



Knowledge, evidence
and learning for
development

Establishing Mobile Money Systems

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Questions

- *What lessons learned are available regarding establishing mobile money systems in contexts where the banking system is really weak and/or in conflict-affected areas (esp. for instance OPTs, Somalia, and Jordan)?*
- *What are the main challenges and how were they overcome?*

Contents

1. Summary
2. M-Pesa in Kenya
3. Government cash transfer programme in Haiti
4. Trust and disputes in Somaliland
5. Merchant adoption of mobile payments in Jordan
6. Tax effects in Uganda
7. Regulation
8. Agents
9. References

The K4D helpdesk service provides brief summaries of current research, evidence, and lessons learned. Helpdesk reports are not rigorous or systematic reviews; they are intended to provide an introduction to the most important evidence related to a research question. They draw on a rapid desk-based review of published literature and consultation with subject specialists.

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1. Summary

The main priority for selecting information for this rapid review was description of mobile money system level operations, rather than social impact. Little was identified on this focus from fragile and conflict-affected states. There was considerably more technical detail in the literature to explore on mobile money set-up and regulation than was allowed within the scope of a rapid review. The research included spans the last decade, as the topic seemed to be written about particularly in the earlier half of the 2010's when mobile money was being initiated more widely.

Establishment of a mobile money platform requires initial investment which grows slowly at first, then requires critical mass for it to take off. The literature discusses different levels of regulation. There emerges the need for a balance between requiring regulation for effective functioning and trust, and having regulation relaxed so that barriers of entry to the market are low. The World Bank recommends phasing regulations and prioritising core standards to start off with and then, when operators are established, introducing tighter regulations for future functioning (Musuku, 2018). Most importantly there must be initial safeguarding of consumer funds and consistent service delivery. After this is established, consumer protection and data privacy can be implemented followed by effective reporting systems. Strict regulation for agents can impede mobile money system establishment.

A functioning agent network, actors dealing with taking and distributing cash, is a critical part of mobile money systems. Sufficient agents are required for systems to get off the ground and must grow in line with user demand. Customer uptake depends on trust and low-costs. Marketing investments are important to establish the group uptake required. Agents need training to operate effectively in a new system, as do customers.

The case study of M-Pesa in Kenya is described in Section 2, largely touted as the most successful mobile money network to have been established in Africa. Customer uptake is high due to a wide distribution network, trusted brands and low-cost transactions. Limiting transaction size in Kenya reduced the need for strict monitoring for money laundering. The regulatory environment was favourable; support was given by the Central Bank as it was recognised that M-Pesa was not conducting bank business. Other countries which have had problems with the banking sector are concerned about their business and feel threatened by mobile money systems.

Beneficiaries of mobile money programmes in the emergency response in Haiti (Section 3) needed product orientation and training. Some also needed handsets. The emergency response required rapid computerised registration, which was challenging to fulfil. To respond more quickly and effectively, a reduced registration requirement was put into effect for small amounts of cash. This flexibility allowed ensured the right level of protection for different sized transactions.

Different issues are reported on through country examples in this report. The importance of trust and the workings of dispute settlement are described in the context of Somaliland in Section 4. Disputes that arise in mobile money systems are fraud and theft (including password theft), transferring money to the wrong phone number, and parties denying the existence of a transfer (or disagreeing with the amount transferred). Disputes are resolved in Somaliland largely through traditional clan mediation. The experience in Somaliland also introduces the benefits and issues of mobile money transactions in US dollars rather than local currency.

The levels of taxes applied to transactions affects mobile money usage. Research from Uganda (Section 5) found that the effect of a government tax of 1% on deposits, withdrawals, transfers and payments rapidly reduced person-to-person transactions and overall values of transactions. It also reduced agent earnings by 30-40% and reduced savings deposits.

Research from Jordan identified the need for merchant adoption of mobile payments (Section 6) and identified barriers including lack of incentives for merchants, lack of awareness among users, technological problems, and policy barriers. Recommendations are outlined for payment service providers, domestic policy makers and donors.

Interoperability between different mobile money providers is useful but can increase costs to users considerably. Interoperability is enforced to encourage competition but raises barriers to entry. This is discussed within the context of Rwanda in Section 7.

Section 8 draws together further information that was identified in the search as of interest on regulation and Section 9 provides further examples of experience with agent networks.

2. M-Pesa in Kenya

M-Pesa¹, the largest mobile money network in Africa, was started in Kenya in 2007 by Safaricom. The Central Bank of Kenya made steps to change the regulation to allow non-banks to operate in the financial system (Muthiora, 2015). M-Pesa achieved rapid success reaching around 65% of households by the end of 2009 (Jack & Suri, 2011). The service allows users to deposit money into an account on their mobile phone which they can send balances from and redeem deposits. Safaricom emphasises that M-Pesa is not a bank but operates in parallel with the banking system. Those who use Safaricom SIM cards register with an official form of identification. The commodity is called e-float or e-money, and is measured in the same units as money. Deposits are free but withdrawals carry a small tariff. E-float can be transferred to another's account and was originally used for remittances, but then became used for goods and services. Network coverage is required and has been expanded across the country.

To ensure low-risk of the money transfer service there were limits on: transaction size, amount of transactions per day, and maximum allowed balance (Muthiora, 2015). Compliance was monitored and reporting was required.

An extensive network of agents facilitates purchase and resale of e-float (Jack & Suri, 2011). Agents receive a commission for deposits and withdrawals made by M-Pesa users. Agents hold e-float on their phone and hold cash on their premises. They need to predict e-float needs and maintain high security. There are three different models of agent groupings: 1) One member of the agent group deals directly with M-Pesa and owns subsidiary agents who manage transactions with them; 2) The aggregator model is the same as model 1 only agents can be independently owned. The aggregator deals directly with M-Pesa and has a contract with agents, and 3) A bank branch, known as a "super-agent", works as an agent for agents trading cash and

¹ M standing for mobile, Pesa is Swahili for money

e-float. The bank does not trade e-float with M-Pesa customers. Users sometimes experience delays if the network is down or when agents do not have the cash.

The successful rapid customer uptake was due to a wide distribution network at the grassroots level, trusted brands, and low-cost transactions (Muthiora, 2015). The Central Bank created a regulatory environment which incentivised service providers to make investments, whilst at the same time not being burdensome or prescriptive with requirements. Initially the scheme was allowed to proceed on an experimental basis. The Central Bank allowed M-Pesa to go ahead when it realised it could legally operate a mobile-money business without conducting bank business, the risk management structure was adequate for consumers, and the pooled trust account in a commercial bank ensured that no intermediation could be possible (Riley & Kulathunga, 2017). The National Payment Systems Regulations has codified many practices² and addresses competition, interoperability, consumer protection and governance.

Muthiora (2015) highlights the positive results that can emerge when a public sector authority, i.e. the Central Bank of Kenya, enables socio-economic development. The Central Bank wanted to assure system security, and the Safaricom application was reviewed by a team from the Central Bank including experts from the Banking and National Payments department, Bank Supervision, and the Legal department. Issues with M-Pesa in Muthiora (2015) include: excessive taxation, lack of deposit insurance, and prohibition of interest accrual.

3. Government cash transfer programme in Haiti

A Humanitarian Practice Network blog by Sossouvi (2012) describes mobile money innovation in Haiti in response to the earthquake emergency. Donors introduced a competition to encourage the launch of mobile money services due to lack of existing financial infrastructure in 2010. The Banque de la République d’Haiti responded and accelerated the regulatory guidelines. They introduced a flexible approach with a ‘Know-Your-Customer (KYC) system’. Under this tiered system, subscribers could store a small amount without registration (other than the registration required for obtaining the SIM) and higher amounts required full identification. Non-government organisation (NGO) cash-for-work programmes paid within the lower tier amount.

Following the regulatory guidelines two schemes emerged. One from Digicel and Scotia Bank called Tcho-Tcho mobile, and one from Voilà and Unibank called T-Cash. In 2011 Mercy Corps used T-Cash for its food assistance programme, HelpAge International used it for a mobile pension programme, Oxfam used it to support disabled people in camps, and the Catholic Relief Service used it to pay construction workers. World Vision used both T-Cash and Tcho-Tcho for an m-payment safety programme. Money is placed in the respective NGO account with e-money through a bank transfer from the national bank account. Then programme managers send payment notifications to beneficiary mobile phones. Beneficiaries go to an agent to collect the cash. Being able to store cash safely on a mobile was a benefit so that not all the money is needed to be withdrawn. Risks and cost are also reduced for the NGOs.

² <https://www.centralbank.go.ke/images/docs/legislation/NPSRegulations2014.pdf>

Use of mobile money programmes in emergency response required a large institutional shift which was a challenge as some emergency providers and cash transfer professionals resisted the new technology. Commitment was needed at all institutional levels. Some beneficiaries lacked handsets, so programme managers had to decide whether to give out handsets. Product orientation and training for beneficiaries was important. The supply side, cash distribution agents, had to be built at the same time as the demand side. It was difficult to build at the pace required for the humanitarian agencies.

In the Haiti government-led cash transfer programme Ti Manman Cheri, money was transferred using mobile money through Digicel's TchoTcho Mobile product. Recipients can withdraw or deposit money only with TchoTcho agents and specified partners (Zimmerman et al., 2014). Digicel were closely involved in the design and initial roll-out of the payment scheme. Digicel's mobile money network was not as strong as required outside of the capital for the large scale-up that was asked for. Another payment provider was brought in - Unitransfer, a subsidiary of Unibank³, which had to make cash payments. Digicel charged 3% for payments whilst Unibank charged 11%.

There were problems with computerised registration. Staff could not work quick enough for the crowds that showed up to register. Errors were identified in recipient information and the recipient was hard to trace to correct the information. There were inconsistencies and data errors between Digicel and government information so many payments were rejected.

4. Trust and disputes in Somaliland

The main types of dispute that occur with mobile money platforms are: 1) fraud and theft, including password theft and unapproved transfers; 2) mistaken transfers, including sending money to the wrong number, and 3) disagreements on payment, when a party denies the existence of a transaction or the amount transferred (Stremlau & Osman, 2015).

Qualitative research on mobile money in Somaliland describes trust and dispute resolution within a social and government structure based on personal relationships and clan affiliations (Stremlau & Osman, 2015). Xeer law, which regulates interactions and prevents disputes escalating into violence, is based on arrangements between clans and is biased towards the more powerful.

Zaad is the dominant mobile money service and was launched in 2009 by mobile phone company Telescom. It was developed on trust-based networks with a framework grounded in Xeer law. Trust in Zaad was found to be relatively high though some feel they have no choice but to use Zaad with social pressures and the network effect. Customers prefer the safety of holding money in mobile wallets than in cash. Consumers have less trust when it comes to savings rather than transactions. Customers also lack trust in digital records and have privacy concerns. International privacy regulations are becoming more restrictive and putting pressure on in this area.

Customers reported being satisfied with the way Zaad responded to problems. Zaad has a system for reporting and freezing mistaken transfers which is usually resolved by the

³ The leading commercial bank in Haiti.

management. In the rare case it is not, Zaad refers it to the relevant authority including judiciary institutions, traditional elders and religious leaders. Clan leader involvement is dependent on the parties involved. Clan elders do not meditate with repeat offenders. Those without clan affiliations have to deal with the courts or police, which may involve fines or prison time.

Overall success is attributed to Telesom's business model and outreach strategy combined with Zaad's flexibility, popularity, and free transfers (Iazzolino, 2015). Zaad grew because it met the demand for US dollar currency. Users favour US dollars to cope with the volatility of the domestic economy. Common problems exist in reaching rural areas: less reliable network coverage, power outages, local perceptions of services, and requirement of an official identity card to use the service. Its main interaction with rural areas is use by farmers who travel to town on market days. The majority of rural inhabitants are subsistence farmers. The use of US currency creates a divide in urban areas between business people and NGO employees who use US dollars, and civil servants who are "stuck" within the Somaliland shilling economy (Iazzolino, 2015: 6). Zaad have started operating in shillings also, but uptake has been slow.

5. Tax effects in Uganda

In Uganda, over 30% of the population use mobile money and the industry has created over 200,000 jobs (Pasti, 2019). In July 2008, the government introduced a 1% tax on deposits, withdrawals, transfers and payments. Previously, only transaction fees were taxed. This rapidly reduced person-to-person transactions, by around 50% after 2 months, and the value of all transactions decreased by 25%. Agents' earnings declined by around 30-40%. Customers turned back to cash or agency banking. Banking deposits, account-to-bank transfers saw a decline as were mobile bill payments, use by savings and credit cooperatives, farmer microloans, and refugee transfers. The tax boosting measure has put the existing tax base at risk. The government has attempted to reduce the impact by reducing the tax to 0.5%. Pasti (2019) recommends lowering further or, instead, using mobile money to improve tax collection to meet fiscal targets.

Muthiora (2015) suggests that taxation of mobile money in Kenya is excessive. In 2013, the National Treasury introduced a 10% excise duty on money transfer which has been passed on the customers through higher transaction charges.

6. Merchant adoption of mobile payments in Jordan

The mobile payment system in Jordan, JoMoPay, began in 2012 with the Central Bank of Jordan requesting proposals for a switch to national centralised payments⁴. Currently there are five mobile payment providers⁵. JoMoPay was designed and implemented by a number of stakeholders including the Government of Jordan, private banks, financial service providers,

⁴ A computer-based software system where transactions are routed.

⁵ Zain Cash, Mahfazti, Dinarak, Aya and MEPS

development organisations (domestic and international) and donors. A review examining the development of JoMoPay finds that merchant⁶ adoption of mobile payments is important for increasing mobile money usage and for sustaining the current system (Nichols et al., 2019). Barriers to adoption identified include lack of incentives for merchant groups to use the system, lack of awareness among potential users, technological problems, and policy barriers.

The review recommends that payment service providers improve incentives for merchants; promote interoperability between service providers; partner with adopters to tailor products; improve feedback loops between agents, merchants, and end-users, and narrows the range of products to focus on core functions (Nichols et al., 2019). Domestic policy makers are advised to lower barriers to merchant and user account registration, make interoperability between providers mandatory, increase awareness of services, improve perceptions of data protection vulnerabilities, and ensure inclusiveness for refugee populations. The review recommends humanitarian agencies and donors to advocate for mobile money that is more inclusive for refugees, continue to incorporate mobile payments in to cash transfer programmes, and support digital financial literacy improvements.

7. Interoperability in Rwanda

Regulation in Rwanda mandates that payment systems be interoperable within one year of business. Interoperability in this context is the ability for customers to use one mobile money system to transfer to another. This is a significant challenge as it requires either a new system or one that runs parallel to the system in place (Argent et al., 2013). The high costs of interoperability will be passed to consumers who may not necessarily require interoperability, although it improves convenience. Interoperability encourages competition reducing the risk network effects, where customers are increasingly joined to the one network so that they can make payments to each other. Strict regulations such as this one in Rwanda also risk deterring potential operators from starting out or deter growth; the business requires a large initial investment with a long wait for returns. ‘Light touch’ regulations are recommended to get mobile money started.

8. Regulation

An article examining factors for success and failure of mobile money schemes in a number of developing countries finds that schemes which fail to ignite typically have heavy regulation, and insists that banks play a major role (Evans & Pirchio, 2014). A paper comparing the high rates of mobile money use in Kenya and the low rates in Mexico attribute the difference as largely related to regulation levels (Suárez, 2016). In Mexico, the financial sector sought to protect itself with a bank-led regulatory model. Kenya’s model was Mobile Network Operator-led which limited the impact of financial industry capture. Banks see mobile money as competition to their business (Stremula & Osman, 2015). Strict regulatory frameworks, for example in Nigeria and Egypt, allow

⁶ Any business selling a product or service.

few players to partake in the industry which results in low levels of investment and fewer innovative services (Pasti, 2019).

Evans & Pircho (2014) suggest that mobile money schemes were more likely to succeed where there was a lack of basic infrastructure as they are of more value, however this finding maybe somewhat compounded by the fact that poorer countries put less regulation in place.

Lack of regulation in Somalia has supported the growth of mobile money but makes it unreliable and carries risk for users who do not have customer guarantees as described in a London School of Economics blog (Majoka, 2019). There are also concerns about tax evasion, money laundering and the financing of terrorism. The World Bank SCORE⁷ programme is working with the Central Bank of Somalia to develop mobile money regulations. The World Bank recommends a phased approach to regulation prioritising safeguarding of consumer funds and uninterrupted service delivery (Musuku, 2018). A later phase would prioritise service delivery strengthening and innovation. Consumer protection and data privacy should follow shortly after. And finally, regulation for clear, consistent, and effective reporting.

In Kenya, Safaricom and the Central Bank of Kenya started by designing compatibility within existing legal frameworks which restricted intermediating M-Pesa customer funds (Muthiora, 2015). The Communications Commission of Kenya collaborated with the Central Bank of Kenya to formulate regulations in-line with telecommunication licensing.

In Nigeria, the regulator was the Central Bank of Nigeria. Mobile money was emerging around the time of the 2008 financial crisis so there was particular apprehension around allowing a dominant financial actor (as was the case in Kenya) (Lepoutre & Oguntoye, 2018). The regulatory framework for mobile payment issued in 2009 was prescriptive on which activities were allowed by which actors. There were also strict specifications of how actors should be positioned and how linkages between actors should work. Under licensing, mobile money operators had to comply with interoperability which was a large investment. As a dominant player did not emerge the growth of mobile money was slow. A lack of agents emerged due to barriers to registering so local aggregator agents were introduced.

Restrictive regulation of agents is thought to hamper mobile money in the Philippines (Riley & Kulathunga, 2017). All agents have to be registered with the Central Bank of the Philippines by providing appropriate documentation and must comply with the Anti-Money Laundering Act. Agents must attend anti-money laundering training seminars. The agents are mandated to retain records of sender information who must report source of funds. The agents are not authorised to open new accounts. These factors limit the scale-up of agent networks.

⁷ Somali Core Economic Institutions and Opportunities Programme.

9. Agent engagement

A higher density of agents (cash-in cash-out networks) is associated with greater success (Evans & Pirchio, 2014). However, too many create problems of sufficient liquidity and business generation (Pelletier et al., 2017). For growth, systems must attract both customers and cash-in cash-out merchants at the same time (Mas & Radcliffe, 2011). There is also a network effect: a number of people need to be on the network for it to be worthwhile for others to join. And customers need trust for this to build. There needs to be a rapid intake of customers which requires marketing and creating urgency.

The relationship between the cash agent and the 'master agent', the manager of and supplier of cash to the agents is important, noted by Pelletier et al. (2017) through research in Bangladesh and Tanzania. And similarly, between the master agent and the mobile payment system. Goals must be aligned and mutual information flows functioning with frequent meetings and training provision. Higher education levels of agents have positive effects on transactions but does not affect business expansion. Decentralisation as an organisational structure was more efficient when retail agents were more specialised in mobile payment and had a positive impact on performance. Agents who were motivated to use mobile payments to grow their business were associated with greater success.

Successful operators engage with regulators early on to understand the regulations and are forthcoming with information required by the regulator to show willingness to comply (Muthiora, 2015). They should be able to be agile in responding to changes in the regulatory environment.

Different countries have set different regulations regarding whether agents are allowed to serve multiple operators. This is allowed in Liberia, Tanzania and Nigeria but not mandated (Argent et al., 2013). India has banned exclusivity agreements which has led to a smaller network forming and to higher commissions. Forcing non-exclusivity for agents can create incentives that may raise the costs of a high-quality agent network.

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