Online Appendix

Online Appendix A: Randomized Encouragement Designs - Definition, Analysis and Examples

In this appendix, we provide background for the empirical method we use in the paper. We first define Randomized Encouragement Designs (REDs) as one type of a broader set of Randomized Controlled Trials (RCTs). Next, we briefly review some seminal examples of studies that have used RED, and discuss how RED data can be analyzed. We conclude this appendix by discussing how the RED methodology does not only allow us to estimate the causal impact of a program/technology, but also, as a byproduct, to study barriers to adoption of the particular program/technology.

Definition and Examples of REDs

Field experiments, also known as RCTs, are able to provide estimates of the causal impact of programs/technologies on key economic outcomes (Duflo et al., 2007; Khandker et al., 2010). The method relies on randomly assigning units (in our case, SMEs) to either a treatment or a control group. If the number of units in the sample is sufficiently large, random assignment results in the two groups being very similar in all respects – observable characteristics (like sector, size and location), but also unobservable characteristics (like technology-savviness). If the (distributions of) characteristics in the two groups are the same, average outcomes will be the same, too. Random assignment thus results in the control group providing the counterfactual outcome had the units in the treatment group not received the intervention, and the difference in average outcomes between the two groups is thus the impact of the treatment under consideration (Rubin, 1974).

REDs are a special type of RCTs that allow researchers to evaluate the impact of programs/technologies that are already available in the study area, but whose take up is not universal (Bradlow, 1998). An early application of the technique is Holland (1988), who estimated the impact of preparing better for the GRE test on scores obtained. All candidates were free to prepare themselves as well as they saw fit, but Holland stimulated a random subset of students to put in (even) more effort. Because the two groups of candidates were ex-ante identical, on average they were expected to study equally hard for the test and to receive the same average GRE score. Thus, any difference in test scores between the two groups can only have been caused by candidates in the encouraged group having studied harder than they would otherwise.

A second example is Duflo et al. (2006), who evaluated the impact of demonstrating the use of a novel agricultural technology on subsequent adoption, and of the role of social processes therein. Fertilizer demonstrations were set up on the plots of randomly selected farmers, and all interested farmers in the region were welcome to attend the demonstration. For a random subset of demonstration plots, however, the farmer's friends were actively invited to attend the demonstration. Thus, any difference in percentage uptake rates of the new technology between the two groups can only have been caused by the difference in social interactions.

As third example, Devoto et al. (2012) implemented a RED to estimate the welfare impacts of having access to piped water in Morocco. While all households were free to purchase a connection, not all of them did. The researchers encouraged a random subset of households to purchase a connection – for example by providing information about the service and help with the application procedure. Any measured difference in welfare between the two groups can thus only be the result of some households in the encouraged group having acquired a piped water connection whereas they would not have done so otherwise.

Analysis of Data from REDs: ITT and ToT

Because assignment to the encouraged group is random, the REDs generate exogenous variation in the rate of program/technology adoption. When regressing the variable of interest on the unit's treatment status (having received encouragement, or not), the coefficient on the latter gives the so-called intention-to-treat (ITT) effect: the average impact of having lowered the barriers to adoption on the variable of interest. An alternative measure is the so-called treatment-on-the-treated (TOT) effect: the impact of actually having been induced to adopt the program/technology on the variable of interest. While the two effects may seem very different, they are closely connected. The TOT estimate is equal to the ITT, divided by the difference in take-up rates between the encouraged and non-encouraged groups (Wald, 1940). Any difference in the dependent variable can only be caused by the share of households in the encouraged group ending up adopting the new technology, whereas they would not have done so absent the encouragement. Because the ITT estimate is typically the most policy relevant one since units cannot be forced to adopt the new program/technology, the literature in general and we in particular focus on ITT effects.

This Study: Measuring the Impact of LPN

In this study, we estimate the impact of adopting LPN on variables like sales, sales volatility, and loans. LPN was available to all firms that meet the requirements (e.g., having a business license), so just comparing outcomes of firms who adopted with outcomes of firms who did not adopt LPN would confound treatment with selection effects. For instance, if we observed that firms adopting LPN also increasing their access to loans, this could be because the technology improved access to loans (the treatment effect), or because the firms that adopted the technology were better connected financially a priori (the selection effect).

To address this challenge, we implemented a RED. Even if all licensed firms could in principle access LPN, we estimated its impact by encouraging its adoption in one group (treatment), and not in the other (control). With random allocation of firms to treatment and control, take-up should be the same in both groups without intervening. As pointed out above, encouraging only a random group ensures, under mild assumptions, that any difference in outcomes between the two groups must be due to firms who adopted the technology but would not have done it if they had not been assigned to treatment.

As we explained in the main body of the paper, to encourage adoption, we contacted all firms in our treatment group, and implemented actions to overcome potential barriers for adoption. Our attempt to increase take-up in the encouraged group was successful, as adoption rates in the treatment group were significantly and substantially higher than in the non-encouraged group. Importantly, encouragement designs yield unbiased impacts estimates if and only if the encouragement package affects the key variables of interest only indirectly – i.e., by having induced an exogenous increase in adoption. Arguably, the encouragement package we used plausibly meets this condition.

This study: Analysis of the Barriers to Adoption as a Byproduct of our RED Design

In the context of our study, the RED allowed us to obtain causal inference on the impact of LPN on business outcomes – as is the key objective of our study. Because estimating those impacts required substantially higher adoption rates in the treatment as compared

to the control group, we designed an intervention aimed at fostering adoption, without simultaneously affecting the outcome variables of interest. Providing detailed information on the technology and offering merchants to help them with the application paperwork allowed us to increase adoption, and as a byproduct, it also allows us to test whether reducing some (of the most important) barriers to technology adoption increased adoption.

While there is a literature on the drivers of adoption of electronic payment technologies among consumers, we are not aware of other research studying the causal effect of randomly lifting barriers to the adoption of e-payment technologies by small and medium-sized enterprises. We acknowledge that we are unable to show the relative importance of the various barriers, precisely for the reasons stated above. However, showing that these barriers actually exist and are binding for some firms contributes to advance our knowledge in the existing literature.

References

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Online Appendix B: Encouragement Interventions

Safaricom launched LPN in 2014, and the key pillars of its marketing campaign were leaflets and TV commercials. Because we randomly assigned businesses to the treatment and control group, the SMEs in both groups were equally exposed to Safaricom's LPN marketing. Obviously, Safaricom's marketing has been successful in convincing (at least some) merchants that adopting LPN is beneficial for their business. The essence of randomized assignment of SMEs to each of the two groups is that, without any additional interventions implemented by us, exposure to Safaricom's marketing is the same in both groups.

The key to our identification strategy is that, on top of Safaricom's advertisement efforts, we set up an additional intervention aimed at inducing take-up – but only among SMEs that had been assigned to the treatment group. We managed to increase to increase LPN adoption from 23% (had we not intervened) to 31%. This increase in take-up is due to the fact that our intervention is complementary to Safaricom's campaign in three respects. First, Safaricom's marketing campaign is fairly generic, while our intervention was developed to provide information that is of specific interest to businesses in the sectors our study focuses on, pharmacies and restaurants. Second, in terms of providing information on how to use the technology, our intervention complemented Safaricom's marketing by our research enumerators demonstrating to the merchants how LPN accounts can be accessed, how money is received and sent, etc., as well as to show how user-friendly the technology is. Third, although Safaricom made an effort to keep the registration process as simple as possible, the necessary work is still quite involved. This is not surprising as opening a bank account typically requires a lengthy registration process, with the applicant being required to hand in (photocopies of) a number of documents, and having to fill out lengthy application forms. The third component of our intervention was to take over, as much as possible, all this work (below we discuss these three components in more detail).

Finally, two further considerations are in order. First, the timing of the intervention was fundamental for the effectiveness of our empirical strategy. We moved fast and implemented the encouragement design soon after the launching of LPN, as it was relatively simply to contact firms without the technology. Second, it is important to note that we are not the only study that involves an intervention encouraging the adoption of a financial product in parallel to marketing efforts of the institution promoting the product. While we are, to our knowledge, the first paper doing this with an electronic payment tool for P2B, there are papers from the broader financial inclusion literature that apply the same method for other financial product. The closest paper in this regard is a recent paper by Cai and Szeidl (2021), who implement an encouragement design to induce the adoption of a loan product launched by Rural Credit Cooperatives (RCC) in China. In addition to the existing marketing efforts of RCC, which stimulated loan applications among the wider population, the researchers took intense efforts to encourage adoption in a treatment group. Similar to our research, Cai and Szeidl (2021) also included elements of "customizing the information on the benefits and ease of loan application for the target SMEs" in their design and provided "help with filling out the loan application document". In their study, the control group also - adopts and - applies for RCC loans; however, the adoption among treated businesses was 33% higher compared to the adoption in the control group.

Provision of Information about the Technology

The objective of this component was to provide information on the advantages and disadvantages of LPN compared to other payment methods. The information was provided by means of a leaflet and a video. All materials were produced by the research team in

close cooperation with DDD-Kenya and a professional producer company.[43]

The leaflet consisted of concrete and easy-to-understand information on LPN's costs and benefits. People only pay attention to that part of the provided information which they think is the most relevant to them, and hence too much information can actually limit adoption. Hanna et al. (2014) thus recommend providing targeted as well as simplified information, and we have tried to follow that advice.

The video complemented the leaflet. It featured an interview with a fellow business owner (i.e., an owner of an SME in the same sector as the merchant) who had already adopted LPN. We thus produced two videos, a 5.2 minute clip for the restaurant sector and a 3.2 minute clip for pharmacists, in which the interviewee summarized the advantages of using LPN as well as their own personal experience with the cashless payment technology.[44] The video was shown in SME premises using enumerator tablets. The inclusion of the video as a component of the intervention is motivated by an emerging literature highlighting the effectiveness of role models in inducing behavioral change. This literature shows that successful peers can act as role models and are particularly effective in the context of low-income households in developing countries (see, for instance, Bernard et al. (2014) and La Ferrara (2016)).

While most merchants knew about the existence of LPN, the purpose of providing information was to complement (and maybe correct) the information the merchants had about the product. For example, the video explained that LPN was easy to use, and illustrated this by showing an example of a customer paying a bill with her M-Pesa account. Likewise, in the video, merchants explained that having LPN was convenient for the customer because transferring money from M-Pesa to LPN was free of charge for the customer, and because the customer does not need to worry about all the issues associated with paying in cash (including concerns about having the correct change). Additionally, the video emphasized that receiving payments in mobile money reduces the chances of theft, and if there is theft, there is less cash in the shop to be stolen. It also reduces the risk of counterfeit money, and makes running the business easier, especially with record keeping. The leaflet also highlighted how simple it was to use LPN, that opening an account was free of charge, that there was no limit to the amount of money the merchant could keep in the account and that transferring money from the LPN account to the merchant's personal M-Pesa account was free. Overall, much of this information was new to the merchants and, in some cases, this information was likely to help correcting prior misconceptions.

Support for the Registration Process

In addition to lifting informational barriers, we also aimed to reduce the transaction costs associated with opening a LPN account. We did so by offering the merchant to handle all the necessary paperwork. After the baseline survey, a trained enumerator would contact those treated businesses that expressed their interest to open an account to pick up the required copies of the documents from the business premises. She would subsequently do all the required paperwork, and deliver the application package to a Safaricom office.[45] When the account was approved, the enumerator would collect all the materials from Safaricom on behalf of the owner of the SME. This component is motivated by the literature pioneered by Bertrand et al. (2004), who argue that (relatively small) transaction barriers

[43] Neither Safaricom nor any other (marketing) company were involved.

[44] As an example, the restaurant video can be accessed by clicking here.

[45] We collaborated with an office of Safaricom during the entire project. This office has trained our enumerator on the registration process, allowed the enumerator to collect documents on behalf of them, and help them opening the account for the businesses.

play a decisive role in preventing people to take advantage of efficient investment opportunities. The paperwork associated with opening an account can be perceived as a hassle for business owners and can prevent them from adopting the technology.

Technology Implementation Assistance

When delivering the LPN material to the business owner, the enumerator made sure that the account would be set to the "transaction ready" mode. Specifically, this component of the intervention consisted of inserting the LPN SIM-card into the mobile phone the business owner would use for her LPN transactions and testing whether the SIM-card was functional. A short training was provided, which ended by assisting the merchant in performing a test transaction – charging our (standard) M-Pesa account for a sum of 100 KShs and completing the transaction.

References

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Online Appendix C: Information Leaflet

- It's simple and straightforward to use, both to you and your customers.
- It's free to sign up; no set up costs to your business.
- It's available 24/7: hence, can be used outside of core banking hours.
- Other than the small transaction fee of 1%, no other operational costs for your business.
- You have a USSD code to manage the flow of your balances in the merchant account.
- There are no wallet size limits to the amount of money that can be held in your Lipa Na M-PESA merchant account.
- Lipa Na M-PESA minimizes your costs of cash movement, e.g. cash-in-transit, insurance, etc.
- It also minimizes your cost of cash handling, e.g. cash register, money counter, safe machine, etc.
- Lipa Na M-PESA minimizes incidences of internal theft of money by your employees.
- Lipa Na M-PESA helps you maintain good and quality record-keeping using Lipa Na M-PESA transaction statements, for future reference.
- You can then use this statement to apply for credit in a financial institution, when your business needs money.
- With Lipa Na M-PESA, your business has no "change" issues when attending to customers.
- Lipa Na M-PESA gives you the option of rolling up funds from merchant till to either personal M-PESA wallet or bank account, as needed.
- Lipa Na M-PESA ensures security of your business funds against external armed theft/robbery/mugging.
- With Lipa Na M-PESA, there is no risk of fake/counterfeit currency from fraudulent customers.
- Unlike M-PESA P2P, there is no risk of customer reversing funds, claiming they sent the money by mistake, which can inconvenience the smooth running of your business, liquidity-wise.
- Most customers now have mobile handsets, and have registered for M-PESA: most Kenyans keep some money in their M-PESA wallet.
- Depending on type of business, far-away customers can still pay and goods delivered to them, hence increasing your business sales.
- For long-standing relationships, your business can increase sales by offering goods on credit to clients, who then pay later using Lipa Na M-PESA.

- Lipa Na M-PESA ensures that you do not lose customers who have money in their M-PESA and not cash.
- Since it is free to customers, you will have more customers coming to your business; this will increase your sales revenue.
- Your customers earn Bonga (loyalty) points when they use Lipa Na M-PESA in your shop. This can encourage them to buy more, increasing your sales.
- The government wants to go cashless in many sectors, therefore, the earlier you start using Lipa Na M-PESA in your business, the better!
- No stress/worry to you about the safety of your business finances since it is safely kept away in the merchant till.
- No one can access the merchant till account since it is secured by a secret PIN, only known to you.
- Even if the PIN is accidentally made known to some people, the Lipa Na M-PESA merchant funds cannot be transferred to any other M-PESA personal wallet, except that which is official nominated by you or the bank account.

Online Appendix Tables

Table OA1: Variables and their Definitions Used in the Regression Analyses

	Variable	Definiton
Panel A: Standard M-Money Use	For business	=1 if the business uses mobile money to receive payments or store money or pay bills, inputs, salaries.
	To receive payments	=1 if the business receives payments to standard mobile money.
	To store money	=1 if the business store money in standard mobile money beyond business needs.
	To pay bills	=1 if the business pay bills via standard mobile money.
	To pay inputs	=1 if the business pay inputs via standard mobile money.
	To pay salaries	=1 if the business pay salaries via standard mobile money.
	To save	=1 if the business saves revenues in mob. money account.
	% of utility exp. via m-money	% of business utility expenses paid via standard m-money.
	% of input exp. via m-money	% of business input expenses paid via standard m-money.
	Paying wages via m-money	=1 if the business pays wages to the personal m-money accounts of workers.
	No increase in prices	=1 if the business does not increase prices when customer pays via m-money.
Panel B: Safety	Theft and safety index	Summation of internal, external theft, and feeling not safe variables, standardized.
	Internal theft	=1 if employees stole something from the business in the past 6 months.
	External theft	=1 if experienced losses as a result of theft, robbery, fire in the past 6 months.
	Feeling safe	The safety of the area where the business is located (1 very unsafe-10 very safe)
Panel C: Saving Behavior	Savings in a bank or MFI	=1 if the business saves at bank or microfinance account
	Savings in a personal bank account	=1 if the business saves at a personal bank account.
	Savings in a business bank account	=1 if the business saves at a business bank account.
	Savings in an MFI	=1 if the business saves at a microfinance account.
Panel D: Transparency	Not shared sales	=1 if the business has not shared its sales at baseline interview.
	Not shared profits	=1 if the business has not shared its profits at baseline interview.
	Business license	=1 if the business has an up-to-date government business permit.
	Financial soph. index	Summation of bank loan, mobile loan and records, standardized.
	Fin. soph. index alternative	Sum. of bank and, mob. loan.; rec.; sav. at a bank or microf, and a per. b. acc., stand.
	Bank loan	=1 if the business received a bank loan in the past 12 months.
	Mobile loan	=1 if the business received a mobile loan in the past 12 months.
	Business records	=1 if the business keeps business records.
	Sells on credit to customers	=1 if the business makes sales on credit.
Panel E: Behavioral Factors	Present bias	=1 if business owner or manager is present biased.
	Future orientation	=1 if merchant is more patient regarding the timing of future payments than for present payments.
	Cognitive ability	maximum number of digits remembered.
	Trust in strangers	Trust in people you meet for the first time, 1 (not at all) -4 (completely).
	Trust in customers	Trust in customers, 1 (not at all) -4 (completely).
	Trust in courts	Trust in courts, 1 (not at all) -4 (completely).
	Trust in m-money company	Trust in mobile money companies, 1 (not at all) -4 (completely).
Panel F: Business Size	Employees (log)	Number of total employees, logarithm.
	Monthly Sales, in 1000 Ksh. (log-winsorized 5%)	Sales in the past month, 5% winsorized & in logarithm.
	Monthly Profits, in 1000 Ksh. (log-winsorized 5%)	Profits in the past month, 5% winsorized & in logarithm.
Panel G: Reasons of not opening a Lipa Na M-pesa account	Not seeing the benefits of Lipa Na M-Pesa	=1 if bus. does not have an accout, because bus. do not see benefits of Lipa Na M-Pesa
	Too costly to open an account	=1 if bus. does not have account because it is too costly to open
	High transaction fees via Lipa Na M-pesa	=1 if bus. does not have an account because of high transaction fees.
	Don't have time to open an account	=1 if bus. does not have account because of not having time to open account.
	Would not increase my sales	=1 if bus. does not have an account because of thinking it would not increase bus. sales.
	No trust in mobile money provider (0/1)	=1 if bus. does not have have an account because it does not trust in m-money provider.
	Too complex to use (0/1)	=1 if bus. does not have an account because it is too complex to use.

Table OA2: Descriptive Statistics of Variables Used in the Regression Estimations

		All Sample			Pharmacy			Restaurant		
	Variable	N	mean	sd	N	mean	sd	N	mean	sd
***Panel A**: Standard* M-Money Use	For business	543	0.52	0.50	249	0.42	0.49	294	0.60	0.49
	To receive payments	541	0.34	0.47	248	0.27	0.44	293	0.40	0.49
	To store money	541	0.17	0.38	247	0.09	0.29	294	0.24	0.43
	To Pay bill	542	0.30	0.46	248	0.26	0.44	294	0.33	0.47
	To pay input	542	0.37	0.48	248	0.29	0.45	294	0.43	0.50
	To pay salaries	542	0.06	0.24	248	0.06	0.24	294	0.06	0.25
	To save	540	0.10	0.30	247	0.04	0.20	293	0.15	0.36
	% of utility exp. via m-money	472	0.32	0.44	224	0.34	0.46	248	0.30	0.42
	% of input exp. via m-money	480	0.15	0.29	222	0.14	0.28	258	0.15	0.30
	Paying wages via m-money	536	0.05	0.23	242	0.06	0.24	294	0.05	0.21
	No increase in prices	544	0.13	0.34	250	0.11	0.31	294	0.15	0.35
***Panel B**: Safety*	Theft and safety index	535	0.04	1.09	244	-0.27	0.68	291	0.30	1.29
	Internal theft	536	0.27	0.44	245	0.07	0.26	291	0.44	0.50
	External theft	543	0.10	0.30	249	0.02	0.15	294	0.17	0.37
	Feeling safe	543	7.31	1.89	249	7.04	1.87	294	7.54	1.88
Panel C: Saving Behavior	Saving in a bank or micro.	540	0.57	0.50	247	0.52	0.50	293	0.61	0.49
	Saving in a personal bank acc.	540	0.37	0.48	247	0.28	0.45	293	0.45	0.50
	Saving in a business bank acc.	540	0.20	0.40	247	0.25	0.43	293	0.15	0.36
	Saving at a microf. inst.	540	0.03	0.16	247	0.02	0.15	293	0.03	0.16
***Panel D**: Transparency*	Business license	536	0.71	0.46	244	0.91	0.29	292	0.54	0.50
	Financial soph. index	513	-0.03	1.01	227	0.01	0.78	286	-0.06	1.16
	Final soph. index alternative	511	-0.09	1.00	225	-0.12	0.95	286	-0.07	1.04
	Bank loan	520	0.10	0.31	232	0.06	0.25	288	0.14	0.34
	Mobile loan	515	0.10	0.31	229	0.07	0.26	286	0.13	0.34
	Business records	544	0.87	0.34	250	0.96	0.21	294	0.79	0.41
	Sells on credit to cust.	543	0.51	0.50	250	0.45	0.50	293	0.57	0.50
	Not shared sales	544	0.14	0.35	250	0.21	0.41	294	0.09	0.28
	Not shared profits	544	0.14	0.35	250	0.21	0.41	294	0.08	0.27
***Panel E**: Behavioral Factors*	Present bias	541	0.12	0.33	249	0.11	0.32	292	0.13	0.34
	Future orientation	541	0.15	0.35	249	0.12	0.33	292	0.16	0.37
	Cognitive ability	542	3.58	0.64	250	3.42	0.69	292	3.71	0.57
	Trust in strangers	541	2.11	0.85	249	2.16	0.89	292	2.07	0.82
	Trust in customers	542	3.41	0.65	249	3.41	0.61	293	3.41	0.69
	Trust in courts	542	2.39	0.94	250	2.36	0.98	292	2.42	0.91
	Trust in mob. mon. comp.	543	5.20	1.50	250	5.42	1.48	293	5.02	1.49
Panel F: Business size	Employees (log)	544	1.41	0.42	250	1.19	0.27	294	1.59	0.43
	Monthly Sales, in 1000 Ksh. (log-winsorized 5%)	466	5.03	0.95	198	4.73	0.80	268	5.25	0.99
	Monthly Profits, in 1000 Ksh. (log-winsorized 5%)	468	3.84	0.91	198	3.81	0.83	270	3.86	0.97
Panel G: Reasons of not opening a Lipa Na M-pesa M-pesa account	Not seeing the benefits of Lipa Na M-Pesa	543	0.25	0.43	249	0.27	0.44	294	0.23	0.42
	Too costly to open an account	543	0.11	0.31	249	0.17	0.38	294	0.05	0.23
	High transaction fees via Lipa Na M-pesa	543	0.16	0.37	249	0.24	0.43	294	0.10	0.29
	Don't have time to open an account	543	0.12	0.32	249	0.07	0.25	294	0.16	0.37
	Would not increase my sales	543	0.09	0.28	249	0.12	0.32	294	0.06	0.24
	No trust in mobile money provider	543	0.02	0.15	249	0.04	0.20	294	0.01	0.10
	Too complex to use	543	0.11	0.31	249	0.08	0.28	294	0.13	0.34

Table OA3: Descriptive Statistics from Endline survey - All businesses with Business Licenses

Variables	Definition	All sample			Control			Treatment		
		N	Mean	Median	N	Mean	Median	N	Mean	Median
Lipa Na M-pesa use										
Have Lipa na M-pesa account (0/1)	=1 if business have a registered Lipa na M-pesa account	620	0.27	0	311	0.23	0	309	0.31	0
Used Lipa na M-pesa account for business (0/1)	=1 if business used Lipa na M-pesa account over the last 30 days	620	0.25	0	311	0.21	0	309	0.29	0
Received payment via Lipa na M-pesa (0/1)	=1 if business used Lipa na M-pesa account received payments over the last 30 days	620	0.25	0	311	0.20	0	309	0.29	0
Lipa na M-pesa sales, monthly (1000 Ksh.)	Total sales received via Lipa Na M-pesa at a typical month	620	15.50	0	311	12.47	0	309	18.54	0
Fraction of customers pay via Lipa na M-pesa	Number of customers paying via Lipa Na M-pesa divided by total number of customers	612	0.07	0	308	0.08	0	304	0.05	0
Management practices and safety										
Record keeping via mobile money (0/1)	=1 if the business keeps records via personal mobile money or Lipa Na M-pesa	620	0.11	0	311	0.10	0	309	0.12	0
Not having change (0/1)	=1 if the business experienced a foregone opportunity to sell goods due to not having change	620	0.25	0	311	0.26	0	309	0.25	0
Safety (1 not feel safe - 10 feel safe)	Safety of the area where the business is located in terms of the threats of fire, theft, robbery, etc.	620	7.03	7	311	6.89	7	309	7.18	8
Investment and access to finance										
Capital investment, (1000 Ksh.)	Investment in the capital goods in the last 6 months	601	10.17	0	303	9.30	0	298	11.05	0
Bank loan (0/1)	=1 if the business received a loan from a bank. in the past 12 months	610	0.09	0	305	0.08	0	305	0.10	0
Informal loan (0/1)	=1 if the business received a loan from friends, relatives, etc. in the past 12 months	607	0.05	0	304	0.05	0	303	0.06	0
Mobile loan (0/1)	=1 if the business received a loan through mobile money money companies in the past 12 months	613	0.13	0	307	0.10	0	306	0.16	0
Business size										
Sales, monthly (1000 Ksh.)	Sales over the past month	539	213.07	120	267	218.27	135	272	207.96	120
Profits, monthly, (1000 Ksh.)	Profits over the past month.	531	66.91	45	266	68.67	45	265	65.14	48
Employees	Number of total permanent and temporary employees	594	4.38	3	301	4.40	3	293	4.35	3

Table OA4A: Business Characteristics and Balance Test - Pharmacies and Restaurants

	Pharmacy				Restaurant			
	All	Cont	Treat	Diff	All	Cont	Treat	Diff
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Standard Mobile Money Use								
Use Mobile Money for business purposes (Yes=1; No=0)	0.41	0.40	0.43	-0.03	0.59	0.57	0.62	-0.05
Use Mobile Money to receive payments (Yes=1; No=0)	0.25	0.21	0.28	-0.07*	0.40	0.38	0.42	-0.04
Use Mobile Money to store money (Yes=1; No=0)	0.09	0.09	0.10	0.00	0.25	0.26	0.24	0.02
Use Mobile Money to pay bills (Yes=1; No=0)	0.26	0.26	0.27	-0.01	0.36	0.37	0.35	0.02
Use Mobile Money to pay salaries (Yes=1; No=0)	0.04	0.02	0.06	-0.04**	0.07	0.07	0.07	0.00
Use Mobile Money to pay inputs (Yes=1; No=0)	0.31	0.32	0.29	0.03	0.43	0.41	0.45	-0.04
Awareness of Lipa Na M-Pesa and Reasons for not Having an Account								
Aware of Lipa Na M-Pesa (Yes=1; No=0)	0.94	0.95	0.93	0.02	0.96	0.95	0.97	-0.02
Has Lipa Na M-Pesa (Yes=1; No=0)	0.05	0.01	0.08	-0.06***	0.12	0.12	0.12	0.00
Does not see the benefits of LPN M-Pesa (Yes=1; No=0)	0.27	0.27	0.27	0.00	0.25	0.27	0.24	0.03
Cost of opening LPN M-Pesa is too high (Yes=1; No=0)	0.17	0.18	0.16	0.02	0.05	0.03	0.06	-0.02
High transaction fees via Lipa Na M-pesa (Yes=1; No=0)	0.25	0.25	0.24	0.01	0.09	0.08	0.09	-0.01
Doesn't have time to open an account (Yes=1; No=0)	0.09	0.11	0.07	0.04	0.14	0.14	0.15	-0.01
Would not increase my sales (Yes=1; No=0)	0.09	0.08	0.11	-0.02	0.06	0.06	0.06	0.00
No trust in mobile money provider (Yes=1; No=0)	0.03	0.03	0.04	-0.01	0.02	0.02	0.01	0.00
Too complex to use (Yes=1; No=0)	0.08	0.08	0.08	0.00	0.11	0.09	0.13	-0.03
Business size								
Monthly Sales, in 1000 Ksh. (winsorized 5%)	144.90	130.38	158.41	-28.03**	316.17	310.50	321.75	-11.25
Monthly Profits, in 1000 Ksh. (winsorized 5%)	58.68	53.53	63.47	-9.95**	79.88	78.51	81.22	-2.71
Number of employees	3.39	3.32	3.46	-0.14	6.18	6.19	6.16	0.02
Investment and access to finance								
Investment in the past 6 months (Yes=1; No=0)	0.19	0.19	0.20	-0.01	0.37	0.39	0.35	0.04
Bank loan in the past 12 months (Yes=1; No=0)	0.07	0.07	0.06	0.01	0.12	0.10	0.14	-0.04*
Informal loan in the past 12 months (Yes=1; No=0)	0.03	0.03	0.02	0.00	0.04	0.04	0.05	-0.01
Mobile loan in the past 12 months (Yes=1; No=0)	0.08	0.07	0.09	-0.02	0.12	0.12	0.12	0.00
Informality								
Business license (Yes=1; No=0)	0.92	0.93	0.91	0.02	0.56	0.55	0.57	-0.01

Notes: This table reports the baseline characteristics of pharmacies and restaurants assigned to treatment and control groups. * p<0.10, ** p<0.05, *** p<0.01.

Table OA4B: Comparison of Pharmacies and Restaurants at Baseline

	All businesses			Businesses with license		
	Pharmacy	Restaurant	Diff.	Pharmacy	Restaurant	Diff.
	(1)	(2)	(3)	(4)	(5)	(6)
Personal mobile money use for business purposes						
Using mob. money for business purposes (0/1)	0.41	0.59	0.18***	0.42	0.65	0.23***
Using mob. money to receive payments (0/1)	0.25	0.40	0.16***	0.25	0.47	0.21***
Share of mobile money customers	0.02	0.03	0.01**	0.02	0.04	0.02***
Using mob. money to store money (0/1)	0.09	0.25	0.15***	0.10	0.22	0.12***
Using mob. money to pay bills (0/1)	0.26	0.36	0.10***	0.27	0.45	0.18***
Using mob. money to pay salaries (0/1)	0.04	0.07	0.03**	0.04	0.08	0.04**
Using mob. money to pay inputs (0/1)	0.31	0.43	0.12***	0.32	0.49	0.17***
Awareness of Lipa Na M-Pesa and reasons of not adopting						
Aware of Lipa Na M-Pesa (0/1)	0.94	0.96	0.02	0.95	0.98	0.03**
Have Lipa Na M-Pesa (0/1)	0.05	0.12	0.08***	0.05	0.18	0.14***
Not seeing the benefits of Lipa Na M-Pesa (0/1)	0.27	0.25	-0.02	0.25	0.24	-0.02
Too costly to open an account (0/1)	0.17	0.05	-0.13***	0.17	0.07	-0.11***
High transaction fees via Lipa Na M-pesa (0/1)	0.25	0.09	-0.16***	0.26	0.10	-0.15***
Don't have time to open an account (0/1)	0.09	0.14	0.05**	0.08	0.19	0.11***
Would not increase my sales (0/1)	0.09	0.06	-0.03*	0.10	0.07	-0.03
No trust in mobile money provider (0/1)	0.03	0.02	-0.02*	0.03	0.02	-0.02
Too complex to use (0/1)	0.08	0.11	0.03*	0.08	0.13	0.05**
Business size						
Monthly Sales	144.90	316.17	171.27***	149.23	415.54	266.30***
Monthly Profits	58.68	79.88	21.20***	60.56	102.43	41.87***
Number of employees	3.39	6.18	2.78***	3.44	7.35	3.91***
Investment and access to finance						
Investment (0/1), in the past 6 months	0.19	0.37	0.17***	0.19	0.40	0.21***
Bank loan (0/1), in the past 12 months	0.07	0.12	0.06***	0.07	0.11	0.04**
Informal loan (0/1), in the past 12 months	0.03	0.04	0.02	0.03	0.04	0.02
Mobile loan (0/1) in the past 12 months	0.08	0.12	0.04**	0.09	0.09	0.00
Informality						
Business license (0/1)	0.92	0.56	-0.36***	1.00	1.00	0.00

Notes: This table compares the baseline characteristics of pharmacies and restaurants. Columns 1-2 report the sample averages for all pharmacies and restaurants and columns 4-5 report the averages for licensed pharmacies and restaurants. Columns 3 and 6 report the differences between Pharmacies and Restaurants. * p<0.10, ** p<0.05, *** p<0.01.

Table OA4C: Normalized Differences in Means of Imbalanced Variables

		Treatment		Control		Normalized
Table Reference	Variable	Mean	SD	Mean	SD	Mean Difference
2	M-Money use	0.55	0.5	0.49	0.5	0.12
2	M-money receive payment	0.4	0.49	0.3	0.46	0.21
2	M-Money pay salaries	0.08	0.27	0.04	0.2	0.17
OA4A	Sales (for Pharmacies)	158.41	135.83	130.63	111.23	0.22
OA4A	LPN (for Pharmacies)	0.08	0.27	0.01	0.12	0.34
OA4A	Bank loan (for Restaurants)	0.14	0.35	0.10	0.30	0.12

Notes: This table reports the normalized differences between treatment and control groups of the five variables that were unbalanced at baseline (Tables 2 and OA4A). The normalized difference is defined as the difference in means between the treatment and control groups, divided by the square root of half the sum of the treatment and control group variances (Imbens and Rubin, 2015).

Table OA5A: LPN Usage - Limited Set of Controls

	(1)	(2)	(3)	(4)
	Opened LPN (0/1)	Used LPN (0/1)	Received payment via LPN (0/1)	LPN sales, IHS transformed
Treatment	0.08**	0.10**	0.10**	0.38**
	(0.03)	(0.03)	(0.03)	(0.13)
Control Mean	0.23	0.21	0.20	0.75
Control StDev	0.42	0.40	0.40	1.66
N	619	618	618	618

Notes: This table replicates Table 5A but using only strata dummies and lagged dependent variable as controls. * p<0.10, ** p<0.05, *** p<0.01.

Table OA5B: LPN Usage for Visible and Non-transparent Businesses - Limited Set of Controls

	(1)	(2)	(3)	(4)
	Opened LPN (0/1)	Used LPN (0/1)	Received payment via LPN (0/1)	LPN sales IHS transformed
Panel A: Transparent Firms: shared sales figures in the baseline				
Treatment	0.09**	0.11**	0.11**	0.45***
	(0.04)	(0.04)	(0.04)	(0.15)
Contol Mean	0.24	0.21	0.21	0.76
Contol StDev	0.43	0.41	0.41	1.69
N	488	487	487	487
Panel B: Non-transparent firms: did not share sales figures in the baseline				
Treatment	-0.01	0.03	0.03	0.02
	(0.08)	(0.08)	(0.08)	(0.28)
Control Mean	0.19	0.18	0.18	0.70
Contol StDev	0.40	0.39	0.39	1.59
N	131	131	131	131

Notes: This table replicates Table 5B but using only strata dummies and lagged dependent variable as controls. * p<0.10, ** p<0.05, *** p<0.01.

Table OA5C: Heterogeneous Treatment Effects for Lipa Na M-Pesa Usage

	(1) Opened LPN (0/1)	(2) Used LPN (0/1)	(3) Received payment via LPN (0/1)	(4) LPN sales IHS transformed
Treatment	0.07**	0.08**	0.08**	0.32**
	(0.03)	(0.03)	(0.03)	(0.13)
	[0.12]	[0.05]	[0.05]	[0.04]
Small x Treatment	-0.18	-0.19	-0.19	-0.98
	(0.18)	(0.18)	(0.17)	(0.67)
	[0.74]	[0.70]	[0.69]	[0.40]
Control Mean	0.22	0.20	0.19	0.70
Control StDev	0.41	0.40	0.39	1.61
N	619	618	618	618

Notes: This table presents the HTE estimates for LPN use indicators. Dependent and control variables are described in Table 5A. The dummy Small (defined in Table 6B) is included as a co-variate. * p<0.10, ** p<0.05, *** p<0.01. p-values after correction for multiple hypothesis-testing are reported in brackets.

Table OA5D: Heterogeneous Treatment Effects for LPN use for Money Storing, Paying Bills and Input Purchase - Binary Dependent Variables

	(1) Storing money in LPN (Yes/No)	(2) Paying bill via LPN (Yes/No)	(3) Paying inputs via LPN (Yes/No)
Treatment	0.032	-0.008	0.002
	(0.022)	(0.015)	(0.018)
	[0.20]	[0.75]	[0.99]
Small x Treatment	-0.083	-0.050	-0.087
	(0.101)	(0.069)	(0.117)
	[0.52]	[0.62]	[0.63]
Control Mean	0.064	0.030	0.044
Control StDev	0.245	0.172	0.205
N	618	619	619

Notes: This table presents the HTE estimates for LPN use for storing money, paying bills, and input purchase. The control vector is described in Table 5A. The dummy *Small* (defined in Table 6B) is included as a co-variate. * p<0.10, ** p<0.05, *** p<0.01. p-values after correction for multiple hypothesis-testing are reported in brackets.

Table OA5E: Heterogeneous Treatment Effects for LPN use for Money Storing, Paying Bills, and Input Purchase - Frequency Dependent Variables

	(1) Freq. of storing money in Lipa	(2) Freq. of paying bill via in Lipa	(3) Freq. paying inputs via in Lipa
Treatment	0.095	-0.015	0.006
	(0.080)	(0.039)	(0.062)
	[0.31]	[0.83]	[0.98]
Small x Treatment	-0.421	-0.087	-0.251
	(0.342)	(0.148)	(0.300)
	[0.29]	[0.70]	[0.56]
Control Mean	0.236	0.077	0.145
Control StDev	0.914	0.455	0.695
N	618	619	619

Notes: This table presents the HTE estimates for LPN use for storing money, paying bills, and input purchase. The dependent variable equals 0 when business did not use LPN, 1 when business used a few times a year, 2 when business used once a month, 3 when business used once a week, and 4 when business used at least once a day. The control vector is described in Table 5A. The dummy *Small* (defined in Table 6B) is included as a co-variate. * p<0.10, ** p<0.05, *** p<0.01. p-values after correction for multiple hypothesis-testing are reported in brackets.

Table OA5F: 2SLS Estimates - Effect of Opening LPN on Sales via LPN

	(1)	(2)
	Opened LPN (Yes/No)	LPN sales, (IHS transfromed)
Treatment	0.07**	
	(0.03)	
Opened LPN (Yes/No)		4.05***
		1.18
	First stage	Second stage
N	618	618

Notes: This Table shows 2SLS estimates for the (treatment on treated) effect of opening a Lipa Na M-pesa account on sales through Lipa Na M-pesa. Column 1 show the first stage estimates and columns 2 reports the second stage estimates. Both estimations include the following control variables: sales through Lipa Na M-pesa at baseline, use of mobile money for business purposes, use of mobile money to pay salaries, use of mobile money to receive payments, has LPN, had a bank loan in the past 12 months, ln(sales-winsorized), not reporting sales and stratification controls.. * p<0.10, ** p<0.05, *** p<0.01.

Table OA6A: Business Finance - Limited Set of Controls

	(1)	(2)	(3)	(4)
Panel A: External finance (Formal)				
	Mobile loans (Yes/No)	Mobile loans IHS transformed	Bank loans (Yes/No)	Bank loans IHS transformed
Treatment	0.06**	0.53**	0.02	0.08
	(0.03)	(0.24)	(0.02)	(0.26)
Control Group Mean	0.10	0.81	0.08	0.89
Control Group StDev	0.30	2.55	0.26	3.05
N	612	581	609	580
Panel B: External finance (Informal)				
	Trade credit (Yes/No)	Trade credit IHS transformed	Informal loan (Yes/No)	Informal loan IHS transformed
Treatment	-0.01	-0.44	0.01	-0.02
	(0.04)	(0.39)	(0.02)	(0.10)
Control Group Mean	0.35	3.39	0.05	0.16
Control Group StDev	0.48	5.03	0.22	1.21
N	619	564	576	575

Notes: This table replicates Table 6A but using only strata dummies and lagged dependent variable as controls. * p<0.10, ** p<0.05, *** p<0.01.

Table OA6B: Heterogeneous Treatment Effects for Business Finance - Limited Set of Controls

	(1)	(2)	(3)	(4)
Panel A: External Finance (Formal)				
	Mobile loans (Yes/No)	Mobile loans IHS transformed	Bank loans (Yes/No)	Bank loans IHS transformed
Treatment	0.04	0.43*	0.02	0.09
	(0.03)	(0.25)	(0.02)	(0.27)
Small x Treatment	0.30***	2.24**	-0.00	-0.10
	(0.11)	(0.97)	(0.10)	(0.97)
Control Group Mean	0.11	0.85	0.08	0.89
Control Group StDev	0.31	2.61	0.26	3.05
N	612	581	609	580
Panel B: External finance (Informal)				
	Trade credit (Yes/No)	Trade credit IHS transformed	Informal loan (Yes/No)	Informal loan IHS transformed
Treatment	-0.02	-0.53	0.00	-0.08
	(0.04)	(0.41)	(0.02)	(0.09)
Small x Treated	0.17	1.91	0.20*	1.19
	(0.15)	(1.50)	(0.10)	(0.78)
Control Group Mean	0.36	3.45	0.05	0.17
Control Group StDev	0.48	5.05	0.22	1.24
N	619	564	576	575

Notes: This table replicates Table 6B but using only strata dummies and lagged dependent variable as controls. The dummy *Small* (defined in Table 6B) is included as a co-variate. * p<0.10, ** p<0.05, *** p<0.01.

Table OA6C: Aggregate Loan Access - Limited Set of Controls

	Aggregate Loans (Yes/No)	Aggregate Loans (Yes/No)
Treatment	0.01	-0.01
	(0.04)	(0.04)
Small x Treatment		0.35**
		0.16
Control Mean	0.47	0.48
Control Stdev	0.50	0.50
N	619	619

Notes: This table replicates Table 6C but using only strata dummies and lagged dependent variable as controls. The dummy *Small* (defined in Table 6B) is included as a co-variate. * p<0.10, ** p<0.05, *** p<0.01.

Table OA7: Business Sales and Profits (Levels and Volatility) - Limited Set of Controls

	(1) ln(Sales)	(2) ln(Sales)	(3) Sales Volatility	(4) Sales Volatility	(5) Sales Volatility Robust	(6) Sales Volatility Robust	(7) ln(Profits)	(8) ln(Profits)	(9) Profits Volatility	(10) Profits Volatility	(11) Profits Volatility robust	(12) Profits Volatility robust
Treatment	-0.03	-0.03	-0.00	0.00	-0.00	0.00	-0.07	-0.05	-0.00	-0.00	-0.00	-0.00
	(0.07)	(0.07)	(0.00)	(0.00)	(0.00)	(0.00)	(0.07)	(0.07)	(0.01)	(0.01)	(0.01)	(0.01)
Small x Treatment		-0.03		-0.03		-0.03		-0.34		-0.00		-0.00
		-0.34		(0.02)		(0.02)		-0.36		(0.02)		(0.02)
Control Mean	4.91	4.90	1.06	1.06	1.06	1.06	3.84	3.83	1.08	1.07	1.07	1.07
Control StDev	0.96	0.95	0.05	0.05	0.04	0.04	0.89	0.89	0.06	0.07	0.06	0.06
N	539	539	436	436	515	515	531	531	389	389	494	494

Notes: This table replicates Table 7 but using only strata dummies and lagged dependent variable as controls. The dummy *Small* (defined in Table 6B) is included as a co-variate in HTEs. * p<0.10, ** p<0.05, *** p<0.01.

Table OA8A: Treatment and Heterogenous Treatment Effects for Business Investment - Limited Set of Controls

	(1)	(2)	(3)	(4)
	Total Investment IHS transformed	Total Investment IHS transformed	Inventory Investment IHS transformed	Inventory Investment IHS transformed
Treatment	0.27	0.35*	0.22	0.23
	(0.20)	(0.20)	(0.16)	(0.17)
Small x Treatment		-1.68*		-0.28
		(0.88)		(0.73)
Control Mean	1.76	1.73	1.20	1.23
Control StDev	2.26	2.27	1.93	1.95
N	526	526	546	546

Notes: This table replicates Table 8A but using only strata dummies and lagged dependent variable as controls. The dummy *Small* (defined in Table 6B) is included as a co-variate in HTEs. * p<0.10, ** p<0.05, *** p<0.01.

Table OA8B: Treatment Effects for Business Expenses - Limited Set of Controls

	(1)	(2)	(3)	(4)	(5)	(6)
	Input expenses IHS transformed	Building expenses IHS transformed	Transportation expenses IHS transformed	Utility expenses IHS transformed	Employee expenses IHS transformed	Interest expenses IHS transformed
Treatment	-0.25	0.20	0.02	-0.22	0.22	-0.03
	(0.27)	(0.17)	(0.27)	(0.13)	(0.21)	(0.19)
Control Mean	10.54	9.42	1.82	8.12	9.14	0.70
Control StDev	3.53	2.64	3.57	1.57	3.07	2.23
N	585	608	591	610	619	577

Notes: This table replicates Table 8B but using only strata dummies and lagged dependent variable as controls. * p<0.10, ** p<0.05, *** p<0.01. Outcome variables are IHS transformed.

Table OA8C: Heterogenous Treatment Effects for Business Expenses - Limited Set of Controls

	(1)	(2)	(3)	(4)	(5)	(6)
	Input expenses IHS transformed	Building expenses IHS transformed	Transportation expenses IHS transformed	Utility expenses IHS transformed	Employee expenses IHS transformed	Interest expenses IHS transformed
Treatment	-0.14	0.20	0.05	-0.13	0.24	-0.06
	(0.28)	(0.18)	(0.28)	(0.13)	(0.22)	(0.19)
Small x Treatment	-2.37**	-0.06	-0.39	-1.76*	-0.30	0.69
	(1.20)	(0.52)	(1.39)	(1.02)	(0.66)	(0.93)
Control Mean	10.49	9.41	1.78	8.13	9.10	0.71
Control StDev	3.60	2.63	3.54	1.52	3.13	2.24
N	585	608	591	610	619	577

Notes: This table replicates Table 8C but using only strata dummies and lagged dependent variable as controls.The dummy *Small* (defined in Table 6B) is included as a co-variate. * p<0.10, ** p<0.05, *** p<0.01.

Table OA9A: Business Safety - Limited Set of Controls

	Feeling safe
Treatment	0.27*
	(0.14)
Control Mean	6.89
Control StDev	1.84
N	619

Notes: This table replicates Table 9A but using only strata dummies and lagged dependent variable as controls. * p<0.10, ** p<0.05, *** p<0.01.

Table OA9B: Business Safety and Theft Exposure - Limited Set of Controls

	(1)	(2)
	Theft in Baseline	No Theft in Baseline
	Feeling safe	Feeling Safe
Treatment	1.04**	0.20
	(0.46)	(0.15)
Control Mean	6.36	6.96
Control StDev	1.95	1.82
N	75	543

Notes: This table replicates Table 9B but using only strata dummies and lagged dependent variable as controls. * p<0.10, ** p<0.05, *** p<0.01.

Table OA9C: Heterogenous Treatment Effects on Business Safety for Businesses Exposed to Theft - Limited Set of Controls

	Feeling safe
Treatment	1.157**
	(0.495)
Small x Treatment	-0.951
	(1.617)
Control Mean	6.40
Control StDev	2.02
N	75

Notes: This table replicates Table 9C but using only strata dummies and lagged dependent variable as controls. The dummy *Small* (defined in Table 6B) is included as a co-variate. * p<0.10, ** p<0.05, *** p<0.01.

Table OA10: Minimum Detectable Effect Sizes

Outcome variables	Sample size	Control group mean	Minimum detectable effect size (MDES)
LPN sales, IHS transformed	618	0.75	0.40
Mobile loans (Yes/No)	612	0.10	0.08
Mobile loans, IHS transformed	581	0.81	0.67
Bank loans (Yes/No)	609	0.08	0.06
Bank loans, IHS transformed	580	0.89	0.74
Trade credit (Yes/No)	619	0.35	0.11
Trade credit, IHS transformed	564	3.39	1.14
Informal loan (Yes/No)	576	0.05	0.05
Informal loan, IHS transformed	575	0.16	0.28
Aggregate loans (Yes/No)	619	0.47	0.11
Log(Sales)	539	4.91	0.23
Log(Profitability)	531	3.84	0.22
Sales volatility	515	1.06	0.01
Profits volatility	494	1.07	0.01
Total Investment, IHS transformed	526	1.76	0.56
Inventory Investment, IHS transformed	546	1.20	0.47
Input expenses, IHS transformed	585	10.54	0.83
Building expenses, IHS transformed	608	9.42	0.55
Transportation expenses, IHS transformed	591	1.82	0.82
Utility expenses, IHS transformed	610	8.12	0.42
Employee expenses, IHS transformed	619	9.14	0.65
Interest expenses, IHS transformed	577	0.70	0.52
Feeling safe	619	6.89	0.41

Notes: The table shows the minimum detectable effect (MDE) given the control group mean for each outcome variable that we test the impact of. MDEs are calculated assuming a 5% significance criterion and 80% power.

Table OA11: Transparent and Non-transparent Businesses' Willingness to Open an LPN account: Reasons for Not Opening an Account at BL

	(1)	(2)	(3)
	Transparent	Non transparent	Diff. (1)-(2)
Not seeing the benefits of Lipa Na M-Pesa (0/1)	0.163	0.250	-0.087
Too costly to open an account (0/1)	0.065	0.000	0.065
High transaction fees via Lipa Na M-pesa (0/1)	0.112	0.000	0.112
Don't have time to open an account (0/1)	0.181	0.350	-0.169*
Would not increase my sales (0/1)	0.037	0.050	-0.013
No trust in mobile money provider (0/1)	0.005	0.000	0.005
Too complex to use (0/1)	0.130	0.000	0.130*

Notes: This table compares the fraction of transparent and non-transparent business willing to open a Lipa na M-pesa account in our experiment by reasons of not opening the account before the experimental intervention. Transparent businesses are defined as businesses that shared the sales numbers with our research team. We use baseline data for this analysis. Column 3 is the difference between Columns 1 and 2. * p<0.10, ** p<0.05, *** p<0.01.

Table OA12: Heterogeneous Treatment Effects on Business Sales by Baseline Number of Customers

	(1)	(2)	(3)
	ln(Sales) All	ln(Sales) Restaurants	ln(Sales) Pharmacies
Treatment	-0.01	0.06	-0.14
	(0.10)	(0.18)	(0.14)
Treated x Baseline number of 100 customers	-0.05	-0.10	0.18
	(0.12)	(0.14)	(0.23)
Baseline number of 100 customers	0.03	0.11	-0.02
	(0.11)	(0.12)	(0.20)
Control Mean	4.91	5.30	4.62
Control StDev	0.96	1.05	0.76
N	539	232	307

Notes: This table presents the results of the test how our treatment estimates on sales varies with the number of customers at baseline. Column 1 reports the results for all firms in our sample, and columns 2 and 3 report estimates for just the restaurants and the pharmacies, respectively. We multiply number of customers by 100 to reduce the coefficient estimates' number of decimals. The vector of controls is as defined in Table 5A. * p<0.10, ** p<0.05, *** p<0.01.

Table OA13: Comparison of p-values from OLS and Randomization Inference

	OLS	Randomization inference
Table 5A: LPN Usage		
Opened LPN (0/1)	0.062	0.057
Used LPN (0/1)	0.025	0.017
Received payment via LPN (0/1)	0.027	0.019
LPN sales, (IHS transformed)	0.030	0.034
Table 6B: Business Finance		
Mobile loans (Yes/No)	0.066	0.058
Mobile loans (IHS transformed)	0.057	0.053
Bank loans (Yes/No)	0.549	0.554
Bank loans (IHS transformed)	0.831	0.823
Trade credit (Yes/No)	0.626	0.611
Trade credit (IHS transformed)	0.202	0.183
Informal loans (Yes/No)	0.777	0.790
Informal loans (IHS transformed)	0.763	0.748

Notes: This table compares the p-values of OLS estimates presented in Table 5A and 6A with the p-value for the same treatment effect estimates using randomization inference. For each of the dependent variables used in each of the two tables, columns 1 and 2 present, respectively, the p-values as obtained in the original OLS regressions and those obtained using randomization inference.

Table OA14A: Spillovers from Control to Treatment Restaurants: LPN Adoption

	(1)	(2)	(3)	(4)
	Opened LPN	Opened LPN	Used LPN	Used LPN
Number of control restaurants < 500m	0.001		0.001	
	(0.015)		(0.015)	
Shortest distance to a control restaurant		0.378*		0.387*
		(0.226)		(0.231)
Controls Included	Yes	Yes	Yes	Yes
N	132	112	132	112
R-Squared	0.290	0.362	0.313	0.377

Notes: This table assesses the importance of adoption spillovers by testing whether proximity of control units in the same sector affects uptake of Lipa Na M-Pesa by treatment restaurants. Proximity is measured by the number of control restaurants within a 500m radius (in columns (1) and (3)), and by the distance to the nearest control restaurant (in columns (2) and (4)). Uptake is measured by either whether the treatment restaurant opened a Lipa Na M-Pesa account (the extensive margin, in columns (1) and (2)), or the frequency with which the treatment restaurant made use of its Lipa Na M-Pesa account (the intensive margin, in columns (3) and (4)). The control vector is described in Table 5A. Robust standard errors are presented in parentheses; * p<0.10, ** p<0.05, *** p<0.01.

Table OA14B: Spillovers from Control to Treatment Restaurants: Mobile Loan Usage

	(1)	(2)	(3)	(4)
	Mobile loan (Yes/No)	Mobile loan (Yes/No)	Mobile loan IHS Transformed	Mobile loan IHS Transformed
Number of control restaurants < 500m	-0.007		-0.030	
	(0.011)		(0.091)	
Shortest distance to a control restaurant		0.028		-0.141
		(0.176)		(1.288)
Controls Included	Yes	Yes	Yes	Yes
N	130	110	124	106
R-Squared	0.275	0.309	0.283	0.325

Notes: This table presents the results of the reverse spillovers analysis in restaurants, and tests whether proximity of restaurants in the control group affects mobile loan usage by treatment restaurants. Proximity is measured by the number of control restaurants within a 500m radius (in columns (1) and (3)), and by the distance to the nearest control restaurant (in columns (2) and (4)). Uptake is measured by either whether the treatment restaurant had a mobile loan (the extensive margin, in columns (1) and (2)), or the amount of mobile loan (the intensive margin, in columns (3) and (4)). The control vector is described in Table 5A. Robust standard errors are presented in parentheses; * p<0.10, ** p<0.05, *** p<0.01.

Table OA15A: Spillovers from Control to Treatment Pharmacies: LPN adoption

	(1)	(2)	(3)	(4)
	Opened LPN	Opened LPN	Used LPN	Used LPN
Number of control pharmacies < 500m	0.001		-0.000	
	(0.010)		(0.010)	
Shortest distance to a control pharmacy		-0.045		-0.012
		(0.060)		(0.062)
Controls Included	Yes	Yes	Yes	Yes
N	176	176	175	175
R-Squared	0.295	0.297	0.284	0.284

Notes: This table presents the results of the reverse spillovers analysis in pharmacies, and tests whether proximity of pharmacies in the control group affects uptake of LPN by treatment pharmacies. Proximity is measured by the number of control pharmacies within a 500m radius (in columns (1) and (3)), and by the distance to the nearest control pharmacy (in columns (2) and (4)). Uptake is measured by either the treatment pharmacies having opened an LPN account (the extensive margin, in columns (1) and (2)), or by the frequency with which the treatment pharmacy made use of its LPN account (the intensive margin, in columns (3) and (4)). The control vector is described in Table 5A. Robust standard errors are presented in parentheses; * p<0.10, ** p<0.05, *** p<0.01.

Table OA15B: Spillovers from Control to Treatment Pharmacies: Mobile Loan Usage

	(1)	(2)	(3)	(4)
	Mobile loan (Yes/No)	Mobile loan (Yes/No)	Mobile loan IHS Transformed	Mobile loan IHS Transformed
Number of control pharmacies < 500m	0.008		0.043	
	(0.011)		(0.098)	
Shortest distance to a control pharmacy		-0.074		-0.849
		(0.046)		(0.531)
Controls Included	Yes	Yes	Yes	Yes
N	175	175	164	164
R-Squared	0.103	0.108	0.101	0.108

Notes: This table presents the results of the reverse spillovers analysis in pharmacies, and tests whether proximity of pharmacies in the control group affects mobile loan usage by treatment pharmacies. Proximity is measured by the number of control pharmacies within a 500m radius (in columns (1) and (3)), and by the distance to the nearest control pharmacy (in columns (2) and (4)). Uptake is measured by either whether the treatment pharmacy had a mobile loan (the extensive margin, in columns (1) and (2)), or the amount of the mobile loan (the intensive margin, in columns (3) and (4)). The control vector is described in Table 5A. Robust standard errors are presented in parentheses; * p<0.10, ** p<0.05, *** p<0.01.

Online Appendix Figure 1: M-Pesa Drop-Down Menu (Cook and McKay (2015))