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Electronic Payments in Mozambique

A Baseline on their adoption in Maputo and Matola

Banco de Moçambique
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Abstract

This study analyses the access and use of financial services by small business owners in the cities of Mozambique, as an important tool for boosting economic growth and diminishing inequality. It correlates owners' and business characteristics with the probability of adopting Points-of-Sale (POS), Mobile Banking and Mobile Money in everyday transactions. The main findings highlight that what mostly affects the use of POS is the size of business and the volume of transactions (positively correlated with POS adoption), while using mobile phone technologies for payments predominantly depends on the owner's age and whether he/she is a frequent cellphone user. Moreover, to increase the use of electronic means of payment it is necessary to increase financial literacy and improve the banking services.

Keywords: POS, Mobile Money, Mobile Banking, Mozambique

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1. Introduction

Levine, Kant and Beck (2004) showed that financial development not only contributes to a faster economic growth, but it also affects the poorer share of the population disproportionately, reducing poverty and income inequality. As more and more studies measure the effect of financial services in the developing world, there is increasing evidence that access to financial services can make a positive difference in the lives of the poor (Kendall, Mylenko, Ponce, 2010). This is the evidence that motivated the present written paper.

After decades of violence, political instability, foreign debt and very poor economic infrastructures, Mozambique is ranked as one of the poorest countries in the world. However, and at the same time, it is a country rich in natural resources (oil, natural gas, and coal), attracting large amounts of foreign investment and with a new generation of urban educated young adults. Mozambique has a great potential for being an emerging economy and is already observing annual growth rates of 7%[1]. However, the country faces high levels of corruption[2] and inequality. Virtanen and Ehrenpreis (2007) point out in their paper that the income generated by the extraction industry is not favoring the whole population and data from the World Bank estimates that 55% of the population lives in extreme poverty.[3]

In Mozambique, the financial sector is increasing but there is a big share of the population that is left out of the system and the concepts of *Savings* and *Investment* are still unknown, or new to many people. With this study, our aim is to measure access to financial services by small business owners, knowing that it is a necessary requirement for businesses to grow in a large scale. We will focus on the adoption of electronic means of payments,

[1] Information from the African Economic Outlook
[2] Mozambique is ranked 119 out of 175 countries with a score of 31/100 on the Corruption Perception Index according to Transparency International. Information available in http://www.transparency.org/country#MOZ
[3] Number taken from the World Bank data, available at http://data.worldbank.org/country/mozambique

more specifically on the use of *Points-of-Sale (POS)*, *Mobile Banking* and *Mobile Money* by small business owners in the cities of Maputo and Matola.

Payments by POS are made through simple debit or credit card transactions, requiring that the merchant has a bank account and a POS machine, and that the consumer has a bank account and a card associated to it. In Mozambique there are slightly over 11,000 POS machines, half of them located in the city of Maputo.[4]

Mobile Banking is a new service that enables banking payments using a mobile phone. It requires that both consumers and merchants have a bank account and a mobile phone, that the consumer joins the mobile banking system, and the merchant trusts the mobile banking system. The Mozambican bank Millenium BIM popularized this system with the brand *IZI*.

Mobile Money is an alternative to bank-based systems. It permits simple SMS-based transactions and works through a mobile phone operator. Its success in Kenya with Safaricom's M-Pesa rapidly made Mobile Money a viable alternative for the poorer population to access financial services. By allowing for saving money, sending remittances and paying for services and products, it satisfies the financial needs of those who work with small amounts of money. In 2010 the Mozambican telecommunication company Mcel launched Carteira Móvel (branded as mKesh) and in 2013 Vodacom brought M-Pesa to the country. To make a purchase with this system, both the costumer and the seller must have an active account in either mKesh or M-Pesa, and obviously a mobile phone that can be of the simplest kind.

The question we aim to address in this written paper is: *What are the business and its owner's characteristics that influence adoption of Electronic Means of Payment?*

[4] Values from data of the Bank of Mozambique on Electronic Banking 2014, available at: http://www.bancomoc.mz/Spagamentos.aspx?id=belE&ling=pt

In this vein, we first revise existing literature on the subject. We focus here on literature that explores the influence of access to financial services on economic development, including field and natural experiments that measure the effect of making financial services available to households and business owners that did not have access before.[5] In addition, we will explore the alternatives to formal financial services, which have been gaining importance in developing economies. In the final section, we also go through past literature that studies the effect of government intervention on the use of electronic means of payment.

To actually address the question, we conducted a firm survey in the cities of Maputo and Matola, to a sample of 1027 business owners. We asked them questions regarding their businesses, assets and revenues, as well as questions about their personal characteristics. We then asked about the means of payment used in their business transaction, including frequency of use and main problems faced.

Only 1 in 4 respondents is a woman and 1 in 5 was not born in Mozambique. The average number of total employed workers is 3.5 and most businesses are either general retail trade shops or shops selling construction material. Our data shows that even though 75% of business owners have bank accounts, only 22% of them use POS in their businesses for receiving payments, 4% accept Mobile Banking payments and 7% Mobile Money. Besides these three means of payment, 3% and 0.3% of respondents receive checks and bank transfers more often than any other mean of payment. With this data, we drew three OLS regressions to measure the effects of business and owner characteristics on the probability of accepting payments through POS, Mobile Banking and Mobile Money. We concluded that what affects the use of POS are the business characteristics, more specifically the size of business and volume of transactions is positively correlated with

[5] Burgess and Pande (2005); Bruhn and Love (2009)

POS adoption, and businesses selling construction material and automobile parts are the most likely to accept this method of payment. Accepting payments through mobile phones depends more on the owner himself, whether he/she is a frequent cellphone user and how young he/she is. In general, the education of the business owner is positively correlated with preferring alternative means of payments rather than cash, and so is business size and volume of transactions. We also concluded that to increase the use of electronic means of payment it is necessary to increase financial literacy and improve the banking services.

This paper is organized in five sections: Section 1 provides an introduction; Section 2 critically examines the available literature on the subject; Section 3 presents the experimental design of the research conducted, including the estimation strategy and the data collected; Section 4 presents the econometric results, and finally Section 5 contains the policy implications and concluding remarks.

2. Literature Review

In the past decades there has been increasing attention devoted to accessing financial services in developing countries, and what affect this has on economic development. Peachey and Roe (2006) suggested that access to finance is a basic need such as water, health services and education. Levine (2004) points out that leaving small entrepreneurs and poor households out of the financial system reduces the efficiency of resource allocation, slowing economic growth. The lack of access to financial services in developing countries is viewed as a constraint to economic prosperity as it limits savings and investment possibilities. Dupas and Robinson (2012) test whether having a safe way to save promotes business success by expanding access to bank accounts for a randomly selected sample of small business owners in rural Kenya. Results show that female market vendors subjected to the treatment increased the use of bank accounts the most, and

consequently, invested the most in their businesses. Burgess and Pande (2005) showed that the expansion of bank brunches in rural India had significant effects in reducing poverty, while Bruhn and Love (2009) tell how the opening of 800 bank branches in Mexico led to an increase in the number of people owning businesses and an increase in total employment. Access to finance increases the chances that small firms grow and new firms appear, widening the opportunities for business owners and leading to more competitive markets (Stijn 2005).

So why is it that there is still so many people in the world without access to financial services?

Some argue that this happens because there is a fundamental market limitation: high fixed costs associated to formal financial services make a large portion of the population not appealing to banks. This limitation led to the appearance of alternatives to the traditional financial services, and the concept of *Microfinance*[6] grew steeply in the past decades. Under the idea that what small entrepreneurs need is a little "push" to help them climb there way out of poverty, Microfinance is a set of financial services, with the most renown being *Microcredit*, which its success in reducing poverty is contentious (Banerjee, Duflo, Glennerster and Kinnan, 2013). Besides the provision of micro-loans, accompanied or not by financial literacy and personal guidance, Microfinance also provides services related to insurance, savings, and money transfers. Technologies allowed the appearance of new tools that ease financial inclusion, such as the Mobile Money. This technology has Kenya's M-Pesa system as a success story[7], which "is not designed to replace all payment mechanisms, but has found and filled a niche in the market in which it provides significantly enhanced financial services." (Jack and Suri, 2011). This system was replicated in several other developing countries, including Mozambique. Batista and

[6] See more on Microfinance in Feigenberg, Field and Pande (2010)
[7] More evidence of the success of M-Pesa in Jack and Suri (2013)

Vicente (2013) measured the effects of the introduction of mobile money (mKesh) in rural locations of the country, concluding that there is a clear potential of it to be adopted in rural locations of Mozambique, to substitute for other means of saving and remitting.

Even though these alternative financial services have been life changing for many people around the world, it is important to point out that they have their limitations, and will never completely substitute the formal financial system. As Levine (2004) explains in his paper, financial systems have unique characteristics that enhance economic growth, which he divides in five categories: Giving information about ex-ante investments and capital allocation; Monitoring investments; Facilitating trade, diversification and risk management; Mobilizing and pool savings and Easing the exchange of goods and services. As Johansson and Wang (2012) concluded, a poor financial system disturbs capital allocation, aggravating income distribution and inequality.

3. Experimental Design

To perform this study, we designed a firm survey that reached small businesses in the cities of Maputo and Matola. This study consisted of inquiring a sample of 1027 business owners, with questions regarding business characteristics, owner's characteristics, and whether and to what extent they use Electronic Means of Payments in their everyday transactions. As referred previously, the electronic means of payments we focus our study on are three: POS, Mobile Banking and Mobile Money.

Estimation Strategy

To fulfill the goals of the present study, we used a regression that has as dependent variable one of the three Electronic Means of Payment, and as explanatory variables those describing the business and the business owner.

The regression is the following:

$$\square = \square + \square_1'\square + \square_2'\square + \square.$$

Y corresponds to the use of POS, Mobile Banking or Mobile Money. It is a binary variable that will be equal to 1 in case the business accepts the method of payment in question, or 0 otherwise. X_1 is a vector of the variables that characterize the business owner. These are: *Female*, *Age*, *Born in Maputo, Foreigner, Married, Cellphone Use, Uses gas for cooking, Has a house, Has a car, Has a bank account*. The variable *Age* is years of age and *Cellphone Use* is expressed on a scale of 1 to 5 of how often the respondent performs simple operations with his/her cellphone (sends and receives SMS, makes and receives phone calls, transfers credit to someone)[8]. The remaining variables are dummy variables corresponding to 1 if *Yes* and 0 otherwise.

X_2 is a vector of the variables characterizing the business. These are: *Maputo* (equal to 1 if the business is in Maputo); five dummy variables for the type of business *(Whole Sales, Retail Trade, Construction Material, Car Parts, House and Decoration Articles*); *Years of Business* (for how many years has the business been operating); *Initial Investment* (the natural logarithm of the initial investment made); *Employees* (Number of employed workers); *Buys in Market* and *Imports* (two dummy variables that describe where products are bought); *Insecurity* (in a scale of 1 to 4, aggregates 7 variables of frequency of theft

[8] The variable Cellphone Use includes variables taken from the following five questions: How often do you receive SMS/ send SMS/ receive phone calls/ make phone calls/ transfer credit to someone. Possible answers are: 1-Never 2-Several times a year 3-Several times a month 4-Several times a week 5-Everyday

suffered and physical threat)[9]; *Electricity* (equal to 1 if the shop has electricity), and finally *Expenses* (logarithm of total business expenses in the last month).

The method used to estimate the regression above consisted in a Linear Probability Model. We used an OLS estimation, and the calculated parameters of the independent variables *X* measure their marginal effect on the probability of the outcome *Y* to be equal to 1.

We also performed a Probit model with marginal effects [Table 6], and concluded that the results obtained are very similar, so for the sake of simplification we will use the first model to interpret results.

The method we used has the advantage of its simplicity when it comes to both estimation and interpretation; it has, however, its limitations. We are estimating as if the probability of adopting a certain means of payment is linear on the explanatory variables, meaning that results can give us probabilities that are smaller than 0 or larger than 1.

To complete the set of conclusions given by the previous model, we also performed a Multinomial Logit Model to measure how these same business owner and business characteristics influence the use of different methods of payment. This method is used when the dependent variable is categorical, and in this case the outcome is *Most used Method of Payment* for receiving payments from clients, which can be *Cash, Check, POS, Mobile Banking, Mobile Money* and *Bank Transfer*. Since Mobile Money has zero observations, Bank Transfer has three and Mobile Banking has one observation, we decided to exclude these three options from the estimating model.

With this, and having "Cash" as the baseline category, we are able to measure the effect of a change in our independent variables on the probability of a business to use POS and Checks over receiving payments in cash.

[9] The variables to measure insecurity were depicted by the following seven questions: In the last year, how many times were you stolen money in the shop/ stolen products or material in the shop/ physically threatened in the shop/ stolen near the shop/ physically threatened near the shop/ stolen money in your home. Possible answers are: 1-Never 2-Once or twice 3-Three to five times 4-Six times or more

Data

The material of our study was the survey that was asked to the business owners, and of course, the answers taken from it. This survey was designed and conducted by a team of the NOVAFRICA Research Center in collaboration with the Department of Payment Systems from the Bank of Mozambique. In one month of data collection we ended up with a sample of 1027 observations. With a total of 16 pages, taking around 30 minutes to answer, the questionnaire[10] is divided in 8 sections: *A) Identification and Characteristics of the owner; B) Characteristics of the Business; C) Purchases and Sales; D) Electronic Payments; E) Business Assets; F) Savings and Liability; G)* and *H) Observation and Reliability* (to be answered by the enumerator).

We now describe our procedure for the sampling of the respondents. We departed from a database of businesses in the whole country across all types of sectors, provided to us by *Instituto Nacional de Estatística de Moçambique* (INE) and from there we randomized 1000 businesses in the cities of Maputo and Matola. Besides being from 2012, the database was also inaccurate to a significant extent, which meant that we were only able to use 400 businesses from the sample we had drawn. To overcome this problem and given the fact that the database consisted mostly in businesses in the urban centers, we randomly selected the remaining 627 respondents in the suburban neighborhoods of both cities. The final sample consists mainly in formal businesses, with only a few exceptions of informal businesses. The neighborhoods in the city of Maputo were: Polana Caniço, Maxaquene, Laulane, Zimpeto, Xipamanine, Chamanculo, Xiqueleni, Hulene, Magoanine, Mafalala, and Mahotas. The neighborhoods in Matola were: Patrice, Machava, Mussumbuluco, Malhampsene, Liberdade and Khongolote. Given the fact that the Bank of Mozambique's

[10] The questionnaire is available upon request

main interest was to have the study focusing on the sectors of construction material trade and automobile parts trade, we focused on these types of business.

4. Results

Table 1 describes the data collected, given the variables selected to characterize the business owners and the businesses selected. Out of all 1027 respondents, we can see that most are men: the mean of the dummy variable *Female* is 0.25, meaning that only 25% of respondents are women. 37% of respondents were born in Maputo, while 21% are foreigners, where most come from other African countries (mainly Nigeria, Burundi, Guinea and Rwanda). Mozambique has been in the last decades a country of emigration, and in 2010 it was estimated that 5% of the population was living abroad mostly in the neighbor countries of South Africa, Zimbabwe, Tanzania and Malawi, but also in Europe and the USA, according to the data released by the World Bank[11]. More recently, due to the political stability lived in the country, economic growth, and weak border control, this tendency is inverting and it is becoming a more and more attractive destination for migrants from all over[12].

The average age of our sample respondents is 35 years, and 40% of respondents are aged between 25 and 35. The variable *Married* shows that 55% of respondents are married or live together with their partner, against 42% that are single and the small remaining portion that are either divorced/separated or widowed. On average, respondents studied for 10 years, with 63% having completed secondary school, and 14% having attended higher education. The variable cellphone use is an aggregate of different variables characterizing how often the respondent makes simple operations with his/her cellphone, in a scale of 1

[11] Information taken from http://siteresources.worldbank.org/INTPROSPECTS/Resources/334934-1199807908806/Mozambique.pdf
[12] Information taken from the website of the International Organization for Migration, available at https://www.iom.int/cms/Mozambique-Country-Profile

to 5.[13] With a mean of 4.4 in this variable, we can conclude that respondents in our sample seem to be frequent cellphone users. On household assets of respondent, we observe that 78% of respondents' households own a house, 47% own at least one car, and half uses gas for cooking. We decided to include this last variable because it seems to be a good indicator for living conditions, since 96% of the Mozambican population uses wood or coal for cooking in their homes[14]. The last variable to characterize the business owner is whether he/she has a bank account or not, which 75% of respondents do. This number is considerable, given that it is estimated that less than 1 in 5 households of Sub-Saharan Africa have a bank account, according to the World Bank's report *Financing Africa: Through the crisis and beyond,* and shows us that we are dealing with a population with some access to formal financial services.

Nearly 70% of businesses are located in the city of Maputo (715 businesses) and 30% in Matola (312 businesses). The sectors in our sample are: Businesses that sell construction material (29%), automobile parts (9%), wholesales trade (8%), retail trade (57%) and service providers (5%).[15] In our study we left out the businesses that provide services and make these the comparison group. We also considered businesses that sell housing and decoration articles within the general whole sales and retail sales business, which represent 4% of total businesses. Besides type of activity, we selected variables that characterize the stability and dimension of the business, namely years of business (businesses are operating for 6.7 years on average), initial investment made (average of 117207.4 MT which is around 3500 USD), total employed workers (3.5 on average) and total monthly expenses (average of 66518 MT, around 2000 USD) and we can also report

[13] The five variables of cellphone use were depicted from the following questions of the questionnaire. How often do you: receive SMS/ send SMS/ receive phone calls/ make phone calls/ transfer credit to someone. The possible answers are: 1-never 2-several times a year 3-several times a month 4-several times a week 5-everyday

[14] Information taken from *Inquérito Demográfico e da Saúde 2011,* released by Insituto Nacional de Estatística, Ministério da Saúde in 2012. Available at http://dhsprogram.com/pubs/pdf/FR266/FR266.pdf

[15] Some of these businesses are in more than one of the sector, which is why the total sum surpasses 100%

that 83% of our sample had electricity in their shops. Finally, we employed a variable named *insecurity*, which consists in the aggregate of seven different insecurity measures concerning theft and physical threat in a scale of 1 to 4[16]. With a mean of 1.2, in general, insecurity does not seem to be an everyday issue faced by these business owners.

Table 2 shows the effect of the owner and business characteristics described before, on the use of POS. It contains 5 specifications, where the first one includes all explanatory variables, the second specification includes variables of owner's characteristics, the third one includes variables of business characteristics, specification four contains the business type and the last one has the variables that characterize the business' dimension and stability.

As we can see in the first column, business characteristics seem to be more relevant than owner characteristics when looking at individual significance. We observe that when the business consists in construction material trade or automobile parts trade the probability of accepting payments by POS increases by 11 and 12 percentage points (respectively). Wholesale businesses are less likely to adopt POS, which is unexpected because these businesses in principle transact large amounts of money. Variables of business size and business stability are positively correlated with the probability of accepting POS payments: one additional employed worker increases by 0.8 percentage points this probability, while an increasing 1% on the initial investment and monthly expenses will increase this probability by 1.7 and 4.5 percentage points respectively, which are both significant. Using electricity for lighting is an indicator of how well established the shop is, and it increases the chances of using POS by 11 percentage points, with a significance of 1%. Also, the variable we called *Insecurity* has interesting results: its increase boosts

[16] The questions to measure insecurity are the following. In the last year, how many times were you: Stolen money in the shop/ Stolen products or material in the shop/ Stolen your personal money in the shop/ Physically threatened in your shop/ Stolen near your shop/ Physically threatened nearby/ Stolen in your house. Possible answers are: 1-never 2-once or twice 3-three to five times 4-six times or more

the probability of using POS. In other words, businesses that suffered from theft of products or money more frequently, with episodes of physical threat in the shop or in its surroundings are more likely to use POS. The reason behind this correlation can be the fact that business owners that suffer from higher levels of insecurity are more likely to adopt POS system as a safety measure, in order to prevent further damages.

In the second column where we only use owner's characteristics, coefficients of years of age, being born in Maputo, years of education, using gas for cooking, owning a house or a car become significant. The fact that these are only significant when we take off the business characteristics means that they must be endogenous to the second set of explanatory variables, so owner's characteristics work as controls in our regression. Owning a bank account is the only of the owner's characteristics that is significant to the complete model.

Specification 5 contains only the variables that characterize business size and stability, and suggests that these are the most determinant variables to the complete model.

Table 3 contains the results of the same equation as table 2, but this time having acceptance of Mobile Banking as the dependent outcome. In the first specification, we can see that the explanatory variables are barely statistically significant, when looking at individual significance. On the business owner's side, we have that being born outside of Mozambique decreases the chances of using this system and years of education increases it slightly. In this equation, business characteristics do not seem to affect the use of Mobile Banking, only the fact that the business imports the products it sells and if the shop has electricity. Mobile Banking is a new and rather complex technology, so it requires a considerable degree of knowledge in new technologies and trust in both the banking and mobile phone system for a business owner to adopt it. In the second specification we measure the effects of owner's characteristics alone, on the probability of accepting

Mobile Banking payments. Being born in Maputo becomes individually significant with a negative effect, suggesting that the group of people that is more likely to adopt Mobile Banking payments is owners that were born is Mozambique, but outside of Maputo. Owning a bank account is also significant in this specification, and causes a 3.5 percentage point increase on the probability of accepting Mobile Banking, which is natural to assume since the system demands for a bank account. Specification three confirms that business characteristics are generally not determinants of the use of Mobile Banking and columns four and five confirm the conclusion taken from the second specification.

Finally, table 4 contains regressions of the same independent variables over the use of Mobile Money and the first specification suggests that the owner's characteristics are the ones that affect the most the use of Mobile Money. Mobile money payments consist in simple cell-phone operations, however it is not a particularly "user-friendly" system, and it can bring considerable difficulties to users who are not comfortable with the technology. Given this, it is not surprising that the variable *cellphone use* is positively significant, given that a frequent cellphone user will more easily adapt to the system. A unit increase in the scale of 1 to 5 of frequency of cellphone use raises the chances of accepting Mobile Money payments by 6.3 percentage points. Women are less likely to adopt this system and age has a negative effect on the use of Mobile Money, which is also not surprising since younger generations are more comfortable with new technologies in general, and cellphones in particular. The only significant variable on the group of the business characteristics is the dummy variable "Maputo", which coefficient suggests that a business located in Maputo will be 4 percentage points more likely to accept Mobile Money payments comparing to a business in Matola. In the second specification we regress only the owner's characteristics over the dependent variable, and the only coefficient that changes significantly comparing to the first specification is "Born outside of

Mozambique" which becomes statistically significant, suggesting that being an immigrant decreases chances of using Mobile Money by 6.3 percentage points. The third specification, which leaves out the owner's characteristics from the estimation confirms that business characteristics do not seem to influence the probability of using Mobile Money, specification four confirms what was said before and the last estimation shows some positive impact of having a bank account on using Mobile Money, when only owner's asset characteristics are considered.

In tables 5a and 5b we measure the effects of the same explanatory variables as before, on the chances of the businesses having checks or POS as the main method of payment, comparing to cash, and keeping other things equal. These results are obtained through Multinomial Logit estimation, and by calculating the exponential of the coefficients we get the Relative Risk Ratio, which is the ratio of the probability between that outcome and the base category. Table 5a contains the owner's characteristics, and the coefficients suggest that if a business owner is older, he/she is more likely to use checks and POS over cash payments. By taking the exponential of coefficients, we get that one more year of age increases the chances of using checks by 8 percentage points and POS by 3 percentage points[17], as opposed to using cash. Education also has a significant positive effect on the use of checks and POS over cash, and one more year of education increases the probability of using checks by a factor of 1.93 and POS by 1.22[18], keeping other variables constant. Having a bank account is what affects the most the probability of having POS as the main method of payment, increasing it by a factor of almost 11.[19]

On the side of the business characteristics, in table 5b, we can see that a business located Maputo is much more likely to use checks than cash, and retail business selling housing

[17] exp(0.077)=1.08 and exp(0.029)=1.03
[18] exp(0.66)=1.93 and exp(0.197)=1.22
[19] exp(2.397)=10.99

and decoration articles will have higher chances of using checks and POS over cash, by a factor of 4.7 and 10.4[20] respectively, other things equal. Moreover, a higher value of total business expenses increases the likelihood of replacing cash by alternative means of payments.

5. Conclusions

Policy Implications

In this section it is important to distinguish between access and use of financial services, meaning that people who have financial services available may not use them due to social reasons or high opportunity costs (Beck, Kunt, Peria 2006). In the cities of Maputo and Matola, access to financial services *per se* does not seem to be the problem. In our sample of 1027 businesses, 75% of respondents claimed to have a bank account. So why is it that only 22% accept POS payments? Looking at the answers given to the question "Why don't you use POS?" we found that 26% of respondents claimed that they don't know how the system works, or how to get it. Besides that, 20% said that the clients do not use the system. This shows us that there is a clear problem of poor financial literacy, both on the side of the business owners and the buyers. This is not surprising, because of the country's poor education system and information dissemination in general. Around 15% claim that they do not need the service, which can be because of the volume of sales or low unit prices of products. Besides these, high commissions and excessive bureaucracy are also popular answers, proving that there is a need for improving the country's banking system and 5% of respondents claim to be waiting for the technology to be installed. Although we cannot know for how long these businesses have been waiting, it seems like a significant

[20] exp(1.536)=4.65 and exp(2.34)=10.38

number and suggests that the process must take a while. 65% of respondents that do not own a POS machine say that they would accept one if offered.

Concerning payments through mobile phones (Mobile Banking and Mobile Money), reasons for not adopting are similar to the ones stated for POS. 36% of those who do not use the systems report as main reason not knowing how it works or how to join, while 42% say that their clients are not used to the system, which again suggests lack of information diffusion and a significant number of business owners claims not to trust the system. It is also important to look at the side of those who use electronic payments, and when asked about the problems they most frequently face when using payment technologies, only 17% said they never had any problems when using POS, while the percentage of satisfied users (never faced any problem) for mobile phone payments is much higher. Almost half of respondents said that the most common problem with the POS system is network connections, and 24% have problems with the POS machine reading the costumers' card. Concerning mobile phone payments, the most common problem is network malfunctioning.

To increase the use of financial services in Mozambique, it is important that the country's population is educated towards it. Business owners must understand, first the advantages for their business of using these services instead of working only with cash, and second how to get and use the services properly. More difficult but even more necessary is to mobilize the population towards the use of formal financial services. Moreover, it is necessary to improve the services provided by commercial banks.

The biggest challenge for a new mean of electronic payment to be successful is that requires coordination by different economic groups, meaning that both merchants and

consumers must accept it.[21] Given that the interests of the two groups, maximizing profits by the business owners and maximizing utility of the consumers, will very likely diverge, the Government can intervene to coordinate the behavior of these agents. This intervention can happen in different levels, namely by providing information that will influence both parties' behaviors towards the adoption of the technology, by legislating or providing economic incentives on it. Even though the market for payment technologies seems to reach the most satisfying equilibrium on its own without government intervention (Evans and Rosa, 2013), in the case of Mozambique with its fast growing economy, sudden inflow of capital and industry development, it is unclear whether the financial sector will follow the same path of growth.

Concluding Remarks

As defended in the previous sections, the use of financial services is beneficial for small businesses. It allows firms to operate in a larger scale by generating saving opportunities, encouraging a more efficient asset allocation, easing transactions and increasing security. Maputo is a privileged city in the country of Mozambique, and so is its neighbor city Matola, gaining from proximity and tight connections with the capital. This geographic area therefore has a much higher concentration of financial services than the rest of the country. However, this study reinforces the idea that access and use of financial services are very different concepts, and we concluded that business owners and consumers in the two cities are not using these services to their full potential.

[21] Lillquist and Waldeck (2006) extensively explain this idea in their paper

References

Aboim, Sofia. 2008. "Masculinidades na encruzilhada: Hegemonia, dominação e hibridismo em Maputo". *Análise Social XLIII* (2), pp. 273-295

African Economic Outlook. 2014. http://www.africaneconomicoutlook.org/po/paises/southern-africa/mocambique/ (Accessed in December 2014)

Banerjee, Abhijit, Esther Duflo, Rachel Glennerster and Cynthia Kinnan. 2013. "The Miracle of Microfinance? Evidence from a randomized evaluation". *NBER*, Working Paper No. 18950

Batista, Cátia and Pedro Vicente. 2013. "Introducing Mobile Money in Rural Mozambique: Evidence from a Field Experiment". *NOVAFRICA Working Paper Series*, Working Paper No. 1301

Beck, Thorsten, Asli Kunt and Ross Levine. 2004. "Finance, Inequality, and Poverty: Cross-Country Evidence". *NBER,* Working Paper No. 10979

Beck, Thorsten, Asli Kunt and Maria Peria. 2006. "Banking Services for Everyone? Barriers to bank access and use around the world". *World Bank Policy Research,* Working Paper No. 4079

Bruhn, Miriam and Inessa Love. 2009. "The Economic Impact of Banking the Unbanked: Evidence from Mexico". *World Bank Policy Research,* Working Paper No. 4981

Burgess, Robin and Pande Rohini. 2005. "Do Rural Banks Matter? Evidence from the Indian Social Banking Experiment". *American Economic Review*, 95(3): 780-795

Cameron, A. Colin and Pravin Trivedi. 2005. "Microeconometrics, Methods and Application". *Cambridge University Press*, pp. 490

Claessens, Stijn. 2005. "Access to Financial Services: A review of the issues and public policy objectives". *World Bank Policy Research,* Working Paper No. 3589

Dupas, Pascaline and Jonathon Robinson. 2012a. "Savings Constraints and Microenterprise Development: Evidence from a Field Experiment in Kenya", *American Economic Journal: Applied Economics*, 5(1): 163-92

Evans, David S. and Rosa Abrantes-Metz. 2013. "The Economics and Regulation of the Portuguese Retail Payment System". *SIBS*

Feigenberg, Benjamin, Erica Field and Pande Rohini. 2010. "Building Social Capacity Through Microfinance". *NBER,* Working Paper No. 16018

Financing Africa: Through the crisis and beyond. 2011. The World Bank. http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Financing%20Africa%20Through%20the%20Crisis%20and%20Beyond.pdf (Accessed in December 2014)

Jack, William and Tavneet Suri. 2011. "Mobile Money: The Economics of M-PESA". *NBER*, Working Paper No. 16721

Jack, William and Tavneet Suri. 2014. "Risk Sharing and Transactions Costs: Evidence from Kenya's Mobile Money Revolution". *American Economic Review*, 104(1): 183-223.

Johansson, Anders and Xun Wang. 2012b. "Financial Sector Policies, Poverty and Inequality". *China Economic Research Center*, Working Paper No. 2012-24

Kendall, Jake, Nataliya Mylenko and Alejandro Ponce. 2010. "Measuring Financial Access Around the World". *World Bank Policy Research,* Working Paper No. 5253

Levine, Ross. 2004. "Finance and Growth: Theory and Evidence". *NBER,* Working Paper No. 10766

Lillquist, Erik and Sarah Waldeck. 2007. "Government Intervention in Emerging Networked Technologies". *Seton Hall Public Law*

Peachey, Stephen and Alan Roe. 2006. "Access to Finance: What does it mean and how do Savings Banks foster access". *World Savings Banks Institute (WSBI)*

Virtanen, Pekka and Dag Ehrenpreis. 2007. "Growth, Poverty and Inequality in Mozambique". *International Poverty Centre,* Country Study No. 10

Appendices

Table 1 - Descriptive Statistics

Variable	Number of Obs.	Mean	Std. Dev.	Min.	Max.
Uses POS	1027	0.2220058	0.4157975	0	1
Uses Mobile Banking	1020	0.0392157	0.194203	0	1
Uses Mobile Money	1024	0.0703125	0.2557979	0	1
Business owner's Characteristics					
Female	1027	0.248296	0.4322349	0	1
Born in Maputo	1003	0.3768694	0.4848435	0	1
Born outside Mozambique	1003	0.2093719	0.4070633	0	1
Age	1026	34.60624	11.05529	16	77
Married	1027	0.5501461	0.4977214	0	1
Years of Education	1009	9.864222	3.048614	0	14
Cell phone use	1021	4.385309	0.4207133	1.6	5
Uses gas for cooking (home)	1019	0.5161923	0.4999831	0	1
Household owns a house	1027	0.781889	0.4131644	0	1
Household owns one or more cars	1027	0.4566699	0.4983617	0	1
Has a bank account	1026	0.7524366	0.4318072	0	1
Business Characteristics					
In Maputo	1027	0.6962025	0.4601203	0	1
Wholesales trade	1027	0.0808179	0.2726881	0	1
Retail trade	1027	0.5666991	0.4957727	0	1
Construction material trade	1027	0.285297	0.4517758	0	1
Automobile parts trade	1027	0.0886076	0.284315	0	1
Sells housing / decoration articles	1027	0.0379747	0.1912282	0	1
Years of business	1021	6.739373	7.585749	0	53
Initial investment	811	117207.4	395426.8	7	8,000,000
Total employees	1027	3.542356	16.98046	0	500
Buys products in a wholesales market	1027	0.1139241	0.3178738	0	1
Buys products in a wholesales shop	1027	0.714703	0.4517758	0	1
Imports products	1027	0.3037975	0.4601203	0	1
Insecurity	1021	1.165034	0.2842633	1	3.4
Total expenses (excluding products)	996	66518.48	587082.5	3	15,000,000

Note: All monetary values are in Metical

Table 2 - Business and owner's characteristics affecting the use of POS

	Dependent Variable: Accepts POS payments				
	(1)	(2)	(3)	(4)	(5)
Business Owner's Characteristics					
Female	0.008	0.016			
	(0.033)	(0.029)			
Age	0.001	0.005***			
	(0.001)	(0.001)			
Born in Maputo	0.012	0.054*			
	(0.030)	(0.029)			
Born Outside of Mozambique	0.009	-0.002			
	(0.041)	(0.038)			
Married	-0.015	-0.030			
	(0.027)	(0.027)			
Years of Education	0.007	0.023***			
	(0.005)	(0.005)			
Cell phone use	0.012	-0.019			
	(0.032)	(0.032)			
Uses gas for cooking (home)	0.036	0.131***			
	(0.028)	(0.028)			
Household owns a house	-0.034	-0.074**			
	(0.035)	(0.033)			
Household owns one or more cars	0.020	0.068***			
	(0.027)	(0.026)			
Has a bank account	0.071**	0.117***			
	(0.032)	(0.031)			
Business' Characteristics					
In Maputo	-0.007		0.007		0.011
	(0.028)		(0.027)		(0.026)
Wholesales trade	0.058		0.057	0.053	
	(0.058)		(0.055)	(0.058)	
Retail trade	0.089**		0.099**	0.060	
	(0.043)		(0.042)	(0.041)	
Construction material trade	0.110**		0.104**	0.020	
	(0.043)		(0.041)	(0.040)	
Automobile parts trade	0.124**		0.119**	0.180***	
	(0.062)		(0.060)	(0.059)	
Sells housing / decoration articles	0.359***		0.276***	0.330***	
	(0.076)		(0.070)	(0.068)	
Years of business	0.006***		0.006***		0.007***
	(0.002)		(0.002)		(0.002)
Initial investment	0.017**		0.021***		0.024***
	(0.008)		(0.007)		(0.007)
Total employees	0.007***		0.007***		0.008***
	(0.002)		(0.002)		(0.002)
Buys products in a wholesales market	-0.065*		-0.085**		
	(0.039)		(0.038)		
Imports Products	-0.031		-0.019		
	(0.031)		(0.030)		
Insecurity	0.135***		0.144***		
	(0.044)		(0.043)		
Shop uses electricity for lighting	0.111***		0.115***		
	(0.038)		(0.037)		
Total monthly expenses	0.047***		0.057***		0.067***
	(0.009)		(0.008)		(0.008)
Constant	-0.989***	-0.238	-0.958***	0.149***	-0.739***
	(0.187)	(0.156)	(0.105)	(0.041)	(0.083)
Adjusted R2	0.280	0.147	0.270	0.029	0.235
Number of observations	754	972	802	1,027	804

Note: The dependent variable is binary, defining whether business accepts or not this method of payment. All regressions use OLS. Female, born in Maputo, born outside Mozambique, married, uses gas for cooking, owns a house, owns a car, has a bank account are dummy variables to characterize business owner and his/her assets. Age is in years; Cell phone use measures how often the respondent makes simple operations with his/her cellphone in a scale of 1 to 5; In Maputo is a dummy variable for location of business; wholesales, retail, construction material, automobile parts trade and sells housing/decoration articles are dummies to define type of business; Initial investment and total expenses are in logarithm; Buys products in a wholesales market, imports products and uses electricity for lighting are dummies and insecurity is an aggregate of 7 variables including theft and physical threat in the business, in a scale of 1 to 4. Standard errors reported in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 3 - Business and owner's characteristics affecting the use of Mobile Banking

	Dependent Variable: Accepts Mobile Banking Payments				
	(1)	(2)	(3)	(4)	(5)
Business Owner's Characteristics					
Female	-0.002	0.001		-0.004	-0.000
	(0.019)	(0.015)		(0.015)	(0.014)
Age	0.001	0.000		0.001	-0.000
	(0.001)	(0.001)		(0.001)	(0.001)
Born in Maputo	-0.024	-0.033**		-0.025*	
	(0.018)	(0.015)		(0.015)	
Born Outside of Mozambique	-0.058**	-0.059***		-0.052***	
	(0.024)	(0.019)		(0.018)	
Married	-0.013	-0.017		-0.016	
	(0.016)	(0.014)		(0.014)	
Years of Education	0.005*	0.005**		0.006***	
	(0.003)	(0.002)		(0.002)	
Cell phone use	0.013	0.001		-0.001	
	(0.019)	(0.016)		(0.016)	
Uses gas for cooking (home)	0.002	0.005			-0.001
	(0.017)	(0.014)			(0.013)
Household owns a house	-0.036*	-0.026			-0.012
	(0.021)	(0.017)			(0.015)
Household owns one or more cars	-0.009	-0.001			0.002
	(0.016)	(0.013)			(0.013)
Has a bank account	0.026	0.035**			0.042***
	(0.019)	(0.016)			(0.015)
Business' Characteristics					
In Maputo	-0.001		0.008		
	(0.017)		(0.016)		
Wholesales trade	0.042		0.020		
	(0.034)		(0.033)		
Retail trade	-0.032		-0.042*		
	(0.026)		(0.025)		
Construction material trade	0.028		0.029		
	(0.025)		(0.025)		
Automobile parts trade	-0.014		-0.028		
	(0.037)		(0.036)		
Sells housing / decoration articles	-0.044		0.005		
	(0.045)		(0.041)		
Years of business	-0.000		-0.000		
	(0.001)		(0.001)		
Initial investment	-0.007		-0.008*		
	(0.005)		(0.004)		
Total employees	-0.000		0.000		
	(0.001)		(0.001)		
Buys products in a wholesales market	0.009		-0.002		
	(0.023)		(0.022)		
Imports products	0.050***		0.045**		
	(0.018)		(0.017)		
Insecurity	0.022		0.025		
	(0.026)		(0.025)		
Shop uses electricity for lighting	0.037*		0.038*		
	(0.022)		(0.022)		
Total monthly expenses	0.005		0.003		
	(0.005)		(0.005)		
Constant	-0.065	-0.004	0.038	-0.011	0.021
	(0.111)	(0.079)	(0.062)	(0.078)	(0.023)
Adjusted R2	0.028	0.013	0.019	0.008	0.003
Number of observations	747	965	795	973	1,010

Note: The dependent variable is binary, defining whether business accepts or not this method of payment. All regressions use OLS. Female, born in Maputo, born outside Mozambique, married, uses gas for cooking, owns a house, owns a car, has a bank account are dummy variables to characterize business owner and his/her assets. Age is in years; Cell phone use measures how often the respondent makes simple operations with his/her cellphone in a scale of 1 to 5; In Maputo is a dummy variable for location of business; wholesales, retail, construction material, automobile parts trade and sells housing/decoration articles are dummies to define type of business; Initial investment and total expenses are in logarithm; Buys products in a wholesales market, imports products and uses electricity for lighting are dummies and insecurity is an aggregate of 7 variables including theft and physical threat in the business, in a scale of 1 to 4. Standard errors reported in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 4 - Business and owner's characteristics affecting the use of Mobile Money

	Dependent Variable: Accepts Mobile Money Payments				
	(1)	(2)	(3)	(4)	(5)
Business Owner's Characteristics					
Female	-0.049*	-0.051***		-0.053***	-0.047**
	(0.026)	(0.019)		(0.019)	(0.018)
Age	-0.002*	-0.001		-0.001	-0.001*
	(0.001)	(0.001)		(0.001)	(0.001)
Born in Maputo	0.010	-0.014		-0.012	
	(0.024)	(0.019)		(0.019)	
Born Outside of Mozambique	-0.035	-0.061**		-0.045*	
	(0.033)	(0.025)		(0.023)	
Married	-0.005	-0.005		-0.005	
	(0.022)	(0.018)		(0.018)	
Years of Education	-0.003	-0.003		-0.002	
	(0.004)	(0.003)		(0.003)	
Cell phone use	0.063**	0.057***		0.061***	
	(0.026)	(0.021)		(0.021)	
Uses gas for cooking (home)	0.053**	0.026			0.010
	(0.023)	(0.018)			(0.017)
Household owns a house	-0.052*	-0.040*			-0.010
	(0.028)	(0.022)			(0.020)
Household owns one or more cars	-0.014	-0.023			-0.023
	(0.022)	(0.017)			(0.017)
Has a bank account	0.032	0.030			0.040**
	(0.025)	(0.021)			(0.019)
Business' Characteristics					
In Maputo	0.039*		0.037*		
	(0.023)		(0.021)		
Wholesales trade	-0.010		-0.024		
	(0.047)		(0.044)		
Retail trade	0.002		0.001		
	(0.035)		(0.034)		
Construction material trade	0.036		0.040		
	(0.034)		(0.033)		
Automobile parts trade	0.001		0.001		
	(0.050)		(0.048)		
Sells housing / decoration articles	0.097		0.072		
	(0.061)		(0.056)		
Years of business	0.001		-0.000		
	(0.002)		(0.001)		
Initial investment	-0.010		-0.009		
	(0.006)		(0.006)		
Total employees	-0.002		-0.002		
	(0.002)		(0.002)		
Buys products in a wholesales market	0.049		0.036		
	(0.031)		(0.030)		
Imports products	-0.015		-0.030		
	(0.025)		(0.024)		
Insecurity	0.007		0.014		
	(0.036)		(0.034)		
Shop uses electricity for lighting	-0.004		-0.009		
	(0.030)		(0.029)		
Total monthly expenses	-0.002		0.001		
	(0.007)		(0.007)		
Constant	-0.016	-0.076	0.122	-0.119	0.113***
	(0.150)	(0.103)	(0.084)	(0.102)	(0.030)
Adjusted R2	0.031	0.023	0.007	0.019	0.011
Number of observations	751	969	799	977	1,014

Note: The dependent variable is binary, defining whether business accepts or not this method of payment. All regressions use OLS. Female, born in Maputo, born outside Mozambique, married, uses gas for cooking, owns a house, owns a car, has a bank account are dummy variables to characterize business owner and his/her assets. Age is in years; Cell phone use measures how often the respondent makes simple operations with his/her cellphone in a scale of 1 to 5; In Maputo is a dummy variable for location of business; wholesales, retail, construction material, automobile parts trade and sells housing/decoration articles are dummies to define type of business; Initial investment and total expenses are in logarithm; Buys products in a wholesales market, imports products and uses electricity for lighting are dummies and insecurity is an aggregate of 7 variables including theft and physical threat in the business, in a scale of 1 to 4. Standard errors reported in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 5a - Main method of payment used and Business Owner's Characteristics

Explanatory Variables	Check	POS
	Coefficients	Coefficients
Female	0.239	0.442
Age	0.077***	0.029*
Born in Maputo	0.337	1.195***
Born Outside Mozambique	-0.777	0.314
Married	-0.651	-0.246
Years of Education	0.660***	0.197**
Cell phone use	-0.157	-0.609
Uses gas for cooking (home)	0.86	0.416
Household owns a house	0.573	-0.726**
Household owns one or more cars	1.187**	0.687**
Has a bank account	13.862	2.397**
Constant	-28.437	-6.351***
Base Category	Cash	
Number of observations	966	
LR chi2	156.97	
Log Likelihood	-254.143	
Prob > chi2	0	
Pseudo R2	0.236	

Note: Estimation method used is Multinomial Logit Model. Dependent variable is "Most frequently used method of payment", which can be Cash (base category), Check or POS. Female, born in Maputo, born outside Mozambique, married, uses gas for cooking, owns a house, owns a car, has a bank account are dummy variables to characterize buisness owner and his/assets; Age is in years; Cell phone usage measures how often the respondent makes simple operations with his/her cellphone in a scale of 1 to 5. Standard errors reported in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 5b - Main method of payment used and Business Characteristics

Explanatory Variables	Check	POS
	Coefficients	Coefficients
In Maputo	2.618*	0.941
Wholesales trade	-0.091	-0.472
Retail trade	-0.214	0.056
Construction material trade	0.492	0.271
Automobile parts trade	0.19	0.241
Sells housing / decoration articles	1.536*	2.340***
Years of business	0.049**	0.036
Initial investment	0.138	0.185
Total employees	0.060**	0.035
Buys products in a wholesales market	-0.014	-0.677
Imports Products	-0.701	-0.154
Theft	-0.141	0.255
Shop uses electricity for lighting	15.609	15.511
Total expenses (exluding products)	0.882***	0.657***
Constant	-32.191	-28.752
Base Category	Cash	
Number of observations	796	
LR chi2	198.47	
Log Likelihood	-151.72833	
Prob > chi2	0	
Pseudo R2	0.3954	

Note: Estimation method used is Multinomial Logit Model. Dependent variable is "Most frequently used method of payment", which can be Cash (base category), Check or POS. In Maputo is a dummy variablefor location of business; wholesales, retail, construction material, automobile parts trade and sells housing/decoration articles are dummies to define type of business; Initial investment and total expenses are in logarithm; Buys products in in a wholesales market, imports products and uses electricity for lighting are dummies and insecurity is an aggregate of 7 variables including theft and physical threat in the business, in a scale of 1 to 4. Standard errors reported in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 6 - Business and owner's characteristics affecting the use of POS, Mobile Banking and Mobile Money

	POS	Mobile Banking	Mobile Money
Business Owner's Characteristics			
Female	0.014	-0.012	-0.052**
	(0.043)	(0.014)	(0.023)
Age	-0.000	0.000	-0.002*
	(0.002)	(0.001)	(0.001)
Born in Maputo	0.038	-0.010	0.008
	(0.044)	(0.011)	(0.017)
Born Outside of Mozambique	0.056	-0.036**	-0.038
	(0.050)	(0.018)	(0.027)
Married	-0.029	-0.010	-0.005
	(0.037)	(0.011)	(0.016)
Years of Education	0.010	0.003	-0.003
	(0.006)	(0.002)	(0.003)
Cell phone use	0.007	0.006	0.059***
	(0.043)	(0.013)	(0.022)
Uses gas for cooking (home)	0.049	0.001	0.044***
	(0.038)	(0.011)	(0.017)
Household owns a house	-0.024	-0.026**	-0.038**
	(0.043)	(0.013)	(0.020)
Household owns one or more cars	0.018	-0.005	-0.001
	(0.037)	(0.011)	(0.016)
Has a bank account	0.176***	(0.024)	0.026
	(0.054)	(0.016)	(0.020)
Business' Characteristics			
In Maputo	-0.027	0.002	0.035**
	(0.040)	(0.011)	(0.018)
Wholesales trade	0.024	0.016	-0.021
	(0.075)	(0.018)	(0.037)
Retail trade	0.100*	-0.027*	-0.009
	(0.057)	(0.015)	(0.024)
Construction material trade	0.132**	0.015	0.019
	(0.054)	(0.015)	(0.025)
Automobile parts trade	0.145*	-0.008	-0.013
	(0.078)	(0.022)	(0.039)
Sells housing / decoration articles	0.359***	(omitted)	0.070**
	(0.104)		(0.039)
Years of business	0.007**	-0.000	0.001
	(0.003)	(0.000)	(0.001)
Initial investment	0.016	-0.004	-0.006
	(0.010)	(0.003)	(0.005)
Total employees	0.005**	-0.000	-0.007**
	(0.002)	0.001	(0.004)
Buys products in a wholesales market	-0.109	0.005	0.028
	(0.067)	(0.018)	(0.022)
Imports Products	-0.050	0.029**	-0.019
	(0.040)	(0.012)	(0.019)
Insecurity	0.146**	0.016	0.017
	(0.056)	(0.016)	(0.025)
Shop uses electricity for lighting	(omitted)	0.018	0.001
		(0.015)	(0.02)
Total monthly expenses	0.064***	0.002	0.002
	(0.013)	(0.003)	(0.006)
Number of observations	603	725	751
Pseudo R2	0.2931	0.1698	0.136
Log Likelihood	-234.31877	-106.30737	-180.70667

Note: Estimation method used is the Probit with marginal effects. The 3 dependent variables are binary and correspond to 1 if the business adopts that mean of payment. Female, born in Maputo, born outside Mozambique, married, uses gas for cooking, owns a house, owns a car, has a bank account are dummy variables to characterize business owner and his/her assets; Age is in years; Cell phone use measures how often the respondent makes simple operations with his/her cellphone in a scale of 1 to 5. In Maputo is a dummy variable for location of business; wholesales, retail, construction material, automobile parts trade and sells housing/decoration articles are dummies to define type of business; Initial investment and total expenses are in logarithm; Buys products in in a wholesales market, imports products and uses electricity for lighting are dummies and insecurity is an aggregate of 7 variables including theft and physical threat in the business, in a scale of 1 to 4. Standard errors reported in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%

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