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DISCUSSION PAPER SERIES

IZA DP No. 14781

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ABSTRACT

Closing the Gender Profit Gap?*

We examine the impact of providing access to mobile savings accounts and improving financial management skills on the performance of female-led microenterprises in Mozambique. We find evidence that both interventions can improve business performance but the effects are highly heterogeneous. Combining both types of support is associated with a large increase in both short and long-term firm profits and in financial security for the microentrepreneur. This allowed female-headed microenterprises, particularly those with a higher baseline level of profits, to close the gender profit gap in performance and skills relative to their male counterparts. The main drivers of improved business performance are improved financial management practices (bookkeeping), an increase in accessible savings, and reduced transfers to friends and relatives. For female entrepreneurs with intermediate levels of profits at baseline, even just providing access to mobile money accounts can increase long-term profits and for the most disadvantaged microentrepreneurs it can at least in-crease levels of financial security. Uncovering this heterogeneity in impact within different types of female-led microenterprises can help improve the targeting of these interventions in the future.

JEL Classification: O15, O16, G53, J16

Keywords: microenterprise development, management, gender, mobile money, financial literacy, economic development

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1 Introduction

Over 50% of the urban poor are currently engaged in some form of micro, non-agricultural business.[1] A striking fact about self-employment, particularly in the developing world, is the persistence of a substantial business performance gap between male and female microentrepreneurs (Nix et al, 2015; Hardy and Kagy, 2018). In fact, female-led businesses often report less than half of male-led business profits (Kalleberg and Leicht, 1991; Bird and Sapp, 2004; Doering and Thebaud, 2017), even when operating in similar sectors as their male counterparts (Hardy and Kagy, 2018). While there might be several drivers of this gender profit gap, this paper focusses on two key supply-side constraints to business performance that have been identified in the literature as being particularly binding for female microentrepreneurs: limited access to capital (Bruhn and Love, 2009; Collins et al, 2009; de Mel et al, 2010) and lack of exposure to financial management *know how* (Rosenthal and Strange, 2012; Field et al, 2016; McKenzie and Woodruff, 2017; McKenzie, 2020).

A potential strategy for female microentrepreneurs to overcome capital constraints is to save. Increasing savings can allow them to optimize their cash flows, build long-term financial and business assets (Ashraf et al, 2005; Collins et al, 2009) and, consequently, improve the performance of their businesses. Female vendors may, however, face binding constraints in accessing savings products in the formal banking sector due to a higher opportunity cost of time, restricted mobility and lower levels of financial literacy to interact with the banking system. Given exponential rates of cell phone adoption in the developing world, mobile technology can potentially transform how households and enterprises, particularly female-led microenterprises, access savings tools and manage their finances (Jack and Suri, 2014).[2] And yet, the impact of the technology on microenterprise performance is theoretically ambiguous. Mobile money can facilitate payments to suppliers and payments from clients by enabling low-cost

[1] The ILO estimates that 78% of the world's poor living in low-income countries is currently self-employed (ILO 2017).

[2] In our setting in Mozambique, there are over five million cell phone subscribers (close to one fourth of the population), and the geographic coverage of existing cell operators extends to almost 80% of the country.

payment services over easily accessible cell phones (Plyer et al, 2010), and it can also enable savings that help microenterprises smooth investment, accumulate long-term assets and increase profits (Collins et al, 2009; Jack and Suri, 2014; Mbiti and Weil, 2016).[3] On the other hand, mobile money can reduce the cost of these savings being dissipated in the form of transfers to family or other non-income generating types of consumption. Both of these effects can be exacerbated for female microentrepreneurs who tend to lack access to traditional banking and who may be more heavily taxed by their relatives, or even by their husbands (Fafchamps et al, 2014, Bernhardt et al., 2019 and Solene et Ng, 2020). While the effect of mobile money on household savings has been documented in the literature[4], its impact on business savings has received far less attention.

Lack of financial management skills can also compromise female-led microenterprises' growth through several channels.[5] It can reduce savings, investment, prevent the introduction of new products, the management of inventories and the optimization of cash flows. Financial management skills can also improve the forecasting of revenue, expenditures and profit through improved bookkeeping practices. But the evidence on the impact of financial literacy and business management training interventions on microenterprise performance has shown sometimes positive (Klinger and Schuelden, 2011; Blattman et al., 2016; Bloom et al, 2010; Field et al., 2016; McKenzie and Puerto, 2020) and sometimes negative or zero effects (Karlan and Valdivia, 2010; Drexler et al., 2014; Fiala, 2018).

One potential reason for these mixed results is that releasing just one of these constraints may not be enough to improve business performance. Increasing profits and financial security may require both the tools to save and the *know how* to best manage these savings and invest

[3]Evidence from Mbiti and Weil (2016) and Jack and Suri (2014) suggests that mobile money is associated with an increase in formal savings of households by reducing the cost of safely storing money and reducing over-reliance on other less efficient forms of informal savings.

[4]Recent evidence suggests that accessing financial resources through individual mobile accounts can help increase household savings (Suri and Jack, 2016; Riley, 2020) as it provides women with more control over their finances.

[5]Female microentrepreneurs often have less exposure to good management practices, fewer business networks and business role models, and more limited levels of formal education (Bruhn and Love, 2009; Collins et al, 2009; de Mel et al, 2010; Rosenthal and Strange, 2012).

for future business growth.

This paper tests this complementarity hypothesis through a three-arm field experiment involving 1,270 microentrepreneurs operating in formal urban markets in Mozambique.[6] Motivated by the potential importance of accessible savings as a strategy to overcome capital constraints, one of our treatment arms provides access to a mobile money account with a temporary but high-powered incentive to save.[7]

A second treatment arm in our study tests the impact of providing business management training, with a particular emphasis on separating household and business accounts, on cash flow management, bookkeeping and on the implications of transfers to relatives. This training course was delivered across four one-hour in-person training modules, and it followed a standard rules of thumb approach (Drexler et al, 2010), drawing on visual illustrations and examples from everyday market situations to ensure that participants understood how to apply the training to their day-to-day business activities.[8] The third treatment arm combines both treatments to test for complementarity.

To understand the differential effect of the treatments on female-led microenterprises we stratified our sample by the gender of the microentrepreneur. This design allows us to: i) document the profitability gap between male and female microentrepreneurs at baseline; ii) examine the differential impact of our interventions on each group[9]; and iii) examine whether the interventions can affect the profitability gap by comparing the differences in performance between female microentrepreneurs in the treatment groups and male microentrepreneurs in the control group at the end of the study. This will enable us to document whether the interventions levelled the playing field between female and male microentrepreneurs. We measure the

[6]The sector breakdown is food retail (55%), nonfood retail (clothes, household items, 31%) and services (restaurants, 14%).

[7]Participants earned a bonus equivalent to 5% of their average monthly mobile savings for the three months that followed the opening of their accounts.

[8]This intervention also provided a manual and a comic book illustrating the main concepts taught for future reference.

[9]Despite an initial female disadvantage, it is unclear which group is more likely to have the highest returns to our interventions. Female-led microenterprises may be farther from the productivity frontier, but their male counterparts may be better placed to take advantage of both interventions due to improved client and supplier networks, or higher initial levels of capital and savings.

impact of the interventions on profits and on financial security through an in-person survey 12 months after the intervention, and a phone survey 6 years later.

While the literature has tested these interventions independently, to the best of our knowledge, this is the first paper to test for complementarity in a unified setting. It is also the first paper to compare the impact of these interventions in a stratified sample of male and female microentrepreneurs operating in the same markets.

We find that twelve months following the interventions, the combined treatment is the only one that led to a significant increase in profits for female microentrepreneurs. Both the combined treatment and the mobile money treatment are, however, also associated with higher levels of household financial security (a 7% increase relative to the control mean). This is measured through an index capturing whether in the previous 12 months, anyone in the household went without food and if the microentrepreneur was able to pay for children's schooling expenses. The impact of mobile money on financial security is driven primarily by female microentrepreneurs with the lowest level of profits at baseline. The effect on profits persists and grows in the following 5 years, representing a doubling of profits for the combined treatment group relative to the control, particularly for female microentrepreneurs in the right tail of the baseline profit distribution. In the long-run, the mobile money treatment also increased firm profits, but mostly for female micro-entrepreneurs who started off with intermediate levels of profits at baseline. The financial management on its own appears to have had no significant impact on business performance in either the short or long-run.

The key mechanisms behind these treatment effects were a sustained improvement in financial management knowledge and practices such as bookkeeping, lower remittances[10], and higher savings in more liquid and potentially safer mobile money accounts. For those in the mobile money treatment alone it is possible that the mobile money accounts also provided some means to better track finances (eg: savings). This is consistent with our finding that the share of transactions representing balance checks is higher in this group by at least a factor of

[10] Our baseline survey revealed that there is limited perceived reciprocity with regards to family transfers so our documented transfers are unlikely to be a form of social insurance.

2 relative to the other experimental groups.[11] Mobile money accounts were used primarily to store money and make remote payments to an electricity company, as opposed to making payments to suppliers (wholesalers) or receiving payments from clients. Ensuring timely payments of electricity is key for the day-to-day operations of these businesses. Mobile money also appears to have enabled female micro-entrepreneurs to better track their finances: they are more likely to check their mobile account balances more frequently relative to any other experimental group.

Male microentrepreneurs learn from our financial management training programme and they improve their bookkeeping practices. They also take up the mobile money service but they are less likely to report replacing traditional bank savings with mobile money savings. Despite these positive effects associated with the interventions, we observe no real changes in profits or financial security suggesting that our interventions did not address the binding constraints to the growth of male-led microenterprises, which started off with higher profits relative to female-led microenterprises.

These findings shed light on an important complementarity between providing female-led microenterprises with the enabling technology to build their savings, while at the same time providing financial management skills with a special focus on how these savings can be applied to maximize business returns. When targeted to female microentrepreneurs, these interventions can help close the gap in knowledge and business performance relative to their male counterparts. But they also show that particularly for female entrepreneurs with smaller businesses and lower profits to begin with, even just providing access to mobile savings can improve medium-run financial security, and for female microentrepreneurs with intermediate levels of profits at baseline, the savings technology is a sufficient condition for an increase in profits. This heterogeneity in findings underscores the importance of targeting specific types of microentrepreneurs with different interventions in order to maximize their returns.

Our findings contribute to several literatures. First, our work complements a growing litera-

[11] We do not find any changes in expectations and beliefs about the future performance of the businesses suggesting that an increase in confidence or optimism imparted by our training is unlikely to be driving our results.

ture on the importance of savings for business growth. Most interventions that have attempted to improve savings behavior independently have achieved mixed results (Dupas and Robinson, 2013; Dupas et al, 2016; Dupas et al, 2018; Fox and Thomas, 2016; Brooks et al, 2018; Schaner, 2018; Riley, 2020). At the same time, experimental studies have documented zero returns to capital for female-led microenterprises (De Mel, McKenzie and Woodruff, 2008, 2009b; Fafchamps et al., 2014) so releasing the capital constraint alone via savings or cash transfers may not always suffice. Our results suggest that access to mobile individual saving accounts with short-run high powered incentives to save can have a sizable effect on profits in the long-run, particularly when combined with improved business management practices, in order for microentrepreneurs to make the best possible use of these resources.

Second, we add to a literature on the importance of access to mobile technology in the developing world. We provide new evidence on how mobile savings accounts can drive business performance particularly for microenterprises with intermediate levels of capital, complementing results from studies that have documented the impact of mobile money on household finance, remittances, internal migration and educational and agricultural investment (Jack and Suri, 2014; Jack and Habyarimana, 2018; Batista and Vicente, 2017, 2018, 2020). This is likely to be driven by the fact that this form of savings is both liquid and safe (Riley, 2020).

Third, we contribute to the literature on the role of financial management capabilities on microenterprise growth. The evidence on the effectiveness of business training programmes is mixed (Karlan, Knight, and Udry, 2015; Bruhn, Karlan, and Schoar, 2018; McKenzie, 2020; Horn et al, 2020). Our findings suggest that imparting financial management skills to female microentrepreneurs can help close the gender profit gap, but only when coupled with the tools that enable microentrepreneurs to put such learnings into practice and invest towards business growth (McKenzie and Woodruff, 2017). Moreover, our findings are consistent with the importance of a rules of thumb approach to teaching financial management (Drexler et al, 2014; Arraiz et al, 2019). We further highlight the channels for improved performance such as improved bookkeeping and reduced transfers to relatives.

We also contribute descriptively to the literature on the impact of transfers to relatives on microenterprise performance. In particular, we document low expectations about the reciprocity associated with these transfers and how business training can curb contributions to this "family tax".

The paper proceeds as follows: in section 2 we describe the setting of our experiment; section 3 presents the empirical analysis while section 4 discusses how the interventions helped close the performance gap between male and female-led microenterprises. Section 5 concludes.

2 Empirical Setting

2.1 Study Location, Population and Sampling

Our sample of 1,270 market vendors was drawn from 23 urban markets in the greater Maputo area, the Mozambican capital.[12] All markets had relatively good accessibility and proximity to both residential and industrial areas, so lack of access to wholesale markets and to centres of demand do not represent significant constraints to business in our setting. Vendors can operate their businesses as a stall or as a store[13], both of which have a fixed location in the market and are traditionally engaged in general retail activities (selling produce, food or general groceries) or services (sewing, shoemaking and restaurants).[14]

We stratified our sample based on the gender of the participant and on the type of establishment (stall vs store). Our sample was then randomly assigned to four experimental groups, within each stratum.

[12] Greater Maputo has 120 markets located in low-income neighborhoods, where they are the primary hubs of economic activity. Our analysis is restricted to formal vendors, which we classify as having paid an annual fee to operate within the area that they are assigned to in the market.

[13] See Appendix Figure 3.

[14] We first drew detailed maps of each market with the location of each block of stalls/stores. We then split the market area into quarters and surveyors would randomly identify participants alternating between rows of stalls/stores within each quarter of the market, so that all participants would have at least one aisle of stores between them as a buffer area. In most markets the distance was significantly larger than just one aisle.

2.2 Interventions

Mobile Money: We took advantage of the early stages of the roll-out of mobile money by Mozambique's largest cell operator to generate exogenous variation in access to mobile money. We opened a mobile money account and enrolled all the participants in this treatment arm in an incentive scheme for savings that provided a bonus corresponding to 5% of the average amount of savings kept in the mobile account (Schaner, 2018).[15] This bonus was restricted to the first 3 months from account opening.[16]

Financial Management Training: The aim of the financial management training was to introduce vendors to basic concepts of financial management and bookkeeping. It was conducted during four one-hour visits, during work time but off-peak hours, with visits spaced four weeks apart. The training took place at the establishment, and the training staff ensured that the opportunity cost of the training was low by allowing respondents to interrupt and continue to interact with clients. The first session focussed on the difference between business costs and household expenditures, revenue and profit, the importance of savings and investment and how to deal with requests for transfers from relatives and friends. The second session discussed the theory and practice of how to prepare a budget and the importance of bookkeeping. All participants received three different books to record inventories for the main products, sales on credit and the basic components of a budget (total expenditures and total sales). The last two sessions revisited the materials covered in previous sessions and clarified any questions. All participants received a manual with the core teachings as consultation material and we designed and distributed a comic book written in colloquial Portuguese embedding the core learnings into everyday scenes in the market, drawn by a local Mozambican artist.[17]

During each visit, enumerators checked the books to see if they were being adequately filled

[15] The vendors in this experimental group received a leaflet explaining the bonus: they would receive 5 meticais (0.2 cents at the 2014 exchange rate) for each 100 meticais (4 USD) they kept in their accounts for an entire month.

[16] All the participants received basic training on how to use their mobile money accounts. Our trainers transferred a small amount of 50 meticais (2 USD) for them to practice how to receive and access funds in their account. Beneficiaries also learned the location of the mobile money agent in the market, where they could make cash-ins and cash-outs from their accounts.

[17] Berg and Zia (2013) find that story-telling can be an effective way of teaching about debt management.

in. By the end of the fourth visit, we provided 150 meticais (equivalent to 6 USD or 0.5% of average monthly revenue) if the books were filled in correctly and 75 meticais (equivalent to 3 USD) if the books were in the business but incomplete. This financial management training followed a "rules of thumb" approach to teaching concepts (Drexler et al, 2014; Arraiz et al., 2019), and relied heavily on teaching by analogy and by way of examples from everyday life in the markets.[18]

Combined Treatment: Participants received both the financial management training and the mobile money treatments at the same time.

2.3 Data

To examine treatment effects we rely on a combination of survey and transaction-level data from the mobile money operator. The baseline and the first endline surveys were conducted 12 months apart (in July 2014 and July 2015), face-to-face. The final endline survey was conducted over the phone six years after the baseline in 2020.

Administrative data on mobile money transactions were collected between 2014-2018, and included all transactions and average balances kept in the mobile accounts for all groups.[19] The treatment groups are balanced across treatment and control, and across survey waves, despite significant attrition in the final endline survey.[20]

The majority of businesses (89%) are owner-managed and the average age of businesses is approximately 10 years. Most businesses keep inventory that would allow them to continue selling for on average 20 days and the main types of investments microentrepreneurs have engaged in during the preceding six months is the introduction of new products. This is also the

[18] For a detailed description of the training materials see Appendix Figures 7 through 14.

[19] We obtained the mobile phone numbers associated with the mobile money accounts of all participants at baseline, and we repeated this exercise in the endline survey (including the control group).

[20] Tables A1 and A2 in the Appendix show balance across comparison groups for both endline samples in 2015 and in 2020. Tables A4 and A5 show that attrition at both of the two endlines, while particularly pronounced for the 2020 endline survey, was fairly balanced. We control for any characteristics in which those who remain in the sample differ from those who don't (eg; age of establishment, productive assets) in our main analysis. Firm survival rates between baseline and endline were also similar across treatments for both genders as seen in Table A8.

stated preferred type of investment microentrepreneurs would like to engage in for the following six months. Approximately half of the sample had previous business experience and the majority of respondents funded their business with their own savings (75%), highlighting the critical role of savings for capital investments.

At baseline, overall savings levels are similar between female and male microentrepreneurs: men are more likely to have access to traditional banking but females are more likely to engage in informal savings practices such as savings groups in the market. Despite comparability in levels, keeping funds in savings groups is significantly more restrictive and less liquid than keeping funds in traditional banking accounts. Female-managed businesses also started with lower capital investments and they reported lower levels of investment in new products in the preceding six months, as well as lower monthly expenditures and lower monthly sales.[21]

Levels of financial and numerical literacy differed significantly across female and male microentrepreneurs: women scored 4% lower in a simple applied arithmetic exercise that involved calculating discounted prices in the marketplace and were 15% less likely to keep consistent bookkeeping.

Female microentrepreneurs do not, however, appear to have different objectives for their businesses or different levels of commitment: they report similar intentions to invest, similar objectives for savings and are even more optimistic in terms of the future growth prospects of their businesses than their male counterparts. When asked about their goals when saving, they are just as likely to prioritize saving for their business over saving for their children's education or to cope with health shocks.[22]

[21] Tables A6 and A7 of the Appendix show further differences between female and male-owned microenterprises at baseline.

[22] See Figure 4 in the Appendix.

3 Empirical Analysis

Given the stratified random assignment of our interventions, we can obtain unbiased estimates of their effect by estimating the following equation for each subgroup of microentrepreneurs:

$$y_i^E = \alpha_i + \beta_1 \text{Treatment}_i + \gamma X_i + \delta y_i^B + \epsilon_i \tag{1}$$

where y_i^E is the endline value of an outcome variable of interest (e.g. profit or financial security), i indexes microenterprises and α_i denotes market fixed effects. X_i is a matrix of baseline measured covariates including an indicator on whether the microentrepreneur operates a stall or a store, the number of employees, baseline numerical literacy, an indicator capturing familiarity with a cell phone, the age of the establishment, inventory size at baseline, the entrepreneurs' previous experience as a business owner, and whether the entrepreneur has given/received a loan from a family member in the year prior to the intervention. The control group is the omitted category in all specifications. The baseline measure of the outcome variable y_i^B explains a substantial share of the variance in outcomes across individuals and is included in the specification.

3.1 Impact on Profits and Financial Security

Table 1 presents the effect of each intervention on profits, with Panel A representing the effects for female microentrepreneurs and Panel B the effect for male microentrepreneurs. We find that 12 months following the interventions, female entrepreneurs in the combined treatment experienced an increase in profits that is significant at the 10% level relative to the control mean.[23] One challenge with our data is that in 2015 we measure profits by asking respondents about their total revenue and total expenses. However, the mean of profits in the control group is negative, likely due to measurement error. This can result, for instance, from inconsistencies

[23] All variables are deflated to 2015 prices.

in the timing of investments (expenses) and revenues. The results are however unchanged in Appendix Table A9 when we only consider microenterprises reporting higher levels of bookkeeping at baseline, suggesting that measurement error is likely to be similar across all groups. In 2020, we ask directly about business profit, which had substantially less measurement error.[24] Using this measure, we find that the positive effect on profit persists and, in fact, grows with time. Six years after our intervention, we find that profits reported by the combined treatment group have almost doubled relative to the control mean. While the overall attrition in our sample for the 2020 phone survey was high, it was balanced across experimental groups, and importantly, within each gender. Table 1 includes Lee bounds for each estimate to account for attrition (Lee, 2004).

Female microentrepreneurs who received support to open a mobile money account only do not show changes to profits in the short-run but they experienced a significant increase in profits by 2020 that is comparable in magnitude to the effects of the combined treatment. As a result, the test of the combined treatment having an effect that is greater than the independent effect of each of the treatments is not statistically significant at conventional levels. We explore further heterogeneity in section 4 to identify which sub-groups of female microentrepreneurs benefited the most from each treatment.[25]

Column 5 examines the impact of the interventions on household-level financial security. This is measured through an unweighted average of responses to whether all members of the household had enough to eat in a given day and whether the microentrepreneur had been able to pay for schooling expenses in the previous 12 months.[26] We find that 6 years after the intervention, both the combined and the mobile money treatments are associated with higher

[24] We do not find any evidence of treatment effects varying by market size, despite significant variation across our markets, with the largest markets housing thousands of microentrepreneurs. If treatment effects were more pronounced in smaller markets, it might have indicated business stealing effects (McKenzie and Puerto 2020).

[25] Note also that the observed change in profits is within the range of one year treatment effects (-15% to 61.1%) that have been found in the literature for business training interventions (only) as documented in McKenzie (2020). Our estimates correspond to a 57-78% increase in profits from the combined intervention after 6 years.

[26] The financial security indicator is rescaled in the table to be increasing with positive numbers. The question asked in the survey was how frequently anyone in the household had gone without eating in the previous 12 months and whether the microentrepreneur had been unable to cover schooling expenses. Both phrasings mitigate concerns with affirmative bias in responses.

profits and higher levels of financial security for female-led microentrepreneurs relative to a control group of female microentrepreneurs that did not benefit from the interventions.[27]

In Panel B we examine the effect of the interventions on male microentrepreneurs. We find that our interventions were infra-marginal to monthly profits and to the financial security of male microentrepreneurs, potentially due to higher levels of access to traditional banking and to financial management skills at baseline, when compared to their female counterparts.

3.2 Mechanisms

3.2.1 Financial Management Skills

We assess the effectiveness of our financial management training through a 15-question test covering the material taught during the module. This included questions about how to separate business and household accounts, how to differentiate between gross and net profits, what costs to consider when setting prices, and how to deal with family pressure for redistribution. At the end of the training, the groups that received the financial management training scored on average 60% (with a 20% standard deviation). Table 2 shows that 12 months following the intervention, all treated groups that received the training scored approximately 10% higher in the test, relative to the control and mobile money groups.[28] These results suggest that our training succeeded in improving financial management skills, and that these learnings persisted even 12 months after the intervention. To test that we are isolating the effect of the training alone, we measure performance in a four question numerical literacy test both at baseline and at endline. This test involved calculating simple price discounts in the marketplace. We find no effect of our treatments on numerical literacy. This is reassuring since our interventions were not designed to impart more numerical skills to participants (Column 2).

The second dimension of financial management practices that we assessed was the qual-

[27] These results are robust to clustering the standard errors at the market level to account for market-level shocks to general business conditions.

[28] Performance in this test was standardized to be between 0 and 1. Table A12 in the Online Appendix shows that the training was also effective for male microentrepreneurs.

ity of bookkeeping, 12 months after microentrepreneurs had been trained and encouraged to engage in regular bookkeeping to track sales on credit, total sales and inventories. Column 3 shows that only the group receiving the combined treatment reported improved practices of bookkeeping 12 months after the interventions - a 31% improvement on a score that ranges from 0-3. Bookkeeping was a critical component of the financial management training intervention and all participants were provided with logbooks to encourage record keeping for the first 3 months following the intervention.[29] Taken together, these results suggest that the financial management training was successful in improving financial management skills, assessed in terms of the vendors' theoretical knowledge of how to manage the finances of the business, but that the actual management practices implemented were only sustained for the combined treatment group. The rate of decay of financial knowledge might be fast if microentrepreneurs have no means to apply it effectively for lack of the right financial tools.

The business management training was also effective in reducing transfers to relatives. In our baseline survey, 77% of respondents reported a belief that transfers to relatives and friends would never be repaid and 70% of respondents believed that this assistance would not be reciprocated in case of need. An important part of our financial training alerted participants to ensure that any redistribution should not occur out of business revenue, and that saving and re-investing profits could enlarge the pie for future redistribution. Column 4 shows that while all groups appear to have engaged in lower remittances by 2020 relative to the control group, only the estimate for the combined treatment is statistically significant at conventional levels. This might reflect the change in attitude towards remittances but also the ability to keep savings in a mobile money account, where it is less accessible and visible to other members of the family and of the household.

[29] We measured bookkeeping through direct observation based on whether the books were in the store and had entries in them.

3.2.2 Mobile Money and Savings

Panel B of Table 2 reports the impact of the interventions on exposure to, and usage, of mobile money. While over 93% of all respondents both in the control group and in the financial literacy group had heard of mobile money by the first endline in 2015, usage levels were significantly lower when compared to the treatment groups that received access to a mobile money account, as shown in Column 5.

Column 6 reveals that participants in the mobile money treatments were more likely to use their accounts but only those in the combined treatment group reported keeping their savings stored in their mobile money accounts.[30] Columns 7 and 8 show that these two groups also conducted transactions of similar value and have similar weekly balances. Table A13 reports the type of mobile money transactions performed by male and female microentrepreneurs. Mobile accounts are used for the most part to make remote payments (e.g., paying for electricity), for cash-ins, and to buy air time. Note that one of the potential reasons behind the improved performance of female-led microenterprises who benefited from the mobile money account was that it allowed them to better track their finances. Consistent with this hypothesis, Table A13 shows that checking their account balance on the phone was twice as common for those in the mobile money treatment group as it was for those in the other treatments.

4 Closing the Profit Gender Gap?

We now examine whether the interventions allowed female microentrepreneurs to close the gap in knowledge and performance relative to their male counterparts in the control group.

Figure 1 shows a clear closing of the gap for profits in 2015, profits in 2020, financial literacy, and bookkeeping between female-led microenterprises in the combined treatment and male-led microenterprises in the control group at each endline.[31]

[30] The drop in sample size for this variable is due to non-responses.

[31] We compare the performance of treated females to male controls as opposed to male treated microentrepreneurs since the latter amounts to a comparison with a moving goal post. Table A12 had already shown that the business training module had increased financial knowledge and bookkeeping for men as well.

This shows that targeting female microentrepreneurs with the combined treatment can level the playing field relative to male microentrepreneurs in the control group.

To confirm which female microentrepreneurs benefit the most from the combined treatment, we examine heterogeneous effects based on baseline levels of profit, conditional on all the baseline covariates. Figure 2 shows that the observed treatment effect for the combined treatment in 2015 is driven by female microentrepreneurs who started with higher levels of profits at baseline. These are the microentrepreneurs who are most likely to benefit from the combined intervention and who had the highest potential to grow their businesses in both the short and medium-run. Higher profits in the mobile money treatment group were driven by those with intermediate levels of baseline profits, whereas increased financial security in the mobile money treatment group appears to be driven by those with lower levels of baseline profits (see both Figures 1 and 2).

To further analyse the closing of the gender gap, Table 3 pools both female and male microentrepreneurs but given significant differences in business attributes at baseline between the two groups, we estimate a propensity score for all participants determining the propensity of being "male-led" based on an extensive set of covariates.[32] Table 3 shows that when we restrict the analysis to a comparable-on-observables sample of female and male microentrepreneurs, the impact of the combined treatment on profits (Panel A) is still significant and of similar magnitude to the coefficients observed in Table 1. This confirms our previous finding that the combined treatment has stronger effects for female-led microenterprises with higher levels of baseline profit, and therefore who are most similar on observables to their male counterparts. Panel B confirms the key mechanisms identified previously in Table 2. In this more comparable set of microentrepreneurs we no longer find a positive effect of access to mobile

[32] These include business type (store/stall), business age, previous experience as a business owner, bookkeeping usage, baseline inventory, number of productive assets, and an index of financial literacy. Covariates are selected for propensity score matching if they satisfy 2 conditions. 1) The covariate is descriptively imbalanced across male and female entrepreneurs at baseline, and 2) the covariate is balanced between male and female entrepreneurs within each block (20%) of the propensity score range. The final matched sample of male and female entrepreneurs consists of individuals whose propensity scores fall between the 33rd and 66th percentile of the propensity score range, though our results are not sensitive to the choice of this threshold. See Figure 5 in the Appendix for a distribution of the propensity scores. Results are identical when we use nearest neighbor matching.

money on any differential long-run profits.[33] This is consistent with our previous findings that the effect of mobile money is mostly on female-led microenterprises with lower levels of profits at baseline –a subset that is excluded from the sample in Table 3 as it would be unmatched to the male-led microenterprises that had on average higher profits at baseline.

Finally, we conduct a cost-benefit analysis to assess the cost-effectiveness of the combined treatment in closing the profit gap between female and male-microentrepreneurs. The unit cost of providing the financial management training was 33 USD (2005 Meticais), which included the salaries of the trainers, the production and printout of materials and the bookkeeping bonus. The mobile money intervention was considerably cheaper, at 6.3 USD (382.72 Meticais), including the cost of sim cards, the practice purchase bonus during the training and the savings bonus during the first three months. The total unit cost of the combined treatment was therefore approximately 39 USD (2388 Meticais). The benefit from the combined treatment was approximately 5813 Meticais at the end of 12 months suggesting that the cost of this intervention was easily repaid within the first 5 to 6 months following the intervention.

5 Conclusions

A key policy question is whether access to savings technology and higher levels of business *know how* can help reduce the gender profit gap for microentrepreneurs operating in low income settings. We hypothesize that the complementarity between the two interventions might be central to their effectiveness: access to financial capital may not be a sufficient condition for microenterprise performance if microentrepreneurs lack the ability to manage resources well (de Mel et al, 2010; Dupas and Robinson, 2013; Bernhardt et al, 2019). Similarly, improved financial literacy and management capabilities may not translate into improved business per-

[33] Table A11 shows the results when we do not match the female and the male samples and A14 shows the descriptive statistics for the matched vs unmatched samples. Matching allows us to compare female and male microentrepreneurs who are more likely to both own a store instead of a stall, who are more likely to have started their business with a higher level of investment, who have lower levels of inventory, businesses that are younger, and with higher levels of expenditure, sales and productive assets.

formance if microentrepreneurs have limited financial resources to invest towards business growth (Schaner, 2018).

This paper provides novel evidence on the importance of this complementarity: combining financial literacy and access to savings technology has a positive, significant, sizable and long-lasting effect on profits and on the financial security of female micro-entrepreneurs. The main mechanisms behind these effects are improved bookkeeping, reduced transfers to relatives and increased savings. Female microentrepreneurs with the highest level of profits at baseline are the most likely to benefit from this support, and close the well-documented gender gap in performance and skills relative to their male counterparts operating in the same markets. However, we also find evidence in support of the effectiveness of mobile money alone. For microentrepreneurs with intermediate levels of profits, providing access to mobile money accounts that encourage savings can also have a positive impact on long-term profits. For female microentrepreneurs with lower levels of profits, providing access to mobile money accounts may not increase profits but it increases the financial security of the micro-entrepreneur. All treatments are infra-marginal to male-led microenterprise profits.

This significant heterogeneity in treatment effects across gender, and even within each gender across baseline levels of profits, suggests that policies to promote microenterprise development should be targeted to the specific binding constraints faced by different subsets of microentrepreneurs in order to maximize the returns to these interventions.

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7 Tables and Figures

Table 1: Treatment Effects on Profits

	Panel A: Female Entrepreneurs					*Panel B: Male Entrepreneurs*				
OUTCOMES	(1) Monthly Profit 2015^{a}	(2) Monthly Profit 2015^{a}	(3) Monthly Profit 2020^{at}	(4) Monthly Profit 2020^{at}	(5) Financial Security Index 2015	(6) Monthly Profit 2015^{a}	(7) Monthly Profit 2015^{a}	(8) Monthly Profit 2020^{at}	(9) Monthly Profit 2020^{at}	(10) Financial Security Index 2015
Treatment Condition										
FL	3706.138	3462.259	512.618	912.803	0.067	2415.447	2353.555	166.963	-377.631	0.012
	[3201.270]	[3323.124]	[760.847]	[914.383]	[0.085]	[4058.046]	[4135.634]	[943.374]	[965.137]	[0.076]
FL + MM	5365.581	5812.814*	1852.226**	2135.935**	0.175**	1017.424	430.138	619.694	405.580	0.059
	[3362.758]	[3371.917]	[764.010]	[838.255]	[0.085]	[3908.445]	[4134.025]	[1057.971]	[1093.368]	[0.073]
MM	-548.215	-1505.613	1963.020***	1844.009**	0.155*	1405.220	1212.905	-880.326	-1313.751	0.085
	[3683.109]	[3727.258]	[730.558]	[779.877]	[0.082]	[3949.790]	[4004.485]	[912.818]	[978.002]	[0.071]
Lee Bounds FL	[-8704, 15468]	[-8704, 15468]	[-2253, 1405]	[-2253, 1405]	[-0.13, 0.46]	[-8768, 21834]	[-8768, 21834]	[-1653, 2899]	[-1653, 2899]	[-0.19, 0.32]
Lee Bounds FL + MM	[-9156, 15707]	[-9156, 15707]	[-1416, 3282]	[-1416, 3282]	[-0.02, 0.54]	[-8919, 15267]	[-8919, 15267]	[-1203, 4551]	[-1203, 4551]	[-0.08, 0.31]
Lee Bounds MM	[-11593, 9566]	[-11593, 9566]	[-1005, 2645]	[-1005, 2645]	[-0.01, 0.44]	[-9307, 17247]	[-9307, 17247]	[-2582, 2097]	[-2582, 2097]	[-0.10, 0.33]
Control Group Mean	-15334.838	-15185.402	1219.375	1194.291	2.56	-17211.856	-18136.84	2449.267	2560.338	2.73
Control Group St.d	28969.671	29146.497	1669.294	1689.674	0.822	32669.961	33564.107	3669.321	3726.349	0.620
p-value FL = Comb	0.575	0.446	0.094	0.146	0.174	0.691	0.630	0.663	0.477	0.491
p-value MM = Comb	0.085	0.039	0.893	0.782	0.801	0.911	0.812	0.154	0.097	0.668
p-value MM = FL	0.208	0.146	0.102	0.332	0.237	0.784	0.803	0.227	0.243	0.270
p-value MM = FL = Comb	0.221	0.114	0.166	0.340	0.347	0.921	0.890	0.289	0.198	0.542
p-value MM + FL = Comb	0.635	0.448	0.545	0.577	0.661	0.593	0.578	0.351	0.170	0.727
p-value MM + FL >= Comb	0.317	0.224	0.727	0.711	0.669	0.703	0.711	0.175	0.085	0.637
Controls	NO	YES	NO	YES	YES	NO	YES	NO	YES	YES
Market Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Sector Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	582	563	142	139	645	487	454	137	127	513
Adjusted R-squared	0.038	0.051	0.009	-0.044	0.065	0.048	0.057	0.002	0.081	0.097
F-Statistic	0.877	1.771	1.845	1.153	3.325	0.503	0.922	2.360	1.918	2.046

Notes: Robust standard errors in parentheses. All models control for the dependent variable's baseline value (where possible), market fixed effects and sector fixed effects. The full set of controls include the age of the business, the type of business (store or stall), the number of employees at baseline, an index of financial numeracy, inventory size at baseline, the entrepreneurs' previous experience as a business owner, log number of productive assets at baseline, and whether or not the entrepreneur has given/received a loan from a family member in the year prior to intervention. Models 1, 2, 5, 6, 7, and 10 correspond to an end line survey taken in July, 2015. Models 3, 4, 8 and 9 correspond to a follow-up survey taken in November, 2020. ^{a} indicates that the outcome variable was winsorized and ^{t} indicates that the outcome variable was deflated to correspond to prices in 2015 *** p<0.01, ** p<0.05, * p<0.1

Table 2: Mechanisms, Female Entrepreneurs

	Panel A: Business Practices				*Panel B: Mobile Money Usage*			
OUTCOMES	(1) Financial Literacy Index	(2) Numerical Literacy Index	(3) Book-Keeping Index	(4) Remit. To Family^{t}	(5) Reports Using MM	(6) Reported MM Savings^{m}	(7) Weekly MM Balance^{m}	(8) Weekly Transaction Value^{m}
Treatment Condition								
FL	0.057***	0.004	0.182	-150.234	-0.064*	0.547	0.063	0.007
	[0.020]	[0.023]	[0.125]	[93.604]	[0.036]	[0.921]	[0.087]	[0.016]
FL + MM	0.060***	0.017	0.268**	-142.028*	0.187***	2.333***	1.794***	0.061***
	[0.020]	[0.023]	[0.129]	[83.806]	[0.047]	[0.703]	[0.151]	[0.021]
MM	0.025	-0.008	0.024	-200.156	0.143***	0.986	1.915***	0.060***
	[0.019]	[0.024]	[0.118]	[129.630]	[0.048]	[0.719]	[0.152]	[0.017]
Lee Bounds FL	[0.01, 0.10]	[-0.06, 0.11]	[-0.29, 0.57]	[-411, -9]	[-0.16, 0.00]	[-2.62, 2.18]	[0.06, 0.14]	[0.00, 0.03]
Lee Bounds FL + MM	[0.02, 0.12]	[-0.07, 0.14]	[-0.34, 0.79]	[-429, 15]	[-0.06, 0.39]	[-3.23, 5.63]	[1.63, 1.94]	[-0.02, 0.08]
Lee Bounds MM	[-0.02, 0.06]	[-0.08, 0.10]	[-0.49, 0.39]	[-431, 720]	[0.02, 0.28]	[-2.35, 4.56]	[1.96, 2.01]	[0.06, 0.09]
Control Group Mean	0.594	0.803	0.862	270.932	0.123	2.209	0.119	0.017
Control Group St.d	0.175	0.211	1.012	1045.892	0.330	2.755	0.659	0.343
p-value FL = Comb	0.889	0.549	0.507	0.879	0.000	0.014	0.000	0.037
p-value MM = Comb	0.053	0.271	0.051	0.526	0.411	0.016	0.540	0.980
p-value MM = FL	0.092	0.585	0.194	0.582	0.000	0.561	0.000	0.010
p-value MM = FL = Comb	0.103	0.543	0.133	0.816	0.000	0.011	0.000	0.019
p-value MM + FL = Comb	0.420	0.511	0.722	0.158	0.093	0.451	0.389	0.838
p-value MM + FL >= Comb	0.790	0.256	0.361	0.079	0.047	0.226	0.805	0.581
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Market Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Observations	645	650	631	222	575	135	126,994	126,994
Adjusted R-squared	0.112	0.066	0.029	0.067	0.105	0.119	0.300	0.038
F-Statistic	3.108	0.526	1.486	0.666	4.483	4.132	11.039	2.359

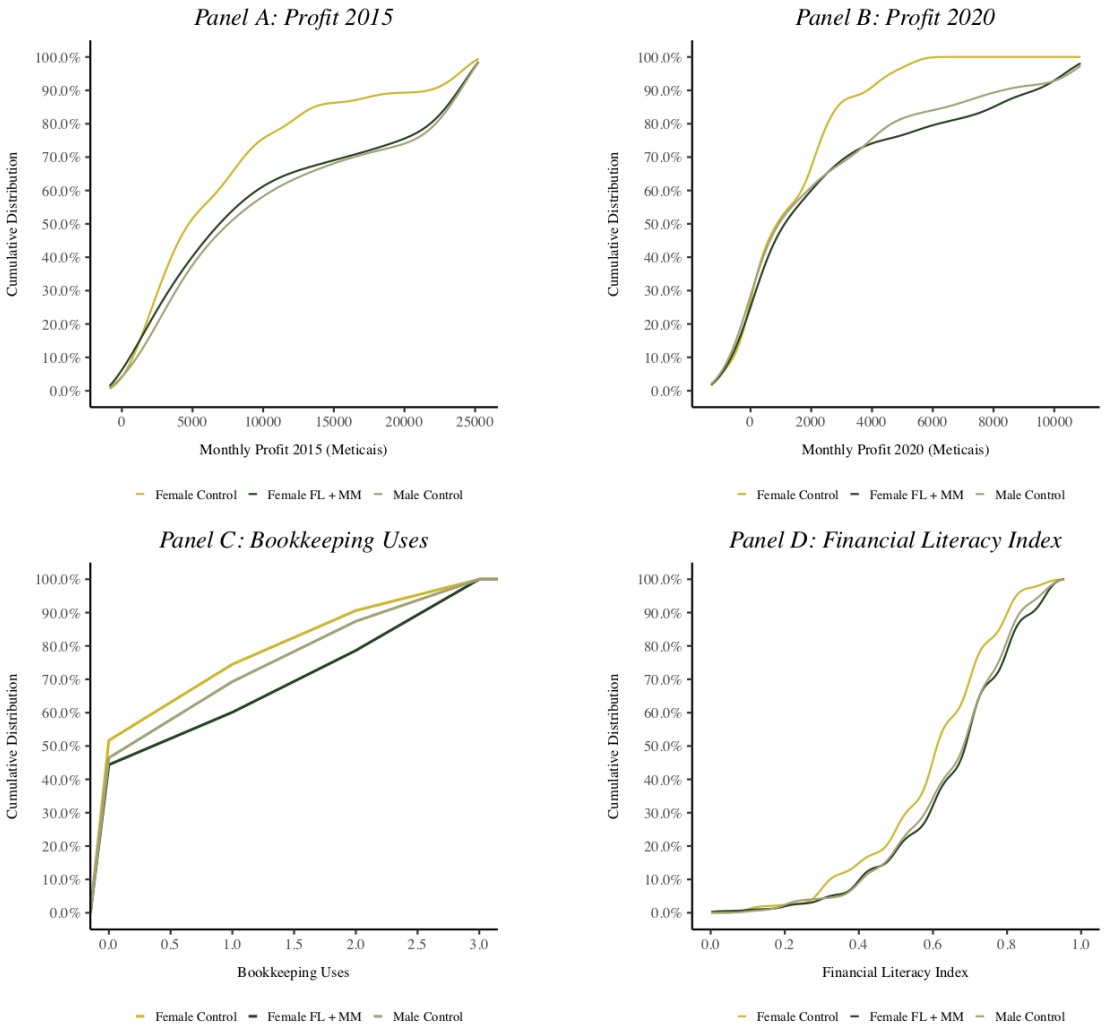
Notes: Robust standard errors in parentheses. All models control for the dependent variable's baseline value (where possible), market fixed effects, sector fixed effects, the age of the business, the type of business (store or stall), the number of employees at baseline, an index of financial numeracy, inventory size at baseline, the entrepreneurs' previous experience as a business owner, and whether or not the entrepreneur has given/received a loan from a family member in the year prior to intervention. The dependent variable in models 1, 2, 3, 5, and 6 correspond to its value in the end line survey (July, 2015), while model 4 corresponds to it's value in the follow-up survey (November, 2020). Models 7 and 8 correspond to an administrative data set from the Mobile Money operator that tracks mobile money usage and account balances from June 2014 to February 2018. ^{a} indicates that the outcome variable was winsorized, ^{t} indicates that the outcome variable was deflated to correspond to prices in 2015, and ^{m} indicates that that the dependent variable was log transformed. *** p<0.01, ** p<0.05, * p<0.1

Table 3: Combined Sample: Male and Female Entrepreneurs

	Panel A: Profit					*Panel B: Mechanisms*					
OUTCOMES	(1) Monthly Profit 2015^{a}	(2) Monthly Profit 2015^{a}	(3) Monthly Profit 2020^{at}	(4) Monthly Profit 2020^{at}	(5) Financial Security Index 2015	(6) Financial Literacy Index	(7) Book-Keeping Index	(8) Remit. To Family^{t}	(9) Reports Using MM	(10) Weekly MM Balance^{m}	(11) Weekly Transaction Value^{m}
Treatment Condition											
FL	5708.637	4915.327	3077.655	3527.225	0.172	0.071**	0.534**	-207.626	-0.008	0.181	0.004
	[5373.357]	[5651.760]	[2030.588]	[2307.835]	[0.133]	[0.031]	[0.209]	[344.500]	[0.047]	[0.140]	[0.034]
FL + MM	6814.968	7113.183	3331.195***	3485.018**	0.111	0.051*	0.599***	-129.463	0.283***	1.722***	0.064**
	[5383.150]	[5536.127]	[1239.142]	[1526.279]	[0.154]	[0.030]	[0.199]	[307.732]	[0.072]	[0.219]	[0.030]
MM	-7321.152	-5230.422	756.623	-421.335	0.206	-0.005	0.263	-155.633	0.215***	1.844***	0.107***
	[6700.187]	[6772.533]	[1318.814]	[1989.575]	[0.164]	[0.034]	[0.230]	[431.300]	[0.082]	[0.262]	[0.041]
FL * Male	1218.423	2077.848	-3273.600	-4579.600	-0.317*	0.002	-0.031	-1083.749	-0.003	-0.398	0.027
	[9474.046]	[9342.113]	[2962.572]	[2934.390]	[0.174]	[0.045]	[0.326]	[815.365]	[0.102]	[0.295]	[0.054]
(FL + MM) * Male	2395.894	1126.002	-2889.351	-2600.452	-0.137	0.064	-0.223	-822.779	-0.001	0.261	0.070
	[9676.062]	[9549.267]	[3270.029]	[3071.395]	[0.184]	[0.046]	[0.320]	[852.203]	[0.131]	[0.428]	[0.075]
MM * Male	12837.059	9210.684	-1778.315	-1043.546	-0.147	-0.050	-0.226	-948.725	0.013	0.050	0.065
	[11083.438]	[10765.781]	[1858.684]	[2372.182]	[0.183]	[0.055]	[0.362]	[729.658]	[0.135]	[0.462]	[0.088]
Lee Bounds FL	[-3932, 19938]	[-3932, 19938]	[-4791, 2874]	[-4791, 2874]	[-0.14, 0.35]	[0.01, 0.10]	[-0.11, 1.07]	[-823, 579]	[-0.18, 0.08]	[-0.04, 0.04]	[0.02, 0.03]
Lee Bounds FL + MM	[-2067, 19261]	[-2067, 19261]	[-1735, 5410]	[-1735, 5410]	[-0.19, 0.32]	[0.01, 0.11]	[-0.08, 0.84]	[-890, 833]	[0.08, 0.45]	[1.74, 1.89]	[0.09, 0.10]
Lee Bounds MM	[-12311, 13655]	[-12311, 13655]	[-3671, 1999]	[-3671, 1999]	[-0.02, 0.38]	[-0.06, 0.04]	[-0.43, 0.49]	[-1145, 255]	[0.06, 0.37]	[1.86, 1.98]	[0.14, 0.17]
Control Group Mean	-18271.878	-18271.878	2281.861	2281.861	2.682	0.635	0.765	717.089	0.114	0.208	0.005
Control Group St.d	34662.281	34662.281	3475.246	3475.246	0.767	0.174	0.926	2159.721	0.320	0.968	0.161
p-value FL = Comb	0.806	0.652	0.885	0.982	0.591	0.504	0.764	0.719	0.000	0.000	0.057
p-value MM = Comb	0.017	0.042	0.036	0.039	0.506	0.094	0.152	0.930	0.467	0.709	0.233
p-value MM = FL	0.029	0.100	0.179	0.089	0.794	0.027	0.271	0.874	0.004	0.000	0.018
p-value MM = FL = Comb	0.046	0.119	0.087	0.101	0.779	0.082	0.341	0.937	0.000	0.000	0.050
p-value MM + FL = Comb	0.296	0.374	0.836	0.898	0.165	0.753	0.530	0.632	0.476	0.398	0.335
p-value MM + FL >= Comb	0.148	0.187	0.582	0.449	0.918	0.623	0.735	0.316	0.238	0.801	0.832
Controls	NO	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES
Market Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Sector Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	363	363	92	92	377	373	372	144	359	74,112	74,112
Adjusted R-squared	0.005	0.019	-0.025	-0.037	0.065	0.191	0.044	0.021	0.101	0.324	0.057
F-Statistic	1.388	1.227	1.901	1.195	1.621	11.422	1.969	0.478	3.957	7.984	1.473

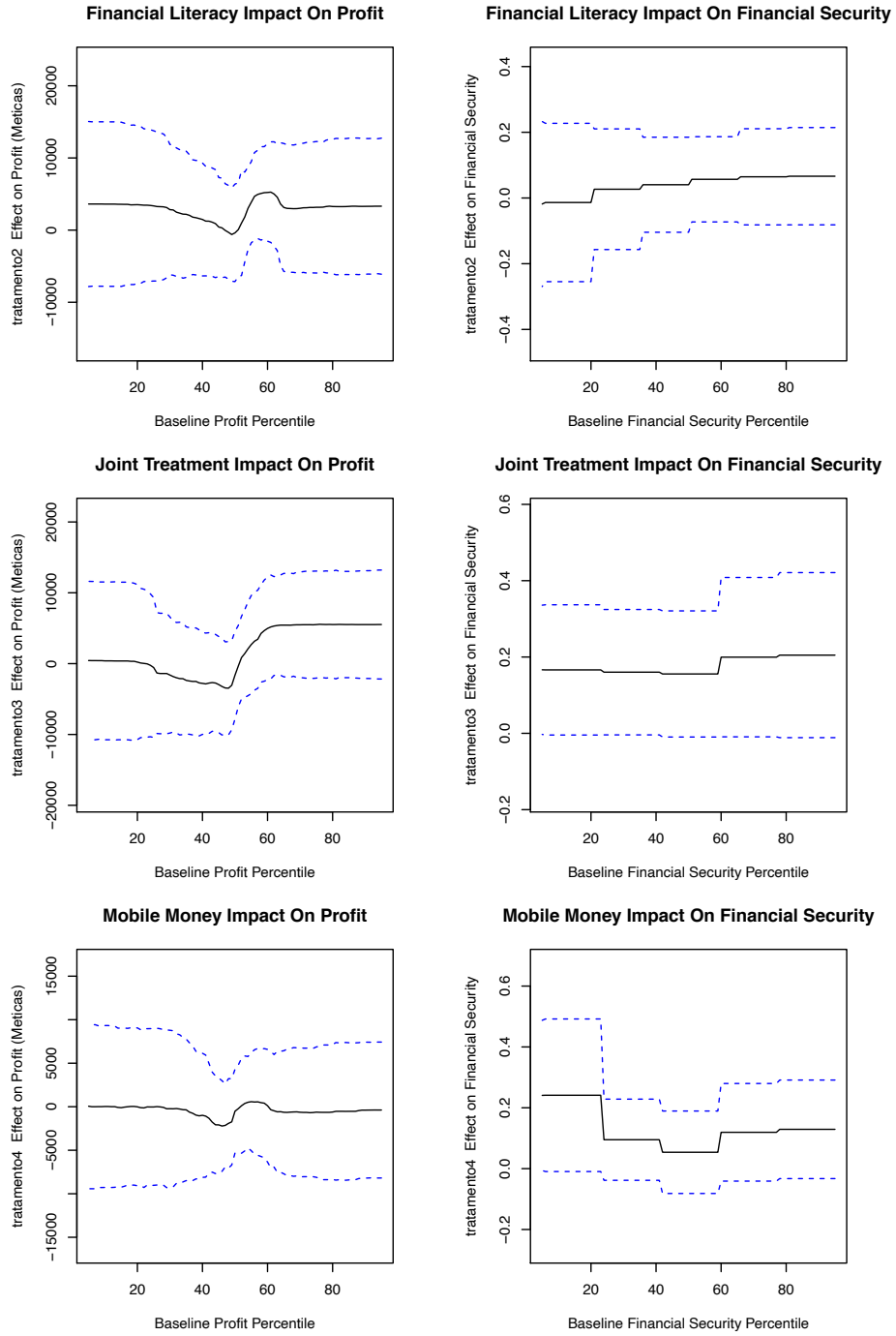
Notes: Robust standard errors in parentheses. All models control for the dependent variable's baseline value (where possible), market fixed effects and sector fixed effects. The full set of controls include the age of the business, the type of business (store or stall), the number of employees at baseline, an index of financial numeracy, inventory size at baseline, the entrepreneurs' previous experience as a business owner, and whether or not the entrepreneur has given/received a loan from a family member in the year prior to the intervention. The dependent variable in models 1, 2, 5, 6, 7 and 9 correspond to its value in the end line survey (July, 2015), while models 3, 4 and 8 corresponds to it's value in the follow-up survey (November, 2020). Models 10 and 11 correspond to an administrative data set from the Mobile Money operator that tracks mobile money usage and account balances from June 2014 to February 2018. ^{a} indicates that the outcome variable was winsorized, ^{t} indicates that the outcome variable was deflated to correspond to prices in 2015, and ^{m} indicates that that the dependent variable was log transformed. *** p<0.01, ** p<0.05, * p<0.1

Figure 1: Closing the Gap on Profit, Financial Management And Bookkeeping



Notes: Panel (A) reports the closing of the gap in profit between 2014 and 2015 for female-led microenterprises in the combined treatment group and male-led microenterprises in the control group. Panel (B) shows the closing of the gender gap on profit between 2014 and 2020. Panel (C) shows the closing of the gap in bookkeeping practices, and panel (D) the closing of the gap in financial management knowledge, as measured by a 15-question test on core financial literacy and management concepts.

Figure 2: Heterogeneity of Treatment Effects in 2015 by Baseline Levels of Profits for Female Entrepreneurs in all Treatments.



Notes: 90% confidence intervals shown on graphs.

ONLINE APPENDIX FOR
CLOSING THE PROFIT GENDER GAP
(NOT FOR PUBLICATION)

September 2021

Table A1: Balance By Experimental Groups, 2015 Endline

	Panel A: Female Entrepreneurs						*Panel B: Male Entrepreneurs*					
	Control	FL	FL + MM	MM	Full Sample	Joint Orth. Test	Control	FL	FL + MM	MM	Full Sample	Joint Orth. Test
Business Characteristics												
Business Type	0.364	0.397	0.391	0.378	0.383	0.929	0.438	0.446	0.418	0.428	0.433	0.968
	(0.039)	(0.037)	(0.036)	(0.036)	(0.018)		(0.044)	(0.041)	(0.042)	(0.040)	(0.021)	
% Owns Business	0.935	0.897	0.902	0.888	0.904	0.505	0.840	0.899	0.887	0.868	0.874	0.484
	(0.020)	(0.023)	(0.022)	(0.024)	(0.011)		(0.032)	(0.025)	(0.027)	(0.028)	(0.014)	
Initial Investment (win)	11936	11552	12565	15103	12797	0.718	20579	20922	16830	19397	19388	0.842
	(2426)	(1880)	(1923)	(3151)	(1189)		(4145)	(3735)	(2781)	(3477)	(1767)	
% Business Has Space For Inventory	0.539	0.586	0.565	0.533	0.556	0.739	0.662	0.628	0.574	0.658	0.630	0.404
	(0.040)	(0.037)	(0.037)	(0.037)	(0.019)		(0.042)	(0.040)	(0.042)	(0.039)	(0.020)	
Inventory Levels (win)	15.507	15.853	19.579	17.000	17.083	0.592	21.730	25.856	25.759	18.160	22.875	0.283
	(2.335)	(2.136)	(2.513)	(2.325)	(1.172)		(2.485)	(3.547)	(4.122)	(2.803)	(1.667)	
Establishment Age	142.739	135.193	116.896	147.844	135.341	0.037	118.443	120.156	96.489	109.150	111.037	0.176
	(8.692)	(8.443)	(7.063)	(8.606)	(4.115)		(8.116)	(9.753)	(7.936)	(7.359)	(4.185)	
Number Of Employees	0.516	0.443	0.429	0.531	0.478	0.645	0.551	0.507	0.441	0.411	0.475	0.600
	(0.082)	(0.066)	(0.056)	(0.074)	(0.035)		(0.043)	(0.040)	(0.040)	(0.039)	(0.020)	
Business Owner Characteristics												
% Was Previously A Vendor	0.461	0.468	0.554	0.439	0.482	0.133	0.420	0.385	0.340	0.379	0.380	0.609
	(0.040)	(0.038)	(0.037)	(0.037)	(0.019)		(0.043)	(0.040)	(0.040)	(0.039)	(0.020)	
% Owns Another Business	0.026	0.034	0.038	0.028	0.032	0.912	0.068	0.053	0.057	0.039	0.054	0.755
	(0.013)	(0.014)	(0.014)	(0.012)	(0.007)		(0.022)	(0.018)	(0.020)	(0.016)	(0.009)	
% Played Lottery Last 12 Months	0.078	0.109	0.087	0.044	0.079	0.154	0.198	0.216	0.135	0.183	0.183	0.323
	(0.022)	(0.024)	(0.021)	(0.015)	(0.010)		(0.035)	(0.034)	(0.029)	(0.031)	(0.016)	
Risk Aversion Index	0.853	0.726	0.731	0.794	0.773	0.350	0.779	0.817	0.922	0.852	0.845	0.231
	(0.048)	(0.061)	(0.058)	(0.052)	(0.028)		(0.064)	(0.053)	(0.033)	(0.048)	(0.025)	
Financial Literacy Index	0.847	0.829	0.822	0.844	0.835	0.595	0.889	0.862	0.863	0.865	0.869	0.567
	(0.015)	(0.016)	(0.015)	(0.015)	(0.008)		(0.015)	(0.015)	(0.015)	(0.014)	(0.007)	
% Uses Book-Keeping	0.235	0.241	0.185	0.242	0.225	0.505	0.268	0.308	0.302	0.298	0.295	0.893
	(0.039)	(0.038)	(0.039)	(0.037)	(0.019)							
Business Performance												
Total Expenditure Last Month (win)	20805	22549	20639	21613	21409	0.851	29944	33013	28925	27316	29786	0.387
	(1867)	(1859)	(1440)	(1666)	(850)		(2700)	(2532)	(2487)	(2079)	(1221)	
Total Sales Last Month(win)	24416	27462	24294	26116	25590	0.661	32510	34482	34132	33993	33814	0.966
	(2144)	(2277)	(1785)	(2186)	(1048)		(2795)	(2786)	(3016)	(2735)	(1415)	
Number of Productive Assets	5.617	5.138	5.397	5.419	5.386	0.943	4.115	4.412	4.007	3.980	4.129	0.876
	(0.610)	(0.520)	(0.513)	(0.513)	(0.268)		(0.466)	(0.399)	(0.472)	(0.347)	(0.209)	
Number of Clients Past 3 Days	19.615	19.669	21.783	22.475	20.955	0.481	26.519	24.776	21.524	24.063	24.205	0.408
	(1.409)	(1.217)	(1.706)	(1.894)	(0.801)		(2.513)	(2.033)	(1.577)	(1.991)	(1.023)	
N	154	175	184	180	693		132	150	141	153	576	

Notes: win indicates that the variable was winsorized. Exchange rate for the metical was 1,000 meticais=40 USD. The overall initial investment was on average 632 USD, total expenditure 1000 USD and average total sales 1094 USD.

Table A2: Balance By Experimental Groups, 2020 Endline

	Panel A: Female Entrepreneurs						*Panel B: Male Entrepreneurs*					
	Control	FL	FL + MM	MM	Full Sample	Joint Orth. Test	Control	FL	FL + MM	MM	Full Sample	Joint Orth. Test
Business Characteristics												
Business Type	0.446	0.468	0.420	0.438	0.442	0.959	0.473	0.484	0.429	0.375	0.441	0.640
	(0.067)	(0.064)	(0.060)	(0.062)	(0.031)		(0.068)	(0.064)	(0.071)	(0.065)	(0.033)	
% Owns Business	0.946	0.935	0.928	0.891	0.924	0.675	0.836	0.887	0.878	0.875	0.869	0.865
	(0.030)	(0.031)	(0.031)	(0.039)	(0.017)		(0.050)	(0.041)	(0.047)	(0.045)	(0.023)	
Initial Investment (win)	14111	11481	13895	13939	13350	0.964	25727	16929	20303	19601	20551	0.774
	(5030)	(2707)	(3484)	(5157)	(2037)		(7808)	(4309)	(5579)	(6746)	(3087)	
% Business Has Space For Inventory	0.554	0.694	0.580	0.547	0.594	0.314	0.691	0.661	0.592	0.684	0.659	0.711
	(0.067)	(0.059)	(0.060)	(0.063)	(0.031)		(0.063)	(0.061)	(0.071)	(0.062)	(0.032)	
Inventory Levels (win)	17.245	12.839	26.147	17.672	18.726	0.120	24.722	29.597	37.851	19.885	27.828	0.242
	(5.119)	(1.623)	(4.600)	(4.446)	(2.079)		(4.635)	(4.848)	(9.732)	(5.524)	(3.109)	
Establishment Age	147.393	145.767	127.043	153.672	142.976	0.509	127.291	147.066	105.021	124.421	127.273	0.278
	(14.825)	(13.912)	(11.028)	(14.527)	(6.746)		(13.061)	(18.606)	(12.744)	(12.876)	(7.488)	
Number Of Employees	0.482	0.355	0.449	0.500	0.446	0.776	0.611	0.377	0.681	0.327	0.488	0.121
	(0.114)	(0.095)	(0.096)	(0.119)	(0.053)		(0.136)	(0.094)	(0.164)	(0.097)	(0.061)	
Business Owner Characteristics												
% Was Previously A Vendor	0.429	0.468	0.565	0.422	0.474	0.327	0.473	0.355	0.306	0.333	0.368	0.294
	(0.067)	(0.064)	(0.060)	(0.062)	(0.032)		(0.068)	(0.061)	(0.067)	(0.063)	(0.032)	
% Owns Another Business	0.018	0.065	0.043	0.016	0.036	0.416	0.073	0.097	0.102	0.035	0.076	0.534
	(0.018)	(0.031)	(0.025)	(0.016)	(0.012)		(0.035)	(0.038)	(0.044)	(0.025)	(0.018)	
% Played Lottery Last 12 Months	0.089	0.129	0.101	0.047	0.092	0.450	0.291	0.242	0.122	0.211	0.220	0.211
	(0.038)	(0.043)	(0.037)	(0.027)	(0.018)		(0.062)	(0.055)	(0.047)	(0.054)	(0.028)	
Risk Aversion Index	0.833	0.681	0.674	0.860	0.758	0.371	0.885	0.853	0.857	0.867	0.865	0.798
	(0.083)	(0.106)	(0.108)	(0.079)	(0.048)		(0.024)	(0.024)	(0.027)	(0.022)	(0.012)	
Financial Literacy Index	0.860	0.866	0.826	0.823	0.843	0.513	0.222	0.344	0.417	0.309	0.321	0.204
	(0.025)	(0.027)	(0.025)	(0.024)	(0.013)		(0.057)	(0.061)	(0.072)	(0.063)	(0.032)	
% Uses Book-Keeping	0.250	0.194	0.159	0.190	0.196	0.655	0.222	0.344	0.417	0.309	0.321	0.204
	(0.058)	(0.051)	(0.044)	(0.050)	(0.025)		(0.057)	(0.061)	(0.072)	(0.063)	(0.032)	
Business Performance												
Total Expenditure Last Month (win)	20357	21661	21851	20237	21063	0.962	30536	31081	32904	25027	29796	0.518
	(2789)	(3345)	(2221)	(2589)	(1363)		(4190)	(3594)	(4483)	(3336)	(1935)	
Total Sales Last Month(win)	24138	25143	23803	27137	24983	0.912	33049	32386	32950	30207	32144	0.970
	(4074)	(3476)	(2670)	(3904)	(1733)		(4610)	(4108)	(5317)	(4484)	(2286)	
Number of Productive Assets	5.232	5.484	5.203	5.734	5.414	0.971	4.309	3.806	4.286	3.912	4.063	0.921
	(0.968)	(0.894)	(0.790)	(0.901)	(0.440)		(0.822)	(0.433)	(0.756)	(0.536)	(0.317)	
Number of Clients Past 3 Days	19.272	18.098	20.313	22.065	19.946	0.751	30.819	24.848	20.740	24.820	25.405	0.302
	(2.701)	(1.752)	(2.114)	(3.804)	(1.316)		(4.832)	(3.379)	(2.261)	(3.434)	(1.824)	
N	56	62	69	64	251		55	62	49	57	223	

Notes: win indicates that the variable was winsorized.

Table A3: Attrition Across Experimental Groups

	Control	FL	FL + MM	MM	Overall Sample	Joint Orthogonality Test
			Panel A: 2020 Survey Completion			
% Remained, Females	0.257	0.286	0.318	0.296	0.289	0.564
	(0.030)	(0.031)	(0.032)	(0.031)	(0.015)	
% Remained Males	0.309	0.346	0.275	0.320	0.313	0.541
	(0.035)	(0.036)	(0.034)	(0.035)	(0.017)	
% Remained, Pooled Sample	0.280	0.313	0.299	0.307	0.299	0.446
	(0.023)	(0.023)	(0.023)	(0.023)	(0.011)	
			Panel B: Profit 2020 Missingness			
% Missing, Females	0.188	0.207	0.230	0.194	0.205	0.707
	(0.027)	(0.028)	(0.029)	(0.027)	(0.014)	
% Missing, Males	0.275	0.229	0.213	0.225	0.236	0.534
	(0.034)	(0.031)	(0.031)	(0.031)	(0.016)	
% Missing, Pooled Sample	0.227	0.217	0.223	0.208	0.218	0.658
	(0.021)	(0.021)	(0.021)	(0.020)	(0.010)	

Table A4: Descriptive Statistics And Sample Balance By Attrition Group, Endline 2015 Survey Sample

	Left Sample	Remained Sample	Overall Sample	Joint Orthogonality Test
Business Characteristics				
Business Type	0.457	0.405	0.416	0.098
	(0.028)	(0.014)	(0.012)	
% Owns Business	0.866	0.891	0.886	0.222
	(0.019)	(0.009)	(0.008)	
Initial Investment[a]	16737.138	15806.970	15985.169	0.691
	(1953.151)	(1038.714)	(919.035)	
% Business Has Space For Inventory	0.529	0.590	0.578	0.049
	(0.028)	(0.014)	(0.012)	
Inventory Levels[a]	13.930	19.675	18.543	0.006
	(1.211)	(0.990)	(0.832)	
Establishment Age	99.032	124.311	119.294	0.000
	(6.391)	(2.961)	(2.702)	
Number of Employees	0.590	0.477	0.499	0.060
	(0.058)	(0.026)	(0.024)	
Business Owner Characteristics				
Gender	0.439	0.454	0.451	0.638
	(0.028)	(0.014)	(0.013)	
% Was Previously A Vendor	0.468	0.436	0.442	0.304
	(0.028)	(0.014)	(0.013)	
% Owns Another Business	0.035	0.042	0.040	0.569
	(0.010)	(0.006)	(0.005)	
% Played Lottery in last 12 Months	0.080	0.126	0.117	0.023
	(0.015)	(0.009)	(0.008)	
Risk Aversion Index	0.837	0.807	0.813	0.482
	(0.036)	(0.019)	(0.017)	
Financial Literacy Index	0.862	0.850	0.853	0.345
	(0.011)	(0.005)	(0.005)	
% Uses Book-Keeping	0.277	0.256	0.260	0.469
	(0.025)	(0.012)	(0.011)	
Business Performance				
Total Expenditure Last Month[a]	25303.156	25199.682	25220.245	0.950
	(1502.517)	(731.806)	(657.808)	
Total Sales Last Month[a]	27173.296	27361.154	27324.416	0.917
	(1556.179)	(807.180)	(716.875)	
Number Of Productive Assets	6.494	4.817	5.151	0.000
	(0.424)	(0.175)	(0.165)	
Number Of Client Past 3 Days	22.029	22.417	22.339	0.787
	(1.306)	(0.639)	(0.573)	
N	317	1269	1588	

Notes: [a] indicates that the variable was winsorized.

Table A5: Descriptive Statistics And Sample Balance By Attrition Group, Endline 2020 Survey Sample

	Left Sample	Remained Sample	Overall Sample	Joint Orthogonality Test
Business Characteristics				
Business Type	0.404	0.442	0.416	0.166
	(0.015)	(0.023)	(0.012))	
% Owns Business	0.880	0.899	0.886	0.301
	(0.010)	(0.014)	(0.008)	
Initial Investment[a]	15646.232	16764.632	15985.169	0.576
	(1054.928)	(1821.202)	(919.035)	
% Business Has Space For Inventory	0.558	0.624	0.578	0.014
	(0.015)	(0.022)	(0.012)	
Inventory Levels[a]	16.619	23.018	18.543	0.000
	(0.882)	(1.842)	(0.832)	
Establishment Age	112.325	135.610	119.294	0.000
	(3.183)	(5.024)	(2.702)	
Number of Employees	0.513	0.466	0.499	0.361
	(0.030)	(0.040)	(0.024)	
Business Owner Characteristics				
Gender	0.443	0.470	0.451	0.309
	(0.015)	(0.023)	(0.013)	
% Was Previously A Vendor	0.450	0.424	0.442	0.338
	(0.015)	(0.023)	(0.013)	
% Owns Another Business	0.034	0.055	0.040	0.055
	(0.005)	(0.010)	(0.005)	
% Played Lottery in last 12 Months	0.102	0.152	0.117	0.005
	(0.009)	(0.017)	(0.008)	
Risk Aversion Index	0.828	0.779	0.813	0.173
	(0.019)	(0.033)	(0.017)	
Financial Literacy Index	0.853	0.853	0.853	0.937
	(0.006)	(0.009)	(0.005)	
% Uses Book-Keeping	0.263	0.254	0.260	0.719
	(0.013)	(0.020)	(0.011)	
Business Performance				
Total Expenditure Last Month[a]	25241.391	25170.832	25220.245	0.961
	(792.870)	(1178.180)	(657.808)	
Total Sales Last Month[a]	29641.840	28344.796	29245.171	0.438
	(915.667)	(1422.154)	(770.078)	
Number Of Productive Assets	5.311	4.778	5.151	0.138
	(0.203)	(0.278)	(0.165)	
Number Of Client Past 3 Days	22.271	22.493	22.339	0.859
	(0.666)	(1.110)	(0.573)	
N	1113	474	1587	

Notes: [a] indicates that the variable was winsorized.

Table A6: Descriptive Statistics And Sample Balance By Gender at Baseline, Endline 2015 Survey Sample

	Female	Male	Overall Sample	Joint Orthogonality Test
Business Characteristics				
Business Type	0.383	0.433	0.405	0.074
	(0.018)	(0.021)	(0.014)	
% Owns Business	0.904	0.874	0.891	0.085
	(0.011)	(0.014)	(0.009)	
Initial Investment[a]	12797.447	19388.774	15806.970	0.002
	(1189.046)	(1767.875)	(1038.714)	
% Business Has Space For Inventory	0.556	0.630	0.590	0.008
	(0.019)	(0.020)	(0.014)	
Inventory Levels[a]	17.083	22.875	19.675	0.004
	(1.172)	(1.667)	(0.990)	
Establishment Age	135.341	111.037	124.311	0.000
	(4.115)	(4.185)	(2.961)	
Number of Employees	0.478	0.475	0.477	0.952
	(0.035)	(0.040)	(0.026)	
Business Owner Characteristics				
Gender	0	1	0.454	
	(0.000)	(0.000)	(0.014)	
% Was Previously A Vendor	0.482	0.380	0.436	0.000
	(0.019)	(0.020)	(0.014)	
% Owns Another Business	0.032	0.054	0.042	0.144
	(0.007)	(0.009)	(0.006)	
% Played Lottery in last 12 Months	0.079	0.183	0.126	0.000
	(0.010)	(0.016)	(0.009)	
Risk Aversion Index	0.773	0.845	0.807	0.055
	(0.028)	(0.025)	(0.019)	
Financial Literacy Index	0.835	0.869	0.850	0.002
	(0.008)	(0.007)	(0.005)	
% Uses Book-Keeping	0.225	0.295	0.256	0.005
	(0.016)	(0.019)	(0.012)	
Business Performance				
Total Expenditure Last Month[a]	21409.807	29786.028	25199.682	0.000
	(850.586)	(1221.166)	(731.806)	
Total Sales Last Month[a]	23910.977	31592.753	27361.154	0.000
	(976.292)	(1317.746)	(807.180)	
Number Of Productive Assets	5.386	4.129	4.817	0.000
	(0.268)	(0.209)	(0.175)	
Number Of Client Past 3 Days	20.955	24.205	22.417	0.011
	(0.801)	(1.023)	(0.639)	
N	693	576	1269	

Notes: [a] indicates that the variable was winsorized.

Table A7: Descriptive Statistics And Sample Balance By Gender, Endline 2020 Survey Sample

	Female	Male	Overall Sample	Joint Orthogonality Test
Business Characteristics				
Business Type	0.442	0.441	0.442	0.986
	(0.031)	(0.033)	(0.023)	
% Owns Business	0.924	0.869	0.899	0.048
	(0.017)	(0.023)	(0.014)	
Initial Investment[a]	13350.824	20551.213	16764.632	0.048
	(2037.828)	(3087.154)	(1821.202)	
% Business Has Space For Inventory	0.594	0.659	0.624	0.142
	(0.031)	(0.032)	(0.022)	
Inventory Levels[a]	18.726	27.828	23.018	0.013
	(2.079)	(3.109)	(1.842)	
Establishment Age	142.976	127.273	135.610	0.119
	(6.746)	(7.488)	(5.024)	
Number of Employees	0.446	0.488	0.466	0.596
	(0.053)	(0.061)	(0.040)	
Business Owner Characteristics				
Gender	0.000	1.000	0.470	
	(0.000)	(0.000)	(0.023)	
% Was Previously A Vendor	0.474	0.368	0.424	0.019
	(0.032)	(0.032)	(0.023)	
% Owns Another Business	0.036	0.076	0.055	0.054
	(0.012)	(0.018)	(0.010)	
% Played Lottery in last 12 Months	0.092	0.220	0.152	0.000
	(0.018)	(0.028)	(0.017)	
Risk Aversion Index	0.758	0.799	0.779	0.536
	(0.048)	(0.044)	(0.033)	
Financial Literacy Index	0.843	0.865	0.853	0.195
	(0.013)	(0.012)	(0.009)	
% Uses Book-Keeping	0.196	0.321	0.254	0.002
	(0.025)	(0.032)	(0.020)	
Business Performance				
Total Expenditure Last Month[a]	21063.051	29796.712	25170.832	0.000
	(1363.762)	(1935.787)	(1178.180)	
Total Sales Last Month[a]	23352.930	30048.928	26495.949	0.011
	(1613.717)	(2127.588)	(1323.575)	
Number Of Productive Assets	5.414	4.063	4.778	0.015
	(0.440)	(0.317)	(0.278)	
Number Of Client Past 3 Days	19.946	25.405	22.493	0.014
	(1.316)	(1.824)	(1.110)	
N	251	223	474	

Notes: [a] indicates that the variable was winsorized.

Table A8: Firm Survival in 2020 Endline Survey

	(1) Firm Survival (Female)	(2) Firm Survival (Male)
Treatment		
FL	-0.027	-0.064
	[0.054]	[0.063]
FL + MM	-0.027	-0.104
	[0.053]	[0.065]
MM	-0.079	-0.098
	[0.053]	[0.065]
Lee Bounds FL	[-0.22, 0.11]	[-0.32, 0.13]
Lee Bounds FL + MM	[-0.22, 0.16]	[-0.29, 0.04]
Lee Bounds MM	[-0.26, 0.05]	[-0.36, 0.09]
Control Group Mean	0.314	0.423
Control Group St.d	0.466	0.496
p-value FL = Comb	0.996	0.489
p-value MM = Comb	0.282	0.929
p-value MM = FL	0.297	0.539
p-value MM = FL = Comb	0.470	0.743
p-value MM + FL = Comb	0.274	0.504
p-value MM + FL >= Comb	0.137	0.252
Controls	YES	YES
Market Fixed Effects	YES	YES
Sector Fixed Effects	YES	YES
Observations	632	497
Adjusted R-squared	0.027	0.028
F-Statistic	1.694	5.459

Notes: Robust standard errors in parentheses. All models control for market fixed effects, sector fixed effects, the age of the business, the type of business (store or stall), the number of employees at baseline, an index of financial numeracy, inventory size at baseline, the entrepreneurs' previous experience as a business owner, and whether or not the entrepreneur has given/received a loan from a family member in the year prior to intervention. A firm is 'survived' if they indicate on the follow up survey that the business is still in operation. Column (1) corresponds to female micro-entrepreneurs and column (2) corresponds to male micro-entrepreneurs.

Table A9: Treatment Effects On Profits, Controlling For Endline Bookkeeping

	Panel A: Female Entrepreneurs					*Panel B: Male Entrepreneurs*				
OUTCOMES	(1) Monthly Profit 2015^{a}	(2) Monthly Profit 2015^{a}	(3) Monthly Profit 2020^{at}	(4) Monthly Profit 2020^{at}	(5) Financial Security Index 2015	(6) Monthly Profit 2015^{a}	(7) Monthly Profit 2015^{a}	(8) Monthly Profit 2020^{at}	(9) Monthly Profit 2020^{at}	(10) Financial Security Index 2015
Treatment Condition										
FL	4803.170	4511.597	383.718	752.814	0.062	4106.112	3920.521	-23.303	-601.873	-0.006
	[3152.428]	[3272.560]	[744.521]	[886.355]	[0.086]	[4108.874]	[4190.475]	[993.999]	[999.818]	[0.074]
FL + MM	7047.315**	7480.638**	1742.866**	1904.573**	0.169*	2986.572	2511.670	342.062	157.870	0.053
	[3306.436]	[3335.819]	[762.525]	[850.804]	[0.087]	[3965.387]	[4205.396]	[1087.851]	[1129.923]	[0.071]
MM	-730.662	-1803.656	2169.163***	2198.559***	0.176**	2230.535	2070.114	-870.775	-1278.949	0.067
	[3700.272]	[3739.580]	[758.785]	[805.694]	[0.082]	[3946.484]	[4001.924]	[970.072]	[1005.174]	[0.070]
Lee Bounds FL	[-8801, 15475]	[-8801, 15475]	[-1974, 1084]	[-1974, 1084]	[-0.14, 0.47]	[-8810, 23249]	[-8810, 23249]	[-1904, 2193]	[-1904, 2193]	[-0.22, 0.30]
Lee Bounds FL + MM	[-9243, 17240]	[-9243, 17240]	[-1588, 3950]	[-1588, 3950]	[-0.02, 0.54]	[-8193, 17410]	[-8193, 17410]	[-1915, 3838]	[-1915, 3838]	[-0.10, 0.31]
Lee Bounds MM	[-12391, 12484]	[-12391, 12484]	[113, 3006]	[113, 3006]	[0.02, 0.47]	[-9322, 17788]	[-9322, 17788]	[-3558, 1617]	[-3558, 1617]	[-0.13, 0.31]
Control Group Mean	-15391.222	-15240.542	1237.165	1211.001	2.554	-17934.495	-18980.823	2461.133	2576.169	2.750
Control Group St.d	28910.876	29090.404	1722.386	1745.554	0.826	32948.503	33878.655	3720.650	3781.192	0.570
p-value FL = Comb	0.430	0.306	0.067	0.144	0.183	0.752	0.703	0.729	0.501	0.412
p-value MM = Comb	0.021	0.007	0.617	0.750	0.922	0.830	0.905	0.265	0.176	0.833
p-value MM = FL	0.096	0.058	0.036	0.139	0.132	0.618	0.626	0.345	0.428	0.310
p-value MM = FL = Comb	0.067	0.025	0.066	0.229	0.263	0.882	0.877	0.473	0.371	0.570
p-value MM + FL = Comb	0.517	0.316	0.441	0.347	0.542	0.523	0.518	0.409	0.189	0.932
p-value MM + FL >= Comb	0.258	0.158	0.779	0.826	0.729	0.738	0.741	0.205	0.095	0.534
Controls	NO	YES	NO	YES	YES	NO	YES	NO	YES	YES
Market Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Sector Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	573	554	137	134	633	477	444	133	123	502
Adjusted R-squared	0.059	0.074	0.016	-0.047	0.067	0.065	0.072	-0.030	0.038	0.101
F-Statistic	2.715	2.448	1.729	0.915	3.048	0.640	0.971	1.753	1.467	1.914

Notes: Robust standard errors in parentheses. All models control for the dependent variable's baseline value (where possible), market fixed effects and sector fixed effects. The full set of controls include the age of the business, the type of business (store or stall), the number of employees at baseline, an index of financial numeracy, inventory size at baseline, the entrepreneurs' previous experience as a business owner, log number of productive assets at baseline, whether or not the entrepreneur has given/received a loan from a family member in the year prior to intervention, and an index of endline bookkeeping. Models 1, 2, 5, 6, 7, and 10 correspond to an end line survey taken in July, 2015. Models 3, 4, 8 and 9 correspond to a follow-up survey taken in November, 2020. ^{a} indicates that the outcome variable was winsorized and ^{t} indicates that the outcome variable was deflated to correspond to prices in 2015 *** p<0.01, ** p<0.05, * p<0.1

Table A10: Pooled Sample: Treatment Effects on Profits

	All Entrepreneurs				
OUTCOMES	(1) Monthly Profit 2015^{a}	(2) Monthly Profit 2015^{a}	(3) Monthly Profit 2020^{at}	(4) Monthly Profit 2020^{at}	(5) Financial Security Index
Treatment Condition					
FL	2890.539	2521.846	488.451	388.076	0.040
	[2548.634]	[2633.942]	[541.316]	[550.464]	[0.058]
FL + MM	3127.967	2390.910	1346.958**	1465.432**	0.122**
	[2515.234]	[2595.558]	[611.343]	[628.533]	[0.057]
MM	-183.348	-907.143	577.224	186.314	0.123**
	[2643.648]	[2718.045]	[542.319]	[542.682]	[0.056]
Lee Bounds FL	[-7417, 16870]	[-7417, 16870]	[-1404, 1551]	[-1404, 1551]	[-0.12, 0.37]
Lee Bounds FL + MM	[-6833, 14790]	[-6833, 14790]	[-420, 2663]	[-420, 2663]	[-0.01, 0.42]
Lee Bounds MM	[-8191, 11643]	[-8191, 11643]	[-1543, 1970]	[-1543, 1970]	[-0.02, 0.37]
Control Group Mean	-16199.357	-16514.878	1869.461	1907.898	2.635
Control Group St.d	30678.375	31175.957	2949.466	2994.470	0.743
p-value FL = Comb	0.916	0.955	0.154	0.078	0.124
p-value MM = Comb	0.168	0.180	0.243	0.057	0.984
p-value MM = FL	0.209	0.163	0.879	0.728	0.110
p-value MM = FL = Comb	0.327	0.301	0.330	0.120	0.205
p-value MM + FL = Comb	0.903	0.829	0.731	0.283	0.590
p-value MM + FL >= Comb	0.452	0.415	0.365	0.141	0.705
Controls	NO	YES	NO	YES	YES
Market Fixed Effects	YES	YES	YES	YES	YES
Sector Fixed Effects	YES	YES	YES	YES	YES
Observations	1,069	1,017	279	266	1,158
Adjusted R-squared	0.044	0.055	-0.014	0.014	0.070
F-Statistic	1.232	1.650	1.609	1.338	2.830

Notes: Robust standard errors in parentheses. All models control for the dependent variable's baseline value (where possible), market fixed effects and sector fixed effects. The full set of controls include the age of the business, the type of business (store or stall), gender, log number of productive assets at baseline, the number of employees at baseline, an index of financial numeracy, inventory size at baseline, the entrepreneurs' previous experience as a business owner, and whether or not the entrepreneur has given/received a loan from a family member in the year prior to intervention. Models 1, 2, and 5 correspond to an end line survey taken in July, 2015. Models 3 and 4 correspond to a follow-up survey taken in November, 2020. ^{a} indicates that the outcome variable was winsorized and ^{t} indicates that the outcome variable was deflated to correspond to prices in 2015 *** p<0.01, ** p<0.05, * p<0.1

Table A11: Unmatched, Pooled Sample: Treatment Effect on Profits

	(1) Monthly Profit 2015	(2) Monthly Profit 2015	(3) Monthly Profit 2020	(4) Monthly Profit 2020	(5) Financial Security Index
FL	3271.467	2592.905	574.762	648.696	0.063
	[3223.752]	[3325.592]	[663.627]	[741.327]	[0.087]
FL + MM	4562.489	4056.057	1910.642***	2044.173**	0.168**
	[3334.933]	[3371.789]	[726.038]	[794.334]	[0.084]
MM	-1358.758	-2194.759	1913.909***	1465.389**	0.158*
	[3630.815]	[3693.881]	[716.537]	[735.628]	[0.082]
FL*Male	-827.162	-141.257	-56.500	-370.188	-0.051
	[5143.719]	[5290.475]	[1112.602]	[1198.093]	[0.115]
(FL + MM)*Male	-3302.382	-3998.326	-1036.270	-1043.966	-0.107
	[5130.663]	[5333.738]	[1285.708]	[1404.933]	[0.111]
MM*Male	2440.908	2739.859	-2464.100**	-2403.733**	-0.077
	[5378.451]	[5473.658]	[1137.271]	[1174.753]	[0.107]
Lee Bounds FL	[-7417, 16870]	[-7417, 16870]	[-1404, 1551]	[-1404, 1551]	[-0.12, 0.37]
Lee Bounds FL + MM	[-6833, 14790]	[-6833, 14790]	[-420, 2663]	[-420, 2663]	[-0.01, 0.42]
Lee Bounds MM	[-8191, 11643]	[-8191, 11643]	[-1543, 1970]	[-1543, 1970]	[-0.02, 0.37]
Control Group Mean	-16199.357	-16514.878	1869.461	1907.898	2.635
Control Group St.d	30678.375	31175.957	2949.466	2994.470	0.743
p-value FL = Comb	0.662	0.624	0.089	0.088	0.175
p-value MM = Comb	0.081	0.067	0.997	0.516	0.885
p-value MM = FL	0.166	0.152	0.104	0.351	0.209
p-value MM = FL = Comb	0.201	0.172	0.147	0.230	0.333
p-value MM + FL = Comb	0.568	0.443	0.578	0.948	0.639
p-value MM + FL >= Comb	0.284	0.221	0.711	0.526	0.681
Market Fixed Effects	YES	YES	YES	YES	YES
Sector Fixed Effects	YES	YES	YES	YES	YES
Observations	1,069	1,017	279	266	1,158
Adjusted R-squared	0.043	0.053	-0.004	0.018	0.069
F-Statistic	0.966	1.466	2.163	1.636	2.398

Standard errors in brackets

* $p < .1$, ** $p < .05$, *** $p < .01$

Table A12: Mechanisms, Male Entrepreneurs

	Panel A: Business Practices				*Panel B: Mobile Money Usage*			
OUTCOMES	(1) Financial Literacy Index	(2) Numerical Literacy Index	(3) Book-Keeping Index	(4) Remit. To Family^{t}	(5) Reports Using MM	(6) Reported MM Savings^{m}	(7) Weekly MM Balance^{m}	(8) Weekly Transaction Value^{m}
Treatment Condition								
FL	0.076***	0.006	0.386**	662.107	0.001	-0.762	-0.024	0.024
	[0.021]	[0.024]	[0.150]	[624.976]	[0.050]	[0.832]	[0.120]	[0.020]
FL + MM	0.076***	-0.011	0.427***	-401.096	0.380***	0.068	1.908***	0.112***
	[0.023]	[0.024]	[0.157]	[374.613]	[0.061]	[0.704]	[0.189]	[0.029]
MM	-0.019	-0.010	-0.062	-297.320	0.242***	-0.426	2.023***	0.112***
	[0.023]	[0.025]	[0.143]	[401.592]	[0.060]	[0.702]	[0.180]	[0.025]
Lee Bounds FL	[0.03, 0.13]	[-0.07, 0.12]	[-0.32, 0.99]	[-1103, 1427]	[-0.18, 0.07]	[-2.70, 1.71]	[-0.24, 0.03]	[-0.01, 0.03]
Lee Bounds FL + MM	[0.05, 0.13]	[-0.06, 0.07]	[-0.05, 0.77]	[-999, 709]	[0.21, 0.49]	[-3.08, 4.72]	[1.78, 1.94]	[-0.01, 0.12]
Lee Bounds MM	[-0.06, 0.04]	[-0.09, 0.09]	[-0.67, 0.30]	[-914, 305]	[0.12, 0.42]	[-3.68, 3.88]	[1.87, 2.21]	[-0.01, 0.18]
Control Group Mean	0.652	0.834	0.963	701.867	0.147	3.115	0.231	0.006
Control Group St.d	0.178	0.186	1.113	1911.859	0.356	2.225	0.970	0.182
p-value FL = Comb	0.984	0.498	0.790	0.057	0.000	0.283	0.000	0.010
p-value MM = Comb	0.000	0.960	0.001	0.738	0.036	0.365	0.618	0.983
p-value MM = FL	0.000	0.538	0.001	0.043	0.000	0.632	0.000	0.003
p-value MM = FL = Comb	0.000	0.754	0.001	0.119	0.000	0.507	0.000	0.004
p-value MM + FL = Comb	0.518	0.845	0.625	0.321	0.102	0.231	0.724	0.554
p-value MM + FL >= Comb	0.259	0.577	0.312	0.839	0.051	0.115	0.638	0.723
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Market Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Observations	513	517	501	183	448	150	100,360	100,360
Adjusted R-squared	0.059	0.039	0.063	0.005	0.149	0.082	0.330	0.088
F-Statistic	3.750	1.614	2.434	0.900	5.805	5.174	10.261	1.778

Notes: Robust standard errors in parentheses. All models control for the dependent variable's baseline value (where possible), market fixed effects, sector fixed effects, the age of the business, the type of business (store or stall), the number of employees at baseline, an index of financial numeracy, inventory size at baseline, the entrepreneurs' previous experience as a business owner, and whether or not the entrepreneur has given/received a loan from a family member in the year prior to intervention. The dependent variable in models 1, 2, 3, 5, and 6 correspond to its value in the end line survey (July, 2015), while model 4 corresponds to it's value in the follow-up survey (November, 2020). Models 7 and 8 correspond to an administrative data set from the mobile money operator that tracks mobile money usage and account balances from June 2014 to February 2018. ^{t} indicates that the outcome variable was deflated to correspond to prices in 2015, and ^{m} indicates that that the dependent variable was log transformed. *** p<0.01, ** p<0.05, * p<0.1

Table A13: Share Of Mobile Money Transactions Across Experimental Groups

	Total	Airtime	Checking Balance	Deposit	Withd.	Remote Payment	Transfer Sent	Transfer Received	Reversal
Full Sample									
Control (N=286)	885	3.62%	0.45%	13.22%	1.13%	70.85%	8.93%	1.81%	0.00%
FL (N=325)	943	16.12%	2.12%	32.77%	7.53%	34.89%	3.08%	2.01%	0.42%
Combined(N=325)	4511	23.90%	3.37%	25.43%	4.41%	39.64%	2.50%	0.75%	0.00%
MM (N=333)	4910	14.81%	4.62%	32.81%	4.81%	39.23%	2.75%	0.84%	0.14%
Male									
Control (N=132)	69	26.09%	4.35%	37.68%	0.00%	26.09%	1.45%	4.35%	0.00%
FM (N=150)	491	19.96%	1.43%	26.88%	0.81%	43.79%	4.89%	2.24%	0.00%
Combined (N=141)	2513	3.02%	16.35%	22.32%	1.31%	54.20%	2.03%	0.76%	0.00%
MM (N=153)	3112	11.21%	3.50%	35.15%	6.88%	39.91%	2.15%	0.96%	0.22%
Female									
Control (N=154)	816	1.72%	0.12%	11.15%	1.23%	74.63%	9.56%	1.59%	0.00%
FL (N=175)	452	11.95%	2.88%	39.16%	14.82%	25.22%	3.32%	1.77%	0.88%
Combined (N=184)	1998	33.38%	3.80%	29.33%	8.31%	21.32%	3.10%	0.75%	0.00%
MM (N=180)	1798	21.02%	6.56%	28.75%	1.22%	38.04%	3.78%	0.61%	0.00%
Total	11249	17.68%	3.58%	28.30%	4.59%	41.51%	3.25%	0.98%	0.10%

Table A14: Descriptive Statistics of Matched and Unmatched Samples

	(1) Matched Sample				(2) Un-Matched Sample				(3) Difference	
	mean	p25	p75	sd	mean	p25	p75	sd	b	p
% Store	0.506	0.000	1.000	0.501	0.382	0.000	1.000	0.486	-0.124	(0.000)
% Owns Business	0.890	1.000	1.000	0.313	0.884	1.000	1.000	0.320	-0.006	(0.739)
Initial Investment (win)	18891.167	2400.000	15000.000	36701.600	14923.678	1500.000	15000.000	30026.657	-3967.489	(0.082)
% Business Has Space For Inventory	0.498	0.000	1.000	0.501	0.607	0.000	1.000	0.489	0.110	(0.000)
Inventory Levels (win)	12.680	5.000	15.000	13.516	20.847	4.000	20.000	37.059	8.167	(0.000)
Establishment Age	108.829	36.000	168.000	88.973	123.227	36.000	180.000	112.779	14.397	(0.008)
Number of Employees	0.596	0.000	1.000	1.007	0.462	0.000	1.000	0.915	-0.134	(0.017)
% Female	0.442	0.000	1.000	0.497	0.454	0.000	1.000	0.498	0.013	(0.648)
% Was Previously a Vendor	0.460	0.000	1.000	0.499	0.436	0.000	1.000	0.496	-0.025	(0.383)
% Owns Another Business	0.005	0.000	0.000	0.068	0.053	0.000	0.000	0.225	0.049	(0.000)
% Played Lottery in last 12 Month	0.133	0.000	0.000	0.340	0.111	0.000	0.000	0.315	-0.022	(0.249)
Risk Aversion Index	0.886	1.000	1.000	0.459	0.785	1.000	1.000	0.607	-0.101	(0.002)
Financial literacy Index	0.849	0.750	1.000	0.186	0.854	0.750	1.000	0.198	0.005	(0.639)
% Uses Book-Keeping	0.255	0.000	1.000	0.436	0.263	0.000	1.000	0.440	0.008	(0.751)
Total Expenditure Last Month (win)	29864.038	10038.539	39830.645	26963.678	23487.427	6392.990	29859.705	25575.310	-6376.612	(0.000)
Total Sales Last Month (win)	41698.775	14963.108	62130.553	33044.922	23988.620	6368.382	31065.276	25748.075	-17710.155	(0.000)
Number of Productive Assests (win)	6.425	1.000	8.000	7.078	4.676	1.000	6.000	6.264	-1.749	(0.000)
Number of Clients Past 3 Days	24.567	10.333	30.000	21.945	21.464	9.333	27.667	20.752	-3.103	(0.018)
Observations	428				1159				1587	

8 Figures

Figure 3: Business Illustrations

Notes: Left panel illustrates a stall in the market and Right panel illustrates a store.

Figure 4: Reported Savings Objectives At Baseline By Gender

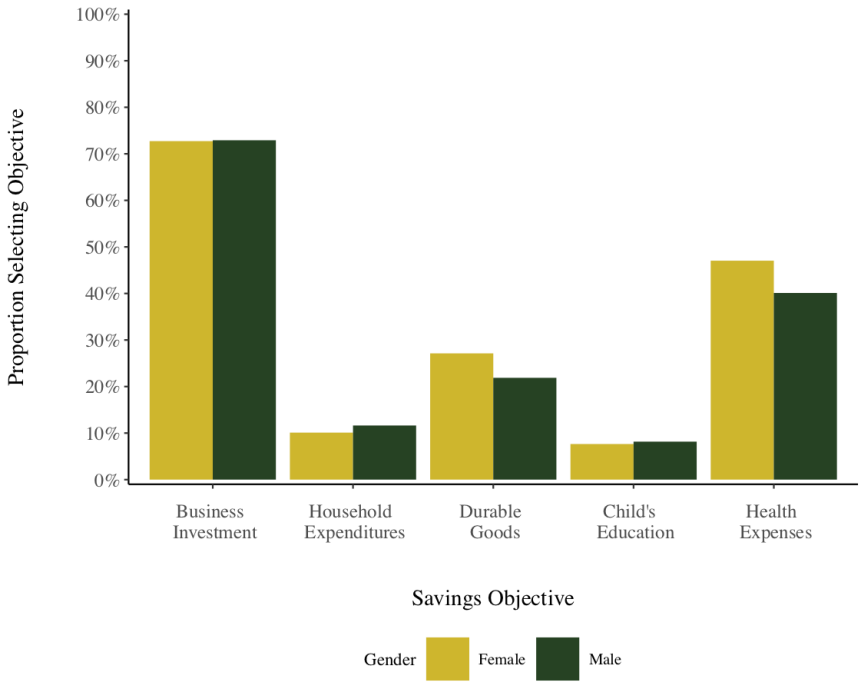


Figure 5: Propensity Scores Of Female and Male microenterprises

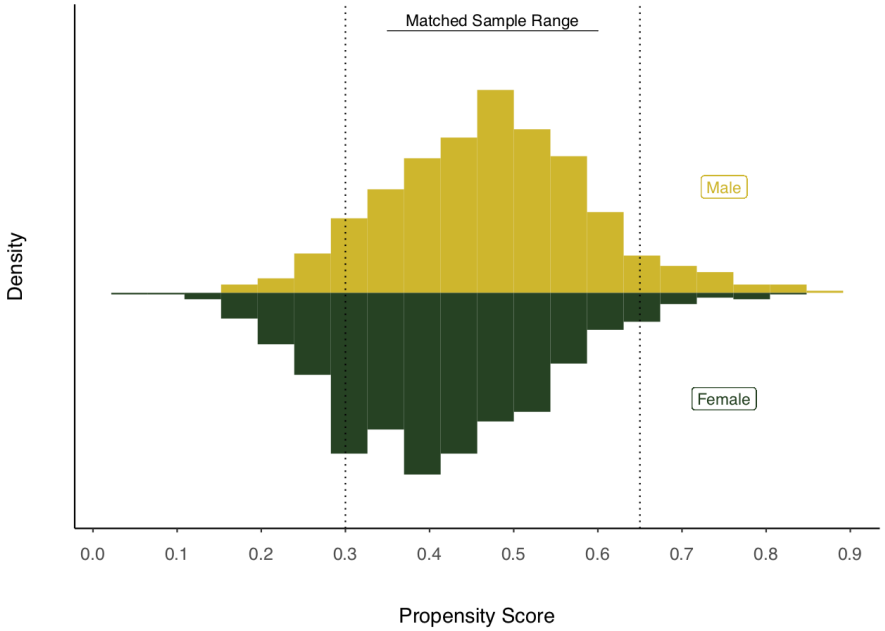


Figure 6: Closing the Gender Gap on Profit, Mobile Money Treatment

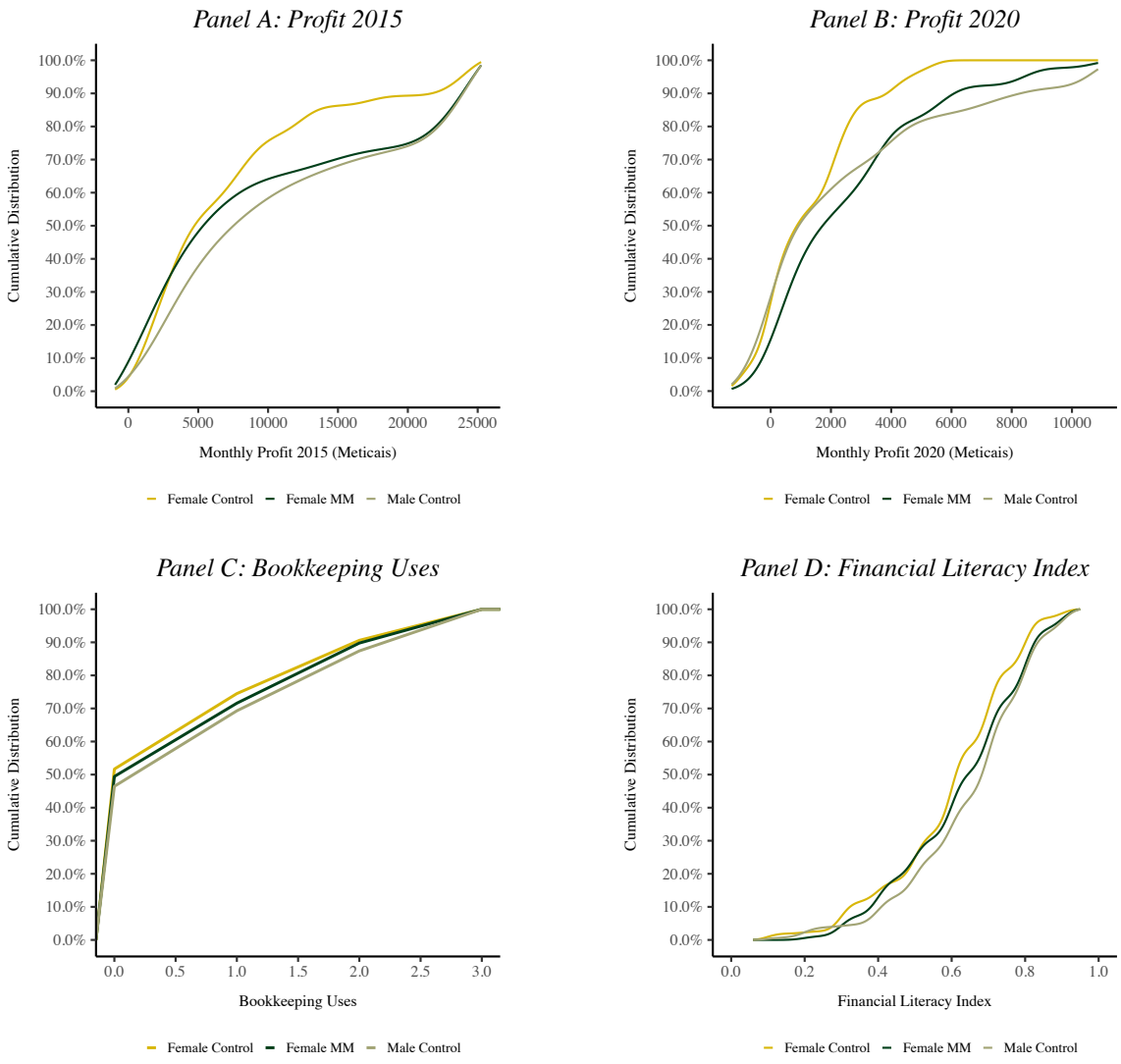
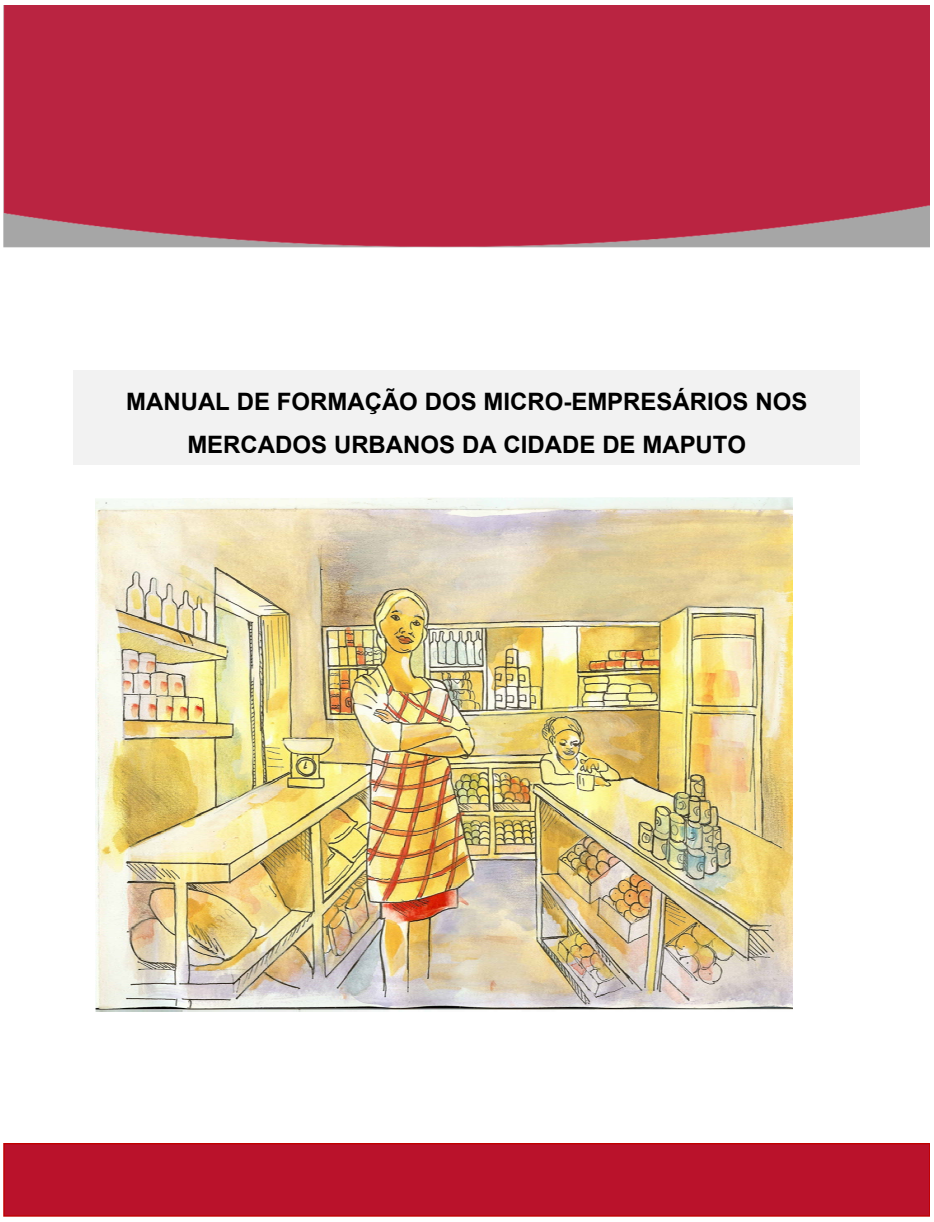


Figure 7: Front Cover Of The Manual Designed To Support Financial Management Training



Training Manual for microentrepreneurs Operating in the Urban Markets of the City of Maputo

Figure 8: Outline Of the Topics Covered in The Manual Designed To Support Financial Management Training

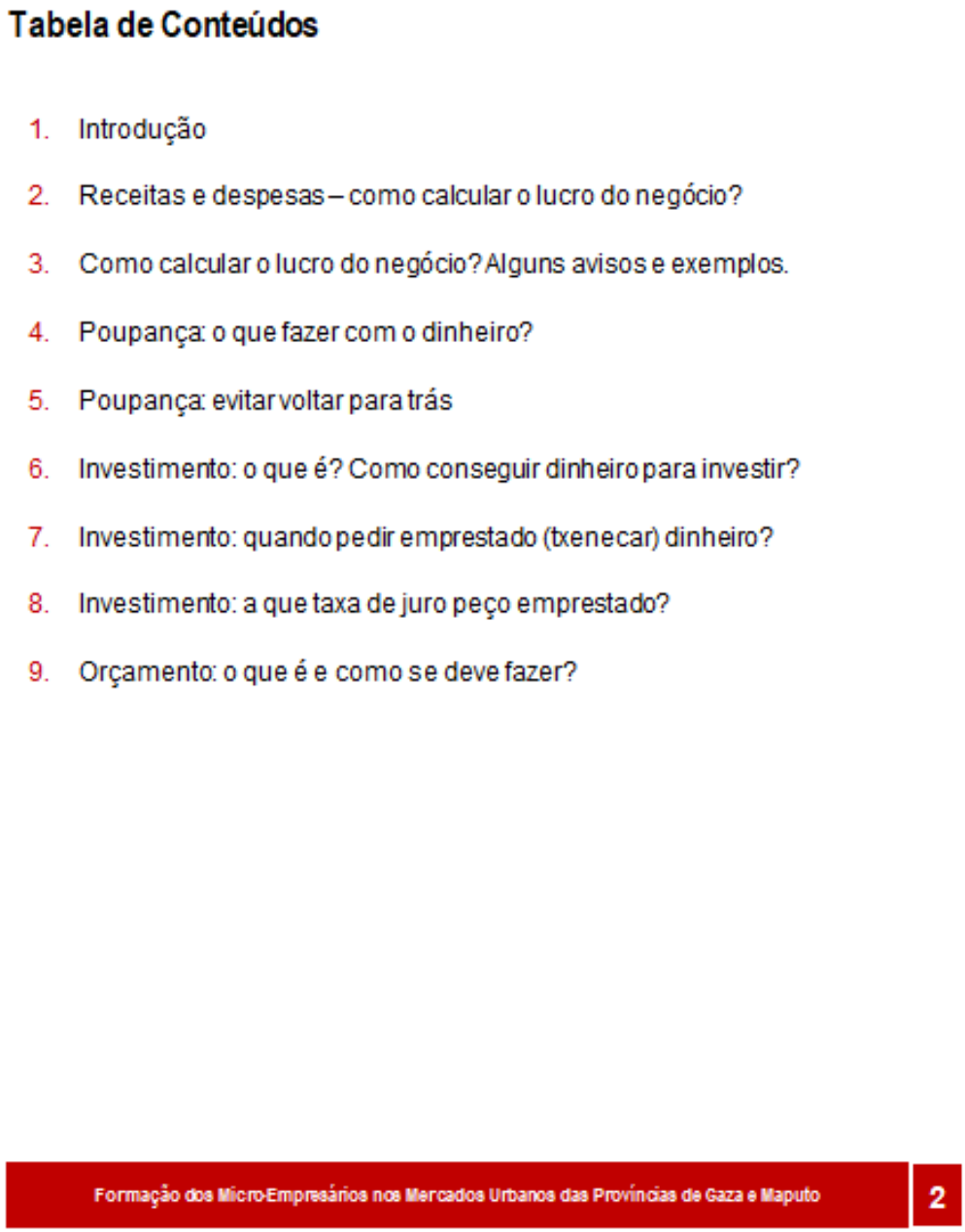


Tabela de Conteúdos

1. Introdução
2. Receitas e despesas – como calcular o lucro do negócio?
3. Como calcular o lucro do negócio? Alguns avisos e exemplos.
4. Poupança: o que fazer com o dinheiro?
5. Poupança: evitar voltar para trás
6. Investimento: o que é? Como conseguir dinheiro para investir?
7. Investimento: quando pedir emprestado (txenecar) dinheiro?
8. Investimento: a que taxa de juro peço emprestado?
9. Orçamento: o que é e como se deve fazer?

Formação dos Micro-Empresários nos Mercados Urbanos das Províncias de Gaza e Maputo 2

Contents: 1. Introduction, 2. Revenues and Expenditures - how to calculate profit?, 3. How to calculate profit? Some Examples, 4. Savings: what to do with your money, 5. Savings: saving your business, 6. Investiment: what is it? How to get money to invest?, 7. Investment: when to ask for a loan?, 8. Investment: what is the right interest rate?, 9. Budget: what is it and how can you prepare one?

Figure 9: Example of Manual Content: Savings and How to Manage your Money

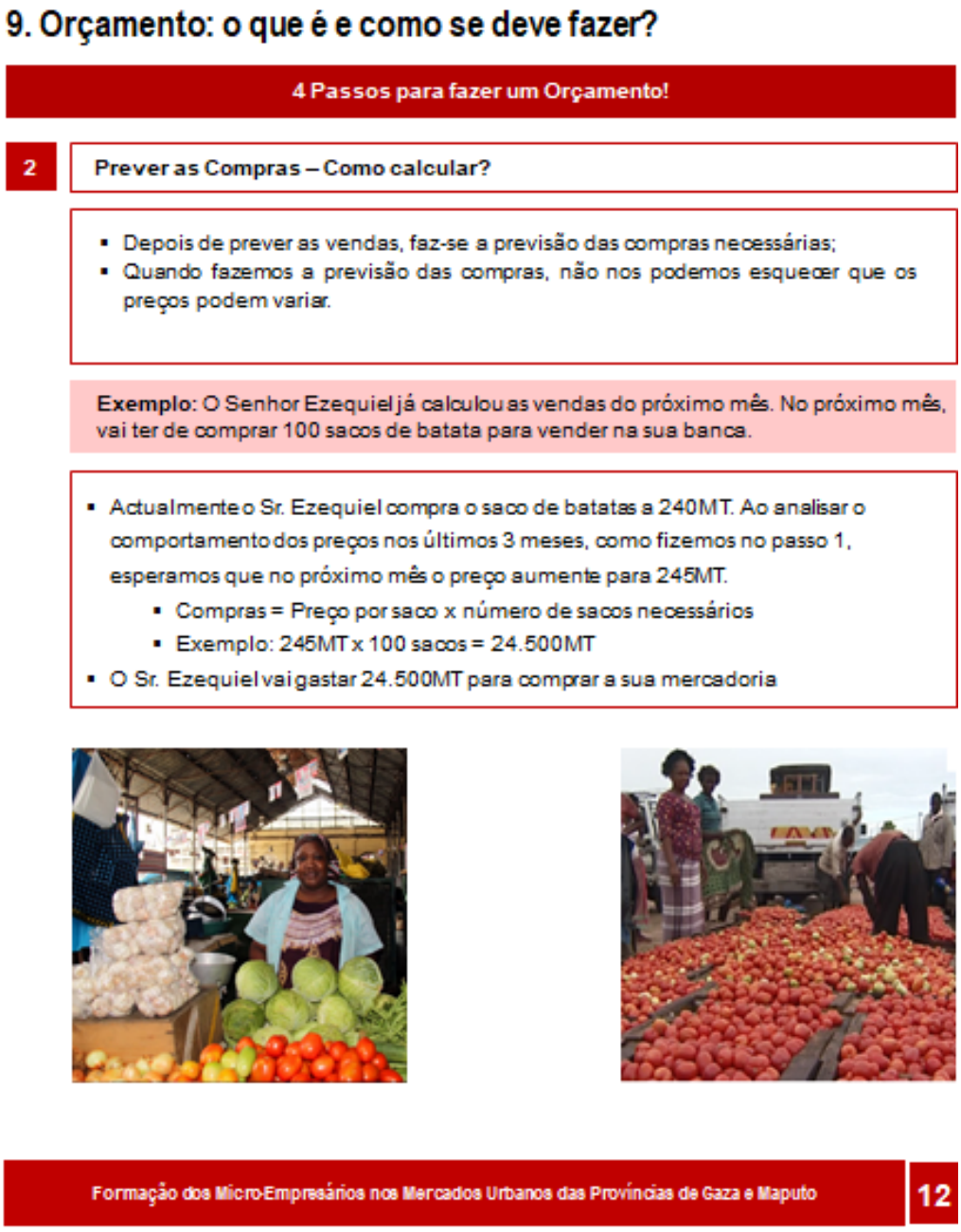
What are savings? It is the portion of the net profit that we do not spend. Types of Savings: 1) Savings Groups (Xitique): advantages – you do not have to leave the market to save; disadvantages –Xitique can be risky because while you contribute with your money, when it is your turn to get it not everyone will pay and you lose out.; 2) Mobile Money: advantages – it is safe, you do not have to walk far to reach the money as there is always an agent in the market, you can use these savings ot make purchases; disadvantages – it does not pay (long-term)interest; 3) Bank: advantages – it is safe, pays interests, and the bank can provide you loans if you need one; disadvantages – you have to leave your business and queue at a far away Bank to access your money or to make deposits.

Figure 10: Example of Financial Management Training on How to Manage the Family Tax

Savings: Avoid Losing your Business. How can you lose your business? Requests for transfers by family and friends

After putting money aside for your savings, when you are considering an investment in your business, you are approached by a relative requesting money. If you remove this from your savings you might return to square one. Unless you have considerable profits, helping others might compromise your own business. If you are not careful you might be the one who runs out of money to purchase goods for your shop and you will be the one who will have to ask for help. First it is important to save and invest for the business to grow. Once you have stable profits and savings, you can help others in the family!

Figure 11: Example of Financial Management Training Manual: How To Prepare A Budget.



Budget: what is it and how do you prepare one? Four Steps to preparing a budget

Estimating Shopping Expenditures - how to calculate it?

- Once you estimate and predict your sales, you can predict what would be the required purchases. When you are predicting purchases, remember that prices might vary!
- Example: Mr Ezequiel already estimated his sales for next month. Next month he will have to buy 100 bags of potatoes to sell in his stall. At present, Mr Ezequiel buys each potato bag at 240 MT. He expects prices to increase to 245 MT in the next 3 months. Purchases = Price per bag x Number of Bags that are needed. Example: 245 MTx100 bags=24500 MT. Mr Ezequiel will spend 24,500 MT to buy is stock.

Figure 12: Example Of Logbook Page Provided During The Financial Management Training

Livro 3 – Registo ao final do dia

Data	Compras Valor Total – Custos Directos	Vendas Valor Total – Receitas – Pago	Vendas Valor Total – Receitas – Não Pago (a crédito)	Despesas com a loja (eletricidade, taxa de mercado,...)		Transferências/Empréstimos		Poupança	
				Valor	Descrição	Valor	Pessoa - Descrição	Xitique	Banco

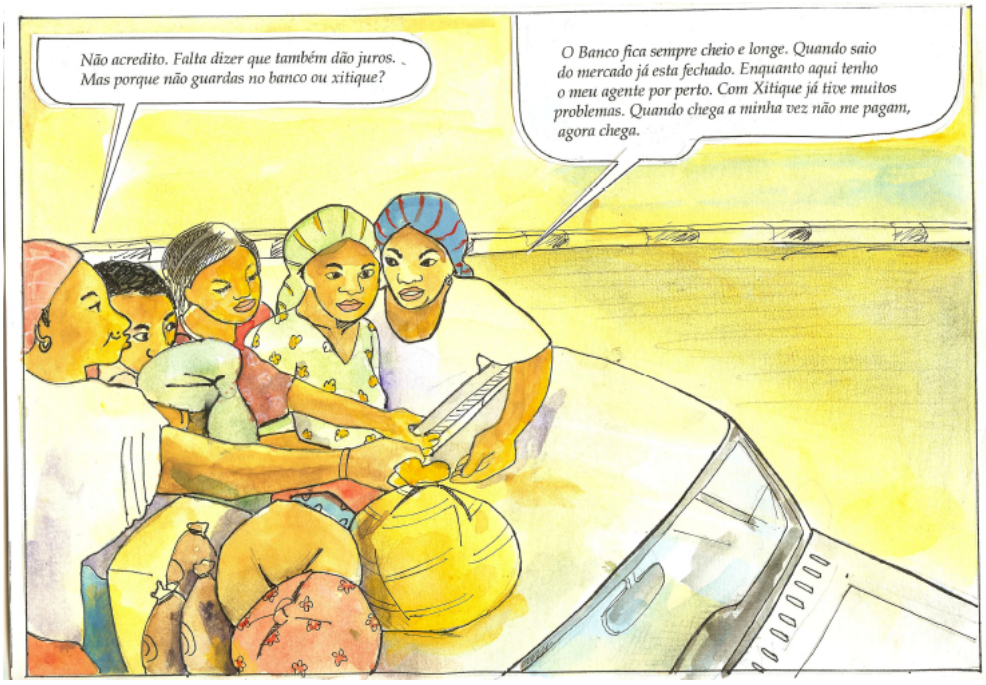
Date, Total Value of Purchases (Direct Costs), Total Value of Sales (Revenues) Paid For, Total Value of Sales (Revenues) Sold on Credit, Expenditures with the Store (electricity, market tax, etc), Transfers – Loans, Savings

Figure 13: Example Of The Comic Book Designed To Help Teach Key Financial Concepts

Character A: "Joana, You know, I used all of yesterday's money to go to the wholesale market and for our breakfast. Can you pay for my transport today? I don't know what we will eat tonight if I don't go to the market and sell today."

Character B: "We learned last week that we are not supposed to use the money from the business for household expenses. You shouldn't have used yesterday's revenue for breakfast. If you separate correctly the money from the business and your household expenses you will never need money for transport or food."

Figure 14: Example Of The Comic Book Designed To Help Teach Key Financial Concepts



Character A: “I don’t believe you. The next thing you are going to tell me is that they also give you interest. But why don’t you save your money in the savings group or at the Bank?”

Character B: “The Bank is always packed and it is far away. By the time I leave the market it is already closed. Here I know I have my agent close by. I have had many problems with the savings group (xitique). When it is my turn to get the money I am not paid. Enough.”