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# EXPANDING ACCESS TO FINANCIAL SERVICES FOR THE BASE OF THE PYRAMID

**KENYA CASE STUDY: LINKING MOBILE BANKING AND MOBILE  
PAYMENT PLATFORMS TO CREDIT BUREAUS**

**APRIL 2009**

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**KENYA CASE STUDY: LINKING MOBILE BANKING AND MOBILE  
PAYMENT PLATFORMS TO CREDIT BUREAUS**

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# ACRONYMS AND ABBREVIATIONS

AML	anti-money laundering
ATM	automatic teller machine
BoP	Base of the Pyramid
CBK	Central Bank of Kenya
CCK	Communications Commission of Kenya
CPA	Credit Providers Association
CRB	Credit Reference Bureau
FSD	Financial Sector Deepening
ICT	information and communication technology
ID	identifier or identification
IFC	International Finance Corporation
IT	information technology
KBA	Kenya Bankers Association
KES	Kenyan shillings
KYC	know your customer
MFI	microfinance institution
MNO	mobile network operator (e.g., Safaricom, Vodafone, Zain)
NGO	non-governmental organization
NPL	non-performing loan
NPS	national payment system
PERC	Political and Economics Research Council
PPP	public-private partnerships
SACCO	savings and credit cooperative
SMEs	small and medium-sized enterprises
SMS	short message service

telco	Telecommunications firm
USD	United States dollar

# EXECUTIVE SUMMARY

## INTRODUCTION

The success of mobile payment and mobile banking systems, such as M-PESA in Kenya, has exceeded expectations, with greater numbers of formal financial sector actors taking notice. According to the Central Bank of Kenya (CBK), M-PESA—Kenya’s leading mobile payment system offered by Safaricom—may have already made an impact on the formal financial sector, given the increase in formal bank accounts during the period M-PESA has been operational. At the end of 2005, there were 2.6 million formal bank accounts, but by the end of 2008 that number had increased almost 150 percent to 6.4 million accounts<sup>1</sup>. There are over 7,000 M-PESA agents<sup>2</sup>—substantially more points of service than the combined number of bank branches (887) and automatic teller machines (1,435)<sup>3</sup> in the country—serving 6 million customers or 15.3% of Kenya’s population of 39 million<sup>4</sup>. The monthly value of person-to-person money transfers as of the end of February 2009 was KES 14.5 billion (USD 190.3 million<sup>5</sup>), and the cumulative value of these money transfers since launch in March 2007 of the service is KES 118 billion (USD 1.5 billion). Safaricom’s CFO asserted in a June 2008 interview that Safaricom is the biggest generator of cash in Kenya, with the exception of the government<sup>6</sup>.

The competition is responding to M-PESA’s success. On February 17, 2009, Zain Kenya began offering both an m-payment service and m-banking through its Zap platform and partner banks such as Standard Chartered Bank<sup>7</sup>.

### Payment Transaction Services

#### M-PESA offers the following services:

- Deposit cash to clients’ accounts
- Send (transfer) money
- Withdraw money from an agent or automated teller machine (ATM)
- Buy Safaricom Airtime
- Pay Bills
- Manage clients’ M-PESA accounts

(source: <http://www.safaricom.co.ke/index.php?id=747>)

#### Zap offers the following services:

- Send and receive money
- Top up airtime
- Withdraw from clients’ bank accounts
- Pay Kenya Power and Lighting Company (KPLC) bills
- Pay for shopping (Nakumatt Supermarket)

(source: <http://www.ke.zain.com/en/zap/index.html>).

<sup>1</sup> Interview with Matu Mugo, Manager, Bank Supervision, Central Bank of Kenya, on March 26, 2009. M-PESA does not require users to have a bank account, but perhaps once users became accustomed to their “virtual account” associated with their mobile number, some decided they needed a formal bank account.

<sup>2</sup> Pauline Vaughan, head of M-PESA, provided all M-PESA data cited in this report, unless otherwise noted, on March 26, 2009.

<sup>3</sup> Number of bank branches and automatic teller machines (ATMs) provided by the Central Bank of Kenya. Data are as of the end of 2008.

<sup>4</sup> CIA Factbook July 2009 estimate. <https://www.cia.gov/library/publications/the-world-factbook/geos/ke.html> (accessed April 3, 2009).

<sup>5</sup> Exchange rate used for both Safaricom numbers is the rate on February 28, 2009, retrieved from [www.oanda.com](http://www.oanda.com).

<sup>6</sup> Nick Wachira and Isabella Mukumu, “Man behind Safaricom’s \$1bn cash machine,” *Business Daily Africa*, June 9, 2008, [http://www.bdafrica.com/index.php?option=com\\_content&task=view&id=8098&Itemid=5822](http://www.bdafrica.com/index.php?option=com_content&task=view&id=8098&Itemid=5822) (accessed March 28, 2009).

<sup>7</sup> <http://www.itnewsafrika.com/?p=2251> (accessed March 28, 2009).

With the exponential growth of mobile phone subscriptions in developing countries, and the increasing popularity of m-banking and m-payment providers such as M-PESA, there is also an expanding volume of data accumulating in the databases of mobile network operators (MNOs). Captured in their databases are payment and transaction histories about users who many believe represent the unbanked population. This population segment typically has no formal credit history and therefore cannot access financial services at affordable interest rates. These payment and transaction records may indicate a person's creditworthiness, based on whether the transaction is a bill payment or whether any trends or patterns based on the frequency, regularity, and value of the transactions can be detected.

## OBJECTIVE

The hypothesis is that mobile transaction data<sup>8</sup> may potentially help this population establish a formal credit history, help lenders more accurately evaluate credit risk, and lead to increased access to financial services for the poor. The objective of this research is to determine whether mobile transaction data provide enough of a foundation on which a credit information system for the base of the pyramid (BoP) can be built. An additional objective is to determine the level of interest in public-private partnerships (PPPs) on the part of various stakeholders.

## METHODOLOGY/APPROACH

This research uses Kenya as a case study. Kenya was chosen because it has a very successful mobile payment service offered by Safaricom called M-PESA, as well as two private credit risk management companies<sup>9</sup>, and the financial sector and banking regulator are making progress towards establishing licensed credit reference bureaus and building a credit bureau industry. A research team composed of a financial services specialist and an information and communication technology (ICT) specialist conducted desk research and on-site interviews with these key stakeholders in Kenya.

## RESULTS

The researchers determined that although there is general interest in the potential of mobile transaction data to inform credit decisions and increase low-income groups' access to financial services, the reality is that:

- Kenya is in the midst of establishing the enabling environment for sharing credit information systems. More work needs to be done to implement recently passed regulations and establish licensed and functioning credit reference bureaus before any dedicated attention can be given to alternative data sources.

### Credit Bureau Business Model

In the common business model of a credit bureau, businesses such as banks, merchants, lenders, and utilities contribute data to the credit bureau. The credit bureau combines information about a customer from these businesses, as well as public data sources such as court records, to develop a credit profile of a person and possibly a credit score. The credit bureau then sells the credit report to businesses needing to make a credit decision about a customer. The business directly or indirectly passes on the cost of acquiring the credit report, including their cost to provide data to the credit bureau, to the customer.

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<sup>8</sup> For the purposes of this study, the researchers refer to MNO, m-payment, and m-banking data collectively as "mobile transaction data". MNO data refers mainly to the call detail records for every mobile phone call made. Data mining will reveal whether there is any correlation between call detail history and creditworthiness, so until the answer is known, MNO data are included as a potential source of data.

<sup>9</sup> The phrase "credit risk management companies" is used in this paper to avoid confusion with and distinguish from "credit reference bureaus", which is used more often in Kenya to describe licensed credit reference bureaus. There are no licensed credit reference bureaus yet in Kenya, but there are firms providing some of the same services. The term "credit bureau" is used to refer to the general concept of credit bureaus.

- Telecom regulations of the Communications Commission of Kenya (CCK) currently prohibit the disclosure of statement and account data, which include the MNO and m-payment data that credit bureaus would be interested in using. The banking regulator has no authority over MNOs or m-payment providers, but even if it did, current credit reference bureau regulations do not require the sharing of alternative data such as mobile transaction data and utility payments<sup>10</sup>.
- A clear and compelling business case is needed in order for MNOs and m-payment providers to share information with and subscribe to a credit reference bureau. One may exist, but none of the parties interviewed could offer a compelling case.
- Mobile transaction data may be more useful as a market segmentation tool to separate lower- and higher-risk segments.
- There may need to be a longer record history, perhaps one to two more years, before one can gain a reliable sense of behavior and trends from the data.
- The data potentially have predictive value—that is, they may increase the accuracy of credit scoring and risk evaluation models to predict ability to repay or likelihood of default—when combined with mainstream credit bureau data.

Kenya is at least one to two years away from having a functioning credit reference bureau, so the focus of the industry is on reaching this initial goal and not yet on alternative data sources.

## RECOMMENDATIONS FOR NEXT STEPS

These recommendations are specific to the Kenyan context and suggest ideas for future research and assistance. The main emphasis is on supporting the development of the credit bureau industry in Kenya, and within this context, on the possible use of mobile transaction data in credit reference bureaus, which should lead to increased access to financial services for the poor. It is important to design any interventions with the current state and continuing development of the Kenyan financial system in mind. There are certain key priorities that the financial sector is addressing first, even before a specific alternative data source can be considered.

1. **Support the mobile platform to increase breadth and depth of financial access and services and encourage adoption by MFIs.** The mobile platform's primary value is the reach achieved through the distribution network and the increased efficiencies gained from using this network and mobile devices. Microfinance institutions (MFIs) have the greatest outreach to the unbanked and the BoP, but they are relatively weaker institutions, and in Kenya they are not adopting m-banking or m-payments as a delivery and service channel as fast as some would have expected.
2. **Provide assistance to all Kenyan banks in sharing data with licensed credit reference bureaus.** There are 16–17 different banking information technology (IT) systems over the 42 banks in Kenya<sup>11</sup>. Bringing all of these banks into the credit reference bureau system is going to require a concerted effort from an IT, management, and operational perspective.

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<sup>10</sup> Generally, alternative data can include recurring payments for rent, utilities (water, gas, electricity), telecommunications (fixed or mobile phone service, post- and pre-paid), and insurance, as well as other payments.

<sup>11</sup> Interview with James Kashangaki, Head of GrowthFin, Financial Sector Deepening (FSD) Kenya, on March 19, 2009.

3. **Provide assistance, if needed, to enact regulations that will improve the enabling environment for credit reference bureaus and clarify the regulatory authority over mobile banking and mobile payments.** Kenya is in the midst of several regulatory changes, but some issues need clarification. These issues include the following:
  - It appears that CBK and CCK have a mutual interest in ensuring that the mobile platform is secure and reliable, yet there appear to be overlapping or unclear delineation of the various regulations governing the m-banking/m-payment technology architecture as a whole.
  - Similarly, there may be a need to harmonize consumer protection regulations.
  - In the absence of a clear regulator for m-payments, will there be people not reached by this service because the lack of a clear regulator will discourage others from providing service?
4. **Support the use of alternative data and the provision of positive information from the banks.** Utility payment data exist today, so one could start with this information set and encourage banks to use these data. This could contribute to increased openness on the part of banks to using alternative data in general.
5. **Perform an initial analysis of mobile transaction data to confirm whether these data have any predictive value and if they do, to what degree.** One could compare the results from a credit decision based on traditional credit bureau data to the results of a decision that also incorporated mobile transaction data, isolating each type of mobile transaction data (e.g., MNO call detail records versus m-payment records).
6. **Explore further the business incentive for MNOs and the regulatory options to enable sharing of mobile transaction data, and support the best path.** If there's a strong business case, the MNOs will have the incentive to make the necessary changes to start sharing data and lobby for telecommunications regulatory reform. Whether CCK would be willing to allow voluntary sharing of information or to mandate it (if the business case cannot be made) is unclear.

## CONCLUSIONS

The answer to the key research question, “Can m-banking, m-payment, and MNO data be used to support a credit information system for the BoP?” is this: *there is potential, but currently telecom regulations prohibit the disclosure of these data, and a clearly defined business case is needed to incent the MNOs to share the data.* If no compelling business case can be made for MNOs to share data, the other option is to mandate it through regulations. The regulations of the telecommunications regulator CCK would need to be revised to allow the disclosure of customer information. The Central Bank of Kenya is the other relevant regulator, but CBK has no authority over MNOs and m-payment providers, and current banking regulations do not require the sharing of alternative data such as mobile transaction data.

The other research question this study sought to answer was “What is the level of interest, capacity, and commitment from the various stakeholders to build PPPs around m-banking-powered credit information systems for the BoP?” At this point it should be clear that the interest level of MNOs is low. However, capacity is likely to be high if the business case could be made, because they have strong IT capacity within their organizations. The banking regulator, financial institutions, and credit risk management firms are interested in mobile transaction data, but their focus is on the fundamental task of creating the first licensed and functioning credit reference bureau. The telecom regulator would likely be supportive, given



that it supports increased access to telecommunications services for rural and underserved areas through its Universal Access program.

In the Kenyan context, where m-payments have been phenomenally successful, credit data do not seem to be a binding constraint to increased access. Priority should therefore be on increasing the outreach of financial institutions and working towards having a robust credit reference bureau with multiple suppliers of information beyond banks.

Even though functioning credit reference bureaus are a few years away from being operational and the use of mobile transaction data may be as well, there has already been a step forward in Kenya because people have more ways to execute financial transactions and access financial services. Kenyans now have expanded access to financial services, based on the increase in formal bank accounts between 2005 and 2008 and on the amount of money and transaction volumes being handled by M-PESA. There is a greater breadth of financial services for the banked (current base), in addition to a deepening of financial services to reach the unbanked. Technology has made this depth and breadth possible because scalable, cost-effective, innovative solutions are possible through technology. The financial sector is grappling with how best to work with the new players in the financial services market—the telecommunications firms (telcos)—but it is generally accepted that mobile phones have been a positive disruptive force in developing countries. The development sector, financial sector, telecom sector, and public sector need to continue to identify common interests and to partner so as to harness the full potential of mobile technology to achieve sustainable economic growth and increased prosperity for all.



# INTRODUCTION

## BACKGROUND

Mobile payments have had incredible uptake in Kenya because they allow both the banked and the unbanked to transfer money more conveniently, more safely, and at a much lower cost than through formal banking services or other money transfer methods. In Kenya, M-PESA, launched on March 6, 2007, is the dominant m-payment system. It has experienced phenomenal growth since then, greatly exceeding expectations. M-PESA’s initial goal was to acquire 200,000–250,000 subscribers in the first year<sup>12</sup>. Instead, it achieved that goal in just four months. In fact, M-PESA attained 10 times the original goal in one year, registering 2 million customers.

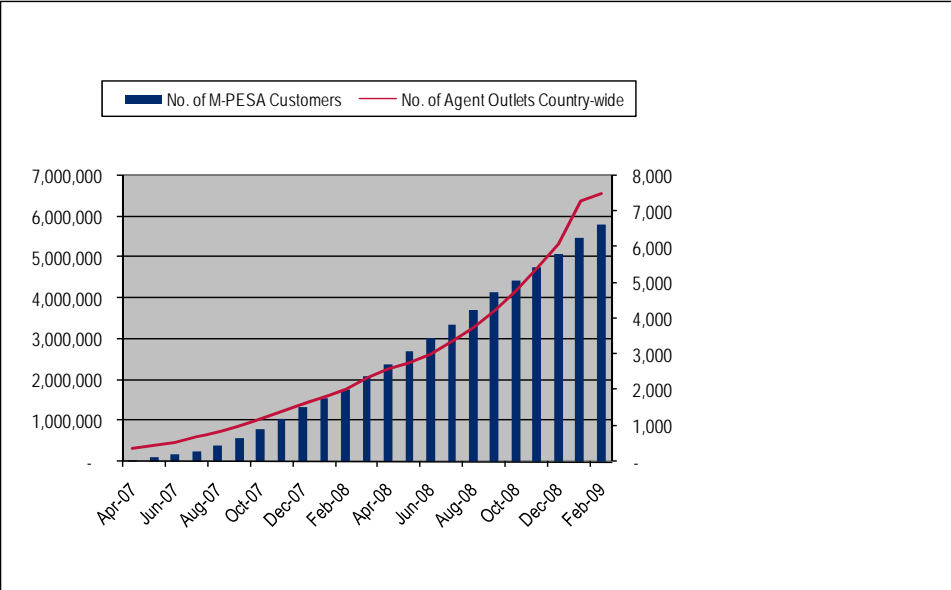
**Mobile network operators (MNOs)** are the firms that build and maintain the telecommunications networks that deliver voice and data services to a mobile phone. Well-known firms operating around the world include Vodafone, Safaricom, Zain, Orange, Telefonica, and Globe Telecom.

Today the more than 7,000 M-PESA agents serving a country of 39 million Kenyans and customer base of 6 million far exceed the 887 bank branches and 1435 automatic teller machines (ATMs) in Kenya. As of the end of February 2009, the monthly value of person-to-person money transfers was KES 14.5 billion (USD 190.3 million), with the cumulative value of these money transfers since M-PESA’s launch reaching KES 118 billion (USD 1.5 billion).

**Vodafone, Safaricom, M-PESA Relationship**

Vodafone holds a 40% share of Safaricom. Vodafone Group Services Limited owns the M-PESA solution and provides it to Safaricom as a managed service. Safaricom markets and offers the M-PESA services throughout the country (source: 2008 Safaricom Annual Report and Accounts, p. 52).

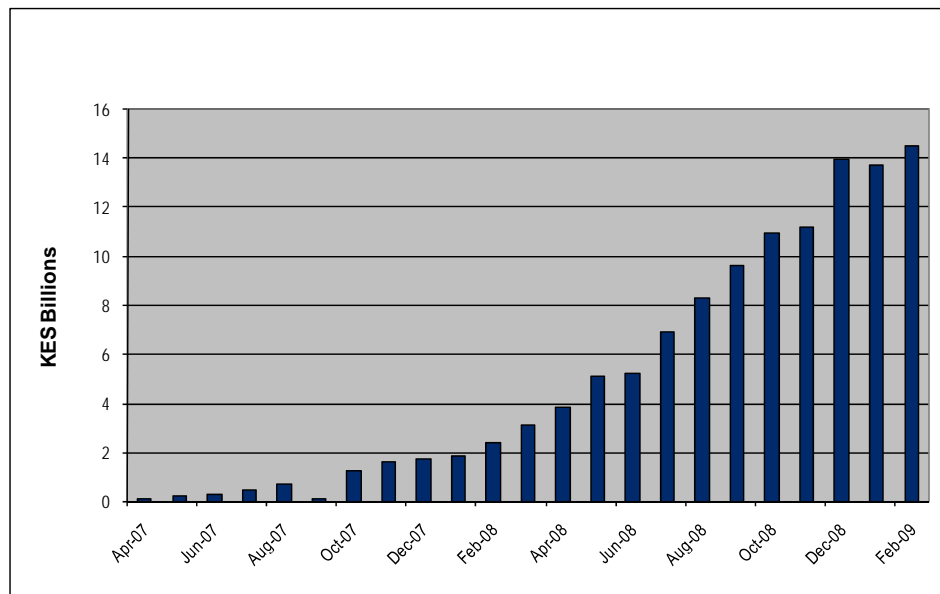
**FIGURE 1: M-PESA KEY STATISTICS**



<sup>12</sup> Dr. Nick Hughes, Head of International Mobile Payment Solutions at Vodafone, at a panel discussion at the World Bank InfoShop on February 25, 2009.

There is now a new provider of m-payment services in Kenya. On February 17, 2009, Zain Kenya began offering both an m-payment service and m-banking through its Zap platform and partner banks such as Standard Chartered Bank.

**FIGURE 2: M-PESA VALUE OF TRANSFERS (PERSON-TO-PERSON)**



The volume of data collected by MNOs, m-banking, and m-payment providers about their users' payments and transactions is increasing at a rapid rate. These payment and transaction records may indicate a person's creditworthiness, based on whether the transaction is a bill payment or whether any trends or patterns based on the frequency, regularity, and value of the transactions can be detected. With many of these users believed to be unbanked, the theory is that this mobile transaction data may be able to support credit decisions and lead to increased access to financial services for the BoP. One study by the Political and Economics Research Council (PERC) of the Brookings Institution examined the credit files containing nontraditional or alternative data—namely, utility and telecommunications bill payment history—of 8 million American consumers outside the credit mainstream, and followed their history for one year. Its findings demonstrated the value of alternative data<sup>13</sup>.

**Subset of PERC Study Findings**

Nontraditional data make extending credit easier:

- Including energy utility data in all consumer credit reports increases the acceptance rate by 10 percent, and including telecommunications data increases the acceptance rate by 9 percent, given a 3 percent target default rate.

Nontraditional data decrease credit risk and increase access.

- Sizable segments would see their credit scores improve—22.4 percent in the utility sample and 11 percent in the telecommunications sample.

<sup>13</sup> Political and Economics Research Council and The Brookings Institution Urban Markets Initiative, *Give Credit Where Credit Is Due*, 2006, pp. 2–3. <http://www.infopolicy.org/pdf/alt-data.pdf> (accessed March 13, 2009).

Mobile transaction data might therefore be a valuable new alternative data source for a credit bureau<sup>14</sup> and thereby lead to increased access to financial services for the BoP. Given the optimism, this study attempts to understand the reality by examining Kenya as a single case, knowing that there are likely gaps between the data that lenders need to make credit decisions and the data that MNOs, m-banking, and m-payment providers are collecting.

## PURPOSE AND SCOPE OF THE STUDY

The purpose of this study is to explore the feasibility of using data from MNOs and mobile banking and mobile-payment providers as a foundation for credit information systems for the BoP, using Kenya as a case study. The key research question this study seeks to answer is: Can m-banking, m-payment, and MNO data be used to support a credit information system for the BoP? The study focuses on the fundamental data-related questions of establishing a hypothetical credit information system: What data do lenders require to make credit decisions? What data are the MNOs and m-banking/m-payment providers collecting? And what is the gap? The study also seeks to understand the level of interest the various stakeholders have in building public-private partnerships (PPPs) around m-banking-powered credit information systems that can support increased access to financial services for the BoP.

**Mobile banking** is used in this paper to describe a service that provides an additional delivery and service channel for bank customers, allowing them to deposit and withdraw money from their bank account as well as perform other transactions and services using their mobile phone. **Mobile payment** is used to refer to a service where money can be transferred between mobile phone users independent of a bank account. Users must visit an agent to “cash in or cash out” (load or withdraw cash) from their “virtual” accounts at the MNO. In the case of M-PESA, the M-PESA Trust Company holds the money in these virtual accounts in trust for M-PESA users in a pooled account with the Commercial Bank of Africa.

The study neither defines a business model, pricing strategies, etcetera, nor describes the form the credit information system would take (a private system, a shared system, or part of an international system, for example). Rather, the main objective is to determine whether the concept of an m-banking/m-payment-powered credit information system would work, given the type of data available, the regulatory environment, and demand. The researchers expect that the results of this research will guide future research in this area.

This report reflects the voices and opinions of the stakeholders interviewed in Kenya. The researchers recognize that these views are to a degree subjective and may not always represent the views and opinions of all stakeholders and actors in the financial and telecom sectors in Kenya.

## METHODOLOGY/APPROACH

This research examines whether mobile transaction data provide a sufficient foundation on which a credit information system for the BoP can be built. Kenya was chosen because it has a very successful mobile payment service (called M-PESA) offered by Safaricom, a recently launched competing mobile payment/banking service (called Zap) offered by Zain, and two private credit risk management firms; moreover, the financial sector and banking regulator are making progress towards establishing licensed credit reference bureaus and building a credit bureau industry.

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<sup>14</sup> The term “credit bureau” is used in this paper to refer to the general concept of credit bureaus. The phrase “credit risk management companies” is used to avoid confusion with and distinguish from “credit reference bureaus”, which is used more often in Kenya to refer to licensed credit reference bureaus. There are no licensed credit reference bureaus yet in Kenya, but credit risk management companies provide some of the same services.

Two researchers, a financial services specialist and an information and communications technology (ICT) specialist, conducted desk research and interviews with the following organizations:

- Central Bank of Kenya (the banking regulator)
- Communications Commission of Kenya (the telecommunications regulator).
- Financial Sector Deepening (FSD) Kenya (an independent trust funded by donors and the Government of Kenya that seeks to increase access to financial services for lower-income groups and small enterprises)
- CRB Africa (a private credit risk management firm operating in Kenya and other African countries)
- K-Rep Bank
- Metropol East Africa Ltd. (a private credit risk management firm operating in Kenya)
- Safaricom and M-PESA (M-PESA is the m-payment service offered by Safaricom)
- Zain (Zap is their m-payment and m-banking service)

## MAIN AUDIENCE

The intended audience for this report is the development community, including donors and practitioners, and investors interested in mobile banking or credit bureaus. Familiarity with microfinance institution (MFI) needs and challenges, the benefit of credit bureaus, and mobile banking/mobile payments is assumed, while less familiarity with the business of mobile network operators is expected.

## ASSUMPTIONS

An initial assumption behind this research is that many M-PESA users are unbanked and operating at the BoP. The researchers, however, have learned that a forthcoming study may prove this to be an inaccurate assumption. This study by FSD Kenya found that 70 percent of M-PESA users have a formal bank account, and M-PESA users have accounts with multiple institutions (banks, savings and credit cooperatives, etc.)<sup>15</sup>. The focus of this research is still important, because there is still a very large population in Kenya without access to credit and financial services. From the FSD study it follows that 30 percent of the M-PESA users do *not* have a formal bank account. To extrapolate, this figure represents 1.8 million people, some of whom need financial services. There are also 33 million people in the country who are not yet registered users of M-PESA, and even a small percentage of this group comprises a large number who may be creditworthy and need credit. Both are large numbers that may eventually be assisted if this research ultimately leads to better credit decisions through the use of credit bureaus that include mobile transaction data. It is also important to note that the 70 percent figure represents *registered* users. One does not need to register to receive money, so *unregistered* users may make up a large group that needs financial services.

There is also an implicit assumption that there is a demand for credit information and a willingness to pay for the data and services.

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<sup>15</sup> FSD Kenya conducted a survey of 3,000 households and 287 M-PESA agents in September/October 2008. Approximately 1,200 were registered M-PESA users and FSD reviewed M-PESA transactions for about 1,000 households. These results and data are unofficial and preliminary and the final official results and data will be published in a forthcoming paper expected in April 2009.

# EARLY FINDINGS FROM KENYA

The researchers have organized the findings into three main areas of research:

- Data and gap analysis of mobile transaction data and credit bureau data: the data collected by the MNOs, m-banking, and m-payment providers; the data that credit bureaus and lenders may require to evaluate credit risk; and the gap analysis
- The legal and regulatory issues related to the sharing and use of mobile transaction data by financial institutions and the MNOs
- The business incentives and stakeholder interest in sharing and using mobile transaction data in a credit bureau from a supply and demand perspective. The main stakeholders are:
  - MNOs and m-payment and m-banking service providers
  - Credit bureaus and credit risk management firms
  - Banks
  - Regulators

Summary of Data Issues
• A sizable gap exists between mobile transaction data and credit bureau data requirements
• Bill payment and business transactions made through mobile payments cannot be used alone but may be used to segment potential borrowers and complement core credit data
• Mobile transaction data about the banked can be analyzed for predictive value
• Customer history is relatively brief for accurate data interpretation but in time will become more reliable

## DATA AND GAP ANALYSIS OF MOBILE TRANSACTION DATA AND CREDIT REFERENCE BUREAU REQUIREMENTS

Only a small number of data elements required by credit reference bureaus are collected by MNOs and m-payment and m-banking providers, but these data have potential as a complement to core credit bureau data to determine payment ability or risk. For instance, they may prove useful in segmenting customers into lower and higher risk groups. In time the data may be able to serve as a proxy for information such as income level. The reliability of the proxy data depends on the interpretation and volume of the mobile transaction data. In time the volume of data will be great enough to make more confident predictions from the data.

### Sizable Gap Exists between Mobile Transaction Data and Credit Reference Bureau Data Requirements

Name, national ID number, and date of birth are captured for each registered M-PESA user, but the list of data a credit reference bureau is allowed to collect includes significantly more data than are currently captured in mobile transaction records. Securities information would not be available through mobile transaction data. Some data elements that mobile payment agents are not currently collecting would not be too difficult to capture at the time of customer registration, namely additional personal identity information and current employment and income information, but would increase the time required to register a customer. MNOs and agents may not welcome this increase in time, though, because they want

to process new customers as quickly and easily as possible.<sup>16</sup> By the same token, a slower registration process may deter new customers from signing up.

**Bill Payment and Business Transactions through Mobile Payments Cannot Be Used Alone But May be Used to Segment Potential Borrowers and Complement Core Credit Data**

The “pay bill” feature of mobile payment and mobile banking systems is the most relevant type of mobile transaction to credit bureaus, because bill payment is a “credit-like” transaction in which a good or service is provided to the customer in advance of payment, and payment is due at regular intervals. Through the “bill pay” feature, MNOs are collecting bill payment history, but the true “system of record”<sup>18</sup> of payment history ultimately resides with the goods or service provider (“merchant” for ease of reference), not the MNO, and is therefore the best source of payment history. Only the merchant knows the payment due date and can therefore determine whether the payment was on time or late, allowing the merchant to classify the

account as being in good standing, overdue, or delinquent. The authoritative reference date that the payment was made will be the date the merchant received the payment and not the m-banking or m-payment transaction date. Usually these dates should be the same, but this cannot be 100% guaranteed by

<b>Description of Credit Reference Bureau Data Requirements</b>	
	The Banking (Credit Reference Bureau) Regulations 2008 allow licensed credit reference bureaus to collect information about a customer’s non-performing and performing loans, as follows <sup>17</sup> :
	The identity of a customer who is a natural person:
	<ul style="list-style-type: none"> <li>• Name</li> <li>• Date of birth</li> <li>• Gender</li> <li>• National ID number, personal ID number, passport number</li> <li>• Driver’s license number</li> <li>• Past and current addresses</li> <li>• Other contact details</li> </ul>
	The identity of a customer who is not a natural person:
	<ul style="list-style-type: none"> <li>• Name</li> <li>• Registration number</li> <li>• Personal identification number</li> <li>• Names of directors, shareholders, or partners</li> <li>• Past and current addresses</li> <li>• Other contact details</li> </ul>
	Employment, income, career, professional, or business history
	Credit history including nature and amount of loans and advances and other credit facilities granted, amounts outstanding
	Nature and details of securities or securities taken or proposed to be taken by an institution as security for the loans, advances, and other credit facilities
	Details of patterns of payment of credit facilities or default in payment by the customer, debt restructuring and actions taken by the institution to recover unpaid amounts including realization of securities, legal proceedings, and related matters

<sup>16</sup> Agents earn a commission for every M-PESA customer they sign up, as well as on the customer’s first deposit and for each transaction thereafter, so a slower process could affect their earnings. See <http://www.cgap.org/p/site/c/template.rc/1.26.5205/> for more details.

<sup>17</sup> The Banking (Credit Reference Bureau) Regulations, 2008. Kenya Gazette Supplement No. 52 (Legislative Supplement No. 31), Nairobi, July 11, 2008, pp. 395–396.

<sup>18</sup> The “system of record” is the data source, usually a database system, which is considered the authoritative source of data for a given piece or set of data.



any of the parties involved. However, if credit bureaus have access only to the mobile transaction data, they may be able to use the data to segment those who make regular bill payments from those who do not and predict their ability to make other payments.

To identify a business transaction, data mining by the MNOs could reveal that payment was made to a mobile number owned by a business. But again, the specific purpose—paying for product or a service, personal or business—will be difficult to discern.

#### **Mobile Transaction Data about the Banked can be Analyzed for Predictive Value**

The previously mentioned forthcoming FSD Kenya study found that 70 percent of M-PESA users have a formal bank account, and M-PESA users have accounts with multiple institutions (e.g., banks and SACCOs). This refutes the assumption of this study and of most of the development community that M-PESA is used largely by the unbanked. On the other hand, this presents an opportunity for further analysis to determine how predictive M-PESA data is by comparing mobile transaction data for the banked and data from the banks. It may be possible to determine if there is a correlation between M-PESA transaction history (frequency, periodicity, etc.) and credit evaluations based purely on bank data.

#### **Description of Mobile Network Operator, M-Payment, and M-Banking Data**

MNOs track every transaction made on their network in detail, whether it is a call or a text message or a ringtone download, the date and time the call started and ended, the number called, whether the caller initiated the call from his/her home service area or was roaming, and more. These transactions make up the call detail records that may appear on a billing statement or account record.

For know-your-customer (KYC) purposes, an M-PESA agent collects the following data about a user at the time the user registers for M-PESA:

- Name
- Identification number (national ID or passport number for example)
- ID type (national identity card or passport for example)
- Date of birth

The agent enters this information into a database, making it immediately accessible in electronic form. Safaricom keeps this information for ten years. The national ID number is not verified against the National Registration Bureau database unless a need arises, such as a fraud complaint or a high value transaction is made. The existence of a National Registry of Persons and a National ID Card and Number in Kenya is significant and must be emphasized because without this unique identifier for every person in Kenya<sup>19</sup>, it would not be possible (or at least be very difficult) to link data about a person from different sources. For Kenya, it means that a credit bureau can incorporate data from banks, MFIs, utilities, MNOs, universities, and other institutions as long as they capture a person's national ID number in their databases.

M-PESA captures a wide range of information on a transaction. Information such as the agent used and whether the transfer was to a registered or unregistered M-PESA user is known but the purpose of the transaction is not. Person-to-person transfers to a registered versus unregistered M-PESA user are considered different transactions. Other transaction types include using an ATM, paying a bill, and buying goods.

M-PESA's "bill pay" service currently has 50 businesses on board representing a variety of service providers. M-PESA users can pay their insurance premium, Safaricom bill, pay-TV bill, and health service provider, as well as make loan payments to a savings and credit cooperative (SACCO) and MFI.

#### **Customer History Is Relatively Brief for Accurate Data Interpretation, But in Time Will Become More Reliable**

There are now four mobile operators in Kenya: Safaricom, Zain Kenya, Orange Kenya, and Essar Telecom Kenya (formerly Econet Wireless). Orange and Econet launched their Kenya operations at the

<sup>19</sup> The Registration of Persons Act, CAP 107, requires Kenyan citizens 18 years old and above to register with the National Registration Bureau and be issued a national identity card. For more details see <http://www.identity.go.ke>.

end of 2008 and therefore do not yet have a sufficient base of Kenyan customers and transactions to reliably interpret customer behavior, trends, and patterns. Neither currently offers an m-banking or m-payment service. Zain launched Zap in Kenya on February 17, 2009, so it is not yet a deep source of data. Safaricom has been operating for over a decade in Kenya<sup>20</sup> and launched M-PESA two years ago, on March 6, 2007. Although M-PESA is the longest-running m-payment service, most customers have been customers for less than the two-year life of M-PESA, and having two years' worth of data on a customer is preferable to having data for only one year. Out of 5.8 million customers, four million are just one year old, having joined M-PESA since February 2008. Analysis is required on the data to determine how many of the early adopters of M-PESA are still using M-PESA, as this would be the segment with the deepest transaction history and therefore lead to more reliable interpretation of behavior, trends, and patterns.

There needs to be a sufficient volume of transactions per user to confidently interpret a user's behavior, trends, and patterns. Bill payment is the m-payment transaction most relevant to interpreting creditworthiness of those who send money. This service is relatively new, however, so customer payment history is currently shallow. In time—perhaps with one to two years of regular payments—the history will become sufficient for interpretation.

It may be possible to infer income level of those who receive money through m-payments, using the total value of money transfers into an account, but it is difficult to know for certain whether the money is intended for the recipient or a recipient's family member, friend, or other associate. One could also infer stability and reliability of income from the pattern of money transfers, if there were a sufficient volume of transactions. Money transfers of roughly the same value on a regular basis, such as the first of every month, could imply that a salaried worker is sending money, as indicated by the FSD Kenya study that finds that 43% of M-PESA users use it monthly.

## **REVIEW AND ANALYSIS OF LEGAL AND REGULATORY ENVIRONMENT FOR THE SHARING AND USAGE OF MOBILE TRANSACTION DATA**

The primary regulators involved are the Central Bank of Kenya (CBK) which regulates the financial sector, and the Communications Commission of Kenya (CCK), the regulator of the telecommunications industry in Kenya. This section presents the main constraints imposed by current regulations, and describes the overall regulatory environment and regulations under development that may impact usage of mobile transaction data.

### **Summary of Regulatory Issues**

- Telecommunications regulations prohibit the sharing of customer and transaction information, so currently there is no way to use mobile transaction data from a telco-led payment system such as M-PESA in a credit bureau.
- Banking regulations do not require the collection or sharing of alternative data, such as mobile transaction data and utility payments, in credit bureaus, so there is no compliance incentive to do so.
- Most of the financial sector's focus is on implementing the prerequisites for a functioning credit bureau industry, mainly the fundamental tasks associated with establishing the regulatory environment for credit bureaus and making the business case to banks.
- While there is intent to incorporate alternative data in Kenya's credit bureaus, this is not the first priority for CBK or any of the stakeholders. It may be two years before this is achieved.

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<sup>20</sup> <http://www.safaricom.co.ke/index.php?id=30> (accessed April 6, 2009).

## **CURRENT REGULATIONS OF THE COMMUNICATIONS COMMISSION OF KENYA (CCK) PROHIBIT MNOS FROM SHARING CUSTOMER AND TRANSACTION INFORMATION**

There are at least two sections in the current telecom regulations that prohibit MNOs from sharing customer or transaction information. Section 31 of the Kenya Communications Act, 1998, makes it an offense for a licensed telecommunication operator to intercept or disclose a message sent through the operator's system or to disclose the contents of any statement or account specifying the telecommunications services provided.<sup>21</sup> A message sent through the operator's system would include short message service (SMS) messages, which therefore would apply to M-PESA transactions because they are sent via SMS. Statement and account contents would include call transaction details and history as well as possibly the SMS transactions, so the information about a customer's mobile phone usage and payment patterns, although it may provide useful information for making credit decisions, is unavailable to external parties by law.

Section 93 of this act also restricts disclosure by the CCK of information about an individual or business during their lifetime without their permission (criminal and civil proceedings excepted)<sup>22</sup>.

Given current regulations, there is no way to incorporate mobile transaction data from a telecommunications company (telco)-run payment system such as M-PESA into a credit information system or any non-telco system.

## **CURRENT CREDIT REFERENCE BUREAU (CRB) REGULATIONS OF THE CENTRAL BANK OF KENYA (CBK) DO NOT REQUIRE THE USE OR SHARING OF MOBILE TRANSACTION DATA**

With the IFC and financial sector support, legislation was passed in 2006 that required banks to submit negative information (such as a default on a loan). The Banking (Credit Reference Bureau) Regulations, 2008 was officially launched on September 22, 2008, and became operational on February 1, 2009.

According to the press release:

These regulations set out the framework for the establishment and operation of Credit Reference Bureaus (CRBs) in Kenya to facilitate credit information sharing among all credit providers licensed under the Banking Act. These Regulations will become operational from 1st February 2009 and allow the Central Bank of Kenya (CBK) to license and supervise Bureaus. The Bureaus will collate credit information on loans of customers of institutions licensed under the Banking Act namely commercial banks and mortgage finance companies.<sup>23</sup>

The Banking (Credit Reference Bureau) Regulations 2008 do not require licensed credit reference bureaus to collect alternative data sources or positive information, which could be found in mobile transaction data and utility payments. The regulations only require licensed credit reference bureaus to collect negative data from institutions licensed under the Banking Act.<sup>24</sup>

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<sup>21</sup> The Kenya Communications Act, 1998. Kenya Gazette Supplement No. 64 (Acts No. 3). Nairobi, November 9, 1998, p. 219-220.

<sup>22</sup> Ibid, p. 264-265.

<sup>23</sup> Central Bank of Kenya, "Credit Referencing Regulations Launched", press release, September 22, 2008. <http://www.centralbank.go.ke/downloads/pressrelease/Credit%20Referencing%20Regulations%20Launched.pdf> (accessed March 24, 2009).

<sup>24</sup> The Banking (Credit Reference Bureau) Regulations, 2008. Kenya Gazette Supplement No. 52 (Legislative Supplement No. 31), Nairobi, July 11, 2008, pp. 395-396.

CBK has authority only over licensed bank institutions. Therefore, CBK does not regulate MFIs, SACCOs, utilities, MNOs, and other sources of alternative data, so it cannot require them to share data with credit reference bureaus. By the same token, credit reference bureaus are not required to grant access to their credit information systems to these non-licensed banks and non-bank institutions. If they did grant access, this would provide one potential incentive for these institutions to share data.

## **FINANCIAL SECTOR'S MAIN PRIORITY IS TO ESTABLISH LICENSED AND FUNCTIONING CREDIT REFERENCE BUREAUS**

There are no licensed credit reference bureaus to date. To enable the recently commenced Banking (Credit Reference Bureau) Regulations 2008 to become operational, the Kenya Bankers Association (KBA) and CBK very recently formed a joint task force to drive the implementation of a credit information system, with support and facilitation from FSD Kenya. The project is called the Kenya Credit Information Implementation Project. The task force has several major milestones that it intends to meet within two years to accomplish the goal of a functioning credit information system in Kenya:

1. Roadmap developed to create an operational credit reference system in Kenya
2. Credit reference bureaus are licensed and operational
3. A functional regulatory framework, which will include a timeline and strategy to include non-bank credit providers such as MFIs, SACCOs, and utilities and positive information (on-time payment history for example, currently optional for banks to provide), which is required to develop a full credit file.
4. Participation by all banks in the credit reference system
5. Positive buy-in from all stakeholders (banks, credit providers, credit bureaus, the public, government)<sup>25</sup>

Milestone 3 states the intent to incorporate alternative data into the credit reference bureaus, but actually incorporating alternative data is not one of the goals within this two-year project—there is only a goal to develop a timeline and strategy to include providers of these data. The KBA/CBK task force will review this only after a licensed credit reference bureau is live and operational and banks and deposit-taking MFIs are on the system. It is entirely possible that alternative data will not be available in credit reference bureaus for two to three years.

Another reason the task force is not focusing on alternative data at this time is that they must first solve problems with bank data, the primary data source for credit bureaus. Several people interviewed for this study reported that bank data quality is poor and data are incomplete. While the banks' transactional systems are reported to be robust, their customer profile information is still largely held in paper files. No one knows the percentage of the paper-based data that is entered into an electronic system. Banks today are not collecting all of the information that should be collected. Some collect just the ID number and name. Some data elements are not required to be collected and data collection is not strictly enforced.

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<sup>25</sup> FSD Kenya, "Credit Reference Project Appraisal Report," December 19, 2008.

### Regulations in Practice

There is no formal agreement between CBK and CCK to jointly provide mobile payment and mobile banking regulatory oversight, but they have open lines of communication and collaborate with each other. The way the two regulators regulate m-payments and m-banking in practice is described below, using M-PESA to illustrate a few points:

#### CBK

- CBK regulates the commercial bank where M-PESA holds its trust account, but does not regulate M-PESA because M-PESA is not a licensed banking institution, and therefore does not fall under the purview of CBK per the Banking Act.
- However, one could say that M-PESA is “observed” by CBK. M-PESA voluntarily provides monthly reports and regularly meets with them, and have been working with CBK since they conducted their pilot of M-PESA with Faulu Kenya, an MFI.
- For a bank-led m-banking service, regulatory oversight is a given as the CBK would already oversee the bank. In this case, m-banking transaction data would not be considered an alternative data source and therefore would be available to the credit bureaus.

#### CCK

- CCK’s interest is ensuring a stable, reliable telecommunications platform run by a sustainable telco firm.
- Under the new license regime, in effect since October 2008, CCK now grants a telco a Unified License which consists of four licenses, one of which is the Content Service Provider license.
- When CCK receives an application for a Content Service Provider license, they inform CBK as a courtesy. The applicant must submit a business plan and purpose of the service.

There may be some overlap in the oversight of the m-banking/m-payment technology. CBK as well as CCK have an interest in ensuring that the technology platform is secure and reliable. CCK’s focus is more on the telecom network itself, whereas CBK’s focus would be broader, perhaps over the m-banking/m-payment technology (hardware, software, and databases) and any application components. A further analysis of this potential overlap is beyond the scope of this study but would add clarity for all parties.

## DATA SUPPLY AND DEMAND: MNO BUSINESS INCENTIVES AND STAKEHOLDER INTEREST IN SHARING AND USING MOBILE TRANSACTION DATA IN A CREDIT BUREAU TO SERVE THE BOP

Regardless of the technical data and legal issues related to the sharing and use of mobile transaction data, is there any interest from the MNOs and m-payment providers to share the data? Is there any interest from credit bureaus, banks, or others in using the data? This section explores the supply and demand issues from the perspective of the stakeholders who would supply and use the data.

### SUPPLY OF MOBILE TRANSACTION DATA: A COMPELLING BUSINESS CASE NEEDS TO BE DEFINED FOR THE MNOS AND M-PAYMENT PROVIDERS TO SHARE DATA

In order for the MNOs and m-payment providers to share data with a credit reference bureau, there needs to be a compelling business case or value proposition for the MNO or m-payment provider. The question came up in nearly every interview but no one interviewed for this research could articulate a strong business case. One may exist but it is not readily apparent to anyone involved with this study. The business case or lack thereof depends in part on what is driving the MNO business in Kenya. In Kenya, Safaricom is the market leader. They now face two new competitors in addition to Zain, so they are contending with more fundamental and high potential options for revenue growth. Even in the United States, telecommunications and utility companies need to be convinced that they will benefit from reporting data to credit bureaus<sup>26</sup>.

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<sup>26</sup> Political and Economics Research Council, p. 41.

If no business incentive can be identified for sharing data with a licensed credit reference bureau, then one answer would be to pass regulations to require the sharing of data. This is easier said than done and is not the preference of anyone involved. In the researchers' judgment, in a market as competitive and small as Kenya, MNOs would vigorously fight such a change if it was imposed on them to their competitive detriment and lacked the potential for significant returns. Any regulatory changes will require a carefully managed process of stakeholder consultation and engagement to ensure that new regulations are designed to achieve the intended objective without creating undue burden or disadvantage for any party<sup>27</sup>.

Developing a business case was outside the scope of this study but the accompanying text box contains an exploration of a few of the more obvious ideas. None of the ideas present a compelling business case but the exploration serves to educate development practitioners about the MNO business context and provide insight into how to engage with them. The business case question is one that should be explored more thoroughly through future research.

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<sup>27</sup> For more information on regulatory issues related to mobile banking in general, see the CGAP Focus Note "Regulating Transformational Branchless Banking: Mobile Phones and Other Technology to Increase Access to Finance", available at <http://www.cgap.org/p/site/c/template.rc/1.9.2583/>.

### Hypothetical MNO Business Cases to Share Data

#### Business Case Hypothesis—Postpaid service

One possible business incentive for an MNO could be the ability to access the credit profiles of potential and existing postpaid customers in an effort to convert prepaid customers to postpaid plans and to retain existing postpaid customers. Postpaid service is one common approach MNOs use to retain customers, given that with the prepaid model (the predominant model in developing countries), one can easily switch to another mobile carrier simply by buying the SIM and airtime card of a competing MNO (known as “churn”). With information from credit profiles, MNOs and m-payment providers could then determine which potential customers meet the credit requirements and could be offered a postpaid service plan<sup>28</sup>. Existing postpaid customers could be offered better terms or new services based on their credit score. This case most closely resembles the conventional credit bureau model: banks, lenders, and others contribute their data to a credit bureau because in return they gain access to more complete credit profiles of prospective clients than the institution itself has.

For MNOs in most developing countries, however, postpaid customers comprise a very small percentage of their subscriber base. They comprise only 1% of Safaricom’s base and only 10% of their revenues<sup>29</sup>. Growth is static and may be shrinking<sup>30</sup>, so the option to expand the postpaid service because of access to credit information may not drive Safaricom to share data with and subscribe to a credit bureau. Similarly for Zain, according to their 2008 Earnings Release, prepaid customers make up 97.8% of their active customers in 15 African and seven Middle East countries<sup>31</sup>. This report further states that “This phenomenon clearly reflects the effects of the cash based economies of Africa and some Middle Eastern countries such as Iraq. Prepaid customers significantly reduce the credit and collection risks for Zain’s operations.”<sup>32</sup>

#### Business Case Hypothesis—Dealer Credit

Another possible reason for MNOs to use a credit bureau is that MNOs sometimes give credit to dealers<sup>34</sup> in their airtime distribution network, but MNOs have other methods to evaluate a dealer’s creditworthiness (they have their own large internal departments to evaluate credit risk) and generally in Kenya, companies are not accustomed to using external services like Dun and Bradstreet to evaluate a business. Anecdotally, MNOs can demand large deposits (upwards of USD 100,000) when signing up a new dealer. Given the fierce competition for dealer licenses, if one prospective dealer cannot pay the deposit, there is always another dealer prospect. Dealers are SMEs and the focus of this study is access to finance for the base of the pyramid, but this case illustrates the methods firms in Kenya have devised to reduce their risk.

#### Business Case Hypothesis—Revenue from Selling Data

M-PESA has actually received many requests for their data. Putting aside the regulatory constraint on sharing data for the moment, is there a case to be made for selling the data? The case is not strong, based both on the buyer’s willingness to pay and that paying for data is not part of the business culture in Kenya<sup>33</sup>. The MNOs have shared their concerns with the researchers about sharing what they consider to be proprietary information about their customers and their revenue base. Given this, if they do sell the data, they are likely to offer it only at a very high price. The most likely buyer is a credit bureau, but there are only two firms providing credit risk management services in Kenya, CRB Africa and Metropol East Africa Ltd., both of whom are busy trying to become licensed CRBs and bringing banks onto their credit information systems, and in the business model of the credit bureau industry, credit bureaus do not pay for the data they collect. For these reasons the existing credit risk management firms in Kenya will refuse to pay for the data. Another category of customer, donors and NGOs, are also not likely to pay for the data and their price point will be too low for the MNO to consider. Investors are a potential market for these data, because not only would they have the interest but also greater capacity to pay. So there may be a small market for these data at the price the MNO or m-payment provider may wish to charge.

#### Business Case Hypothesis—Market Insight Value

M-PESA did share transaction information with FSD Kenya for its forthcoming study, so there must have been a value proposition for them to do so. Some of the study’s early results, previously cited in this paper, point to a possibly compelling business incentive for sharing data: if the data collector can analyze the data to provide market and customer insights, then the MNO or m-payment provider may be willing to share the data (perhaps at no cost or reduced price). CRB Africa and Metropol East Africa Ltd., the two credit risk management firms operating in Kenya, or another third party could potentially provide these analytical services, but as already mentioned they have more urgent priorities to become licensed CRBs. Such services are probably in their long-term plans. The three major credit bureaus in the United States all offer a myriad of marketing and data services. Notably it appears that CCK made an exception to the regulations and allowed M-PESA to share data with FSD Kenya.

<sup>28</sup> With a postpaid plan, the MNO essentially extends credit by providing the mobile service in advance and billing the customer later, usually on a monthly billing cycle.

<sup>29</sup> Nick Wachira and Isabella Mukumu, “Man behind Safaricom’s \$1bn cash machine,” Business Daily Africa, June 9, 2008, [http://www.bdafrica.com/index.php?option=com\\_content&task=view&id=8098&Itemid=5822](http://www.bdafrica.com/index.php?option=com_content&task=view&id=8098&Itemid=5822) (accessed March 28, 2009).

<sup>30</sup> Interview with Pauline Vaughan, head of M-PESA, on March 26, 2009.

<sup>31</sup> Zain 2008 Earnings Release, p. 3. <http://www.zain.com/muse/obj/portal/files/IR/2008/Q42008ER.download> (accessed April 4, 2009).

<sup>32</sup> Ibid, p. 5.

<sup>33</sup> There is a well-researched data set available from a national survey on access to financial services in Kenya, launched in January 2007, known as the FinAccess survey. Anecdotally, the researchers are aware that the project had hoped to recoup some of the project cost through the sale of the data or data mining services, but there has been no sale in the more than two years since the report was released. This survey can be found at <http://www.fsdkenya.org/finaccess/index.html>.

<sup>34</sup> More details about the credit terms are in the Business Daily article previously cited, [http://www.bdafrica.com/index.php?option=com\\_content&task=view&id=8098&Itemid=5822](http://www.bdafrica.com/index.php?option=com_content&task=view&id=8098&Itemid=5822).



## DEMAND FOR ALTERNATIVE DATA, INCLUDING MOBILE TRANSACTION DATA AND INTEREST IN THE BOP MARKET

Everyone interviewed appreciated the potential value that mobile transaction data may have in identifying credit-worthy borrowers and increasing access to financial services for the poor. They also recognize that there is a vast untapped market at the base of the pyramid, but demand for alternative data and in particular mobile transaction data is low.

### **Credit Risk Management Firms Believe Mobile Transaction Data May Be Useful but Incomplete; First Priority is to become a Licensed Credit Reference Bureau**

There are currently two privately-run credit risk management firms in Kenya. CRB Africa was established in 1990 to address issues such as bad debt and lack of information to support credit decisions<sup>35</sup> and operates in 12 African countries. Metropol East Africa Ltd., headquartered in Nairobi, was first established in 1996<sup>36</sup> and has spent six years working with 40 banks to develop a small and medium enterprise (SME) credit score, from which a score about the SME owner can be derived<sup>37</sup>.

Both credit risk management firms are interested in or are actively incorporating alternative data sources. CRB Africa allows people to make their debt payments to CRB Africa's debt management service using M-PESA and feeds this payment information into their credit information system. CRB Africa just announced a partnership with the Higher Education Loans Board to identify former students who are not repaying their student loans<sup>38</sup>. Metropol East Africa Ltd. is currently developing two credit information systems, one that is based on bank data and the other based on alternative data sources, with plans to eventually include utilities such as power and water. Mobile transaction data could be another data source. Interestingly, Metropol's SME credit scoring model shows that data about an SME's ICT usage—whether an SME has a telephone number (most likely mobile), fax number, the number of computers they own, and email address—are predictive and contribute to 10% of the overall score. Of these four attributes, the telephone number was the most predictive.

Both CRB Africa and Metropol East Africa Ltd. echoed the same sentiments, using almost the same words, that there is no question about the usefulness of mobile network operator data, but they raised questions about the integrity of the data because the national ID or other ID given is not always verified. This is not an isolated issue, however, as banks also report problems with fake identity cards. They expressed the most interest in the m-payment or m-banking transactions related to a business trade. They would like to know who the recipient is, and what the payment is for (debt payment, a service, or a product); however, the purpose of the transaction is not captured in M-PESA. It is also not clear to the credit risk management firms if the MNOs will be willing to share the information and make any changes that credit risk management firms would require.

The main focus for the credit risk management firms today is to get licensed to serve banks. If the broader financial sector policy and strategy is effective, financial institutions will eventually pursue the BoP

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<sup>35</sup> Interview with Wachira Ndege, Steven Kamau, and Ravi Vadgama of CRB Africa on March 24, 2009.

<sup>36</sup> <http://www.marsgroupkenya.org/multimedia/?print&storydate=2006-01-28&StoryID=142848&hse=mhes01> (accessed April 12, 2009).

<sup>37</sup> For SMEs, their credit score is closely tied to the entrepreneur's personal creditworthiness/score. Interview with Sam Omukoko, J.H.R. Murigo, and Antony Ragui of Metropol on March 20, 2009.

<sup>38</sup> Ally Jamah, "Loans board signs deal to track defaulters," *The Standard*, April 7, 2009, <http://www.eastandard.net/news/InsidePage.php?id=1144010895&cid=159&> (accessed April 13, 2009).



market. Credit reference bureaus may be counting on this and therefore have little incentive to focus on the BoP market at this point.

#### **Banks May Value Alternative Data including Mobile Transaction Data**

Banks still use a more judgmental approach to evaluating risk, by reviewing the borrower's character, type of business they are in, and history with that borrower. K-Rep Bank pointed out, however, that electricity and water in particular are valued as vital services by the mass population, so a poor history of payment for this critical service would strongly indicate that an individual is a poor credit risk.

With m-banking systems, the issue of sharing data is a moot point because the transaction is just another bank transaction. It is not an alternative data source so the data can be incorporated today into a credit reference bureau, starting with negative information as required by current banking regulations.

#### **Low Interest by Banks in the BoP Market Translates to Low Incentive for Credit Bureaus to Collect or Sell Data on the BoP**

Big banks want to do mass lending but they need a cost-efficient way to sift through the volume of data to find the quality candidates. It is reported that banks are generically interested in the BoP market but they will not be willing to invest a huge effort or change in processes to access this market. In that case they may not succeed in reaching the BoP market. As C.K. Prahalad wrote in his groundbreaking book "The Fortune at the Bottom of the Pyramid", innovation at the BoP requires process redefinition. One cannot simply take practices and technologies from conventional markets and water them down for the BoP market. "Success in BoP markets will break existing paradigms"<sup>39</sup>.

Those working to implement the credit reference bureau regulations state that more work is required to develop a culture of sharing information within the banking sector. Once this is achieved, smaller banks will be more likely to pursue the BoP or MFI-level market and have a greater interest and demand for alternative data. Until then, there will be little incentive for the licensed credit reference bureaus to collect or sell data on the base of the pyramid.

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<sup>39</sup> C.K. Prahalad, *The Fortune at the Bottom of the Pyramid* (New Jersey: Wharton School Publishing, 2006), p. 45.



# RECOMMENDATIONS FOR NEXT STEPS AND CONCLUSIONS

## RECOMMENDATIONS FOR NEXT STEPS

These recommendations are specific to the Kenyan context and suggest ideas for future research and assistance. The main emphasis is to support the development of the credit bureau industry in Kenya, and within this context, the possible use of mobile transaction data in credit reference bureaus, which should lead to increased access to financial services for the poor. It is important to design any interventions with the current state and continuing development of the Kenyan financial system in mind. There are certain key priorities that the financial sector is addressing first, even before a specific alternate data source can be considered.

**1. Support the mobile platform to increase breadth and depth of financial access and services and encourage adoption by MFIs.** The mobile platform's primary value is the reach achieved through the distribution network and the increased efficiencies gained from using this network and mobile devices. MFIs have the greatest outreach to the unbanked and the BoP but are relatively weaker institutions and in Kenya they are not adopting m-banking or m-payments as a delivery and service channel as fast as some would have expected. Specific next steps would be as follows:

- Research why MFIs are not at the forefront of the movement to mobile banking and mobile payments, and identify the best approach to fostering greater adoption. One reason reported in the case of M-PESA, is that the cost of a transaction is too high for an MFI client<sup>40</sup>. Is there a price point that will attract enough MFI clients and generate the volume of transactions to make up for the reduced per transaction charge?
- Support MFIs to adopt m-banking or m-payments for loan disbursements, loan repayments, and other financial transactions. Help accelerate the adoption through technical assistance. The adoption issue is not just about technology adoption, but also about getting management bought-in to mobile banking and mobile payments and appreciating what would be gained from this platform. Once they see the value, they will be motivated to overcome any issues and make the necessary changes to adopt the platform.

**2. Provide assistance to all Kenyan banks to share data with licensed credit reference bureaus.**

There are 16-17 different banking IT systems over the 42 banks in Kenya<sup>41</sup>. Bringing all of these banks into the credit reference bureau system is going to require a concerted effort from an IT, management, and operational perspective. One goal of any technical assistance would be to develop an integration template or set of processes that once developed and refined, can be replicated to other banks.

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<sup>40</sup> Mark Pickens, "Can M-PESA work for microfinance clients?", CGAP, May 28, 2008, <http://technology.cgap.org/2008/05/28/can-m-pesa-work-for-microfinance-clients/> (accessed April 13, 2009).

<sup>41</sup> Interview with James Kashangaki, Head of GrowthFin, FSD Kenya on March 19, 2009.

**3. Provide assistance, if needed, to enact regulations that will improve the enabling environment for credit reference bureaus and clarify the regulatory authority over mobile banking and mobile payments.** Kenya is in the midst of several regulatory changes but some issues need clarification.

These issues include the following:

- It appears that CBK and CCK have a mutual interest in ensuring that the mobile platform is secure and reliable, yet there appear to be overlapping regulations or unclear delineation of the various regulations governing the m-banking/m-payment technology architecture as a whole. There is a general understanding that CCK regulates the telecommunications network portion of this system architecture, whereas CBK is likely concerned with the portions of the system riding on top of this network (hardware, software, and databases). CBK’s recently passed Banking (Credit Reference Bureau) Regulations, 2008 and the forthcoming National Payment Systems Act both address technology, due to the dependence of credit information and payment systems on the software and hardware platforms, as well as management of these technical environments.
- Similarly, there may be a need to harmonize consumer protection regulations. There is the national level Consumer Protection Act, 2007 and both CCK and CBK have regulations protecting consumers. It should be made clear where actors such as M-PESA fall, given that they are technically regulated by CCK but are “observed” by CBK. When the NPS Act is passed will its consumer protection provisions supersede CCK’s regulations, for example?
- In the absence of a clear regulator for m-payments, will there be people not reached by this service because the lack of a clear regulator will prohibit others from providing service?

**4. Support the use of alternative data and the provision of positive information from the banks.**

Utility payment data exist today, so one could start with this set of information and encourage banks to use these data. This could contribute to increased openness by banks to use alternative data in general. The evidence from the previously cited PERC report is strongly in favor of using these data. FSD Kenya and the KBA/CBK task force would be the main partners to work with on this effort. To collect and enable the use of alternative data, however, the credit reference bureau regulations need to be separated from the Banking Act. This would also address an incentive issue for the alternative data providers, because current regulations do not require credit reference bureaus to give access to non-licensed banks and non-bank institutions.

**5. Perform an initial analysis of mobile transaction data to confirm whether these data have any predictive value and if they do, to what degree.**

One could compare the results from a credit decision based on traditional credit bureau data to the results of a decision that also incorporated mobile transaction data, isolating each type of mobile transaction data (e.g., MNO call detail records versus m-payment records). The PERC study examined a different set of telecom data. It focused on land line and mobile phone payments because these were “credit-like”, where services are rendered before payment and payment is made in regular intervals<sup>42</sup>, so it would be interesting to know whether including data, such as m-payment transactions, that is less credit-like and more a reflection of cash demand can still be indicative of credit risk or worthiness.

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<sup>42</sup> Political and Economics Research Council, p. 9.

**6. Explore further the business incentive for MNOs and the regulatory options to enable sharing of mobile transaction data and support the best path.** If there's a strong business case, the MNOs will have the incentive to make the necessary changes to start sharing data and lobby for telecoms regulatory reform. Whether CCK would be willing to allow voluntary sharing of information or to mandate it (if the business case cannot be made) is unclear. One avenue that CBK is already pursuing to gain more oversight authority is through the upcoming National Payments System Act, but mandating the sharing of information for credit reference bureaus does not appear to fit within the original scope and intent of the Act.

## CONCLUSIONS

The answer to the key research question, “Can m-banking, m-payment, and MNO data be used to support a credit information system for the BoP?” is *there is potential but currently telecom regulations prohibit the disclosure of these data and a clearly defined business case is needed to incent the MNOs to share the data*. If no compelling business case can be made for MNOs to share data, the other option is to mandate it through regulations. The regulations of the telecommunications regulator CCK would need to be revised to allow the disclosure of customer information. The Central Bank of Kenya is the other relevant regulator but CBK has no authority over MNOs and m-payment providers and current banking regulations do not require the sharing of alternative data such as mobile transaction data.

The other research question this study sought to answer was “What is the level of interest, capacity, and commitment from the various stakeholders to build PPPs around m-banking-powered credit information systems for the BoP?” At this point it should be clear that the interest level of MNOs is low but capacity is likely to be high if the business case could be made, because they have strong IT capacity within their organizations. The financial institutions, credit risk management firms, and banking regulator are interested in mobile transaction data, but their focus is on the fundamental task of creating the first licensed and functioning credit reference bureau. The telecom regulator would likely be supportive, given that they support increased access to telecommunications services for rural and underserved areas through their Universal Access program.

In the Kenyan context, where m-payments have been phenomenally successful, credit data do not seem to be a binding constraint to increased access. Priority should therefore be on increasing the outreach of financial institutions and working towards having a robust credit reference bureau with multiple suppliers of information beyond banks.

Even though functioning credit reference bureaus are a few years away from being operational and the use of mobile transaction data may be as well, there is already a step forward in Kenya because people have more ways to execute financial transactions and access financial services. There is already expanded access to financial services, based on the 150 percent increase in formal bank accounts from 2.6 million in 2005 to 6.4 million accounts in 2008, and on the amount of money and transaction volumes being handled by M-PESA. There is a greater breadth of financial services for the banked (current base) in addition to a deepening of financial services to reach the unbanked. Technology has made this depth and breadth possible because scalable, cost-effective, innovative solutions are possible through technology. The financial sector is grappling with how best to work with the new player in the financial services market, the telcos, but it is generally accepted that mobile phones have been a positive disruptive force in developing countries. The development sector, financial sector, telecom sector, and public sector need to continue to identify common interests and partner to harness the full potential of mobile technology to achieve sustainable economic growth and increased prosperity for all.



# APPENDIX 1

## **Other Regulatory Policies and Activities of the CBK that Affect M-Banking and M-Payment Systems**

**National Payment System Act.** The Central Bank Act has a broad statement about oversight of the national payment system, but the proposed National Payment System Act will give CBK more oversight and authority over all payment systems. This would include m-payment systems such as M-PESA. If a system becomes systemically important, CBK intends to set requirements such as security standards and minimum deposits. The bill has been drafted and submitted to the Ministry of Finance, and is now with the Attorney General.

**Branchless Banking and Delivery Channels.** There was a comprehensive review of the Banking Act and the review cited branchless banking as an issue. Current banking regulations do not allow banks to appoint agents or work with a third party. This makes it difficult for banks to implement m-banking for the mass market, because agents provide the access points to register for services and cash-in and cash-out. With only 887 bank branches and 1,435 ATMs in Kenya as of the end of 2008 for a population of 39 million, agents can more cost-effectively provide a far wider distribution network and are therefore key to increasing access to financial services.

M-PESA's success is due in large part to its extensive agent network. When banks are allowed to use agents, a bank-led m-banking service model will be able to reach scale and become competitive with telco-led m-banking and m-payment services. There are now several proposed amendments to the Banking Act 2009 (which once published will be known as the Banking Act Amendment Bill 2009) that will enable branchless banking, including agency, amongst a host of other changes and will empower CBK to inspect agents.

**Anti-Money Laundering.** CBK is working on an anti-money laundering (AML) law that will place the same standard across the entire financial sector, requiring reporting of suspicious transactions and keeping records for ten years.

**Credit Providers.** CBK is developing a credit provider's code of conduct. A credit provider association is also being formed.





# APPENDIX 2

## Other Regulatory Policies and Activities of CCK that Affect the Usage of Mobile Transaction Data in Credit Reference Bureaus

**SIM Registration.** CCK is considering introducing legislation, expected mid-year, that will require personal data on a person to be collected for new SIMs. Existing SIMs will not need to be registered. This is being enacted in part to address concerns about the use of mobile phones to commit a criminal or terrorist act. There will be a public comment period before this legislation is finalized and passed. If this passes, it will provide more information about the BoP but only for new subscribers. Requiring existing subscribers to register would be difficult to enforce, but in the case of M-PESA there are data on M-PESA users, of which there are 5.8 million as of February 2009 out of nearly 13 million total mobile subscribers as of June 2008 (most recent data available)<sup>43</sup>.

**Unified License including Content Service Provider.** CCK's new Unified License Framework was established to align the licensing and regulatory framework, which was technology-based, to today's trend towards technology convergence. Under the old license regime, telcos wishing to provide m-payment and m-banking services would apply to CCK for a Value Added Service license. Instead of separate service licenses for fixed-line, mobile, voice, data, Internet, and other services, there are now four licenses granted under the Unified License Framework: International Gateway (granted only to "Tier 1" providers), Network Facilities Provider, Applications Service Provider, and Content Services Provider<sup>44</sup>. CCK is moving towards granting a unified license to telcos rather than individual licenses.

**Consumer Protection.** CCK is working on consumer protection regulations, which will supplement the Consumer Protection Bill, 2007. This act protects consumer rights with respect to goods and services in general, such as price, quality, and false claims<sup>45</sup>. On January 15, 2008, CCK announced the creation of a Consumer Affairs Division<sup>46</sup>, and on September 25, 2008, CCK launched a consumer education outreach program to educate consumers about their rights and responsibilities.

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<sup>43</sup> Communications Commission of Kenya, [http://www.cck.go.ke/market\\_information-telecommunications/](http://www.cck.go.ke/market_information-telecommunications/) (accessed April 1, 2009).

<sup>44</sup> Communications Commission of Kenya, <http://www.cck.go.ke/html/pressreleases.asp?newsid=280&area=new&arch=1&year=2008> (accessed April 1, 2009).

<sup>45</sup> Communications Commission of Kenya, [http://www.cck.go.ke/UserFiles/File/Consumer\\_rights\\_and\\_responsibilities.pdf](http://www.cck.go.ke/UserFiles/File/Consumer_rights_and_responsibilities.pdf) (accessed April 1, 2009).

<sup>46</sup> Communications Commission of Kenya, <http://www.cck.go.ke/html/pressreleases.asp?newsid=248&area=new&arch=1&year=2008> (accessed April 1, 2009).



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