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BRIEFING PAPER

KEY LESSONS FOR MOBILE FINANCE IN AFRICAN AGRICULTURE: THREE CASE STUDIES

INTRODUCTION

The widespread use of mobile phones and the growing availability of mobile-based financial services in developing countries have generated significant interest within the development and private sectors. These technological advances can contribute to the reduction of poverty and benefit those at the "base of the pyramid" (BoP) while presenting the BoP as an attractive, high-volume market segment for mobile network operators (MNOs) and technology firms. This paper focuses on how mobile finance, specifically mobile money transfer (MMT) and mobile banking, can benefit agricultural value chains and farmers in sub-Saharan Africa.

How mobile finance can support growth in agricultural value chains. Mobile finance can promote increased investment in value chains by providing a cheaper, more efficient, traceable and transparent payment method for high-volume, low-value transactions. A quicker, safer and more efficient transaction channel allows the value chain as a whole to better meet market demand. Using mobile technology can facilitate more widespread access to agricultural financial services by reducing the administrative costs to financial institutions and providing more accessible repayment and savings options for customers. MMT also allows agribusinesses to offer farmers more financial services, such as payments into savings accounts or electronic vouchers for inputs and services.

The development of a mobile financial services ecosystem can additionally open up business opportunities for buyers, traders, input dealers, service providers and farmers.[1]

This briefing paper reviewed the recent body of knowledge on mobile finance and looked at three business models in sub-Saharan Africa: Zoona in Zambia (formerly MTZL), SmartMoney in Tanzania and Opportunity Bank Malawi (OBM). It considers the following questions:

- Does mobile finance reduce costs and time delays for farmers and agribusinesses?
- Does mobile finance help smallholder producers and agribusinesses increase their sales and/or income?
- Does mobile finance increase farmers' access to and use of inputs, business services and financial products?
- Do mobile transactions provide additional information on the credit worthiness of farmers?[2]

Methodology. This briefing paper was informed by interviews with senior managers at three mobile finance service providers as well as secondary sources. The paper focuses on the features of the various mobile finance solutions, the business case for the different products and the anticipated benefits for value chain actors. Finally, it looks at the lessons learned and how they apply to the definition and understanding of value chain finance.

[1] Kendall, J., Machoka, P., Veniard, C., Maurer, B. (2011, May). An Emerging Platform: From Mobile Money Transfer System to Mobile Money Ecosystem

[2] Bold, C., Porteous, D., Rotman, S. (2012, February). Social Cash Transfers and Financial Inclusion: Evidence from Four Countries. CGAP Focus Note No. 77.

TERMINOLOGY

Mobile Money Transfer. (MMT) is a service whereby a user can transfer funds to other users and/or make payments to third parties. A recipient can receive electronic vouchers, store funds on their "mobile wallet" for further transactions and/or convert the mobile money into cash. MMT can bring financial services to the rural "unbanked" in a cheap, quick, convenient, traceable, transparent and safe method. It does not require the user to have a bank account, but allows users to store value on their mobile wallet. The total stored value in the MMT "ecosystem" of m-wallets and agent accounts is secured by the equivalent amount in a bank trust account.

Common types of transfers are:
P2P – Person to Person
B2C – Business to Customer
C2B – Customer to Business
G2P – Government to Person

Mobile Banking includes all mechanisms that allow customers to do banking activities (balance check, depositing, withdrawing or transferring funds) via alternative delivery channels such as point of sales (POS) machines, ATMs, internet banking and **mobile phone banking**. This can increase a bank's outreach due to lower capital and operating expenditure. The customer benefits from 24-hour service and reduced time and cost of going to branches.

BACKGROUND

Agriculture is usually the most significant employer in developing countries and contributes a large percentage of foreign exchange earnings and gross domestic product (GDP). Increasing investment in agriculture as a means of reducing poverty and improving food security is a key component of the U.S. government's Feed the Future initiative. Increased access to payments and finance for the BoP has the potential to expand opportunities for private investment as a means to strengthen and diversify agricultural value chains; however, a significant financial inclusion gap remains, as shown by research done by The Global Financial Inclusion (Global Findex) Database.[3] Traditional barriers to financial inclusion include:

- Limited accessibility of financial institutions, leading to prohibitive costs (especially in rural areas);
- High operational costs on low-value transactions;
- Capacity constraints of smaller, less-sophisticated institutions;
- Disparity between male and female access to collateral and social capital; and
- Low levels of creditworthiness due to lack of collateral, low financial literacy and lack of financial identity.

Mobile banking and mobile money transfer have the potential to overcome these barriers by providing financial services in a convenient, transparent, auditable and safe manner to the rural poor, who are disproportionately disadvantaged by the inaccessibility of appropriate financial services.

The MNO-Led MMT model. The most well-known MNO MMT model is Vodafone group's M-PESA in Kenya and Tanzania.[4] [5] Many other MNOs deploy MMT platforms, and their levels of operational implementation and sustainability vary. [6] MNOs are only now beginning to think in terms of segmenting their markets, so there are currently no MNO-led MMT models that specifically serve agricultural value chains. [7] There is, however, the potential for an agribusiness, like any other business, to open a merchant account with an MNO. For example, Mace Foods in Kenya opened a merchant account with M-PESA in January 2010. They now make 100 percent of their payments to farmer M-PESA mobile wallets, which has substantially reduced costs and improved accurate accounting and data records.[8]

The MNOs' biggest assets are their existing customers, distribution channels, brand identities, and airtime agent networks (who can also sometimes act as mobile money agents). For MNOs, mobile money is a new revenue stream, built on an existing infrastructure, which targets the "low-hanging fruit" of P2P transfers. MNOs generate revenue through various fees, primarily cash out and collection. They also save on operational costs from reduced churn.

While MNOs provide a reliable transaction infrastructure, it is up to partner businesses (e.g., agribusiness firms), and in some cases nonprofit organizations, to manage the process of transitioning their payments from cash to MMT. Given their focus on scaling up to reach a broad consumer base, MNOs may not be willing to invest the time and money to give technical assistance to such organizations.

The "Third-Party Provider" model. An alternative MMT solution is the third-party provider model, which focuses on B2C payments (e.g., lead firm payments to contract growers) within existing ecosystems. The third-party provider provides a transactional platform. It also offers change management technical assistance to client businesses and organizations. This can include modification of existing internal processes and procedures to take into account mobile money operations. The third-party also develops an agent network (or strengthens an existing network) to support cash-in and cash-out transactions. Mobile money agents can be embedded in existing agricultural infrastructure, such as cooperatives, warehouses, and input suppliers. By using mobile money, the agribusiness can benefit from:

- Reduced cash-handling costs, risk and fraud;
- A more transparent and traceable audit trail;
- Reduction in capital and operating expenditure;
- Increased outreach and field officer efficiencies; and
- Quicker and more accurate management reports.

Agribusinesses can potentially get the same benefits from the MNO-led model, but the difference is that an agribusiness partner would likely not receive the same level of support from an MNO. Those that use mobile money as part of their core operations effectively "push" mobile money into the ecosystem, thereby helping to build out the critical agent network.[9]

The hypothesis behind the third-party provider model is that as B2C transactions increase, P2P transactions will grow organically. By contrast, the MNO-led model focuses on first building out P2P payments with the belief that B2C payments will naturally follow. Of course, how each of these hypotheses eventually unfolds will vary by country and circumstance.

While essentially providing the same transactional platform as an MNO, the third-party provider can target agribusiness lead firms that work directly with many smallholder farmers in remote communities. The lead firm is

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[3] Demirguc-Kunt, A., Klapper, L. (2012, January). Measuring Financial Inclusion: The Global Financial Inclusion Index

[4] Camner, G., Sjoblom, E., Pulver, C. (2009, January). What Makes a Successful Mobile Money Implementation? Learnings from M-PESA in Kenya and Tanzania data sheet

[5] Benlamlih, M. Butt, S., Turecek, D. (2011, Sept – Nov). Tanzania Mobile Money Tracking Study.

[6] Davidson, N., Penicaud, C., (GSMA). State of the Industry: Results from the 2011 Global Mobile Money Adoption Survey

[7] Dalberg (2012, January). From Market Opportunity to Sustainable Business: Market Segmentation and Sustainability in Haiti

[8] USAID (2012, February) ICT and Ag Profile: Mace Foods.

[9] Flaming, M., McKay, C., Pickens, M. (2011, February). Agent Management Toolkit: Building a Viable Network of Branchless Banking Agents

able to make larger numbers of small transactions at a lower cost through a system that provides transparency and traceability.
The following case studies illustrate how various agriculture value chain stakeholders are benefiting from third-party provided mobile financial services.

ZOONA

Mobile Transactions Zambia Limited (MTZL)—now called Zoona—was founded by brothers Brad and Brett Magrath in 2008. From the beginning, Zoona aimed to provide easy, quick, and safe transactional services for the unbanked in the agricultural sector.

Zoona focuses on building reliable, cash-in/out networks and facilitating B2C and B2B payments. They provide technical assistance to client businesses and design tailored, end-to-end solutions that meet their specific needs. On a monthly basis, the Zoona platform supports 50,000 transactions valued at $3.5 million and reaches over 60,000 people.

With the support of USAID's PROFIT project, Zoona designed and piloted a cashless payment system for small-scale cotton farmers that supply Dunavant Zambia Ltd. Originally the payments were paid to m-wallets, but because of illiteracy and financial illiteracy constraints they decided that an e-voucher platform—which are used like pre-paid debit cards—was more viable to implement than an m-wallet platform. PROFIT provided Zoona several tranches of funding totaling $280,000, as well as targeted technical assistance on the regulatory framework.

The twin objectives of the PROFIT grant to Zoona were to foster innovation in agriculture value chains and to reduce the cost of transactions with thousands of farmers. Zoona was built with a focus on the rural unbanked and addressed the barriers to financial inclusion for the farmers. In particular, they worked with outgrower schemes to develop MIS software, microfinance solutions for payments/repayments, solutions for rural remittances, e-voucher payments, and savings mechanisms for agricultural inputs linked to farmer cash flows.

Zoona operates primarily by sending electronic vouchers to farmers' mobile phones; the vouchers are then redeemed for either cash or inputs. Zoona can also transfer money to an m-wallet if the farmer has one. Vouchers are redeemed at input suppliers or at cash-in/out agents depending on the type of voucher. Nonprofit organizations and agribusinesses can use this service to more efficiently provide goods or cash to individuals in remote locations.

Several improvements have resulted from the integration of mobile money into the value chain. Most notably, there is increased information for the agribusinesses about farmers. This allows agribusinesses to impose greater accountability in their system and make evidence-based decisions on whether to work with a given farmer. It is also important to agribusinesses to keep farmers inside an outgrower scheme and to prevent side-selling. Agribusinesses can use the information Zoona's service provides to reward farmers who have a strong record of performance and avoid working with farmers who consistently underperform or try to cheat the system.

Farmers value the increased security of their e-voucher payments. Paper vouchers are more easily lost or damaged than a phone, and they cannot be replaced. Zoona also negotiates with local retailers to provide discounts (typically 2-10 percent, depending on products) to participating e-voucher farmers. In addition, farmers build their financial identity when storing value, in order to invest in productive assets like inputs, which can increase their future access to credit.

Input suppliers (and other retailers) increase business opportunities, carry less cash risk and have improved recordkeeping. Input dealers can also use this increased transparency to improve their relationship with wholesale suppliers via the new Zoona supply chain management platform, which strengthens vertical linkages in the value chain.

The success of Zoona's B2C/B2B business model attracted $4 million in private investment in February 2012. This has supported a larger team, improved functionality of the platform and led to the expansion of the Zoona platform into Zimbabwe and Mozambique, with Malawi planned for 2013.
Zoona is also one of only five of Kiva's non-MFI partners. Zoona agents now have access to Kiva loans for their initial liquidity and other start-up costs.[10]

The following are some of the key factors behind Zoona's success:

- Reliable agents in rural areas where agent liquidity has historically been a challenge. Liquidity challenges were overcome by creating "champion agents" who are given an extra level of financial support in exchange for Zoona exclusivity, as opposed to "typical" MMT agents (e.g., fast-moving consumer goods kiosks) where mobile money is only one of the revenue streams. Zoona also links champion agents with Kiva for start-up loans and trains them on accounting and liquidity management to ensure capacity;
- Promotion of consumer awareness and consumer education and financial literacy about mobile money;
- A transactional platform that can be quickly adapted to customer demand because of proprietary software that allows for customization;
- Inclusion of microinsurance as a value-added service, to make premium payments and make distributions of claims; and
- A keen understanding of how theft and fraud occur at points along the value chain and how to avoid them.

SMARTMONEY

SmartMoney is a third-party provider, founded by Michael Spencer in 2010, that has developed a proprietary mobile money service for lead firm agribusinesses to use to initiate cash-free transactions with smallholder farmers.

[10] Kiva is a not-for-profit organization that uses the internet to channel investments by individuals into microfinance loans through local MFIs.

Lead firms, often large buyers, establish a SmartMoney account and use mobile money to transfer working capital to their intermediary buyers. These intermediary buyers in turn buy crops from farmers and pay with mobile money transfer into farmer's m-wallets. The lead firm agribusiness manages the operational aspects of the SmartMoney system. They also register m-wallet accounts for the farmers as well as the intermediaries and provide training on the user interface and functionality of the SmartMoney wallet.

A cotton ginnery, for example, needs to source large quantities of cotton from many small farmers. Because of the high number of small farmers, they rely on intermediary buyers to aggregate purchases. Once SmartMoney accounts are opened at the lead firm, intermediary and farmer points of the value chain, the intermediary requests the working capital from the lead firm immediately in advance of purchasing the farmers off-take. By doing so, the ginnery reduces cash handling costs while creating a transparent and traceable audit trail for each transaction in the value chain.

A key aspect of the model is that SmartMoney itself reduces its own operational expenses by leaving it to the lead firm to manage the back-office tasks as well as registering and providing training for new accounts. As such, this is less of a vendor/client model and more of a partnership model that presents the lead firm with the option to become an equity owner of SmartMoney. Employees from the agribusiness partners—as well as the independent intermediary/buyers—already work in the villages and are trusted by the local population. Another key aspect is that SmartMoney provides training of trainers to its partners. They in turn train their employees and intermediary buyers, each of whom must be trusted individuals at the village level. These individuals provide SmartMoney training to farmers as well as the village cash agents. By contrast, in the vendor/client Zoona model, agents are trained directly by Zoona.

Farmers often receive the majority of their income from lead firm buyers in only one or two transactions throughout the season. SmartMoney allows farmers to store cash in their mobile wallet and spend it throughout the year. This informal savings mechanism increases their financial security and encourages longer-term planning for investments and emergencies.

SmartMoney is currently partnered with six cotton ginners in Tanzania representing 50% of all cotton production. In Uganda, they are partnered with the Ministry of Industry, Trade & Cooperatives to introduce SmartMoney to their 13,000 cooperatives throughout the country. The ministry has identified a small pilot team that will be working with SmartMoney local staff to travel around the country registering 3,250 pilot participants with 20 cooperatives and SAACOs involved in coffee, maize, fish, fruit and dairy.

SmartMoney demonstrates the viability of—and market for—mobile money along the value chain. They maintain a low-cost model by piggybacking on existing infrastructure in two important ways. The first is their reliance on lead firm partners for the operational platform and farmer interface. The second, a standard industry practice in telephony, is their use of an unstructured supplementary service data (USSD) aggregator to ensure access from all MNO networks (Zoona also uses a USSD aggregator). For lead firm partners, the fees paid to SmartMoney (5 percent) tends to be less than the cash handling costs for transportation, security and theft, which typically accounts for 7-20 percent of annual turnover.

SmartMoney's initial funding of $500,000 was the founder's personal investment. The company says that it is committed to the long-term implementation of the project and is pursuing a broad array of short-term and long-term funding options from foundations, local banks and private investors. It hopes to be self-sustaining from revenue generation by 2014.

OPPORTUNITY BANK

Opportunity Bank Malawi (OBM) is a commercial microfinance bank owned by Opportunity International. In Malawi, they occupy a unique space in the local financial system. Unlike MFIs, they take deposits. They also target Malawian populations in semiurban and rural areas where the commercial banks do not operate. The bank is consistently profitable and currently has more than 350,000 clients.

Agricultural finance. OBM provides agricultural loans to farmer groups as either cash or in-kind inputs. Loans that are in-kind inputs are done through extension service providers (ESPs), so called because they provide agricultural extension services, in addition to their contract farming purchasing role.

The OBM loan decision is facilitated by collecting individual farmer data (size of plot, crop history, etc.) using mobile devices as well as a customer relationship management (CRM) tool that cross references loan repayment histories.

The ESP is responsible for collecting loan repayments from farmers, similar to the contract farming mechanism. Each farmer has an OBM savings account and, at the time of sale, the ESP calculates the net balance due to the farmer after the loan is repaid. Meanwhile, the farmer can conveniently view their balance levels throughout by using OBM's mobile banking service.

Mobile banking. OBM started piloting a mobile banking service called Banki Manja in 2009. They also offer Banki Mkhonde, a network of POS machines located nationwide in Kalima Gold input depots. There are two benefits to OBM for providing these mobile banking services. The first is that access fees provide a new revenue stream for the bank. The second is that alternative delivery channels expand their geographic reach into rural areas while decongesting their physical branches.

There are also two benefits to farmers who use OBM's mobile banking. The first is that they can verify that a payment has been deposited into their savings account without having to travel to a distant bank branch. The second is that alternative delivery channels, like POS machines, enable farmers to withdraw cash at more convenient locations (such as input supply stores, warehouses, and

kiosks). OBM's mobile banking model also mitigates the risk of theft when traveling with cash in remote areas.

OBM's services are also targeting one of the most common recurring challenges when financing contract farming mechanisms: side-selling and accountability. Mobile banking helps to mitigate the risk of side-selling because of its transparency and documented transaction history. This transaction history "performance log" builds a relationship of trust between lender and borrower. Once this relationship is built, the farmer is further motivated to maintain a favorable transaction history. OBM is also able to make improved decisions about individual farmers to work with based upon their own data and data provided by the ESP. OBM reports that its mobile banking service has proved popular among farmers, with the main advantages being convenience and speed.

As of August 2012, Banki Manja had 27,259 transactions/queries and Banki Mkhonde had 2,871 transactions.[11] OBM attributes these low transaction volumes to the frequent telephony service interruptions rather than any lack of demand for mobile banking service by their borrowers. In anticipation of MNO investment to improve their telephony service, OBM has drawn the following lessons learned from its pilot:

- A mobile banking platform can reduce average transaction costs and lower capital investment costs while generating new fee revenue for the bank. For the borrowers, transaction costs are significantly lowered because frequent travel to distant branches is no longer required;
- A mobile banking platform can further the scale, scope, and impact of the traditional contract farming mechanism that links lender, buyer and farmer. Such mechanisms mitigate lender risks and administrative costs associated with servicing high numbers of individual farmers[12]. OBM's ESP partnership model enables agricultural credit and their mobile banking services to further streamline the contract farming mechanism; and
- Linking ESPs with the bank's CRM and core banking system can provide a more detailed financial identity to improve credit decisions.

THE ROLE OF DONORS AND DEVELOPMENT PRACTITIONERS

Mobile technology has the potential for large scale, sustainable development impact. In agricultural value chains, the usage of mobile phones can reduce the cost to agribusinesses working with large numbers of small farmers and support increased investment in rural areas.[13]

The third-party providers and financial institution profiled in this briefing paper have demonstrated the return on investment (ROI), or upcoming ROI, for mobile finance embedded into agricultural value chains. These market leaders have paved the way for increased private investment and innovation in this area. Donors can play a significant role in accelerating this private investment and innovation by sharing the risks of the adoption and expansion of mobile financial services through direct investment and grant funding coupled with rigorous evaluations to assess actual impact on access to financial services for the poor. Donors and other development facilitators can also think creatively about how to integrate mobile finance into their agricultural development programming similar to the models reviewed in this brief. Examples of donor support include:

- USAID investment of $280,000 in Zoona (MTZL) to support a pilot mobile payments system for cotton growers supplying Dunavant. This pilot helped demonstrate the business case for Zoona services and eventually attracted $4 million in private investment;
- Research and reports such as USAID's Mobile Financial Services Risk Matrix[14] and USAID-FSShare's library of documents on mobile money and banking;[15] and
- Donor support for Opportunity International's mandate for greater financial inclusion has enabled them to test the commercial viability of adding mobile banking to OBM's existing agricultural lending model.

As more transactions are done over mobile phones, MNOs and third-party providers will be more incentivized to increase their mobile money business and support agent network growth, thus increasing the availability of mobile financial services to the rural farmer. The most exciting aspect of these cases is that diverse commercial actors are building upon already-available market and ICT infrastructure (thus not reinventing the wheel) and are showing creativity by exploring various win-win business models based on that infrastructure. As a result, private investors will increasingly pay attention to markets they previously saw as unprofitable.

Development practitioners should closely consider the profile of cash transactions in any country they plan to use or support mobile finance in. A review of transaction volumes and costs and other cash usage behavior patterns (e.g. location, frequency and more) at stages throughout the value chain can help make the business case. These cash usage behavior patterns can be surveyed during baseline studies or separate market research can be undertaken. Such research can inform the strategic approach, creation of partnerships with banks, MNOs or third-party providers and the design of programs that will lead to increased competitiveness of agricultural value chains while lowering transaction costs for farmers.

[11] OBM (2011). Market Research on consumer understanding of branchless banking

[12] Dahlberg (2012, September). Catalyzing Smallholder Agricultural Finance

[13] Vodafone (n.d.) Connected Agriculture - The role of mobile in driving efficiency and sustainability in the food and agriculture value chain

[14] USAID (2010, July). Mobile Financial Services Risk Matrix

[15] USAID/EGAT (2008 – 2011) Mobile money documents

CONCLUSION

This briefing paper described how mobile payment and banking technologies are being applied within agricultural value chains in new and innovative ways. It also assessed how mobile technology, specifically mobile money transfer and mobile banking, can benefit agribusinesses and farmers in sub-Saharan Africa. This paper began by asking four questions regarding costs, income, access, and credit worthiness. The Zoona model lowered costs for the cotton lead firm Dunavant, provided discounts to farmers while increasing their access to inputs, reduced side-selling and improved the recordkeeping and sales of input suppliers. In return for a 5 percent fee, SmartMoney reduces the 7-20 percent of annual turnover cash handling costs. The service is free for farmers to use and provides a traceable audit trail, as does Zoona and OBM, that helps to create a financial identity and history to determine credit worthiness. OBM also reduced side-selling and reduced their loan disbursal/repayment costs while mitigating their lender risk. In addition, OBM lowered the transaction costs for, and in some cases state that they have increased the productivity of, farmers who no longer need to travel to distant branch locations.

An underlying characteristic of any mobile finance platform is that it transitions the farmer and other value chain stakeholders out of informal (cash-based) economic activity into the formal economy. It is because of this characteristic that each of these questions can be answered in the affirmative. The lessons learned from Zoona, SmartMoney and OBM reveal increased security and transparency throughout the value chain. Transaction and other histories provide data that can reveal the creditworthiness of farmers. Documented and transparent transaction histories reduce side-selling by contract farmers. Finally, reduced costs increase income and opportunities for farmers and agribusinesses, thereby making value chains more efficient and effective.

Mobile money and mobile banking serve the development objective of encouraging sustainable investment in agriculture in sub-Saharan Africa. Applying mobile finance in agricultural value chains is still at a nascent stage and will need funding and technical assistance to continue innovation, learning and expansion. Meanwhile, there are a number of mobile finance-related innovations on the horizon, such as microinsurance, alternative credit scoring, near field communications (NFC) and more. These are reviewed more closely in the USAID-FACET briefing paper "Using Mobile Finance to Enhance Agriculture in Africa."

RESOURCES

For much more literature and other resources on this topic please go to CGAP (www.cgap.org), GSMA (www.gsma.org) and the Bill and Melinda Gates Foundation (www.gatesfoundation.org) and:

Furuholt, B., Matotay, E. (2011). The Developmental Contribution from Mobile Phones Across Agricultural Value Chains in Rural Africa

Aker, J. (2010, October). Dial "A" for Agriculture: Using Information and Communication Technologies for Agricultural Extension in Developing Countries

GIZ (2011, April). Financing Agricultural Value Chains in Africa: A Synthesis of Four Country Case Studies

USAID (2012, November). Using Mobile Finance to Enhance Agriculture in Africa

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