DRY SPELLS AND SHOCKS: M-PESA AS A FINANCIAL MANAGEMENT TOOL

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- **Two-thirds of the time,** normal cash flow was insufficient to cover an unusually large expense.
- **20% of the external financing sources** were M-PESA cash withdrawals.
- **74% of M-PESA cash withdrawals** were of remittances that came from distances greater than 20 kilometers, virtually all of it from family and friends and virtually all of it cashed out immediately.
- **M-PESA was a common source** of external finance for paying hospital bills—in just over a third of the cases, respondents also reported withdrawing cash from MPESA.

THE SUCCESS OF M-PESA, Kenya's mobile money joint venture between telecommunications leaders Vodafone and Safaricom, is by now well known among those who follow developments in the field of financial services provision for low-income populations. Four years since its 2007 launch, an estimated 13.5 million Kenyans, about 70% of the country's adult population, subscribe to M-PESA. The service processes more transactions domestically in Kenya than Western Union does globally.

Of particular interest to those in the international development field is M-PESA's focus on the lower-income segments. A new study by Microfinance Opportunities (MFO) looked at how M-PESA helps such households work their way out of poverty and mitigate its effects in the meantime. MFO found that M-PESA does not appear to be a tool that low-income people use to accumulate savings, one important path out of poverty. They do use M-PESA as one among numerous tools to patch the holes that routinely spring open in their regular cash flow. But its greater value to such households appears to be in helping them meet emergency expenses, especially hospital bills. Finally, M-PESA plays a unique role in maintaining the "social capital" that can be an important asset for low-income Kenyans.

THE FINANCIAL DIARIES POPULATION

In order to understand how M-PESA achieved such phenomenal growth so quickly, it is useful to understand some of Kenya's demographic features. The country has a high incidence of geographically separated families. The classic scenarios are the husband who moves to find work or the adult child working in the capital city who sends money to parents and younger siblings down on the farm. Both the rural and the urban populations are growing in Kenya, presenting ample opportunity for businesses like M-PESA that connect the two.

MFO compiled a study sample of almost 100 participants, designing a representative range along a number of categories (M-PESA users vs non-users; men vs women; married vs not married) from both urban and provincial settings. MFO tracked all weekly financial transactions for each participant over the course of eight months. In the end, the study yielded a database of more than 18,000 records which researchers could mine for insights into the role M-PESA played in helping low-income households decrease vulnerability and accumulate assets.

CASH FLOW MANAGEMENT

Leading researchers (Rutherford, 2000) have long argued that an important function of financial services is to generate "usefully large lump sums" of cash which low-income households can then use to purchase goods or services they could not otherwise manage out of usual cash flow. MFO looked at the ways the Financial Diaries respondents used financial services to meet such expenses. Respondents reported 451 non-emergency transactions (emergency transactions are discussed separately below) that fit this criterion. About one-third of these transactions occurred during weeks when the respondent had enough cash flow to cover the unusual expense.

The other two-thirds of the time, normal cash flow could not meet the need. So MFO looked at those instances to see whether the respondent gained access to any sort of external financing either during the week in which the expense hit or the week immediately prior. In just under half the cases (n=132)[1], the respondent did get some sort of external financing. And of those 132 cases, respondents used 229 different sources of financing of which 20 percent were cash withdrawals from M-Pesa.

In other words, in each case of an unusually large nonemergency expense, there was often more than one source of financing that paid for it.

TABLE 1 - SOURCES OF FINANCING TO PAY FOR LARGE CASH OUTFLOWS

FINANCING SOURCE	NUMBER	PERCENT	AVERAGE AMOUNT
Spouse	71	31.00%	48
Family	17	7.42%	41
Friend	34	14.85%	43
Associate	30	13.10%	38
Bank	16	6.99%	404
CBO	16	6.99%	141
M-PESA	45	19.65%	39
Grand Total	229	100.00%	75

[1] It is very likely that the other half of the time, the respondent used money that had been stored up at home. MFO researchers were unable to verify this because respondents were extremely reluctant to disclose the existence or amount of cash stored at home even after many months of rapport had built up with the research team.

TABLE 2 - DISTANCES TRAVELED TO PICK UP CASH; DISTANCE COVERED BY REMITTANCES TO PAY FOR LARGE OUTFLOWS

	0–1 km	1–3 km	3–5 km	5–20 km	>20 km	TOTAL
Distance Traveled to Receive Cash	183	7	28	2	2	222
	82%	3%	13%	1%	1%	100%
Distance Covered by Remittance Source of M-PESA Cash Withdrawal	4	2	3	2	32	43
	9%	5%	7%	5%	74%	100%

Looking more closely at the distances involved in gaining access to these sources of financing (see Table 2), we see that they were extremely local. Respondents gained access to 82 percent of the sources of financing for unusual expenses within one kilometer of where they lived or worked. One reasonable assumption is that this is due to support from spouses living at home, but excluding spouses from the analysis only reduces the share of transactions that were highly localized from 82 percent to 80 percent.

The top line indicates the distance traveled to pick up the cash to pay for an unusual expense, including going to an M-PESA agent to withdraw the cash. But from where did the withdrawn M-PESA remittance originate? In all but one case, MFO could match a withdrawal to an incoming remittance. The data suggest that respondents were getting remittances that they subsequently withdrew to pay for an unusual expense from distances greater than 20 kilometers – this is the case 74% of the time. All but three of the remittances came from family (including nonresident spouses) or friends. Furthermore, 43 of the 45 cash withdrawals used to pay for unusual expenses were withdrawn on the same day they were received (and of the other two, one was withdrawn the next day and the other within 10 days).

To recap the numbers:

- Two-thirds of the time, normal cash flow was insufficient to cover an unusually large expense.
- One-half of that two-thirds involved external financing, from 229 sources.
- Twenty percent of the external financing sources were M-PESA cash withdrawals.
- And 74 percent of M-PESA cash withdrawals were of remittances that came from distances greater than 20 kilometers, virtually all of it from family and friends and virtually all of it cashed out immediately.

The key finding on cash-flow management is twofold. First, unusually large expenses present a cash flow challenge for low-income households (as is the case for most households). Second, in cases where Diaries respondents used "external" financing (including money from spouses), M-PESA played a role, bringing funds across long distances to be quickly converted to cash.

RISK MANAGEMENT

Low-income households are especially vulnerable to risk. They live and work in poor conditions that are more likely to result in illness or injury in the first place, and they have fewer and less reliable resources to respond to such events. To assess how the Diaries respondents managed and the role M-PESA played, MFO looked at two types of risks: emergency expenditures and lapses in income.

Hospital bills were a particularly serious emergency expense. Along with the psychologically stressful nature of having a family member hospitalized, these bills impose significant financial burdens. Diaries respondents reported paying 60 such bills. In two-thirds of the cases, (n=40), the respondents got some sort of external financing. In those 40 cases, respondents used 97 different sources of financing. In other words, in the case of emergency expenses, as with unusually large non-emergency expenses, respondents often had to tap more than one source of financing.

But unlike the case of nonemergency large expenses, M-PESA was a common source of external finance for paying hospital bills. In just over a third of the cases where a respondent reported paying a bill they also reported withdrawing cash from M_PESA in the same or the preceding week.

This finding has important implications for raising health standards in rural areas. Speedy access to needed cash translates into quicker health-seeking, both in terms of paying for transport to the hospital and for paying the direct costs of treatment.

As noted above, risk can come not only in the form of sudden spikes in expenses (such as hospital bills) but also in the form of drops in income. To examine the latter category of risk, MFO isolated the subset of respondents who are micro-entrepreneurs because it is they who are

TABLE 3 - SOURCES OF FINANCING TO PAY FOR HOSPITAL BILLS

SOURCE	NUMBER	PERCENT	AVERAGE AMOUNT
Spouse	14	15%	26
Family	7	7%	329
Friend	11	12%	60
Associate	16	17%	47
Bank	4	4%	633
CBO	4	4%	56
M-PESA	36	38%	50
Western Union	1	1%	2128
Zap	2	2%	96
Grand Total	95	100%	115
Missing	2		

most likely to experience unpredictable, week-to-week fluctuations in income. The 46 microentrepreneurs in the MFO study reported earning zero income in about one out of every five weeks. They appeared to maintain consumption during zero-income weeks anyway, through a variety of external financing sources. Here M-PESA played a minimal role; there were only 12 cash withdrawals from M-PESA.

ASSET ACCUMULATION

There are many ways to save (routinely spending less than you earn so that a balance grows over time, setting aside small amounts on a regular basis, not spending a windfall of some sort). But there is no universally accepted definition about what constitutes savings. How long must someone hold a balance in an account for it to constitute savings? Is a market vendor who holds back part of their earnings everyday and then spends it at the end of the week to purchase new inventory saving? Is the salary worker who is paid monthly saving if they hold back money after they are paid so they have enough to last them to the end of the week? Among international development researchers, savings' conceptual parameters are rarely discussed.

That being the case, MFO refrained from any time-threshold definition of savings. Instead, researchers focused simply on whether Diaries respondents held on to M-PESA balances and if so, how those balances had been generated and for how long they were maintained.

The data suggest that M-PESA is used for transactional purposes – moving money from one person to another digitally, then converting the e-money into cash. (See Table 4.)

Sixty-eight percent of all inflows were cleared out before the next inflow into the account occurred. And the clearing-out happened quickly—88 percent of the time on the same day a remittance arrived or cash was deposited. There were of course exceptions. But as a general rule, M-PESA remittances were withdrawn in full shortly after receipt. In cases where residual balances were left on M-PESA, their origin had generally been remittances from someone else. Of the 190 transactions that were not quickly cleared out, 146 were remittances and only 44 were cash deposits. In other words, the most likely way that Diaries respondents ended up leaving money in their M-PESA accounts was by failing to immediately withdraw, or only partially withdrawing, a remittance that had been sent to them, not by converting any of their own cash into e-money and parking it in their M-PESA account.

M-PESA's tariff structure may play a role in the low uptake of the service as a safe place to save. M-PESA charges a cash-out fee every time a subscriber converts e-money into physical cash. So if, in a common scenario, a husband in the city sends his wife back home a remittance of $10, she is better off taking possession of the whole sum at once and incurring one service charge rather than getting hit with multiple fees by tapping the $10 in increments. (Financial services customers from industrialized-country contexts will be familiar with this choice. Many prefer to withdraw a larger sum from an ATM and pay the transaction fee once, however grudgingly, rather than pay it over and over again by withdrawing smaller amounts.)

In interviews with MFO researchers, Diaries respondents described M-PESA as being "for the money I use" or as another put it "more like your wallet than a bank." But even if Kenyans are not currently using

TABLE 4 - PERCENTAGE OF INFLOWS INTO M-PESA ACCOUNT CLEARED OUT AND DAYS ELAPSED

SOURCE	NUMBER	PERCENT
Same day	344	88%
One day	19	5%
2 days to a week	20	5%
1 to 2 weeks	3	1%
More than 2 weeks	6	2%
Grand Total	392	100%
Total days with flows into account	579	
Share of days when account cleared out		68%

M-PESA to accumulate assets in the form of savings, it is important to consider the significant role the service plays in building and maintaining social capital, a nonfinancial but very real asset.

Kenya has a deeply entrenched culture of cash gifts and informal loans flowing among family and friends. Such exchanges are an important way that Kenyans support each other through hard times, maintaining bonds of affection and expectations of reciprocity. There is no doubt that M-PESA helps them do this across long distances much faster and more safely than they could do with physical cash. In the case of hospital bills, M-PESA appears to make a significant difference in people's ability to cope with the costs of urgent medical care, leading presumably to better health, an asset in itself.

Given M-PESA's dramatic success, it is easy to forget that the service only launched in 2007. Its massive scale-up in the "send money home" segment raises intriguing questions about whether it might achieve similar success in other segments and whether it might eventually play a greater role as a financial management tool rather than primarily a transactional one. But for the time being, M-PESA plays a valuable role in helping low-income Kenyans do what they have always done – help out loved ones living elsewhere – much faster and more safely than they could do with cash.

This brief is based on Cash In, Cash Out Kenya: The Role of M-PESA in the Lives of Low-Income People *(September 2011) by Guy Stuart and Monique Cohen. The original report can be downloaded in PDF form from www.microfinanceopportunities.org. The report is part of the Financial Services Assessment project, information about which can be found on the web at http://www.fsassessment.umd.edu/*

This study is part of the **Financial Services Assessment** project, undertaken by the IRIS Center at the University of Maryland and its partner, Microfinance Opportunities. The goal is to assess the impact of grants provided by the Bill and Melinda Gates Foundation to microfinance organizations for the development of innovations in financial services.

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FUNDING

Financial Services Assessment is funded by a $6 million grant from the Bill & Melinda Gates Foundation.

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