consuming, but it can lead to inaccuracies in bookkeeping. The digital platform would eliminate this problem entirely as transactions would be recorded in the system and balances updated in real-time.
- **Limited visibility into group and individual finances:** Because records are maintained in members' cash books in the group box, they cannot check their loan or saving balances between meetings. The platform would allow members to request updates to their balances at any time, along with statistics for the group.
- **Long meeting times:** Cash savings, lending, and share-out meetings take a substantial amount of time; share-out meetings can take several hours. DSGs could meet less often (every other week compared to every week), since



members could save anytime, and loan and share-out meetings would take a fraction of the time relative to cash-based share-out meetings.

- **Limited savings amounts:** CSGs cap the amount a member can save per meeting to ensure equal ownership of the group. For this reason, some members join groups with two memberships—including a daughter, for example—so that they can save additional amounts. DSGs eliminate this rule, allowing members to save as much as they would like.

Furthermore, digitization would benefit savings group promoters as well. Digitizing savings groups would reduce costs for promoters like AKF by decreasing the amount of training needed to teach field officers cash management and monitoring, and by limiting the scope for manipulation of funds. With digitized groups, the service provider would be able to compensate the trainers directly, rather than expecting the groups to pay for training, which aligns incentives and reduces the need for supervision to ensure expansion and quality. While this study did not set out to measure these benefits, these were important motivating factors for the digital platform.

Beyond these operational benefits, AKF, Selcom, and BFA believed that digitizing savings groups could help address the gender digital divide. Certain segments of the population such as women, elderly, and rural populations are less likely to access and use information and communications technologies. While the gender digital divide is stark globally, it is pronounced and growing in Africa.<sup>14</sup>

The team hypothesized that DSGs could provide an entry point for marginalized groups to gain confidence using mobile phones and services. Research shows that learning in a group, or cooperative learning, is more effective than learning alone. Compared to learning alone, it is more powerful in: producing achievement; creating a positive attitude towards learning; enhancing how the group members feel about each other; and creating interpersonal skills.<sup>15</sup> BFA hypothesized that learning to use the digital platform with others in the group who are on the same journey might result in members assisting one another to learn about and become more comfortable with using mobile phones and mobile money, and eventually lead to greater trust in mobile financial services.

<sup>14</sup> Internet Telecommunications Union. "2016 ICT Facts and Figures." <<https://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2016.pdf>>

<sup>15</sup> For example, Roger T. and David W. Johnson (1988) in *Cooperative Learning: Two heads learn better than one*.

## Testing the benefits of digitization

While the potential benefits of digitization seem straightforward, it was not clear how they would operate in practice. To study the effects of digitization, in parallel with the live product testing, AKF, Selcom, and BFA implemented a randomized control trial (RCT) in the Mtwara and Lindi Regions of Southern Tanzania over one 10-month savings cycle between October 2016 and October 2017. The study tracked the savings and loan behavior of 206 women in 23 savings groups and also investigated their attitudes towards mobile technologies.<sup>16</sup> Quantitative data was collected in individual interviews and was supplemented by qualitative deep-dive interviews and retrospective and attitude questions.

More specifically, the team used the RCT to test five hypotheses:

### *Hypothesis 1:*

Cooperative learning through DSG activities creates more independent use of and greater interest in using digital financial services.

### *Hypothesis 2:*

Cooperative learning through DSG activities creates greater trust in formal financial services.<sup>17</sup>

### *Hypothesis 3:*

Digitally transacting decreases time costs for group members.

### *Hypothesis 4:*

Digital financial services will reduce pressure on savings group members to lend frequently as a means to reduce risky cash holdings at the village level.<sup>18</sup>

### *Hypothesis 5:*

Digitally transacting group members maintain the same interest and commitment to the group as in cash-based groups.

<sup>16</sup> 194 respondents were interviewed at the endline survey. The team was unable to track down the additional 12 respondents who had moved or were traveling at the time.

<sup>17</sup> Formal financial services is defined here as mobile money. Although banks were initially included in this definition, the intervention did not in fact relate to members' interactions with banks, bank agents, or knowledge of banks.

<sup>18</sup> This hypothesis was ultimately removed from analysis as there was little evidence to support the hypothesis that lending pressure is a problem for savings groups.

Throughout the report, we will refer to findings related to each by referring to the hypothesis numbers (Hypothesis 1 through Hypothesis 5).

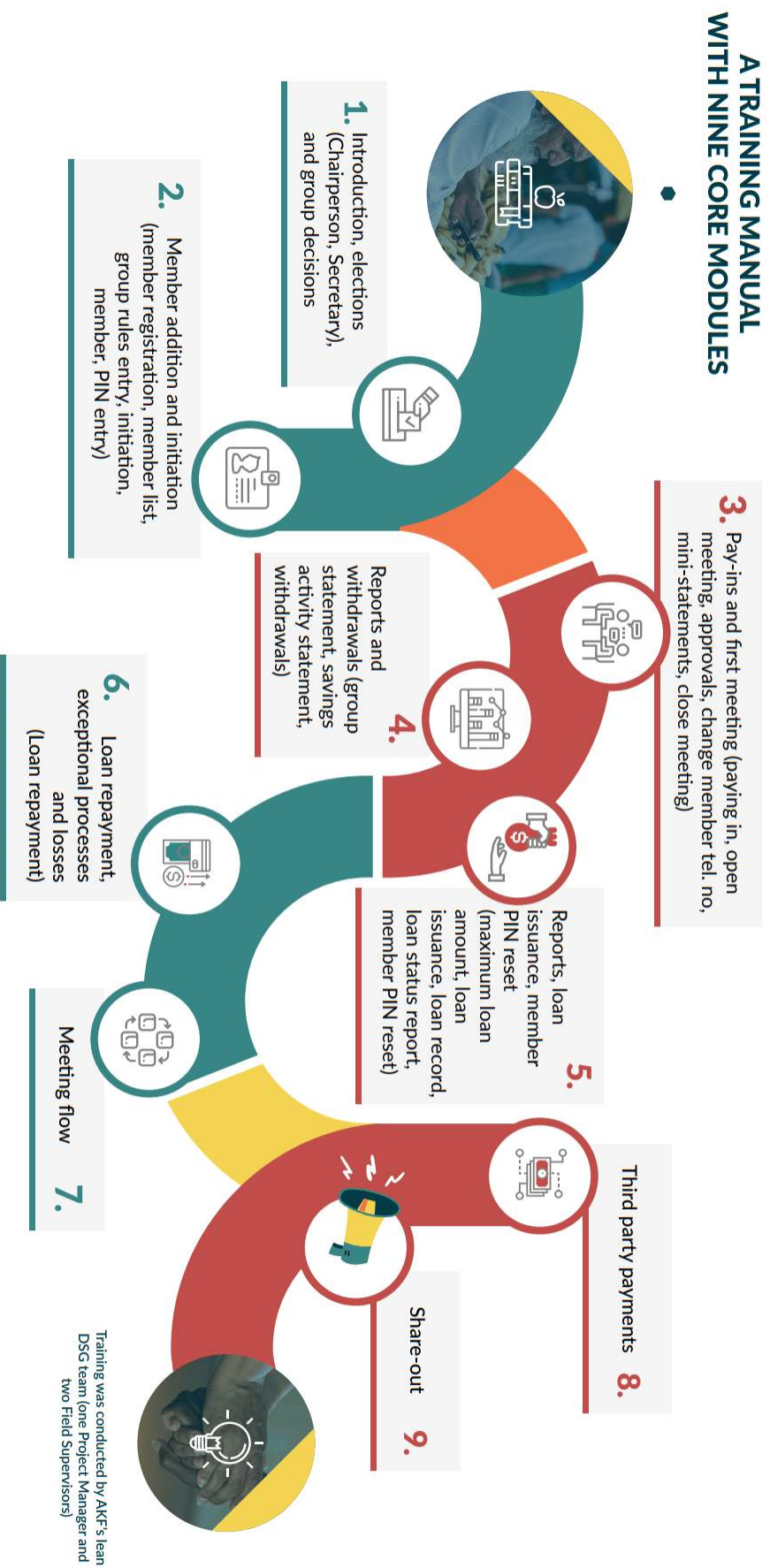
### **RCT timeline and structure**

Mobilizing the control and test groups started in early November 2016. AKF identified 23 existing cash-based groups in the urban and peri-urban areas of Lindi and Mtwara regions to participate in the DSG pilot; 11 of them to learn and adopt the DSG model as part of the treatment group and 12 of them to continue using cash to act as a control group.

Selection and mobilization were conducted through group meetings. In these meetings, the digital platform, research plan, and pilot objectives were explained to the groups, and members decided to join the pilot knowing that their group would be randomly placed in either a CSG or DSG. Members were informed that the pilot would last 10 months and those assigned to DSGs signed a disclaimer form acknowledging that AKF would not be liable for any loan default.

AKF's lean DSG team, comprising of one project manager and two field-supervisors trained members on how to use the platform. The team also developed a training manual with nine core modules (see Figure 1). Based on feedback from members about the challenges of cash liquidity when interacting with mobile network agents as well as other practical issues such as SIM card deterioration, AKF worked with agents to build their awareness of the DSG platform and trained them in how to support the DSGs during the cycle and share-out.

Figure 1: Training manual with nine modules



## DSG platform development

Before the pilot began, the team worked to develop the digital platform. Specification was done in 2015 and development was completed in mid-2016. AKF subsequently conducted nine rounds of testing and improvements before final user acceptance testing was conducted in Q3 of 2016. The study began with 11 groups in Q4 of 2016 and concluded with their share-outs in Q3 of 2017.

After the conclusion of the study, all of the groups continued into a second cycle, with 43 new members joining DSGs in the next round.

As of January 2018, the platform had processed almost 20,000 transactions, of which 97% were successful. By the end of the research study, the 11 DSGs shared out a total of TSH 21.9 million (USD 9,800) and there were no claims of incorrect share-out amounts, which validates the functionality of the share-out design.

There was no real need for changes to the product design in the first cycle. Two additional features – a fines feature and a social fund – were requested and will be added in the next round of development of the app. The pilot experienced a few operational challenges, which are described below:

- The most common challenge was network connectivity failure, which mostly occurred during the initial stages at group initiation before groups had understood the importance of good network connection to open and close meetings and approve loans. The trainers, who were trusted by the group, were able to work with groups to overcome this challenge by selecting a location and time of day when the network was at its strongest e.g., from 8:00 am to 10:00 am. Groups then adjusted the meeting location and the meeting time accordingly. This largely overcame the problem and enabled the groups to communicate using the digital platform.
- A few members experienced incidences where they were not able to withdraw their loan after they had received loan approval from the group. In each case, the Customer Service line resolved the problem with 24 hours of the problem being reported. These members were understanding and felt reassured after Customer Services addressed the problems.
- One member failed to withdraw an amount of over one million shillings since she had not upgraded her mobile wallet to cater for large amounts. The service provider took a long time to upgrade the wallet, and this delay caused significant anxiety and concern to the member. In the future all members will be informed of the importance of upgrading their wallets within a specific timeframe.

- One commonly occurring issue was approval failure (to open and close meetings and approve loans) due to low meeting attendance. At the initial stages this caused great disquiet to members as meeting initiation, closure, and loan approval could take a long time. Also, absent members do not always respond in time to the randomly generated approval messages and some members in the meeting did not respond fast enough, resulting in session time-outs. Mid-cycle some groups introduced fines to address the problem and members learned to assist one another to quickly perform the approvals before being timed-out of the platform.

## Study design and methodology

For the RCT, group members were interviewed face-to-face twice. The quantitative data was supplemented with qualitative deep-dive interviews. Together these sources provided a rigorous evidence base to understand how a DSG product can enhance interest in, comfort with, and use of mobile money platforms amongst female savings group members.

The main research hypotheses were tested in the RCT by seeking answers to the questions detailed below:

*Hypothesis 1: Cooperative learning through DSG activities creates more independent use of and greater interest in using digital financial services.*

Questions:

- Will those members who are more familiar with digital and formal financial services be able to teach and guide their peers without simply doing their transactions for them?
- Likewise, is there a change in the behavior of those members who are less familiar with digital financial services in that they begin to do their transactions themselves?
- Will the cooperative nature of the group lead more knowledgeable members to teach the less sophisticated members how to use digital services themselves?
- Will group members express greater confidence in using digital financial services?

*Hypothesis 2: Cooperative learning through DSG activities creates greater trust in formal financial services.*

Questions:

- Which instrument (bank accounts or mobile wallets) will members prefer for long-term savings?
- What proportion of share-out will members choose to save and for how long?

*Hypothesis 3: Digitally transacting decreases time costs for group members.*

Questions:

- Do we find that group members travel every week to deposit cash at an agent, thus incurring higher time (and money) costs of the physical meeting under the cash-based model?
- How much do group members value the time savings of weekly pay-in meetings?

*Hypothesis 4: Digital financial services will reduce pressure on savings group members to lend frequently as a means to reduce risky cash holdings at the village level.*

This hypothesis was ultimately removed from analysis as there was little evidence to support the hypothesis that lending pressure is a problem for savings groups.

Questions:

- Do savings groups transacting digitally borrow differently than cash-based groups?
- How do members perceive their interactions with agents – do group members who are transacting digitally reduce their requests to agents to help them transact on services other than for the savings group, i.e., for person to person transactions?

*Hypothesis 5: Digitally transacting group members maintain the same interest and commitment to the group as in cash-based groups.*

Questions:

- If the group does not meet in person on a weekly basis, do they still feel the pressure to make their weekly (or bi-weekly) payments?
- How do savings group members' perceptions of the group change – as a financial service? As a community of peers?
- Do groups feel that their emergency needs are not met by the group not meeting every week?
- After the cycle is finished, does the group want to repeat the cycle?
- Do group meetings change from transaction events to something else?

Savings group members in the Mtwara and Lindi Regions of Southern Tanzania were selected through two-stage randomization. The selected savings groups were

randomized into CSGs (control groups) and DSGs (treatment groups) and within each group, female group members were randomly assigned to be interviewed twice.

A baseline quantitative survey was conducted in November 2016. DSGs then received training on how to conduct transactions via mobile phone, while the CSGs continued a normal savings cycle. Endline survey data was collected after the savings groups completed their 10-month savings cycle in October 2017.<sup>19</sup>

The research also included qualitative deep-dive interviews to gain a deeper understanding of the experience over time. The objectives of the qualitative research were to: 1) understand the “whys” behind the results of the quantitative survey results, 2) provide context for the hypotheses that were tested in the survey, and 3) highlight usability issues related to the digital platform, including documenting members’ likes and dislikes related to the product.

It should be noted that the RCT results presented in this report are based on initial treatment assignment, or intention-to-treat. This means that the reported results are averages across all group members who were initially part of the groups selected to be part of the pilot, regardless of whether these members dropped out of the group before the treatment (digitization) or not. The main purpose of employing this type of analysis was to correctly ascribe specific results to digitization, even in the presence of biased attrition rates, and differential dropout rates. For the endline survey, researchers were instructed to seek out and interview all pilot members, including those who dropped out of their groups.

In addition to digitization, a few other key changes were introduced to DSGs:

- **Instead of meeting weekly, as CSGs do, DSGs meet every other week.** This change was introduced under the assumption that DSG members would no longer need to meet to save, as they would have the option to deposit into the platform anytime.
- **Fines for missed meetings or late payments were not collected for much of the pilot.** CSGs typically collect fines to incentivize members to attend meetings regularly and on time. Collection of fines could not be integrated into the platform during cycle one, thus groups did not collect fines for much of the pilot cycle.
- **Members can contribute as much as they would like.** In DSGs, members can contribute as much as they would like to whenever they can do so. In CSGs,

<sup>19</sup> A few groups had not yet completed their cycle at the time of the endline cycle. Where applicable, we control for this in analysis.



given the difficulty of accounting, members were restricted to deposit up to a maximum amount.

- **Social funds were not collected.** Most CSGs ask members for an additional deposit that is collected as a “social fund.” This money is typically used for emergency health grants or loans, or for group activities, such as trading. Since this additional collection could not initially be integrated into the platform, DSGs did not have a social fund during cycle one.<sup>20</sup>

Thanks to the additional differences between DSGs and CSGs (listed above), the RCT should be interpreted as the net effect of being in a DSG and being subject to these other factors.

More details on the methodology can be found in Annex 2.

### Sample description

The sample consisted of 23 savings groups, of which 11 were assigned to the treatment (DSG) and 12 were assigned as control (CSG). A total of 206 group members (101 from DSGs and 105 from CSGs) were interviewed at the baseline. By the endline 94 DSG members and 100 CSG members were interviewed. Researchers were unable to contact the remaining 12 members at the time of the endline survey.

To ensure robust and causal results it was important to have statistical balance across the independent and dependent variables between CSGs and DSGs. After completing the baseline data collection, averages and frequencies were taken across key descriptive variables to ensure that there were no statistical differences across CSGs and DSGs (Table 1). The number of savings groups a member is currently a part of was the only statistically different indicator (at the 10% level), with CSG members slightly more likely to be in an additional savings group compared to DSG members, suggesting that the random selection was successful.

<sup>20</sup> We learned that two DSGs may have instituted a “social fund” that was collected in cash.

Table 1: Socio-demographic statistics from baseline survey

Descriptive Statistics				
Variable	Cash	Digital	Difference	P-Value <sup>21</sup>
Age (years)	41	41	0	0.96
Household size	4.8	5.1	0.3	0.29
Number of savings groups before	2.3	0.8	1.4	0.13
Number savings groups currently	1.5	1.2	0.2	0.07**
Number savings cycles	2.4	1.5	0.9	0.34
Average time to mobile money agent (minutes)	19.2	15.3	3.9	0.23
Household head (%)	36%	41%	5%	0.45
Married (%)	69%	63%	6%	0.31
No schooling (%)	28%	26%	2%	0.72
Own their own phone (%)	77%	76%	1%	0.85

## FINDINGS

### Adoption of the DSG model by group members

*Digitization of savings groups was met with initial skepticism by group and community members. Some group members decided to leave the group before the start of the digital cycle. Many of the members who stayed with the group managed to learn how to use the platform without any assistance. The share-out was an essential moment for building trust and changing attitudes. Some of the members who initially stepped aside decided to rejoin the group after seeing the success of the first cycle. Portions of this section relate to Hypothesis 5.*

#### *Group and community members were initially skeptical about using a new digital product*

Although some members were excited about a digital product at the outset of the cycle, many were apprehensive about the changes that digitization would bring about. This is understandable; change is hard, and the new platform raised many questions about how the group would function and whether deposits would be safe.

<sup>21</sup> p-values of .10 or below indicate a statistically significant difference in averages between CSG and DSG members.

Fazia, a member of a DSG who had never used her phone on her own before the DSG pilot explained, “Upon hearing of the product for the first time, I was doubtful and reluctant to engage in it. I had never heard of any such group that would use the phone to conduct their transactions.”

During qualitative research, other members spoke of pressure from community members who believed the system would cheat them. Simone, a member of one DSG described, “[Group members] were afraid of this new product as they were booed by other people in the village that would say and shout many negative things to them.”

Another member, Ashiya, described her hesitation at the beginning of the DSG cycle: “Since I am still learning about the product, I trust it 50/50. I need to learn and understand more how the product works.” And Eidi, a 60-year-old farmer and DSG member explained halfway through the first cycle: “I am facing a few challenges since the product is still new and I have to get used to it fully. I can open and read messages but cannot operate the platform on my own.”

### *Novelty and risk aversion initially drove some group members away*

Groups transitioning from CSGs to DSGs went through inevitable growing pains. As described above, savings group digitization represented a dramatic change in operations; a new way of operating that few had heard of before. When CSGs converted to DSGs, there was understandable concern among members as picked up during qualitative interviews: members worried that their money would not be safe with the new group, they worried about the difficulty of using the platform, they did not understand what the benefits would be, and a significant number did not want to take the risk.

One member described: “When we first heard of the [DSG], most group members feared for the safety of their money. Since there were a lot of theft cases in the [CSGs], they were not sure if this would be another form of theft conducted in a more sophisticated manner. A number of members decided to drop out and observe from the side before deciding to get involved.”

While there is natural turnover among savings group members, DSGs experienced higher rates of change. Based on qualitative interviews and from previous experience with CSGs, it is known that members sometimes take breaks or leave the group for good if they no longer want or are able to save. Life events and emergencies happen, people move, and the members of a group change. However, the study found that compared to CSGs, a larger proportion of DSG members left their group. This finding is related to Hypothesis 5 on interest and commitment within DSGs versus CSGs. More than one third (35%) of members left the groups when they became digital compared

to only 17% of CSG members (Table 2). Most of the leavers (33 of 35 members who left) did so before the digitized cycle started.

The reasons most members cited for leaving were related to income (eight out of 16 CSG members and 14 out of 35 DSG members who left), and family obligations (five out of 16 CSG members and one DSG member who left). However, nine out of the 35 DSG members who left explicitly named reasons related to digitization for leaving: five said it was too complicated and four said they did not trust the digital wallet. Since leaving, only 10 of the total 35 members who left the DSGs (and only two of the nine who said digitization was the main reason for leaving) have joined other CSGs suggesting that most of those who left were no longer interested in saving and that digitization may have only accelerated their decision. This was confirmed during the qualitative interviews where members who left said that it was mostly due to income or family obligations.

Related to Hypothesis 5, members were more likely to leave a DSG than a CSG at a marginally statistically significant level (Model 1 in Table 3,  $p=.083$ ). However, when the model includes additional control variables related to age and literacy, the statistical significance of the impact of digitization on leaving the group disappears (Model 2 in Table 3,  $p=.108$ ), suggesting that these variables partly explain the variation in the outcome and that digitization on its own is not the primary reason for people leaving. By the endline, when members who stayed in the groups were asked about whether they had thought about leaving the group, although DSG members were slightly more likely to say they did, the result was not statistically significant (Model 3 in Table 3,  $p=.252$ ).

Table 2: DSG members versus CSG members who left groups

	Left the group	Thought about leaving group	
	Endline	Baseline	Endline* (only members who have not already left)
Cash	17%	9%	5%
Digital	35%	4%	11%
Difference (DSG - CSG)	18%***	-5%	6%*
p-value (DSG>CSG)	0.002	0.93	0.1

Table 3: Likelihood of leaving a DSG versus CSG regression results

	Model 1 Did you leave the pilot group before the end of the cycle?	Model 2 Did you leave the pilot group before the end of the cycle?	Model 3 Have you ever thought about leaving your current savings group? (members who have not left only)
	Logit	Logit	Logit
Treatment dummy	2.625* (0.083)	2.351 (0.108)	2.233 (0.252)
Illiterate dummy		3.315*** (0.007)	
Age		0.849* (0.050)	
Age^2		1.002* (0.083)	
Observations	194	194	143

Exponentiated coefficients; *p*-values in parentheses

*p* < 0.10, \*\* *p* < 0.05, \*\*\* *p* < 0.01

All models include constant

As mentioned above, dropping out of DSGs tended to happen before the cycle started, in some cases while the training was still underway and before members had the opportunity to see the platform or its benefits. As such, the team postulates that dropout rates illustrate a generalized uncertainty about digital products and not a reaction to the platform itself.

The team anticipates that once DSGs become more common and people hear about the positive experiences of their neighbors and friends, their fears and concerns may dissipate. Dhakyia, a member, recalls: “The members who dropped out are now showing curiosity and interest in knowing more about the product. For example, there is an old lady who was at first very negative about it, but now she is interested in joining. I informed her about the product, so she can understand it better.” Whether or not this occurs is an important area for future research.

### *DSG members who persevered gained confidence with the platform*

DSG members who persevered in learning to use the platform with the assistance of AKF trainers or fellow group members eventually gained confidence using it. By the endline survey, members expressed their trust and satisfaction with the platform, and 94% of DSG members planned to continue participating in the DSG.

By the second half of the cycle, nearly three-quarters (74%) of DSG members who remained in the groups were able to deposit into their wallets and send deposits to the platform on their own (Figure 2: Which best describes how you saved in the platform by the second half of the cycle?). These members largely attributed their comfort to trainings provided by AKF (69%) and to practice using the platform in the group and elsewhere (18%, Figure 3).

One member, Farida, explained, “I would get assistance from my friend Fatuma who instructs me, too. Fatuma is far more informed about the product compared to other members. I would deposit in my phone and then go to Fatuma’s house, where she would help me to buy shares.”

Ashiya had an Airtel Money account for five years before the pilot, through which she received money from her sons. However, she had always given the phone to her agent to complete these transactions. She discussed how the DSG group offered her the chance to learn to use it on her own: “I found Airtel Money easy to use, since I depend on the agent to do it for me. I can’t transact on my own yet, as I has never had anyone to teach me to do so, but since the introduction of the [DSG], I believe that I will learn to use the product and Airtel Money as well.”

Another member described the importance of the reference sheets provided by AKF: “We are still learning to use the product, and the trainer has provided us with reference sheets. This is how I learn to use the product slowly.”

Mary had been a box keeper for a previous group. She described how “I can’t transact on my own without having someone close by to assist me with [mobile money] but with [the DSG platform] I can transact on my own using the reference sheet I was provided with.”

Others received assistance from agents during their learning process: “Halima depends on the agent for her transactions, but she puts in the pin code herself.” Another member explained that “agents actually push us to learn about mobile money, make our own transactions and not depend so much on them.” She went on to say that, “I trust the agents fully as the agents know more about mobile money than regular people and because the agent gives me the exact amount I require.”

Figure 2: Which best describes how you saved in the platform by the second half of the cycle?

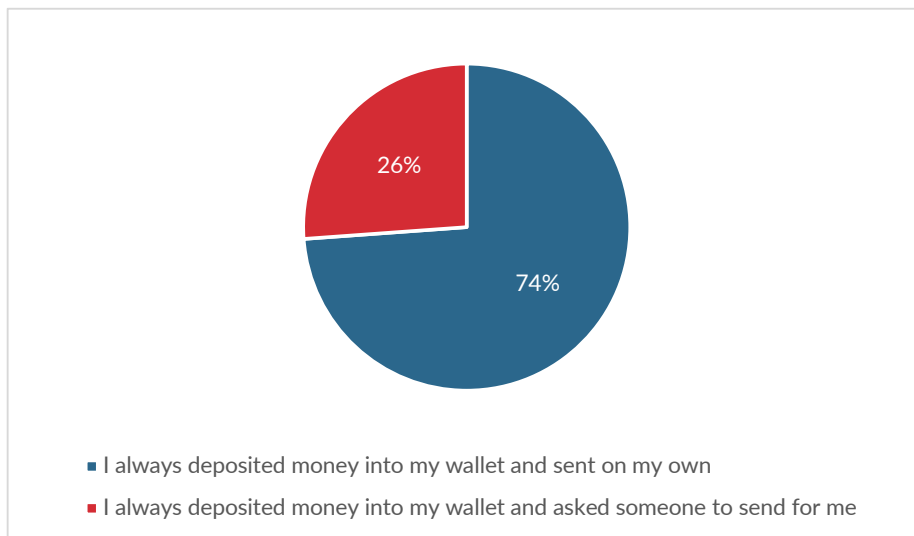
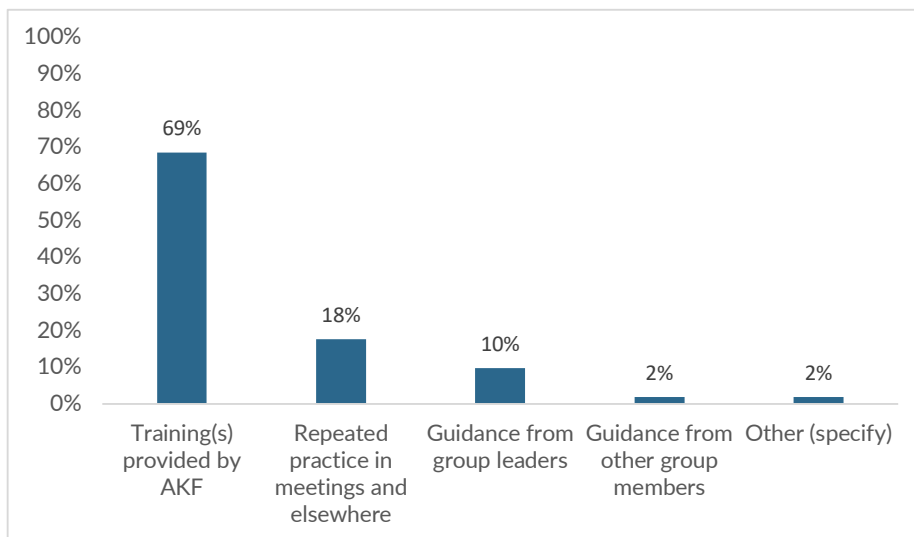
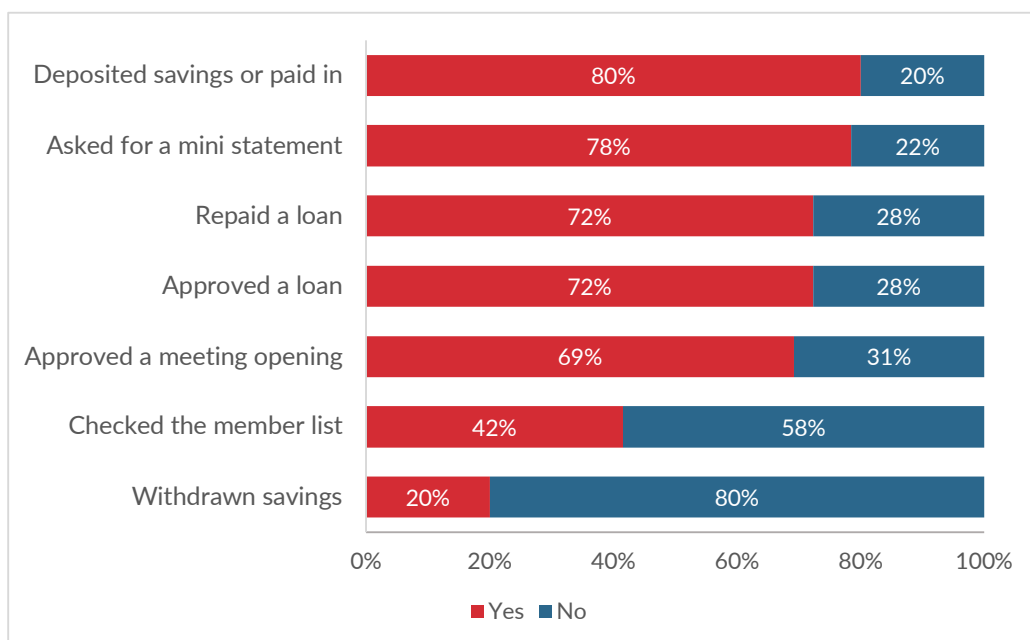


Figure 3: Sources of help in learning to use the DSG platform



By the end of the cycle, most members had deposited savings (80%), asked for a mini statement (78%) or approved or repaid a loan (72%) on their own (Figure 4).

Figure 4: Have you ever personally \_\_\_\_\_ using the digital platform?



To evaluate Hypothesis 1 related to cooperative learning and digitization, we asked DSG members whether they would ask other members of their group if they had a question about finance and other tasks related to their mobile phones. The percentage of DSG members who said that they would definitely ask other group members if they had a question about mobile phones declined from 91% to 79% during the course of the study.<sup>22</sup> Similarly, CSG members who said that they would definitely ask members of their savings groups if they had a question about mobile phones declined from 92% to 83% during the course of the study.<sup>23</sup> However, these changes are not statistically significant.

DSG members had the option to withdraw savings at any point during the cycle. Qualitative interviews revealed that, in some cases, withdrawing from the platform helped members gain confidence over the course of the cycle. A few members withdrew savings from the platform to test that it would work. This appeared to increase trust in the system faster for these particular members. Hala, a cashew and rice farmer, for example, has now entered her second DSG cycle. Successfully withdrawing during the first round appeared critical to her establishing trust in the platform early on. “I trust the [DSG] fully, and this came about after I attempted and

<sup>22</sup> Calculated as a percentage of total of those who responded to the question. (104 respondents at baseline, 72 respondents at endline). Similar results are obtained when excluding members who left the group from endline calculations.

<sup>23</sup> Calculated as a percentage of total of those who responded to the question. (101 respondents at baseline, 81 respondents at endline). Similar results are obtained when excluding members who left the group from endline calculations.



withdrew from my account. I did this to prove that my money is actually there, and that it is not just a scam,” she explained. Furaha, another DSG member, had a similar story: “I withdrew from the group and redeposited once. I took out TSH 220,000 (USD 99) and was surprised that it worked.”

### *The share-out was a key moment for solidifying trust in the digital platform*

The share-out, when members receive their accumulated savings and interest at the completion of the cycle, was the game-changer in terms of earning members' trust completely.

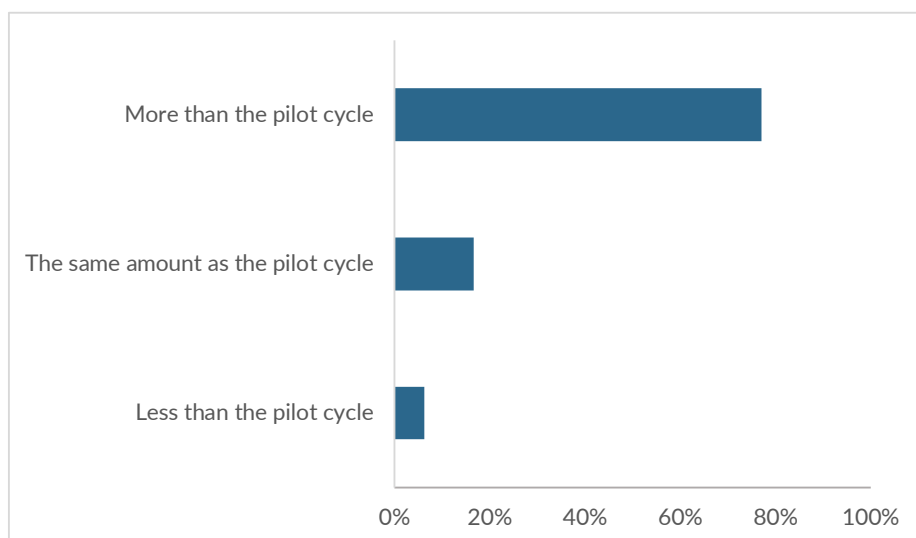
Julian is a DSG member who was interested in the DSG. He is a teacher at a primary school and owns a Samsung smart phone. He described that even with his familiarity with mobile phones: “The product was new, and we were afraid since we didn't know it. We were reluctant to buy shares, attend meetings and even discuss group issues. Even loans were minimal due to small contributions. We were afraid for the safety of our money. But after the share-out, we were all happy with the product. We have seen that our money is safe and that we can actually benefit a lot from the group if we just trust it and contribute more to it.”

Hafsa, another member, farms rice and sorghum and operates a small business selling charcoal. She withdrew from her group before the DSG cycle began due to fear that she would not be able to learn how to use the system quickly enough. “I only trusted the group partially before, and then I dropped out since I was afraid my money would be stolen. But now, after seeing how the share-out came about for the members, I am very interested. I believe that everything will be well for me and that [the DSG] may even improve my life and living conditions in general. I fully trust the [DSG] now.”

Another DSG member, Zawadi, is in her second DSG cycle and was in three CSGs prior to the trial. She explained: “I trusted the share-out 100%. It was accurate, and I did not expect to get anything above the TSH 18,000 (USD 8.10) from my contributions. I will now convince and motivate non-group members to digitize as it is the best and safest way to go as far as savings groups are concerned.”

The team suspected that members would increase their savings in cycles after the trial, having witnessed a successful share-out. At endline 77% of DSG members claimed that they planned to save more in the next cycle (Figure 5).

Figure 5: Planned levels of saving for the next cycle



*Some members who stepped aside for the first cycle want to rejoin DSGs for the second cycle*

When we followed up with members who had left the DSG due to nervousness about the platform or other reasons, 70% said that they would consider joining a digital group again.

In qualitative interviews, many members described how they decided to sit out the first cycle to see how things would go. For example, “[Imani] decided to just sit aside and observe as everything carried on to see how things would work out.” Imani had never attended school and had only used mobile money once before to receive money from relatives. By the mid-point of the first cycle, her fears had been allayed and she confirmed that she planned to rejoin the group for the next cycle.

As with the examples of Imani and Hafsa, the team anticipates that many of the members who dropped out will join DSGs in subsequent cycles, and that the hesitation from other community members will also dissipate as word of the benefits of digitization spreads.

In qualitative interviews, members shared that the share-out had a tremendous effect on members who had dropped out. Basma’s description of a change in sentiment was common across DSGs: “When [Basma] first heard of the [DSG], there were a lot of negative comments from other community members, but also from some group members who were also skeptical about it, due to fear of losing money. Their opinion, especially those of the group members, changed after the share-out. They now love the [DSG].”

## **The effect of digitization on savings group operations and members' attitudes towards the group**

*Increased safety of funds was one of the leading motivations for the efforts to digitize saving groups. Indeed, DSG members did perceive the money stored in the savings group as being much safer. Furthermore, the reduced frequency of meetings, as well as shorter meetings allowed members to save time.*

*Digitization, coupled with dispensing with fines for missed meetings resulted in a decrease of members' negative feelings around missing a contribution or a meeting. The number of group activities, such as group trading, or discussing health, finance, etc. were also reduced by digitization. In future cycles, most groups will re-institute fines, as well as start collecting a social fund.*

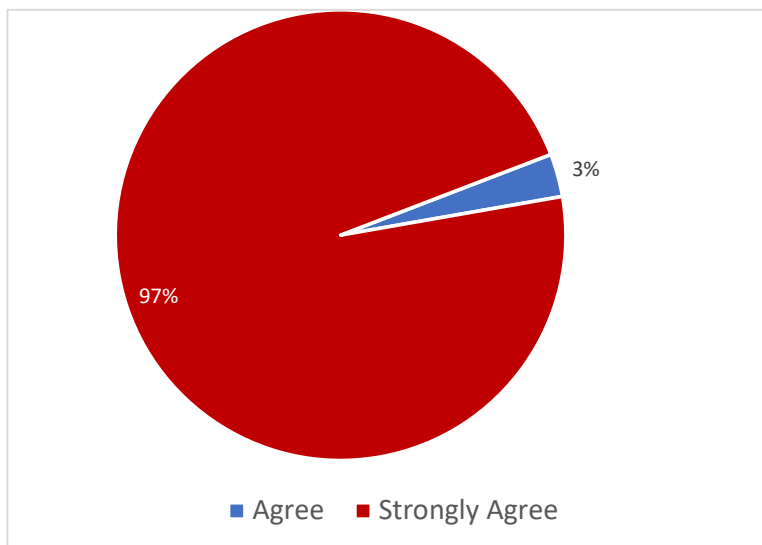
*The level of trust in fellow group members initially decreased, however the result seems driven by responses from members who had not joined the DSG. In qualitative interviews, members said that they trust fellow group members more after the share-out.*

*As mentioned, two of the primary motivations for moving CSGs to a digital platform were related to improving the safety of funds and reducing the costs of training by reducing the time needed to teach and monitor cash management and recording. In addition, the team hoped digitization would reduce meeting times. The study did not set out to measure all of these impacts, but it did measure the benefits of time savings and members' perceptions about safety of funds. Portions of this section relate to Hypotheses 2, 3, and 5.*

### ***DSGs strongly improved the perceived safety of funds***

AKF confirms that CSG members have long wished for an alternative to cash lockboxes given the insecurity of funds in the village. The study established that digitization changed how members perceive the safety of funds (Table 4). When asked whether they agreed or disagreed with the following statement: "Saving money on a digital platform is safer than storing in a lockbox," nearly all of DSG members agreed or strongly agreed with the statement (Figure 6). Jamila, a member of a DSG, elaborated during qualitative research: "The box was too risky not only to the person who had to keep and look after it for the entire cycle, but also to the other members who would keep their eyes wide open in fear of anything happening to it. Cases of theft have left many groups devastated in the past."

Figure 6: How much do you agree or disagree with the following statement: "Saving money on a digital platform is safer than storing in a lockbox"



Another DSG member described her feelings about the DSG: "I trust the [DSG] a lot, since it has proven to be safer than the [CSG]. Once you buy shares in the [DSG], your money stays there, and no one has access to it. In the [CSG], someone may decide to steal the box and cause great loss. Under normal circumstances, it is difficult to catch the thief."

Another DSG member, Hamsa, spoke of the constant sense of anxiety with the cash box. Although Hamsa was new to using phones (she only started using one to join her DSG), she still felt a greater sense of safety "saving on her phone" than in the cash box. She believes that saving money with the DSG is far safer than in a CSG: "There really is no peace when you are in charge of keeping the box. One can barely sleep at night as there is constant fear of your house being broken into and robbed, sometimes even by armed robbers. And during the day, one is unable to work in peace as there is that same fear of someone breaking in and stealing the box while the box keeper is outside working."

As part of Hypothesis 2 related to trust in formal financial services, the survey asked about perceived safety of funds stored in savings groups and on the platform. When asked about the safety of savings in the quantitative survey, DSG members were highly significantly more likely than CSG members to consider money collected and stored in the savings group (and by extension, in the platform) as safe as presented in Model 2 in Table 4: Views on safety of savings groups ( $p=.013$ ). However, digitization did not change their opinion of the safety of savings groups in general (Model 1 in Table 4,  $p=.914$ ).

Table 4: Views on safety of savings groups

	Model 1: Savings groups are a safe place to store money	Model 2: How safe do you think the money collected and stored in this savings group is?
	Ordered logit	Ordered logit
Treatment dummy	1.192 (0.620)	1.108 (0.799)
Endline dummy	1.116 (0.690)	2.712*** (0.000)
Treatment X Endline dummy	1.053 (0.914)	3.440** (0.013)
Observations	381	341

Exponentiated coefficients; p-values in parentheses  
 \*p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01  
 All models include constant

During the endline survey, 78.5% of DSG groups had started a new DSG cycle (Figure 7). Figure 8 shows that the perceived safety of DSGs helped keep members motivated to remain in the group; 54% of DSG members cited the improved safety of funds as the top reason for wanting to continue to a second DSG cycle, followed by the convenience of saving into the platform at any time (31.3%), and the freedom to save any amount (8.3%).

Figure 7: Has your pilot group started a new cycle?

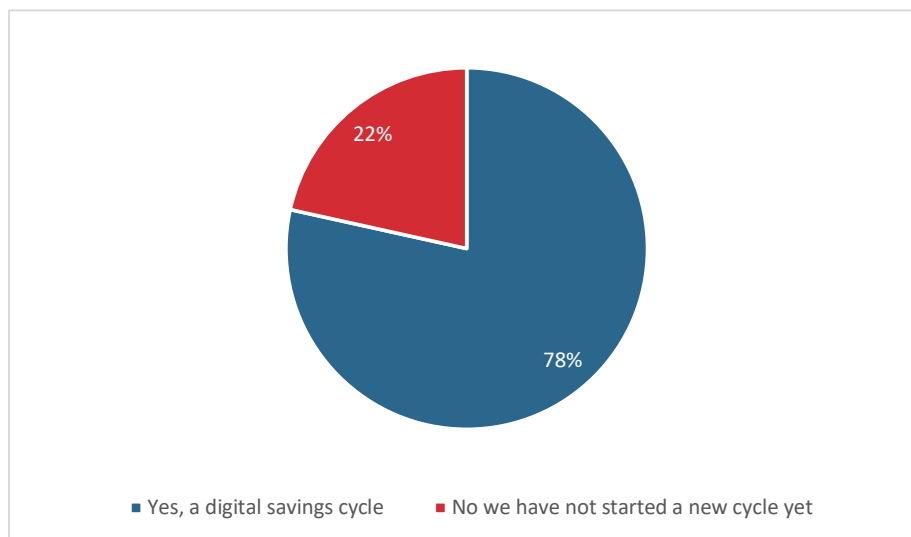
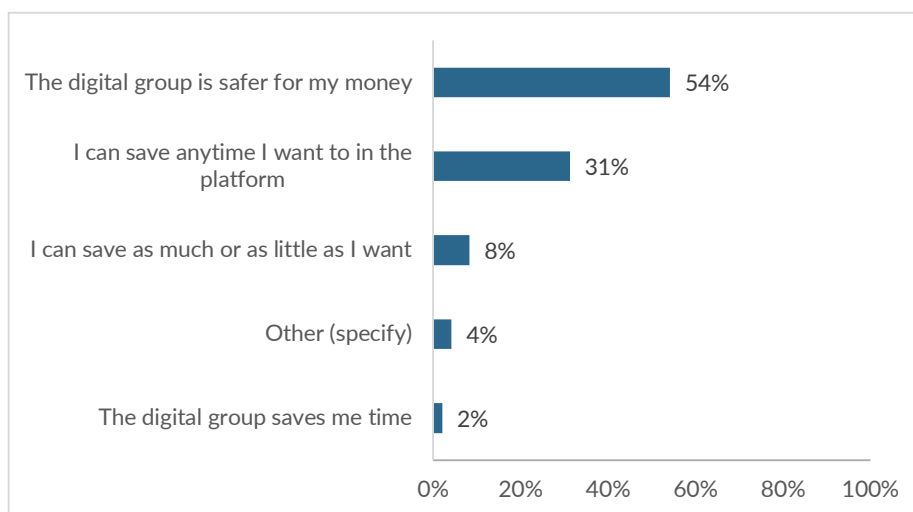


Figure 8: What is the main reason you decided to continue with the group?



*DSGs saved members time through reduced frequency and length of meetings, and ease of counting cash and bookkeeping*

The study sought to measure whether digitization would reduce the time related to savings group meetings and activities (Hypothesis 3). One of the main changes introduced by digitization was the reduction in the frequency and length of group meetings (Table 5). While CSG members met once a week to make their savings contributions and to repay loans every fourth meeting, DSG members only came together twice a month to request and approve loans.

Johnson described, “Generally, I like the [DSG] very much since it has simplified the process of buying shares, and now it takes a shorter amount of time to buy shares and conduct meetings. Also, now we meet twice a month and not weekly. So, time is saved. I can also buy shares at any time now, be it at night or day or from anywhere. In the [CSG], it could only be done at the meeting.”

During qualitative interviews, members described how cutting down meetings to every other week allowed them to spend more time on other activities. It also allowed members to contribute while traveling. Aliya, for example, was happier with this arrangement as she often travels to buy fish for her business. “Meeting twice a month is much better than meeting on a weekly basis. Weekly meetings don’t allow us room to work and accumulate funds. For instance, I have to travel to Mtwara to buy fish for my business, and at times, I may stay there for up to three days. With weekly meetings, it was difficult to plan for both.”

In terms of length of meetings, because DSG members made their savings contributions digitally, members no longer had to wait for the group secretary to count cash contributions and record them in the group notebook. Instead, DSG members only came together twice per month to request and approve loans.

Table 5 shows that, before digitization, most respondents (68%) reported that savings meetings took between 30 minutes to one hour on average. Cutting out this portion of the meeting in DSGs meant half an hour per week that could be allocated to other activities or that members could use as they please.

The majority of CSG members reported that loan meetings lasted between one to three hours at the baseline (72%) and also endline (88%). However, for DSGs this dropped from 82% of members reporting meetings between one to three hours at baseline to 58% at endline (Table 6).

Table 5: Average savings group meeting lengths as reported by members

	Savings meeting length	
	Baseline*	Endline**
0-15 minutes	3%	4%
15 minutes - 30 minutes	19%	32%
30 minutes - 1 hour	68%	43%
1 hour - 2 hours	10%	18%
2 hours - 3 hours	0%	3%

\* DSGs and CSGs combined, asked of the previous savings group cycle (i.e. cash cycle prior to the pilot)

\*\*CSGs only

Table 6: Average loan meeting lengths as reported by members

	Loan meeting length			
	Baseline*		Endline**	
	Cash	Digital	Cash	Digital
15 minutes – 30 minutes	1%	0%	0%	4%
30 minutes – 1 hour	26%	16%	5%	38%
1 hour - 2 hours	59%	73%	36%	45%
2 hours - 3 hours	13%	10%	52%	13%
More than 3 hours	1%	2%	7%	0%

\*Asked of the previous savings group cycle (i.e. cash cycle prior to the pilot)

\*\* Asked of the pilot cycle

This change is highly statistically significant as we see in Model 1 in Table 7 below (p=0).

Table 7: Regression results related to time spent on savings group meetings and activities

	Model 1 How long was an average savings group loan meeting last cycle?	Model 2 In a week, how much time do you spend doing activities related to your savings group?
	Ordered logit	Ordered logit
Treatment dummy	1.420 (0.102)	1.198 (0.338)
Endline dummy	0.487** (0.035)	2.042*** (0.000)
Treatment X Endline dummy	0.0486*** (0.000)	0.571* (0.066)
Observations	354	353

Exponentiated coefficients; *p*-values in parentheses  
 \* *p* < 0.10, \*\* *p* < 0.05, \*\*\* *p* < 0.01  
 All models include constant

DSG members also spent less time doing activities related to the savings group, such as preparing for meetings or looking for savings contributions, but this finding was only marginally significant (Model 2 in Table 7, *p*=.066).

Finally, the share-out process before digitization was especially cumbersome and required additional assistance from the promoter or other trained individuals to complete. The secretary had to calculate exactly how much each member should receive after dividing the interest earned and reducing any outstanding loan amounts that a member might have. Then she/he needed to count out the physical cash for each.

DSG member Zawai described the improvement after digitalization during qualitative research: “The share-out itself took only a short time to complete as it was pre-calculated by the system. But with the CSG, it took a very long time as the secretary had a lot of physical calculations to make.”

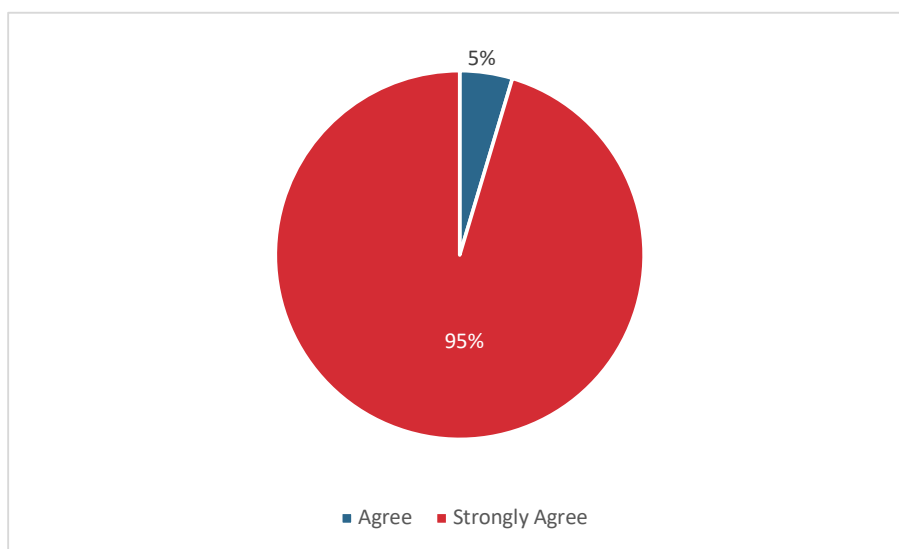
Another member, Hilda, has been a member of two cash cycles and has re-joined her DSG for a second cycle. She described how easy the share-out was after digitization in comparison to the CSGs: “The process wasn’t long, and the facilitator did it for us. It only took a few minutes, and after that moment, we were all interested in the [DSG] even more. The share-out was directed to our phones, and once it was done, we each



received a message with our amounts. At the end of the day, no cash was involved for the better part of the process.”

By the endline survey, DSG members were in full agreement that the DSG saved time over the CSG saving structure (Figure 9: How much do you agree or disagree with the following statement: “Saving on the digital platform saves me time?”).

Figure 9: How much do you agree or disagree with the following statement: “Saving on the digital platform saves me time?”



*Digitization reduced feelings of shame, worry, guilt and stress, created by the thought of missing meetings or contribution*

As noted, CSGs met weekly to make savings contributions, while DSGs met only biweekly to disburse loans and, if needed, to help members make contributions. Moreover, DSGs did not have any penalties or fines for members who missed meetings. Many DSG members expressed that they were very pleased with the lower frequency of these meetings during qualitative research.

One member described, “Meeting once every two weeks seems like a good idea as it gives [members] room to accumulate more funds for contributions and less pressure to do so, as one can send them in at any preferred time.”

Nonetheless, some noted the potential downsides of meeting less frequently: “I prefer meeting weekly and not after two weeks, because people will be pressured to look for funds. Under the current arrangement, even if they do [look for funds early on], they may spend the money on other things and end up panicking when time comes to pay.”

One concern that the study set out to measure was whether fewer meetings would decrease social cohesion (Hypothesis 5). The results show that during the pilot cycle, DSG members did not miss more group meetings than CSG members. On average, at

the endline, a DSG member had missed 1.8 meetings, and a CSG member had missed 2.1 meetings (Table 8). The study also showed no significant impact on the number of times a member gave money to someone else to make the contribution in their stead, although this behavior is more relevant for CSGs than DSGs.

Table 8: Negative feelings about missing meetings or savings

	Negative feeling index* (mean)			
	Missing meeting		Missing savings contribution	
	Baseline	Endline	Baseline	Endline
Cash	1.5	1.3	1.8	1.5
Digital	1.6	1.1	1.9	1.15
Difference (DSG - CSG)	0.1	-0.27**	0.15	0.3***
p-value (DSG>CSG)	0.64	0.02	0.21	0.001

\*Range from 0 to 7

To understand whether digitization would change interest in and commitment to groups, respondents were asked how they would feel if they were to miss a group meeting, as well as how they would feel if they were to miss a savings contribution. This question sought to understand whether members would feel less internal pressure or commitment to DSGs compared to CSGs. Of the nine possible answers, seven were negative feelings (ashamed, sad, worried, stressed, etc.) and two were positive (content and relieved). Virtually nobody said they would feel positively about missing a meeting or a savings contribution. We find no significant impact on any one feeling regarding missing a meeting or a savings contribution.

However, an index of negative feelings (ranging from zero to seven) shows that being part of a DSG group contributed to members experiencing fewer negative feelings than CSG members at the thought of missing a meeting (marginal significance,  $p=.056$ ) or missing a savings contribution (high significance,  $p=.013$ , Table 9). The team postulates that this may in part be due to the lack of fines amongst DSGs for non-attendance of meetings.<sup>24</sup> An area of future research would be to confirm whether in future DSG cycles, members will be less motivated to attend meetings for this reason.

<sup>24</sup> We learned that some groups may have organically re-instituted fines, mid-pilot.

Table 9: Regression results for negative feelings index

	Model 1	Model 2
	Index of negative feelings about missing a group meeting 0-7	Index of negative feelings about missing a savings contribution 0-7
	Ordinary least squares (OLS)	OLS
Treatment dummy	0.0562 (0.503)	0.152 (0.223)
Endline dummy	-0.184** (0.026)	-0.262* (0.053)
Treatment X Endline dummy	-0.327* (0.056)	-0.512** (0.013)
Observations	400	400

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$   
All models include a constant

In cycle two, all except two DSGs have introduced fines for missing meetings, and to make savings more salient, members receive savings statements at the beginning of each meeting.

### *Group activities initially decreased, but some are making a comeback with workarounds*

In addition to their saving and borrowing endeavors, savings group members often engage in other activities with their groups, such as discussing issues related to health, finances, personal challenges, or technology. The activities are not part of the savings group methodology, and many groups pursue them of their own accord. The study regarded the pursuit of group activities as a proxy for social cohesion (Hypothesis 5).

Digitization had no statistically significant impact on whether members engaged in group activities (Table 10), except for group trading and discussions about health, both of which were negatively impacted.

Table 10: Number of DSG member activities

	Number of group activities (mean)	
	Baseline	Endline
Cash	3.6	2.9
Digital	4.4	2.4
Difference (DSG - CSG)	0.8***	-0.5*
p-value (DSG>CSG)	0.005	0.07

An index that counts the number of activities reported by members (ranging from zero to eight) shows a highly significant decrease in the number of activities reported by DSG members relative to CSG members (Table 11,  $p=.045$ ).

Table 11: Group activity regression results

	Model 1 Number of group activities
	OLS
Treatment dummy	0.816** (0.032)
Endline dummy	-0.723* (0.085)
Treatment X Endline dummy	-1.297** (0.045)
Observations	400

*p*-values in parentheses  
 $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$   
 Model includes constant

CSGs often use the social fund for group trading even though it was initially designed to provide members with funds in case of emergencies. Because DSGs were initially unable to collect the social fund through the platform, several DSGs had no funds available for trading. This is a loss because members appreciate these opportunities to trade together and generate profit. For example, one member described in a qualitative interview: “In the last cycle [our group] bought sugar four times and distributed it among group members who would sell it and generate profits. Each got TSH 7,200 (USD 3.24) from the sugar business.”

In cycle two, many DSGs have started to collect money for the social fund in cash since the platform could not collect additional funds.<sup>25</sup> In qualitative interviews, many DSG members said they missed the trading activities and that their groups plan to restart these activities and digitize the collection of money. Two members described the importance of the social fund. One explained: “The only improvement I wish to see so far is for the social fund and the fines to be saved the same way we contribute to the DSG and not keep these contributions in cash.” Another said: “The group didn’t have a social fund in the first cycle, but with this new cycle, they expect to establish it.”

<sup>25</sup> We learned that two DSGs kept the practice of collecting the social fund outside of the platform.

The social fund and collection of fines are being incorporated into the platform and are expected to be operational in cycle three.

*Trust in the group and group members may be eroded by digitization in the initial cycle, but this finding is driven by members that left*

Trust that other members will pay back their loans and continue to make contributions for the duration of the cycle is the essence of a savings group. Not surprisingly, in our sample, members tended to have trust in savings groups and savings group members. Together (treatment and control), 77% of members agreed or strongly agreed that savings groups are trustworthy and believed that out of 10 savings group members, 7.2 could be trusted (somewhat higher at endline than at baseline, Table 12).



Initially, membership in a DSG seemed to negatively impact trust in savings groups and in fellow members (Hypothesis 2): DSG members were marginally significantly less likely to agree with the statement that savings groups are trustworthy ( $p=.08$ ) and thought fewer (nearly one less) savings group members were trustworthy ( $p=.052$ ). However, this result seems to be driven by members who left the group rather than those who stayed (Model 2 and Model 4 in Table 13). Removing those members who chose to drop out of the DSG decreased the difference in the levels of trust to statistical insignificance for trust in the group ( $p=.686$ ) and trust in fellow members ( $p=.319$ ).

Table 12: Out of 10 savings group members, how many do you think are trustworthy?

	Number of savings group members that can be trusted (mean)	
	Baseline	Endline
Cash	7.6	7.4
Digital	8.3	7.1
Difference (DSG -CSG)	0.7**	.25
p-value (DSG>CSG)	0.04	0.73

Table 13: Trust in savings groups and savings group members

	Model 1*	Model 2*	Model 3	Model 4
	Savings groups are trustworthy	Savings groups are trustworthy (excluding members who left)	Out of ten savings group members how many do you think are trustworthy?	Out of 10 savings group members how many do you think are trustworthy? (excluding members who left)
	Logit	Logit	OLS	OLS
Treatment dummy	1.390 (0.399)	1.094 (0.847)	0.663 (0.133)	0.605 (0.223)
Endline dummy	1.073 (0.809)	1.013 (0.972)	-0.232 (0.473)	-0.295 (0.446)
Treatment X Endline dummy	0.526* (0.080)	0.810 (0.686)	-0.915* (0.052)	-0.536 (0.319)
Observations	381	273	400	286

\*Exponentiated coefficients; p-values in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

## The impact of DSGs on digital knowledge and usage

In addition to bringing benefits such as safety, time savings, and ease of accounting, the team had hoped that digitization would also advance women's engagement with technology—mobile phones and mobile money in particular—to help close the digital divide (Hypothesis 1 and 2).

The study found that digitization had noticeable effects in several areas. DSG members texted more and with greater ease and may have talked on the phone more. More DSG members felt that mobile money was easy to use and were slightly more likely to use mobile money to store money. Trust in mobile money was already high among the respondents

*from the beginning, however we did see an increase in the perception that mobile money charges are fair among DSG participants.*

*The extent of the impact of digitization was limited by the existing material infrastructure; most respondents only had basic phones and lacked internet access, preventing them from learning about and using more advanced mobile phone functions. Furthermore, many participants were already using person-to-person transfers prior to the study, and the environment presented few opportunities to use functions such as bill pay or retail purchases. While savings group digitization is indeed a promising avenue for digital learning and usage, the expectation that it will be a quick fix for closing the digital divide needs to be tempered.*

### **Digitization increased the level and ease of usage of mobile phones**

Related to Hypothesis 1 on interest and confidence in using digital financial services, the team had hypothesized that the digitization of savings groups would increase digital literacy because DSG members would become more knowledgeable about mobile phone functions, find them easier to use, and use them more frequently after using the Unstructured Supplementary Service Data (USSD)-enabled DSG platform.

The study assessed whether respondents knew how to make and receive phone calls, send and receive SMS, browse the internet, load airtime, take pictures, use WhatsApp and Facebook, and add airtime. For each of these mobile phone functions, researchers asked members to assess how easy or difficult they found the functions to use, and how often they used them, to understand whether digitization would impact knowledge, comfort, or frequency of use.

At the baseline, phone ownership was high. About 76% of the women personally owned mobile phones and an additional 17% had access to mobile phones by borrowing from someone else. For DSG members who didn't have access to a mobile phone, mobile phones were provided by AKF for the pilot period.

Digitization had highly significant effects in two areas: knowing how to send and how to receive SMS. Knowledge of how to send SMS increased more among DSG members than among CSG members, and with high statistical significance (Model 1, Table 14 -  $p=.004$ ). Note that the impact on knowledge of how to receive an SMS is also highly statistically significant only after we control for the age of the respondent and literacy (Model 3, Table 14 -  $p=.046$ ). Also note that this did not result in *greater* knowledge among DSG members than CSG members as illustrated in Figure 10 and Figure 11. Rather, DSG members caught up to knowledge levels among CSG members.

Figure 10: Knows how to send SMS

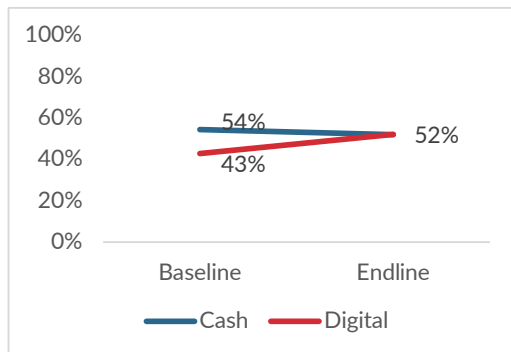
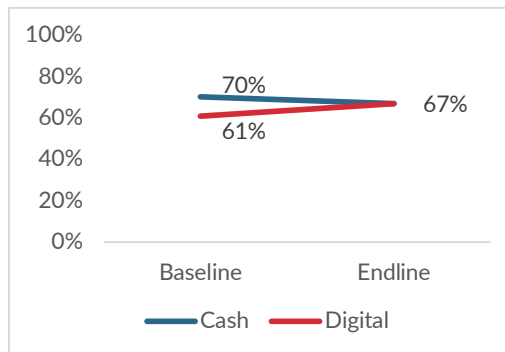


Figure 11: Knows how to receive SMS



Savings group members were also asked about how easy or difficult they found different functions on their mobile phones. By the endline, the number of DSG members who reported that it was somewhat easy or very easy to send ( $p=.001$ ) or receive SMS ( $p=.057$ ) on their mobile phones increased with statistical significance (Model 7 and Model 8 in Table 14) relative to baseline. Members also reported sending SMS more frequently, which was highly statistically significant (Model 6 in Table 14 -  $p=.014$ ).

Although DSG members only needed to access a USSD menu to navigate the digital platform, this practice may have increased comfort with sending SMS independent of the platform. In addition, DSG members received SMS confirmations for all their transactions, which may explain the increased knowledge about receiving SMS.

Following the introduction of the DSG, members also reported an increase in the frequency of making ( $p=.085$ , marginally significant) and receiving ( $p=.002$ , highly significant) phone calls (Model 4 and Model 5 in Table 14).



Table 14: Changes in usage and comfort with mobile phones

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
	Knows how to send SMS on a mobile phone dummy	Knows how to receive/read SMS on a mobile phone dummy	Know how to receive/read SMS on a mobile phone dummy	Frequency of receiving calls <sup>26</sup>	Frequency of making calls <sup>27</sup>	Frequency of sending SMS, including <sup>28</sup>	Easy/Very easy to send SMS dummy	Easy/Very easy to receive SMS dummy
	Logit	Logit	Logit	Ordered logit	Ordered logit	Ordered logit	Logit	Logit
Treatment dummy	0.627 (0.269)	0.660 (0.308)	0.789 (0.632)	0.577 (0.185)	0.793 (0.584)	0.621 (0.217)	0.580 (0.198)	0.643 (0.280)
Endline dummy	0.911 (0.270)	0.859 (0.419)	0.732 (0.525)	0.424*** (0.008)	0.618 (0.104)	0.997 (0.981)	0.873 (0.127)	0.899 (0.569)
Treatment X Endline dummy	1.586*** (0.004)	1.515 (0.117)	3.693** (0.046)	3.430*** (0.002)	1.802* (0.085)	1.603** (0.014)	1.790*** (0.001)	1.630* (0.057)
Age			0.919*** (0.000)					
Illiterate dummy			0.0096*** (0.000)					
Observations	400	400	387	389	395	395	400	400

Exponentiated coefficients; p-values in parentheses

\* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

All models include constants

<sup>26</sup> Those who don't know how to receive calls (<3% of all responses) have zero frequency of receiving calls. Similar results can be seen when analyzing only those who know how to receive calls.

<sup>27</sup> Those who don't know how to make calls (<9% of all responses) have zero frequency of receiving calls. Similar results can be seen when analyzing only those who know how to make calls.

<sup>28</sup> Those who don't know how to send SMS (50% of all responses) have zero frequency of sending SMS. The results do not hold if these individuals are excluded from the analysis.

Digitization did not have any impact on overall knowledge about other mobile phone functions, such as taking photographs or using the internet or social media. The average number of functions that members knew how to use was 4.6, nearly identical between CSGs and DSGs, and with very little change between baseline and endline. This result was not entirely surprising: for one, the digital platform did not utilize any of the advanced functions as mentioned above, and secondly, most members only owned basic phones, which do not support advanced functions.

*Digitization increased ease of use of mobile money, but resulted in no significant change in use cases or frequency of use*

In addition to evaluating knowledge and use of mobile phones, Hypothesis 1 sought to understand whether digitization would increase usage or comfort with mobile money along with whether digitization would positively affect the usage of mobile money beyond the DSG.



At the beginning of the study, nearly every respondent (99%) had heard of mobile money. Furthermore, 70% of CSG members and 77% of DSG members had personally used mobile money. By the end of the period, the proportion of savings group members who had used mobile money for purposes beyond the platform had increased to 75% for CSGs and 86% for DSGs (Figure 12). However, regression results (Model 1, Table 15) show that these differences in increases cannot be attributed to digitization ( $p=.234$ ).

Mobile money users were asked how easy they found it to use mobile money. The percentage of respondents who said that it was “very easy” increased from 32% to 49% among DSG members and from 37% to 46% for CSG mobile money users (Figure 13).

Figure 12: Have you ever used mobile money?

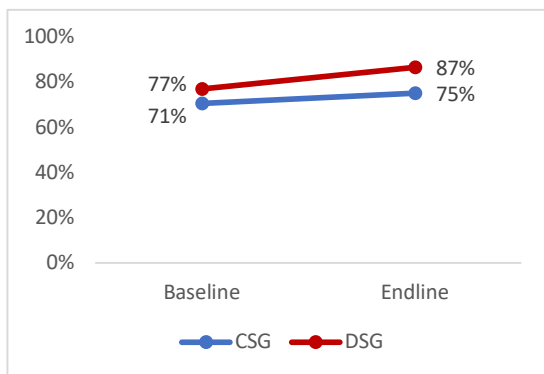
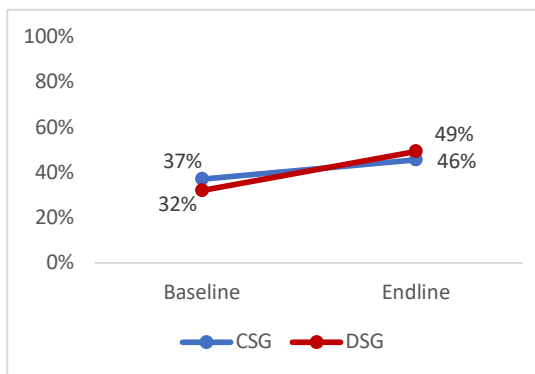


Figure 13: How difficult is it using mobile money? Very easy



Regression analysis showed that both CSG and DSG members became more adept at using mobile money over time, but digitization was responsible for the higher increase for DSG members. Nonetheless, the statistical significance of this result is only marginal (Table 15, Model 2 -  $p=.08$ ).

Table 15: Changes in usage and comfort with mobile money regression results

	Model 1: Used mobile money dummy	Model 2: Very comfortable using mobile money dummy <sup>29</sup>	Model 3: Used mobile money to store or save money (mobile money users only)
	Logit	Logit	Logit
Treatment dummy	1.398 (0.461)	0.924 (0.856)	0.753 (0.493)
Endline dummy	1.261 (0.401)	1.473** (0.032)	2.197*** (0.002)
Treatment X Endline dummy	1.536 (0.234)	1.547* (0.080)	1.960* (0.079)
Observations	395	395	305

Exponentiated coefficients;  $p$ -values in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

All models include constant

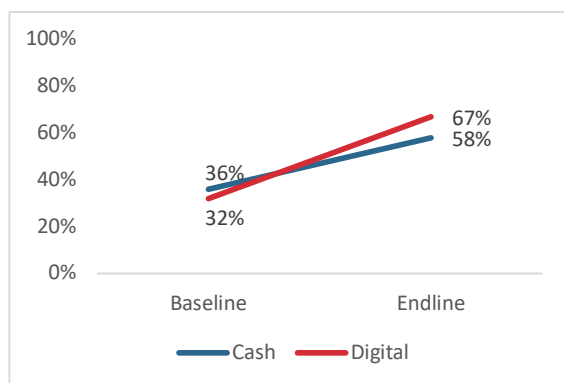
Using mobile money to pay school fees or bill pay did not change significantly. Overall only about 15% of all women had used mobile money to pay bills or school fees, and this did not change during the study. This result was not surprising as savings group members live in cash-based ecosystems. Based on qualitative research, only electricity

<sup>29</sup> Non-mobile money users are included with negative response. Note that the result is not statistically significant if these respondents are excluded from the analysis.

and television subscriptions could be paid using mobile money, and this only applied to areas with electricity.

Between baseline and endline, the use of mobile money as a store of money or savings instrument (for short-term or long-term savings) increased among both CSG and DSG members (Figure 14). In addition to this time trend, digitization had a marginally significant impact on whether members used mobile money for this purpose (Model 3, Table 15 -  $p=.079$ ). It should be noted, however, that this self-reported increase may not have indicated true savings. In qualitative discussions, group members referred to saving money in mobile money wallets, meaning they kept the money in the wallet for just a few days before withdrawing it, which does not quite meet the industry standard for savings.

Figure 14: Have you ever used mobile money to save or store money?

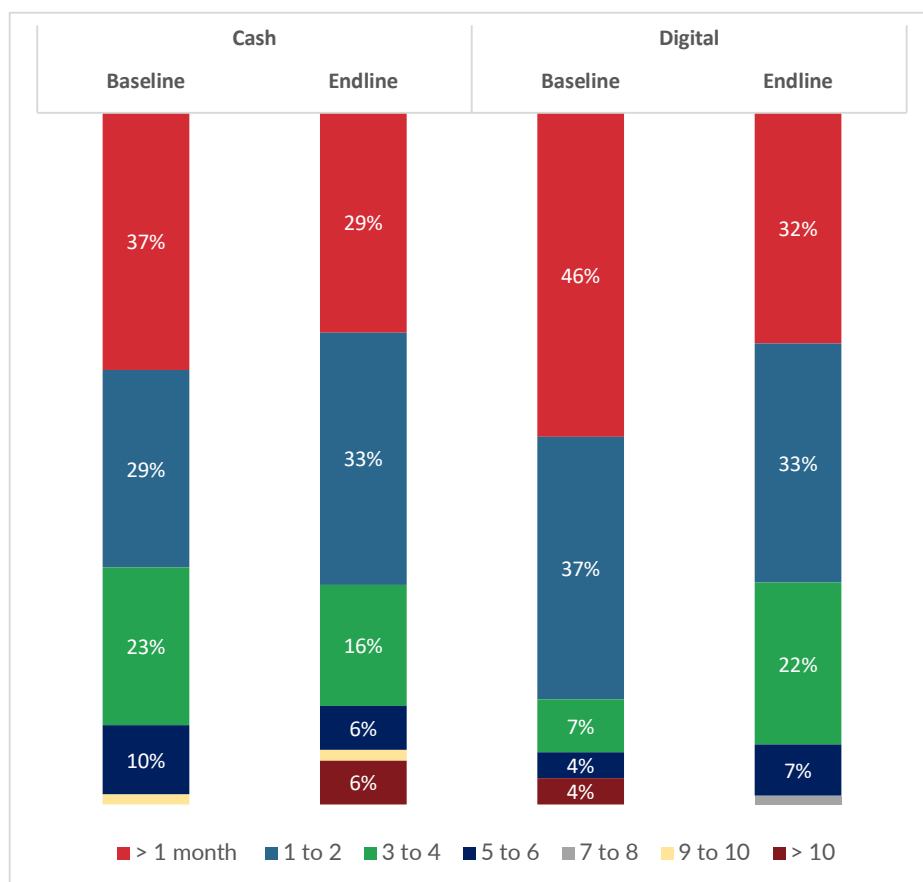


One member explained: “I save with mobile money to buy shares with the [DSG] and to pay the loans. I also save on mobile money for emergencies, for up to a month, and for my daughter’s school fees.”

By the endline survey, 29% of CSG members and 32% of DSG members said they performed fewer than one mobile money transaction per month outside the DSG platform (Figure 15). An additional 33% of members (of both CSGs and DSGs) only performed one or two transactions per month. Regression analysis suggested that digitization had no statistically significant impact on the frequency of mobile money transactions outside of the platform ( $p=.19$ ). However, in qualitative interviews, members reported that they transact more often now. One member explained, “I used to use mobile money between once and twice a month, but now I use mobile money to send and receive more than four times a month.”

Members of both groups were also asked when they conducted their last non-DSG related mobile money transaction. For members of DSGs, the median response was the same at the endline as it was at the baseline i.e., they conducted their last mobile money transaction within the last 30 days suggesting that digitization had no impact on frequency of transactions.

Figure 15: Mobile money transactions conducted in a month (mobile money users only)



*DSG members had a slightly improved perception of mobile money*

The team had hypothesized that routinely using mobile money for group-related transactions would improve DSG members’ outlook on the trustworthiness of mobile money services and mobile money agents (Hypothesis 2 related to trust in formal financial services).

Members viewed mobile money services with a high level of trust from the beginning of the project. When asked how much they agreed with the statement, “Mobile money providers are trustworthy,” only 3% of CSG members disagreed to various degrees, and an additional 7% were undecided. Similar levels were observed for DSG members at baseline: 6% disagreed to some degree, and 6% were undecided. By the endline, trust in mobile money providers had slightly increased for both CSG and DSG members. The percentage of DSG members who strongly believed that mobile money was trustworthy increased by 12 percentage points, compared to an increase of only five percentage points among CSG members (Table 16). However, using regression analysis this finding was not statistically significant (p=.43).

Table 16: Agree or disagree: Mobile money providers are trustworthy

	Cash		Digital	
	Baseline	Endline	Baseline	Endline
Undecided	7%	2%	6%	4%
Strongly Disagree	0%	0%	1%	0%
Disagree	1%	0%	1%	0%
Somewhat disagree	2%	3%	4%	0%
Somewhat Agree	15%	19%	8%	8%
Agree	25%	22%	22%	16%
Strongly Agree	49%	54%	59%	71%

We saw similar results for responses to a question about how safe mobile money is as a place for storing money (Table 17): both CSG and DSG members thought it was safe from the baseline, and the level of agreement increased among all members by the endline. At the endline, 92% of DSG members and 81% of CSG members agreed or strongly agreed that mobile money was a safe place to store money.

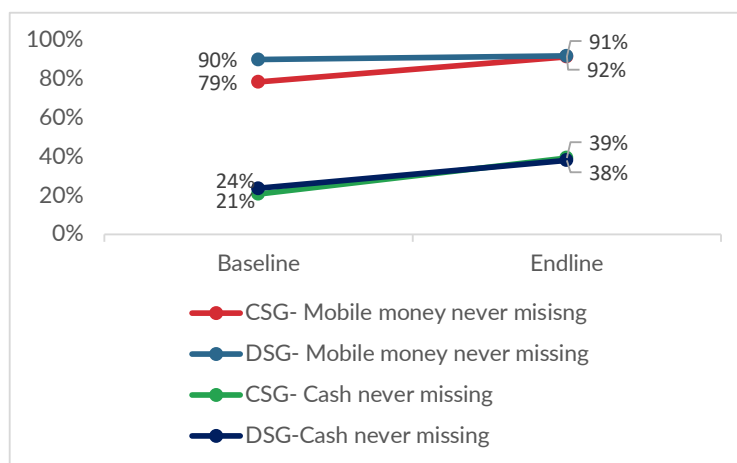
Table 17: Mobile money providers are a safe place to store money

	Cash		Digital	
	Baseline	Endline	Baseline	Endline
Undecided	5%	2%	4%	1%
Strongly Disagree	2%	0%	0%	0%
Disagree	5%	0%	4%	0%
Somewhat disagree	4%	1%	2%	0%
Somewhat Agree	15%	15%	13%	7%
Agree	34%	26%	35%	27%
Strongly Agree	34%	55%	43%	65%

A similar question asked members how safe they believed money stored on a mobile phone to be. Both DSG and CSG members believed that money was safe or very safe. Although this perception improved from the baseline to the endline among both DSG and CSG members, digitization had no statistically significant impact on this perception ( $p=.34$ ).

Savings group members were also asked how many times mobile money sent to a far-away village would go missing when sent in cash vs. when sent as mobile money (see Figure 16). The differences in perceived security were clear: mobile money is seen as a much more secure option of sending money than cash, but digitization did not drive any increases.

Figure 16: How many times would mobile money/cash go missing if sent to a remote village?



Given the high starting points and the time trends, the increases in perceived safety and trustworthiness of mobile money were not large enough to be attributed to digitization with statistical significance (Table 18, Model 1-  $p=.912$ ).

Table 18: Changes in level of trust in mobile money and formal financial services

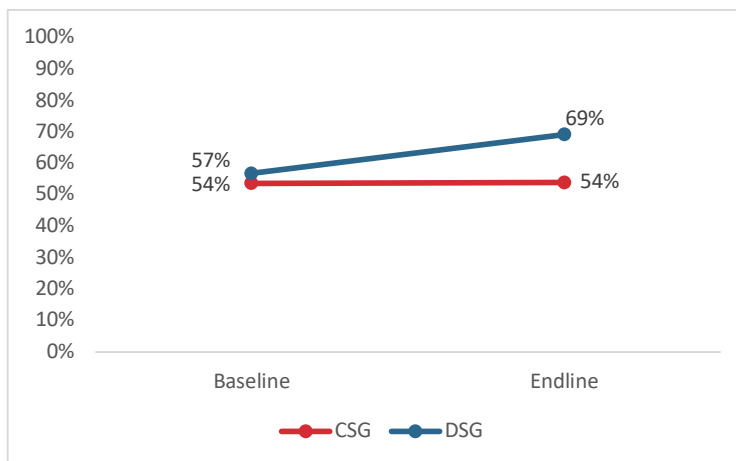
	Model 1: Mobile money providers are a safe place to store money	Model 2: Mobile money charges are fair- Agree/Strongly agree dummy	Model 3: Saves in mobile money for the long-term dummy
	Ordered logit	Logit	Logit
Treatment dummy	1.526* (0.078)	1.013 (0.968)	0.584 (0.274)
Endline dummy	2.324*** (0.001)	1.139 (0.485)	1.678 (0.109)
Treatment X Endline dummy	1.037 (0.912)	1.682* (0.066)	3.407*** (0.006)
Observations	377	381	400

Exponentiated coefficients;  $p$ -values in parentheses  
 \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$   
 All models include constant

On the other hand, perceptions of mobile money fees started off at relatively lower levels: only a little more than half of members agreed or strongly agreed that the fees were fair at the baseline. However, by endline a large enough proportion of DSG members had changed their opinion (Figure 17). The impact of digitization on the

likelihood of finding charges associated with mobile money to be fair was marginally statistically significant (Table 18, Model 2 -  $p=.066$ ).

Figure 17: Agree to strongly agree: Mobile money charges are fair

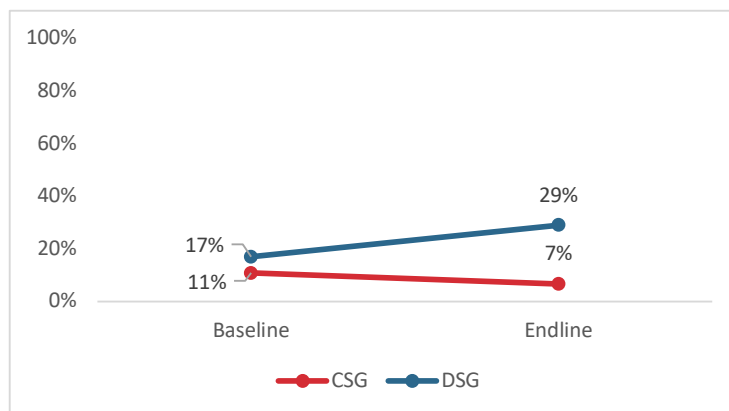


The questionnaire asked group members to name what they thought was the best option for saving money for the long term (more than six months), regardless of whether they actually use that option. At the baseline, 21% and 22% of CSG and DSG members, respectively, selected mobile money as the best option. By the endline, 38% of DSG members selected this option, while the proportion of CSG members selecting this option did not change. The difference, however, was not significant ( $p=.36$ ).

Members were asked also how they actually save money for the long term in order to judge how perceptions of mobile money as a savings instrument evolved. At the beginning of the study period, 7% of both DSG and CSG members stated that they used mobile money as a long-term savings option. This percentage increased to 29% of DSG members by the end of the study period, compared to only 17% of CSG members (Figure 18). This change was highly statistically significant (Table 18, Model 3 -  $p=.006$ ). It should be noted, however, that DSG members likely thought the question referred to savings on the DSG platform rather than to a mobile wallet independent of the savings group. In qualitative interviews, most members revealed that their mobile money savings lasted no longer than one to two weeks.



Figure 18: Long-term savings on mobile phone

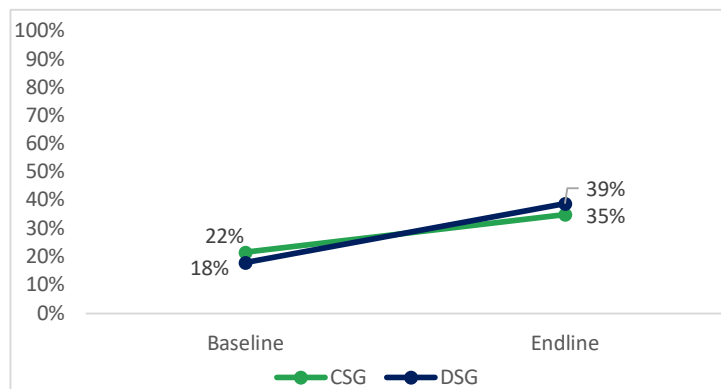


One member said, “I save [into the mobile wallet] for up to a month or two, but not more than six months. I save between TSH 10,000 (USD 4.50) and TSH 100,000 (USD 45). The aim of saving is for emergencies, such as medical. The agent isn’t far from where I am.”

The study asked similar questions about emergency savings—how did people prefer to save for emergencies, and how did they actually do so? Mobile money was the preferred option for saving (surprisingly more so than saving cash in the house), and its popularity grew over time, from 36% to 62% among CSG members, and from 34% to 56% among DSG members. The proportion of DSG members who actually saved with mobile money for emergencies also increased from 18% to 39% – a slightly larger increase than among CSG members who went from 22% to 35% (Figure 19). Nonetheless, none of these changes can be attributed to digitization.

One member said, “I save with mobile money, and that is mainly for emergencies. Withdrawing from it would depend on the need to do so. I save money for up to a week with mobile money.”

Figure 19: Emergency savings on mobile phone



Generally, the study found that group members used mobile money wallets to store value outside the platform dealings, however, only for short-term needs. For example, one member described: “I save for home consumption and may save up to one month on my mobile money account.”

## CONCLUSION

Digitizing saving groups appears to create encouraging progress towards closing the digital divide. Specifically, related to the hypotheses:

*Hypothesis 1: Cooperative learning through DSG activities creates more independent use of and greater interest in using digital financial services.*

- The study found that DSG members were able to text more and with greater ease, use mobile money with greater ease, and use mobile money for money storage more relative to members in CSGs.
- Digitization did not affect uptake of mobile money, likely due to high uptake to begin with.
- However, expectations and hopes about savings group digitization as an easy fix for the digital divide need to be tempered. The study found no change in use of advanced mobile phone functions, such as taking photographs, using the internet or using social media, although this was likely due to the fact that the platform did not utilize these functions and that the majority of members owned basic mobile phones which do not offer these advanced functions. Nor did digitization impact frequency of mobile money use nor use of mobile money for bill pay or for store purchases. The latter was not surprising as savings group members live in cash-based ecosystems.

*Hypothesis 2: Cooperative learning through DSG activities creates greater trust in formal financial services.<sup>30</sup>*

- Membership in the DSGs increased the likelihood that members perceived mobile money charges to be fair and increased the likelihood that members perceived mobile money to be a safe and preferred long-term savings option.

*Hypothesis 3: Digitally transacting decreases time costs for group members.*

- Digitization reduced the frequency and length of group meetings, and this change was highly statistically significant.
- DSG members also spent marginally significantly less time on activities related to their savings groups, such as preparing for meetings or collecting savings contributions.

<sup>30</sup> Formal financial services is defined as mobile money. Although banks were initially included in this hypothesis, the intervention did not change members' interactions with banks, bank agents, or knowledge of banks. Thus, perceptions of banks did not change, and we focus on changes related to mobile money in the report.

*Hypothesis 4: Digital financial services will reduce pressure on savings group members to lend frequently as a means to reduce risky cash holdings at the village level.*

- The initial survey found no evidence that lending pressure was ever an issue for the groups we studied. Thus, this research question was dropped.

*Hypothesis 5: Digitally transacting group members maintain the same interest and commitment to the group as in cash-based groups.*

- DSG members were more likely to leave a group, however qualitative and quantitative survey evidence suggest that this was driven by novelty and risk aversion to the DSG. This result also appears driven by literacy levels and age.
- Meeting attendance was not impacted by digitization.
- DSG members experienced less negative feelings associated with the thought of missing a meeting or missing a savings contribution. Given that internal pressure is important to savings group discipline and commitment, this will be important to study in future DSGs.
- Finally, DSG members reported participating in fewer group activities, such as trading as a group, discussing issues related to health, finance or personal challenges. This may suggest the potential for reduced social cohesion, although the group's ability to trade was impeded by the lack of ready cash via the social fund.

Above and beyond these findings, DSGs improved the perception of safety of funds among members. The majority of members have already joined a second DSG cycle, and cited safety as the number one reason for joining again.

While some members dropped out to see how digitization would go, many of these members stated that they would re-join for the next DSG cycle. The team anticipates that, as understanding of the DSG spreads along with news about the benefits and safety of the platform, membership will grow. The team also anticipates that savings levels will increase in subsequent cycles once members fully trust the system. However, these are topics for future research.

Based on cycle one, we feel that the following changes to the DSG platform and the training that accompanies it could enhance the benefits of the platform:

- **Additional training sessions may help ease less literate and older clients into the DSG.** This training could include introductions to the rationale and benefits of using the platform, a chance for members to interact and ask members who have already used the digital platform questions, and more hands-on training on the functions of the platform. One potential idea is to incorporate icons or symbols to assist less literate members in navigating the platform.

- **Expand opportunities for members to learn in a peer-learning or paired fashion.** In the first cycle, AKF conducted trainings in groups of three members, so that fast-learning members could assist slower ones, making all members feel more comfortable learning how to use the platform and allowing them to access additional guidance from trainers. Although this already happened to some degree informally, members that need additional support could benefit from having another member assigned to them as a one-on-one mentor. For example, more literate members could be paired with less literate or older members who are hesitant about switching to a DSG to demonstrate how the system works and be available as a guide at any time.
- **Develop modules specifically for different functions or use-cases of the platform and mobile money.** The study suggests that the use of the platform increased knowledge of how to send and receive SMS, which is a promising example of the potential benefits of learning to use a digital tool in a group and of the step-by-step guides developed by AKF.
- **Allow members to withdraw early in the cycle to demonstrate its safety.** While DSG members had the option of withdrawing from their savings at any point, doing so would result in a reduction in interest. Thus, most members chose not to do so. However, some withdrew as a means of testing the platform and said this simple test bolstered their confidence in the platform very early on in the cycle. For other members, trust increased only after they experienced the share-out. For others looking to introduce a DSG solution, allowing members the option of withdrawing one time with no penalty might allay any lingering distrust in the system, and even encourage hesitant members to join.

## ANNEXES

### Annex 1: Case Study

*It is a cloudy day in Southern Tanzania. The sky is grey, and towering clouds threaten to unleash upon the fields at any minute. As we drive along the solitary road that cuts its way through fields, swirling past small farming plots, an intermittent drizzle starts. We are somewhere between the Lindi and Mtwara regions, heading to a meeting with the Neema DSG, who have kindly adjusted their semi-monthly meeting schedule to accommodate our visit. When we arrive at the village where the group is based, traditional greetings are exchanged. AKF Program Officers begin a back and forth chant of “Weka Akiba! Boresha Maisha! Boresha Maisha! Weka Akiba!” meaning, “Save!” “Invest in Life!” and vice versa. But the pleasantries are soon interrupted as the rain increases in intensity, forcing a quick scramble of feet and accompanying mats into a nearby building.*

The Neema Group first came together as a cash-based savings group in 2012. At the time, it was comprised of 25 members (15 women and 10 men). The impetus to form the group was a mobilization meeting by AKF, which had been organized in partnership with the village’s executive members. Prior to this meeting, community members had simply kept substantial amounts of money in their homes. However, many saw the value of a cash-based savings group because they believed it ensured greater safety of one’s money, and because it enabled access to loans – which many hoped to use to pay school fees and run small businesses such as selling vegetables. Indeed, Rashidi Omari, age 42, benefitted from the cash-based savings group because it allowed him to purchase and rear goats. Today, he owns a farm where the many goats he owns graze before they are sold for meat.

Despite the many benefits of cash-based savings groups, members of the Neema Group soon came to realize that there were also several flaws with the group’s operations. First, the weekly meetings often ran for longer than an hour as the group’s treasurer was forced to perform cumbersome tasks: checking the float, reviewing and confirming previous contributions, collecting and confirming new contributions, and considering loan applications. Second, theft stemming from an absence of accountability and lack of accuracy in bookkeeping meant that the group would often find their cashbox lighter than expected. Zuhuru Matindira, age 45, says that the group was keeping money in a cashbox controlled by the treasurer. However, one day, the group was dismayed to find that TSH 2,000,000 (USD 900) was missing. They attributed the theft to bad recordkeeping, where members could not reconcile what they had put in the box with what remained, allowing someone to take advantage of this flaw. The theft sowed discord among the group members, decreasing group motivation and morale. Many began to suspect that the savings group’s leaders were

siphoning cash on the side. This belief caused many to leave the group while others pondered the value of remaining.

In response to the theft and growing distrust among the members, Neema Group's leaders called a meeting to encourage members to remain committed to the group. As they reflected on what needed to be improved, the group saw the need for a higher level of transparency. For many members, it was the transparency and security offered by a DSG that encouraged them to remain within the group and motivated dejected previous members to rejoin.

Prior to the launch of the DSG in 2016, Neema Group members were familiar with mobile money. Yet, they still had many questions and concerns about how this innovative approach to collective saving would work, including:

- “How do we know a group member is contributing?”
- “How can I determine my share when I want to withdraw cash?”
- “Where is the money being kept?”

When the transition to using a DSG began, many group members found it challenging to follow the procedures to transact or contribute savings. Uncertainty around decision-making and using the platform often resulted in frustration, as the USSD refreshed and returned to its home screen whenever there was a delay or lack of action. This, in turn, further extended the duration of each meeting. Despite challenges such as this, Rashidi Omari recounts that everyone was eager to learn and was patient with the education process. The group was visited by AKF staff, who played a key role in teaching group members about the platform and, in so doing, increased levels of trust and knowledge about the system. The group self-reports that 60% of its members adopted the digital platform easily. The remaining 40% sought extra support from the early adopters as they made the shift.

There were, of course, growing pains and an aversion to risking too much by immediately giving up cash-based savings in their entirety. As a result, members began by saving just a little money via the DSG – approximately TSH 3,000 (USD 1.35) per month, as opposed to an average of TSH 32,000 (USD 14.40) per month when the group was using a cashbox. After the first nine-month cycle was complete, the share-out went as expected. As trust in the product grew, so too did the average amount saved via the platform. In fact, group members reported that today, mobile savings range from TSH 20,000 (USD 9) to TSH 200,000 (USD 90) per month.

The system's security, user-friendly experience and short meetings were instrumental in building trust and interest in digital finance and the platform itself. Despite not fully understanding how the offering worked, group members made the shift to digital because of their success in applying for and securing loans via the platform. In addition,

viewing the group's account balance was simplified with the mini-statements, and accessing this information easily affirmed to group members that the money contributed was still there. Despite this newfound trust, the group initially continued to keep written records so that they could compare the written records with the digital values. Finally, the DSG reduced the number of meetings from weekly to every two weeks and DSG meetings never run longer than half an hour assuming there is a strong network connection.

Technology has always been viewed as a leveler and an enabler. Indeed, at the heart of the DSG is a commitment to democratic decision-making and knowledge transfer. At the beginning of each cycle, the group gathers and makes decisions collectively to set the group constitution, including the minimum pay-in at each meeting, the loan service charge, the maximum duration of a loan, the share-out meeting number, the group name, and the election of a chair person. This approach to decision-making ensures shared alignment and ownership in the process reducing the likelihood of complaints or member attrition.

Beyond decision-making, knowledge transfer between group members more comfortable with the digital platform and members who aren't ensures that all group members will eventually become resources or support hubs for other community members who are keen to explore digital payments. All the Neema Group's members reported that they were comfortable providing technical advice about the USSD platform and mobile payments in general.

It is startling that nearly two billion individuals and 200 million businesses in emerging economies lack financial identities and, by extension, access to savings, loans and credit<sup>31</sup>. Yet today, more than ever before, we have the tools and services to ensure that inclusive growth is the cornerstone of the global development agenda. A commitment to financial inclusion and the scale of digital platforms to enable this could ensure that



approximately 1.6 billion unbanked people could gain access to formal financial

<sup>31</sup> Banga, Ajay. "Remarks by MasterCard President and CEO Ajay Banga at the Mobile World Forum." MasterCard. March 3, 2015.



services (such as formal loans, transfers, and borrowing money), approximately half of whom would be women.<sup>32</sup>

As Africa's mobile revolution continues to unfurl, it is mission critical that development initiatives focus on leveraging this touchpoint to influence change. Indeed, this is a demand-driven need: 90% of the Neema Group members indicated that they were willing and ready to learn more about other digital financial products. Of the 10% who did not show a commitment to further learning, their reluctance was a product of poor vision and eyesight problems, which made it difficult to interact with a digital interface. This is an important reminder that we need solutions that fit people, not statistics.

In countries where more than 70% of people can pay digitally, financial inclusion is over 85%.<sup>33</sup> Fostering inclusive growth through financial inclusion is the task before us. With continued commitment and dedication, DSGs will be instrumental in helping us achieve this goal.

<sup>32</sup> Manyika et al. "Digital Finance for All: Powering Inclusive Growth in Emerging Economies." McKinsey and Co. September 2016.

<sup>33</sup> Banga, Ajay. "Remarks by MasterCard President and CEO Ajay Banga at the Mobile World Forum." MasterCard. March 3, 2015.

## Annex 2: Methodology

### *Research Methodology for Quantitative and Qualitative Research*

From the census findings, the research stratified groups based on cycle (1<sup>st</sup> cycle vs other cycles) and then randomly selected groups who were in cycles other than their 1<sup>st</sup> cycles. Originally, 20 groups (10 cash and 10 digital) were to be randomly selected (200 total individual interviews), but given the concern for the statistical power of 20 groups, this was increased to 30 savings groups.<sup>34</sup> AKF explained to each of the 30 savings groups the research and the potential for groups to use a digital platform for their savings. All groups self-selected to be part of the study but did so knowing that they might not receive the digital platform.

Within both CSGs and DSGs some group members dropped out of the group before the research started and others joined. This is common amongst AKF savings groups as members tend to shuffle in and out of groups between cycles, however some members chose to leave when they heard their group would be using the digital platform. In Mtwara almost all of the groups approached about the study were interested, but in Lindi, especially in urban areas, the majority of groups were not interested in being part of the research. 24 groups (12 digital and 12 cash) agreed to be part of the research.

After the research began, one digital group in Mtwara withdrew due to concerns that they could not manage the platform with only 4 literate members in the group, reducing the number of participating groups to 23. The Lindi groups that refused to be part of the research cited three main reasons for not wanting to join:

- The group thought that the DSG was the same product that Post Bank was offering to savings group within the region.<sup>35</sup>
- The group had shared out already and did not want to wait to start their next cycle and be part of the research.
- The group wanted to be part of the pilot but only if they could pick whether they were digital or cash.
- Group members were influenced by members and other people that personally felt they might lose out.

Given the high rate of refusal in Lindi, AKF reached out to additional savings groups in the region. The new savings groups met the same criteria as the replaced savings groups; majority women, women in leadership roles and willing to be part of the

<sup>34</sup> See the annex for a technical note about statistical power of a given number of groups

<sup>35</sup> <http://insights.careinternational.org.uk/development-blog/private-sector-engagement/new-linkage-product-for-savings-groups-in-tanzania-shows-potential-of-this-growing-financial-services-market>

research whether as a cash or digital group. Each additional savings group was randomly assigned to be either a CSG or a DSG to ensure a statistically balanced treatment and control group. The table below provides a breakdown of the number of groups selected per region, the number that refused and the actual number that agreed to be part of the research.

Table A1: Group selection breakdown<sup>36</sup>

Random Selection			Number Refused/Eliminated		Actual (after drop out and outreach to additional replacement groups)	
Region	Cash	Digital	Cash	Digital	Cash	Digital
Mtwara Urban	2	2	0	0	2	2
Mtwara Peri-Urban	3	5	0	1	3	3
Lindi Urban	8	8	5	7	3	1
Lindi Peri-Urban	2	0	0	0	4	5
<b>Total</b>	<b>15</b>	<b>15</b>	<b>6</b>	<b>8</b>	<b>12</b>	<b>11</b>

Within groups, group members were randomized to allocate which (female) members would not only be interviewed at baseline and endline (the same member interviewed at baseline was interviewed at endline) but also which members would be part of the deep-dive interviews.

<sup>36</sup> Groups were randomly selected from a census of AKF savings within Mtwara and Lindi. Urban is defined as an area with infrastructure including banks, hospitals and mobile network operators, while peri-urban is defined as a growth point town with semi-infrastructure but potentially lacking a hospital or bank.

In the quantitative survey, the same members that were interviewed at baseline were interviewed at the endline, including members that had dropped out of the pilot cycle early. At endline, among 194 respondents, 51 had left the pilot cycles early.

In addition, individual in-depth interviews were conducted with group members in three rounds (see table) at key junctures: at the start of the cycle, mid-way through the cycle, and following share out. Interviews were also conducted with members who pulled out of the DSGs before or during the pilot. The table below provides a breakdown of the number of interviews that were conducted per group during the interview weeks.

Table A2: Qualitative interview breakdown

Interviews (Deep-dive)	Interviews per group	Number of groups	Location
December 12 <sup>th</sup> - December 17 <sup>th</sup> 2016	4-6	4	Mtwara/Lindi
March 23 <sup>rd</sup> - March 28 <sup>th</sup> 2017	4-6	3	Lindi / Mtwara
November 15 <sup>th</sup> – November 23 <sup>rd</sup> 2017 <sup>37</sup>	4-6	7	Lindi/Mtwara

<sup>37</sup> This date is subject to change based on the group cycle.

## Annex 3: Demographics

### Sample Demographics

To ensure robust and causal endline results, it is important to have statistical balance across independent and dependent variables between the CSGs and DSGs. After completing baseline data collection, averages and frequencies were taken across key descriptive variables to ensure that there is no statistical difference across CSGs and DSGs.

The table below compares averages from 10 socio-demographic and savings group characteristics across CSGs and DSGs at baseline. Only the number of savings groups a member is currently in is marginally statistically different (at the 10% level), with CSG group members slightly more likely to be in an additional savings group compared to DSG members.

Table A3: Socio-demographic statistics from baseline survey

Descriptive Statistics				
Variable	Cash	Digital	Difference	P-Value
Age (years)	41	41	0	0.96
Household size	4.8	5.1	0.3	0.29
Number of savings groups before	2.3	0.8	1.4	0.13
Number savings groups currently	1.5	1.2	0.2	0.07**
Number savings cycles	2.4	1.5	0.9	0.34
Time to mm agent (minutes)	19.2	15.3	3.9	0.23
Household head (%)	36%	41%	5%	0.45
Married (%)	69%	63%	6%	0.31
No schooling (%)	28%	26%	2%	0.72
Own their own phone (%)	77%	76%	1%	0.85

The table below compares averages from 10 dependent variables that were compared across CSGs and DSGs at the endline. Ideally there would be no statistical difference

between CSGs and DSGs, but there are two variables with a significant difference. Savings group members in DSGs on average have more trust in mobile money agents and do more activities (i.e. selling soap, talking about challenges, etc.) with their savings groups compared to CSGs. Even with perfect randomization there is room for spurious correlation between variables and given the balance across other variables, the results do not appear to explicitly violate randomization.

Table A4: Dependent variable statistics from baseline survey

Descriptive Statistics				
Variable	Cash	Digital	Difference	P-Value
Number of phone tasks (10)	4.7	4.3	0.4	0.26
Number of mm agents trusted (10)	5.9	6.7	0.8	0.09*
Number of missed group meetings (10)	1.5	1.6	0.1	0.77
Number of activities done in savings group	3.6	4.4	0.8	0.01**
Forced to borrow (%)	3%	3%	0%	0.89
Life worse if savings group met less (%)	56%	51%	8%	0.23
Have set savings group routine (%)	56%	65%	9%	0.17
Used mobile money (%)	70%	75%	5%	0.45
Wanted to move groups (%)	9%	4%	5%	0.1
Personal bank account (%)	17%	16%	1%	0.85

## Annex 4: Areas for future research

This small but important step towards closing the digital divide is encouraging, and more research can help to unlock exactly how DSGs help women and rural savings group members to use mobile financial services in new ways:

- How do individuals learn to use mobile financial services in their digital journey? Do they continue to use agents to support over-the-counter(OTC), or do they transact on their own?
- How do DSG members utilize mobile money outside of the digital platform? Do they start saving for personal use? If so, for how long and for what purposes? Do they leave money on the wallet for longer periods than before? Do they start to use mobile money more frequently or for purposes beyond peer-to-peer transfers?

Further research could also help better understand broader changes occurring, such as:

- Do groups alter their meeting frequencies as they become more familiar with the platform? What implications does this have for group cohesion?
- Does the reintroduction of fines improve meeting attendance or as members become more familiar with the platform do they feel less need to attend meetings?
- Now that groups have reintegrated the collection of the social fund how does this impact on group activities and by extension members' commitment to the group?
- As DSGs scale up, what is the economic impact for the mobile money agents?

In addition, from an operational perspective:

- As the training model is refined, how do members respond to this? What is the most effective and cost-efficient model?