

In the past few years there have been attempts to mobilize savings via branchless banking models in general and the mobile phone in particular. There is a recognition that savings, probably more than any other financial service, requires proximity and immediacy for the customer. There is also the recognition that savings could radically improve livelihoods. Access to appropriate savings mechanisms could help the resource poor to recover from shocks, smooth consumption and broaden investment opportunities.

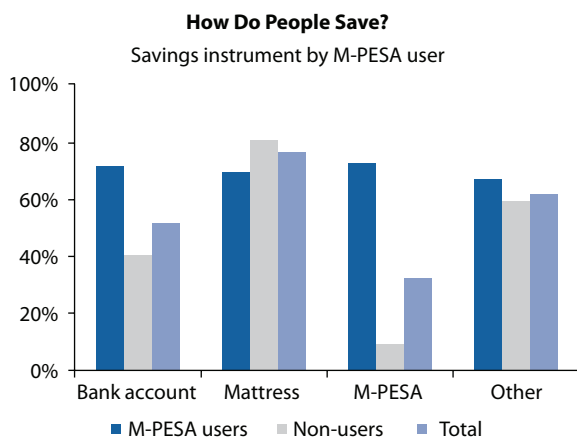
Much of this recent interest towards savings via the mobile phone has been sparked by the stunning success of a Kenyan mobile money service called M-PESA. M-PESA is a mobile phone based service for sending and storing money, offered by Safaricom, Kenya's largest mobile service provider. Safaricom customers can register for M-PESA by visiting a merchant who acts as an "agent" for account opening, handling of deposits and withdrawals into the

customer's virtual "wallet," and customer support. Customers can then use an application on their mobile phone to check their balance, send money to other people, pay bills and purchase mobile phone airtime. Customer funds are held in a special trust account at the Commercial Bank of Africa. This service has acquired over 7 million users and extended its agent base to over 10,000 since it was introduced in March of 2007.

Although M-PESA was designed as a money transfer service, there is evidence that it is also being used for savings. For example, a study funded by FSD-Kenya of over 3000 households in Kenya revealed that users were storing money in M-PESA. The research also revealed that M-PESA was one of the most popular mechanisms for savings amongst the sample, even beating out the mattress for M-PESA users. These results raise some interesting questions. In particular, why did M-PESA beat out the mattress and other popular savings mechanisms? Is M-PESA becoming a substitute for these other mechanisms? How are the savings patterns of the poor changing as they begin to store money with M-PESA?

This paper will address these questions. It uses data from a collection of financial diaries to make its arguments. These diaries captured the savings practices of 14 M-PESA users for a period of one month. They were part of a 14 month ethnographic study that examined the adoption, usage and impact of M-PESA in two locations: an urban slum and a rural village. The paper will also use the empirical data to suggest how mobile money applications can be designed to better suit the needs and interests of poor savers.

Figure 1: Use of savings instruments in Kenya



Source: FSD-Kenya.

¹ I would like to thank Ignacio Mas for his substantial contribution to this paper. Also, many thanks to Microsoft Research and the University of Edinburgh for funding this research.

Evidence from the Financial Diaries of M-PESA Users in Kenya

The financial diaries participants were asked to make daily entries detailing their financial practices for the

period of one month. These entries were made in two columns—money in and money out. They were also asked to maintain a balance in the two columns. This facilitated the analysis of not only expenditure but also savings patterns. It must be noted that the majority of the financial diaries participants were frequent users. These users made several transactions per week. Some even conducted transactions on a daily basis. The results presented here thus represent more intensive usage patterns than usual. The data from the financial diaries will be used to substantiate many of the arguments presented here. **Table 1** provides more information about the participants.

The Findings

A variety of savings mechanisms were integrated into the savings portfolios of the participants

The diaries revealed that the poor use a combination of savings mechanisms to manage their limited income and to meet their unique savings needs. The average amount of savings mechanisms used by the participants for the storage of cash was just over two. The findings further illustrated that the poor were very strategic when cultivating their savings portfolios. The

mechanisms included usually acted as complements to the others. As will be shown below, most of the participants who were banked continued to store money at home. These home savings were more accessible, and were often used for daily consumption. The bank was appropriate for the accumulation of savings over time. This facilitated the purchase of future items, usually of greater value. It also provided the participants with an accumulated amount, which could be accessed during an emergency. **Table 2** presents the advantages and disadvantages of the savings mechanisms that were available to Kenyans.

Many appropriated these various mechanisms to keep track of their finances. For example, John used four mechanisms to store his cash. This includes an MFI account, a bank account, M-PESA and the home bank. For John, each of these accounts served a different function and provided him with some type of benefit. For example, the home bank allowed John to have immediate access to his cash. The bank gave him a place where he could save cash for larger purchases. M-PESA facilitated the separation of John's business and personal finances. He explained that this made it easier for him to organize and "keep track" of his finances.

Some of the informants also appropriated more than one mechanism to "spread out" their finances

Table 1 Financial diaries participants

Name	Location	Job	M-PESA User/ Non user	Relation to Diary Participant
Wyclif	Urban- Kibera	Barber	Non User-sender	Married to Eunice
Eunice	Rural- Chamarmar	Farm work, fetch water	Non user	Married to Wyclif
Lawrence	Urban-Kibera	Painter	User-sender	
Brown	Urban-Kibera	Security guard	User-sender	Married to Betty
Betty	Rural-Bukura	Sold goods from farm	User-recipient	Married to Brown
Violet	Rural-Bukura	Not working	User-recipient	Betty's friend
Gaudezina	Rural-Shangalangwi (near Bukura)	Sold goods from farm	User-recipient	Betty's Mother
John	Urban-Kibera	Security guard and shop owner	User-sender	
Sylvester	Urban-Kibera	Security guard and shop owner	User-sender	Married to Elizabeth
Elizabeth	Rural-Sikarira	Sold goods on market-table cloth etc.	User-recipient	Married to Sylvester
Martin	Urban-Kibera	Shoe repair	User-sender	Married to Margaret
Margaret	Rural-Masiro	Sold goods from farm	User-recipient	Married to Martin
Joyce	Urban-Kibera	Shop owner	User-recipient	
Patrik	Urban-Kibera	Pastor	User-sender and recipient	

Table 2 The savings portfolio of low-income Kenyans

Savings mechanism	Advantages	Disadvantages
Home bank	<ul style="list-style-type: none"> - Free to transact and highly accessible 	<ul style="list-style-type: none"> - Risky-money stored in the home can be stolen by household members or outsiders - No interest is gained on the money stored at home
ROSCA	<ul style="list-style-type: none"> - Allows for the rapid accumulation of funds - Support to save is provided from other community members 	<ul style="list-style-type: none"> - Risky-money can be lost if group dissolves - Time consuming-regular meetings are often required by group members
Bank	<ul style="list-style-type: none"> - Secure method of savings - Interest provided on savings - Potential for credit 	<ul style="list-style-type: none"> - High transaction and maintenance fees - Difficult to access, especially in rural areas
M-PESA	<ul style="list-style-type: none"> - Free to deposit and store money - Highly accessible - Secure-customer ID and PIN is needed to access money 	<ul style="list-style-type: none"> - No interest on money stored - Cash shortages in rural areas can sometimes make it difficult to withdraw money - Not regulated as a savings mechanism, thus funds of customer are not protected
In-kind	<ul style="list-style-type: none"> - Material interest gained on some forms of material savings (i.e. Egg, milk) 	<ul style="list-style-type: none"> - Maintenance fees sometimes required (i.e. animal feed) - Low liquidity on some material savings - Potential loss of value over time

and to avoid the risk of money being lost. For example, Sylvester kept money in both M-PESA and the bank. After he was paid his salary, he would withdraw a substantial amount from the bank and would deposit the money into his M-PESA account. Sylvester explained that he did not fully trust the banks in Kenya with his money. He had heard “stories” that his savings would be lost if the bank crashed. Sylvester was not alone in his distrust of banks. Many other informants confirmed this finding during the fieldwork. This distrust was especially common prior to the presidential elections of December 2007. This period was characterized by heightened tensions between ethnic communities within the informal settlement. Informants took a variety of measures to protect their cash during the period. Some claimed that they took most, and sometimes all, of their savings from the banks and deposited the money into M-PESA and their home bank. They explained that they reduced the risk of money being lost by spreading out their savings.

In urban areas, M-PESA and the home bank were the most popular savings mechanisms

There were some substantial differences between financial portfolios in urban centres and rural areas. In Kibera, the most widely used mechanism for savings was M-PESA as well as the home bank. Many of those informants who had a steady flow of income also had an account with a formal bank or MFI. However,

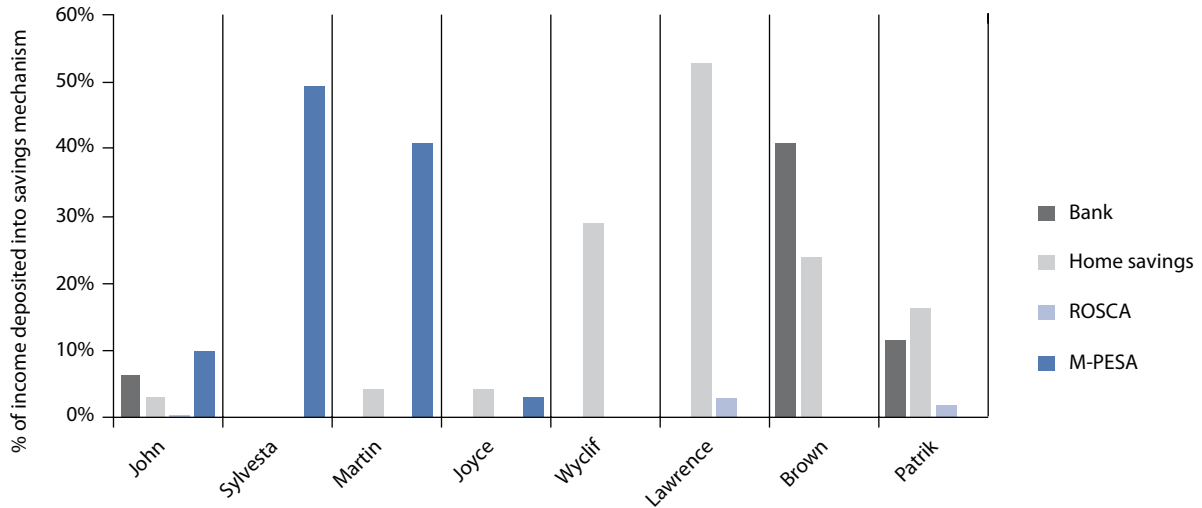
because there were no formal financial institutions within Kibera, the residents had to leave the informal settlement to transact. Many noted that this was a significant disadvantage of having such an account.

In regards to frequency of transactions, the home bank was the most popular. All of the urban participants kept some money in their home savings and many would make daily deposits and withdrawals. Most often, the money was used to purchase items for household consumption around Kibera. Lawrence kept nearly half of his income at home because it was easily accessible. He did not need to leave Kibera to transact. When asked whether he was afraid of losing money stored in the home, he said no. He explained that he had “hidden the money well” and did not “fear” theft by intruders.

Although the number of transactions was higher for the home bank, the value stored was lower than M-PESA. The diaries revealed that an average of 4 percent of total income was deposited into home savings. This compares to nearly 18 percent that was put into M-PESA. Two of the financial diaries participants, Martin and Sylvester, stored nearly half of their income inflows with M-PESA. Both men asserted that they preferred this method because it was “safer” than the other savings mechanisms.

John and Joyce also saved with M-PESA. However, they deposited a much smaller percentage of their income into their M-PESA accounts. Joyce explained that she

Figure 2: Savings portfolio of urban diarists



preferred to invest her cash in her small business. She would often maintain low balances in all of her savings mechanisms. She explained that money stored at home was at risk of being stolen by her husband who was often thirsty for *changa* [local brew]. She did not keep too much in her bank account because interest rates were low. The balance in her M-PESA account was the highest. She explained that she used this money for daily consumption and the “upkeep” of her rural relatives. Because an M-PESA agent was located close to her home, Joyce was able to accumulate money through weekly deposits. She would remit the money when she met her savings target for the month. The cash that was left over at month end would be used for home consumption. For John the balance was kept low because, as mentioned above, M-PESA was just one of several mechanisms he used for savings.

Four of the urban participants did not use M-PESA for savings. Wyclif and Lawrence did not know that M-PESA could be used for this purpose. As was mentioned above, M-PESA was not designed or regulated as a savings mechanism. This is why Safaricom, the mobile service provider, never advertised this option. Those who used M-PESA for savings discovered this function on their own, or heard about it from friends. Brown and Patrik said that they knew M-PESA could be used for savings, but had no use for this mechanism. Their existing portfolio of savings mechanisms was enough to meet their needs.

Some of the urban informants kept a bank account. Usually, they used the bank to accumulate money for future expenses. Many also wanted to build a relationship with the financial institution to access

credit in the future. There were informants who explained that they did not keep an account by choice; rather, they had their salaries deposited directly. They explained that banks were too expensive and that fees were “eating up” their savings. Numerous informants wanted their salaries deposited directly into M-PESA. They explained that they took a risk each time they carried money from the bank, which was located outside of Kibera, to their homes.

In rural areas, many preferred to keep their money in circulation rather than saving their cash

In the villages, the home bank was the most popular mechanism for savings. On average, 32 percent of rural household income was deposited into the home bank. Many preferred this method because it was accessible. The majority of banks and MFIs were located in the closest town, which was more than 20 km away. Many of the rural dwellers noted that this was too far to travel. They also explained that the banks only catered to the “rich”. The monthly fees and transaction costs were too high and would quickly wipe out their “small money”.

ROSCAs (rotating savings and credit associations), also known as merry-go-rounds, were also popular in the villages. Four out of the six rural women were involved in a merry-go-round. However, only 2 percent of rural inflows were stored in this mechanism. When asked why so little was stored, some of the rural respondents said that they were part of the merry go round for social, rather than, financial reasons. They enjoyed the weekly meetings with the group during which they

would catch up on the village happenings. Others also made clear that these groups “forced” them to save. They were less likely to accumulate cash if they “saved alone”. Group savings, however, were also somewhat risky. Both Betty and Elizabeth had lost money when previous groups disbanded without warning. Betty explained that because of such risk, it is best to keep smaller amounts in the merry go round. It is also better to have “back-up” savings in other mechanisms such as the home bank.

None of the rural participants used M-PESA for savings. Again, most did not know that M-PESA could be used for this purpose. Those who did know claimed that the application was not suitable for savings. They noted frequent cash shortages in rural areas, and were concerned that money saved with M-PESA would be difficult to access. Because the majority of the M-PESA transactions in rural areas were withdrawals, agents often ran out of cash float. Some would maintain this float by making regular trips to the bank to “top up”. Others, however, found such maintenance too costly and time consuming. They instead chose to top up their float sporadically. This resulted in cash shortages.

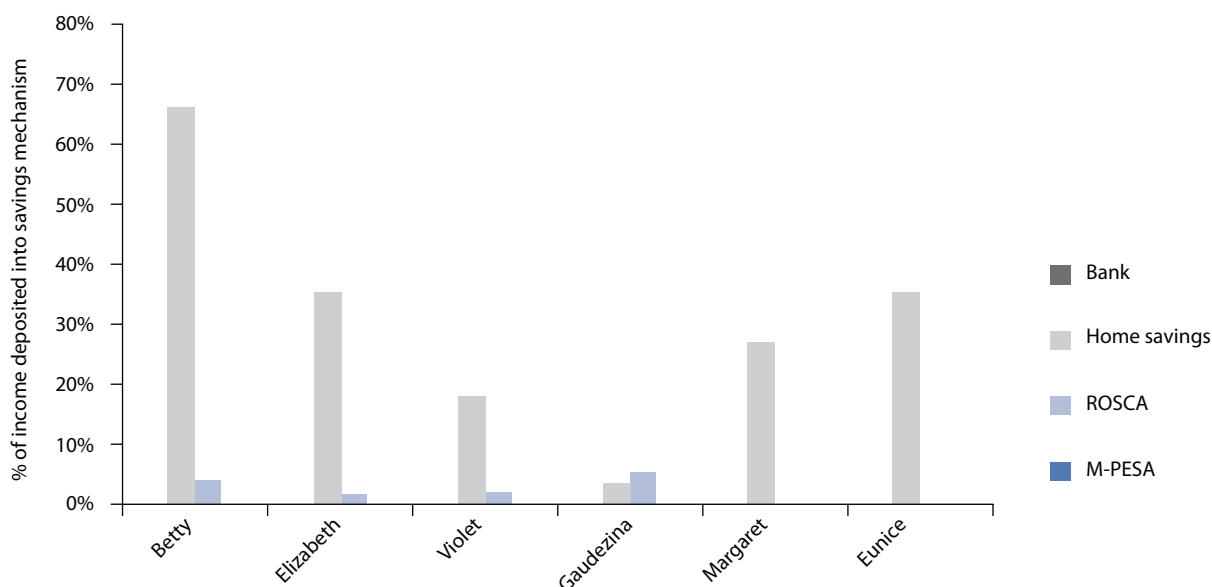
Because accessibility to cash was vitally important for the rural dwellers, the home bank was one of the most popular savings mechanisms. As is shown in **Figure 3**, all of the rural participants stored their money at home. These rural respondents further expressed a need for an affordable and accessible savings mechanism. As in the urban areas, they wanted to remove their cash from the household economy where it was prone to demands of relatives and neighbours.

	M-PESA	Bank	Home	ROSCA
John	18	13	15	6
Sylvester	25	17	0	31
Martin	6	0	24	9
Joyce	4	3	32	4
Total	53	33	71	50
Mean	13	8	18	13
Median	16	8	20	8

M-PESA acted as a complement, rather than substitute, for many of the other mechanisms in the savings portfolio

For the participants who used M-PESA for savings, an interesting trend was noted. The application acted as a complement, rather than a substitute, to these other mechanisms. It was used in conjunction with the bank, home bank and ROSCA. M-PESA had a vital place in the savings portfolio of the poor informants—somewhere between the bank and the home bank. Unlike the bank, M-PESA was appropriate for the accumulation of small savings. There were no fees to deposit money or to maintain the account. The application was also more accessible than the bank. Those living in Kibera did not need to leave the informal settlement to make deposits or access

Figure 3: Savings portfolio of rural diarists



their cash. They could also check their balance, at any time, using their mobile phone. Because M-PESA was accessible, it was used more often than the bank and ROSCA as is shown in **Table 3**. In some cases, deposits and withdrawals were made nearly every day.

Many also noted that M-PESA was safer than the other mechanisms. Safaricom was less likely than the bank to crash. Money stored with M-PESA could also not be stolen by a husband who was thirsty for *changa* [local brew]. The application was further used to organize cash. For example, John used M-PESA to separate his business from his personal savings. Joyce used the application to accumulate money that would be sent to her rural relatives. Once M-PESA became integrated into the savings portfolio of the poor, there was a re-balancing of amounts in each of the savings mechanisms. For example, Martin began to store more in M-PESA and less in his home bank. Sylvester took a balance from his bank account and kept it with M-PESA. As mentioned above, many wanted to spread out their cash to decrease the risk of it being lost if one of the mechanisms failed.

It must be noted that M-PESA had some disadvantages as a savings mechanism. As was explained by John, it was not appropriate for “big savings”. Interest was not paid on the money stored. Loans could also be acquired from Safaricom. M-PESA was also dependent on the Safaricom network. Thus, when there were network issues money could not be accessed. This happened several times throughout the course of the fieldwork. Many informants explained that this dissuaded them from keeping larger amounts in M-PESA. Also, as mentioned above, many did not use M-PESA for savings in the rural areas because of frequent cash shortages. They instead chose to keep cash at home where it was accessible. John explained that unlike M-PESA, his home bank “never closed”. Furthermore, money stored in M-PESA was not adequately protected. The service was not regulated by the Central Bank of Kenya. This was mainly because M-PESA was never designed to be a savings mechanism.

Safaricom can take various measures to improve the current M-PESA savings value proposition. In particular, there is the opportunity for M-PESA to be more than just a mechanism in the savings portfolio. The application can become the platform from which the entire portfolio of mechanisms can be accessed. This would provide poor savers with a centralized savings base on which they could accumulate, track, and manage, their small savings. It would also allow them to work with two forms of currency when

organizing their finances—cash and electronic value. The latter would be advantageous because it would facilitate the movement of value across the numerous accounts. As was shown in the empirical findings, such movement has significant costs (time and money). The electronic value would also render wealth invisible, which would make it less prone to demands from friends and family. However, before M-PESA becomes a platform for savings, the system design needs to be altered and new partnerships must be cultivated.

Issuance of M-PESA accounts by banks or third parties

For M-PESA to become a centralized base for savings services, the opening and maintenance of accounts would have to be outsourced. This would allow banks and MFIs to tap into the M-PESA platform and offer services at scale. It would also provide customers with new opportunities to generate interest on their savings. Currently, M-PESA accounts are issued by Safaricom and thus not subject to full prudential scrutiny by bank supervisory authorities. It puts M-PESA in an unstable regulatory position, which prevents Safaricom from benefiting financially from the interest on float held. It further precludes Safaricom from paying interest on balances held, or promoting M-PESA as a savings service for fear of incurring more regulation. If accounts were formally issued in the name of a bank, or other financial institution, the arrangement would be regulatorily more sustainable as funds held in M-PESA would have the necessary prudential protections.

No change to the design, operation or branding of the service would be required. Customer contracts would be issued by the bank but processed by Safaricom, in the same way as it processes contracts today. Safaricom would continue transferring all stored funds through M-PESA with the chosen bank, but now they would be stored on behalf of the M-PESA clients, not on behalf of M-PESA itself. Safaricom would still operate all individual accounts, and their collective value would be registered as a single line (pooled deposit account or account payable) in its ledger. This would be following the Smart Money model in the Philippines, where the service is operated and branded by mobile operator Smart Communications but the mobile wallet accounts are issued in the name of bank partner Banco de Oro. To make this possible, the Central Bank of Kenya would need to permit a high degree of outsourcing of bank operations to a non-bank.

The customers would benefit from this arrangement. They would be able to access a multitude of savings accounts, from different institutions, via their mobile phone. The value of M-PESA as a savings platform would also grow exponentially as more institutions use it to offer their savings products.

Creating savings sub-accounts

Once M-PESA becomes a centralized savings base it could provide a link between people's goals and their savings by compartmentalizing these savings into a system of sub-accounts. Each of these would have a pre-defined purpose. When making a deposit, the agent would ask customers if they had a special purpose for the funds. If so, the agent would select the appropriate item from a limited set of pre-defined options on the M-PESA menu (home savings, school fees, house repairs, funeral, remittances, etc.) when requesting authorization for the deposit. These options could be based on the most common savings objectives according to local research. It would also be possible for customers to pre-define their own objectives. When customers check balances through their mobile, their balance would be itemized by saving purpose (i.e. by sub-account). When making withdrawals or payments, customers would be able to select which sub-account to withdraw from. A ROSCA account could also be integrated. This could eliminate the need for cash exchanges at the meetings. The pay-out could also be provided in electronic value, rather than cash.

M-PESA could also facilitate the movement of funds between these various accounts. For example, the pay-out from the ROSCA could be immediately deposited into the school fees account. A remittance transfer made into the M-PESA wallet could also be moved into the account that is allocated to daily consumption. This could eliminate the need to physically move the money between the different mechanisms. It would also allow the poor to more easily diversify their savings base by the appropriation of various mechanisms and, in effect, spread out their risk. Disciplinary techniques could also be integrated into the system. For example, a text message could be sent to remind a saver who is accumulating cash that a deposit is due. Mechanisms that deter withdrawals on some accounts can also be incorporated. These could be in the form of higher withdrawal fees. They could also be in the form of time restrictions on withdrawals.

Enabling micro-transactions

The lowest amount that can currently be deposited into M-PESA is 100 KES (equal to less than 1 euro).

This makes it more difficult for M-PESA to be used for the accumulation of "small savings". This is where the home bank, without any minimum deposit stipulations, has a significant advantage. By lowering this minimum deposit amount to around 10 KES, M-PESA could encourage poor savers to make more frequent deposits into the system. This would remove money from the household economy, where it is vulnerable to theft and demands from relatives.

Managing liquidity

If M-PESA is to be used as a tool for the mobilization of savings, one of the greatest challenges for Safaricom would be to ensure the liquidity of M-PESA accounts. As was mentioned in the empirical findings, many rural dwellers did not use M-PESA for savings because of the frequent cash shortages. One strategy that could be taken to manage cash float is to increase the number of rural deposits. This could only be done by finding ways in which M-PESA could beat out the home bank as a savings mechanism. Facilitating access to accounts offering interest, and future loans, would be a good start. Banks could also work with Safaricom to help with liquidity management in rural areas. It is in their interest to ensure cash is readily available not only to keep customers happy but also to increase the number of transactions going through the system. As was made clear above, banks had the lowest number of transactions amongst the numerous savings mechanisms.

Conclusion

The empirical findings showed that the poor use a variety of mechanisms to meet their unique savings needs. These are combined into a savings portfolio, in which each of the mechanisms acts as complement to the others. M-PESA has a vital role in this portfolio—somewhere between the bank and home bank. It is more accessible and cheaper than the bank. It also provides additional security to savers by removing the money from the home and rendering wealth invisible.

The paper further suggested that M-PESA can have a much greater role in the mobilization of savings. Rather than just being a mechanism in the financial portfolio, it can provide a platform on which various savings mechanisms can be accessed. This is especially the case because it utilizes a new form of value—mobile money (or electronic money, more broadly). This new form of value would make it easier for savers

to organize, and keep track of, their various accounts. Rather than going from one mechanism to the next to check balances and make deposits and withdrawals, all the accounts would be centralized and made accessible via the mobile. It would also make it easier to move money between accounts. Accumulated amounts could be moved to a bank account to accrue interest; money in the bank could be moved to M-PESA for daily consumption. Mechanisms could also be built in to instil discipline. For example, a user accumulating cash could be sent a text message each time a payment is due. The user could immediately move value from one account to the next in reaction to this electronic reminder.

There are thus endless possibilities for the formalization and mobilization of savings with the mobile phone as a platform. Savings services can further replicate the experience of mobile payments. The frequency of savings transactions will most likely increase whilst the value per transaction will fall. However, before such mobilization occurs several measures must be taken. In particular, Safaricom should strengthen the reliability of the technical platform and the liquidity options of users. They should further increase the flexibility of the system. This will provide the resource poor with more opportunities to save. It will also make it easier for this segment to constitute savings portfolios that meet their unique needs.