Tonny Omwansa

M-PESA: Progress and Prospects

Innovations Case Discussion:
M-PESA

In *Innovations*, less than two years ago, Nick Hughes and Susie Lonie described how they conceptualized, piloted and, in 2007 launched, M-PESA, an award-winning money transfer technology based on mobile phones.[1] Much has happened since then.

This article looks further into what happened next, focusing on the local context and commenting on what the future might hold. I will try to demonstrate that besides the simple and innovative product, the characteristics of the local mobile telephony and banking sectors contributed greatly to the successful adoption and diffusion of the money transfer service. This is a good example of a service whose time had come and whose implementation occurred in the right context.

ABOUT KENYA

Kenya, considered an economic hub of East Africa, lies astride the equator. Tanzania lies to the south and Uganda to the west; to the southeast lies over 3300 miles of Indian Ocean coastline. In 2007, Kenya's population was estimated at 36,913,721 and its growth rate at 2.8%. More than a third of the population lives in urban areas; Nairobi, the capital, is the largest city, with approximately 3,000,000 people.[2]

Like people in many emerging markets, most Kenyans are not used to making electronic payments. At the national level, most transactions are in cash. A survey

Tonny Kerage Omwansa is a lecturer at the Faculty of Information Technology at Strathmore University in Nairobi, Kenya. He holds a BSc. in Computer Science from Nairobi, Kenya and MSc. Computer from Kansas, USA. Besides consultancy in technology issues, he has done extensive research in Mobile Transactions in Africa and published various reports including use of airtime transfers, mobile banking, virtual currencies as well as regulation of mobile transactions. His research interests are in mobile transactions, socio-economic impacts of technologies in emerging economies and role of technology in regulation. He is enrolled for a PhD pursuing economics of technology with an emphasis on regulation.

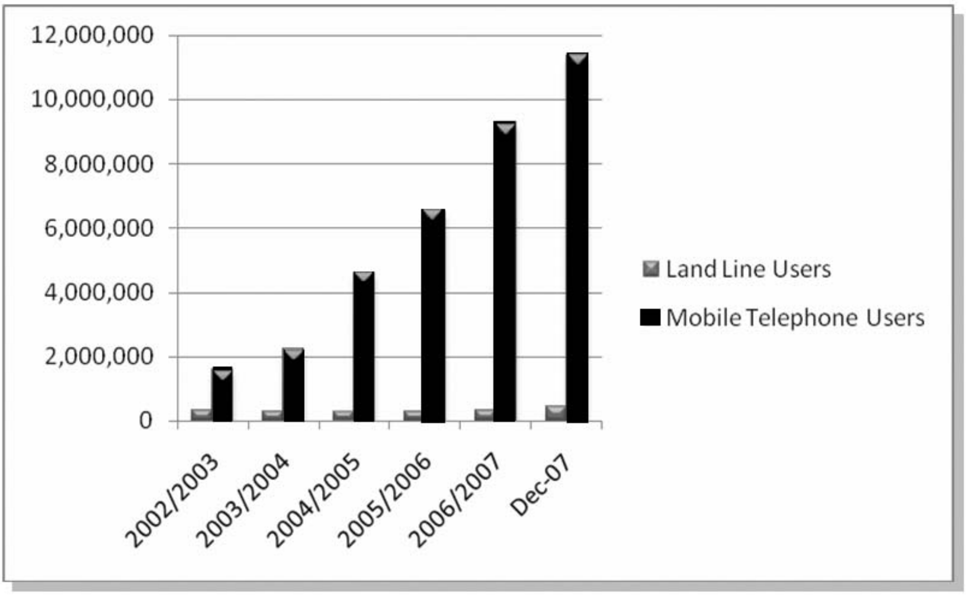

Figure 1. Growth of mobile phone and land line users in Kenya.
Sources: CCK website, June 2008; Safaricom prospectus for 2008

conducted by Research ICT Africa[3] established that over 80% of Africa's small to medium-sized enterprises (SMEs) conduct their transactions using cash.

TRENDS IN KENYA'S MOBILE TELECOMMUNICATIONS SECTOR

Until 1998, the Kenya Posts and Telecommunications Corporation (KPTC) was a monopoly providing all telecommunication services; it was established after the East African Community broke up in 1977. In 1998, Kenya's Parliament enacted the Kenya Communications Act (KCA 2008) to regulate the communications sector.[4] Based on the KCA, five companies were created from the KPTC:

- The Postal Corporation of Kenya (PCK), established under the Postal Corporation Act of 1998
- Telkom Kenya Ltd (Telkom), incorporated in April 1999 under the Companies Act of 1948
- The Communications Commission of Kenya (CCK), an independent regulator of all communications services in the country
- The National Communications Secretariat (NCS), a communications policy advisory think-tank within the Ministry of Information and Communications responsible for communications services
- The Appeals Tribunal set up to resolve disputes between operators or between CCK and the operators. It has three members: a chair, who should be an experienced advocate at the High Court of Kenya, and two technical experts, one from telecommunications and the other in postal services.

Although the KCA did not allow a monopoly—or even a duopoly—on telecommunication operations, the government granted Telkom an exclusive license for five years up to June 2004, to allow Telkom to adjust to a competitive business environment. Telkom was responsible for all local access, national telephone services, Internet backbone networks, and very small aperture terminals (VSATs) as well as all international gateway services. Today, it is still the only national fixed telecommunications services operator. In September 2007, Telkom was also granted a mobile license and began offering those services using code-division multiple access (CDMA) 2000 technology.

Mobile phone services in Kenya have operated as a duopoly with Safaricom and Celtel taking the lead since 2000. The original intention of the KCA—to liberalize telecommunications in Kenya—has largely been met. Growth was tremendous: from 17,000 mobile subscribers in 1999 to 11.3 million by December 2007.[5] In December 2007, France Telecom acquired 50% of Telkom Kenya and proceeded to launch its Orange brand in Kenya in September 2008. Now called Telkom Orange, it has rolled out and aggressively marketed its mobile services, which run on GSM (global system for mobile communication) technology. In November 2008 Econet was launched, bringing to four the total number of operators. Figure 1 shows how the number of both mobile phone and land line users has grown in Kenya over five years.

THE REGULATORY ENVIRONMENT FOR M-TRANSACTIONS IN KENYA

The growth in the mobile sector was primarily a result of the friendly regulatory environment the KCA created in 1998. However, KCA only regulates communications services; it does not address electronic commerce, mobile commerce, or mobile banking.

In 2006, the Kenya ICT Policy was published to promote electronic commerce and other electronic services such as mobile banking and mobile transactions.[6] But the country still lacked a clear framework for electronic transactions, which it needed to participate effectively in the new internet economy. It needed an appropriate and comprehensive information bill to address the specific details of electronic transactions including the critical laws for this sector. Though Kenya's government did publish the Electronic Transactions Bill of 2007 to address electronic commerce issues such as recognition of electronic transactions and electronic signatures, it has not enacted the Kenya Information and Communications Bill of 2007.[7] Many interested parties—including mobile operators, merchants, banks, entrepreneurs and consumers—want to see the accurate and inclusive ICT enacted soon, to enhance trust in electronic transactions and more specifically, mobile transactions.

M-TRANSACTIONS IN KENYA

Safaricom launched M-PESA in 2007. This innovation was not Safaricom's idea. It began at Vodafone, Safaricom's parent company in the UK, which was awarded funding from the Department of International Development (DFID to help develop a mobile phone-based system to improve access to financial services for people in East Africa. Safaricom only agreed to partner on the project. The pilot implementation began on October 11, 2005; other partners were Faulu Kenya, a leading microfinance institution in Kenya, and the Commercial Bank of Africa, which provided the traditional banking infrastructure.[8]

Late in 2007, Celtel launched Sokotele, a competitor to M-PESA. Celtel's partners in the development are Packet Stream, a public data network operator, and K-Rep, one of Kenya's leading micro-finance institutions. K-Rep provides the banking expertise, Packet Stream supplies the vending software, and Celtel Kenya's cellular network makes the connectivity possible.

Over the last two years, several banks have also embraced mobile banking technologies, enabling customers to access their bank accounts via their mobile phones. Leading microfinance institutions in Kenya, including Jamii Bora, K-Rep and Faulu Kenya, have also introduced services based on SMS (short message service) that let their clients view their balances, request account statements, and transfer money.

M-PESA CATCHES ON

Technology and innovation often catch on ahead of regulation. M-PESA's growth is a classic example. Within the first eight months after its launch in March 2007, M-PESA announced a subscription base of 900,000 users and 1,200 agents operating nationwide. Meanwhile, a total of KShs. 4 billion (approx US $57 million) had been transmitted, with an average transaction value under KShs. 5,000 (approx US $71).[9]

In April 2008, Safaricom's CEO reported that M-PESA had well over two million active subscribers, transmitting over 100 million KShs. (approx. US$ 1,428,571) a day. This was just over a year after M-PESA was launched.[10] Three months later, at the end of July 2008, M-PESA had 3.6 million users, and was adding 10,000 new registrations daily. In just the month of July 2008, people transferred KShs. 21 billion (approx US $300 million). In November 2008 it had 4 million users. Meanwhile, in April 2008, a Steadman Group study reported that over 80% of Kenyans were aware of M-PESA and 66% had actually used it. But these M-PESA users represented only 40% of all Safaricom subscribers. If all these factors remain relatively constant, we can anticipate that M-PESA will continue to penetrate the market for the next year or so.

Still, Safaricom is not authorized to operate as a bank; the money being circulated is deposited in a physical bank account at the Commercial Bank of Africa, which supervises the daily transactions of M-PESA. Users make their transactions using virtual information. When they want to withdraw cash, they go to an agent, who is authorized to keep cash and can give them the cash equivalent for the electronic value they transmit to the agent.

WHY M-TRANSFERS HAVE SUCCEEDED IN KENYA

Several factors help explain the success of M-Transactions, especially in Kenya. The top three are the impressive adoption of mobile phones, the need to access financial services, and the low cost of M-transfers.

Diffusion of mobile phones

As Figure 1 shows, the growth of Kenya's mobile subscribers has been tremendous. As of December 2008, the number had risen well above 13 million. Meanwhile, the use of land lines grew far less quickly over the same period, from 328,358 to 463,122.

In the first quarter of 2006 there were 147.4 million mobile subscribers in Africa; two years later the number had more than doubled, to 301.7 million, representing a penetration rate of 30.4%.[11] Kenya's penetration rate rose from 2% in 2001 to 39% as of the second quarter of 2008. Kenya is the most developed mobile market in East Africa and its penetration rate is forecast to reach 67.5% in 2012.[12]

Four mobile phone operators are active in Kenya. Safaricom, with well over 10 million subscribers, is the clear market leader with 81% of the total subscriber base. Zain (formerly Celtel) follows with just over 3 million subscribers, and Telkom Orange has about 1 million. Econet, barely a month old, has not released any subscription data.

The fact that Safaricom controls such a large percentage of the subscription base has given M-PESA the advantage it needed to penetrate very quickly. Only Safaricom subscribers can operate an M-PESA account, though other network subscribers can receive an SMS from an M-PESA subscriber.

The need for access to financial services

As of early 2007, 38% of Kenyans had no access to any form of financial services, according to a national survey, and only 19% had access to formally regulated financial institutions such as banks. In the entire country there were only 400 bank branches and slightly over 600 ATMs—and over 10 million mobile subscribers.[13]

We could easily say that M-PESA took off so rapidly because of the low penetration of banking services and the public need for them. Though few studies have been done to establish whether the service mostly benefits the un-banked, we have several indications that it has gone both ways. Features such as convenience, speed, and low transaction fees attract significant numbers of those who already use banks. Small businesses are among the greatest beneficiaries; using M-PESA lets them go to the bank less often, and spend more time running their businesses. Many un-banked Kenyans can now receive and send money via their mobile phones, wherever they are in the country.

In September 2008, Safaricom signed an agreement with PesaPoint Ltd. to allow M-PESA subscribers to withdraw money through PesaPoint ATMs. Registered in 2005, PesaPoint has a vision: to provide all banked Kenyans with easy access to funds in their bank accounts wherever they are in the country. So far it has installed over 110 ATMs across the country. This agreement helps overcome the problem that agents sometimes do not have enough cash to issue to M-PESA customers who want to withdraw it. This partnership was a major milestone in linking M-PESA to the formal banking system, a confirmation that more financial players are willing to collaborate to improve access to financial services.

In December 2008, M-PESA signed another agreement with Western Union for international cash transactions. Vodafone, Safaricom and Western Union announced that they would partner to pilot a cross-border mobile money transfer service between the U.K. and Kenya. Ultimately M-PESA subscribers will be able to receive international remittances just like local ones. According to the World Bank, Kenyans received approximately $US 1.3 billion in international remittances in 2007; for some Kenyans, these remittances are a considerable part of their total income. These innovations will certainly improve many Kenyans' lives.

Low transaction costs

According to the 2007 survey mentioned above, over 70% of Kenyans prefer informal methods to remit funds to their loved ones within the country. Of those interviewed, 55% sent money with friends or family members who would be traveling and 22% used public transport companies. Though such methods are not safe, people prefer them because the transaction fees are lower than those of banks and money transfer companies.[14]

M-PESA offers a very competitive service with a very attractive transaction cost. To send KShs. 35,000 (approx US$ 500) using a money transfer company such as Western Union would cost KShs. 1,200 (approx US$ 17) within the country, but using M-PESA to send the same amount would cost only one third as much.[15] And M-PESA is much cheaper than using a bank account. Given their setup and operational costs, banks and money transfer companies cannot offer such low rates.

INNOVATIVE USES OF M-PESA

Originally, M-PESA intended just to design and test a platform that would allow customers to receive money and repay small loans using their handsets. The service was also designed to help microfinance institutions streamline their operations, raising efficiency and boosting business growth. After the pilot the executives at Safaricom saw M-PESA as an opportunity first to become a payment service provider and second to increase customer retention. It has certainly achieved these objectives.

But other, unexpected, uses have also emerged. Some have already been exploited but many more have not. They indicate that a service like M-PESA has the potential to be extended in many innovative ways.

Paying school fees

Many M-PESA agents report much more business during the early days of January, May and September compared to other months. It was discovered that many parents were using M-PESA to send school fees at the start of new school terms or semesters. M-PESA is a more personal, quick and convenient way to send school fees than the more formal methods. In some cases, parents or guardians send funds to a staff member or even to the child in a school; that person then pays the school fees and gets a receipt. In situations where the trust level is high enough, the electronic money is sent directly to the school cashier, who then prepares a receipt. Both the sender and receiver have confirmations of the money sent on their phones, making it very unlikely that the receiver would refuse to acknowledge receipt of the money.

Sending pocket money

Just like they do with school fees, many parents and guardians are now sending pocket money to their dependents using M-PESA. The beauty of this usage is that, to get their money, students in remote areas need not go into town to the post office or Western Union office. M-PESA agents are within reasonable walking distance of many schools. Any student who has access to a mobile phone can get a notification, via SMS, that pocket money has been sent, which is again cheaper and more convenient than other methods.

Paying for a drink in a local club

On Friday evenings and weekends, many Kenyans visit local clubs to relax and spend time with friends over a drink. Some of these places cannot guarantee security for the club owners, let alone the customers, during off hours. M-PESA provides a secure way to pay and keep money in shops where no credit/debit card infrastructure is in place. In some cases, for the same security reasons, club owners are very particular about only accepting M-PESA and not cash.

Making informal loan repayments

M-PESA accounts are registered and managed by Safaricom. Each time a sender transfers funds, they receive a confirmation with a transaction identification number, amount sent, name and number of person it was sent to, along with date, time and the remaining balance. The receiver gets equivalent information: transaction ID number, amount received, name and number of sender, date, time and the new balance. This makes it possible to send money using the mobile phone to an officer who can record it as a loan repayment from a member who had gotten a loan. As long as the loan officer knows about and expects a repayment from a specific number, the system is dependable. This usage has been reported with microfinance institutions and savings and credit co-operatives (SACCOs), but not for large financial institutions.

Submitting contributions to fund drives

People also use M-PESA to send contributions to events like pre-wedding parties and to fund drives for medical bills because it is convenient and available even in remote locations. It is also safer for the treasurers, who need not deal with cash. But the convenience has a downside: when people use technologies like M-PESA, they need not show up for meetings. Their absence removes the social bond as well as the peer pressure that is sometimes necessary to raise more funds. (See the snapshot on social mission.)

Paying for public transport

The transport system in Kenya is largely controlled by private owners of buses and vans. Travellers rarely have any payment option besides cash. Sometimes travellers must depend on the driver or his assistant for change, an exercise that can get messy when no one has the desired smaller bills or coins. Here is where M-PESA comes in handy. It is also safer for drivers and their assistants to deal with virtual currency than cash. When travellers need less than KShs. 100, the least one can send from an M-PESA account, they can use airtime transfers. Airtime is an electronic value bought from authorized agents to make phone calls. Though airtime is different from M-PESA value, it can be transferred between mobile phones at no cost—and can also be converted back to cash, informally. So the passenger who wants to pay KShs. 10, but has no cash, would transfer airtime worth KShs. 20 (the minimum allowed) to the bus driver, who would then give him back KShs. 10 as cash.

Keeping money safe, in a virtual checking account

Moving around with cash is convenient but not safe. Checking, or current, accounts provide safety but not convenience, especially when access to bank branches is limited. In a country where 38% of people have no bank account, M-PESA provides both convenience and safety. People walk around with their virtual money knowing they can withdraw cash any time at a minimal fee. Nor does a lost or stolen mobile phone mean catastrophe: no one can access an M-PESA account without a correct personal identification number (PIN).

Like the Internet, whose uses have evolved to be very different from those originally intended, all these ways of using M-PESA have appeared in response to necessity and are not directly controlled by Safaricom. The two snapshots show how M-PESA continues to make a difference in people's daily lives.

Opportunities for agents

As M-PESA expands its services, many more agents are signing on. Agents have three primary responsibilities: accept deposits and load them onto a customer's mobile account, transfer funds on behalf of non-registered users, and serve as points for withdrawing cash. Ngummo, a middle-class suburb of Nairobi, has seen the number of its agents rise from four in June 2008 to its current ten. This indi-

M-PESA and the Social Mission

It is 6 p.m. at the Garden Square restaurant in Nairobi's central business district. The popular meeting place is filled to capacity with groups of people huddled over tables, engrossed in conversation. In one corner of the restaurant sits Mr. Musyoki, a tall middle-aged man with a deep voice and a face full of character. He towers over the rest of his group, his mobile phone in his hand; it is easy to see why he was chosen for this particular role. His cousin Kioko is seated next to him, scribbling furiously onto a pad as the rest of the group make pledges. Suddenly Mr. Musyoki's phone rings. He looks at the screen for a second and his face lights up. "Margaret has sent ten thousand shillings," he announces to the rest of the group to rousing cheers.

Mr. Musyoki is the chairman of a medical expenses committee charged with raising funds to cover the medical expenses of a relative who has fallen ill. In Kenya the power of the social system is embodied in the spirit of *harambee*, which translates roughly to fund-raiser or community support. In Mr. Musyoki's ethnic Kamba community, it would be unheard of, even for a rich man who could well afford it, to cover huge medical or funeral expenses without involving his relatives. Contributing money in such times is one important way that relatives are involved. Traditionally, however, it has been difficult to fully involve out-of-town relatives, or those with busy schedules, in such get-togethers. Though relatives may send money through an emissary or by making a deposit in a bank account, the social mission and the impulse of the moment are often lost.

M-PESA has found a new function in these events. Through M-PESA, those who cannot attend an event make their contributions in a very personal way by transferring funds via their mobile phone to the convener of the meeting at the very moment when those present are making their contributions. This scene is replayed daily across the country in countless harambee initiatives, with focuses that range from weddings to educational fees. Mrs. Catherine Namiri, a Nairobi resident, uses the M-PESA service quite frequently. "With my busy schedule, switching between my women's group meetings, my own part-time school and meetings at my kids' schools, I often cannot find time to attend harambee events. I just send money through M-PESA when I cannot attend," she says. These examples show that M-PESA has found a permanent home among Kenya's social activities.

cates how popular the service has become among Safaricom subscribers, as well as being a lucrative business proposition for the agents.

Job Creation through Agents

27-year old Samuel Mwanzia is one of the new M-PESA agents who have recently set up shop in the Ngummo shopping centre, a few kilometers from Nairobi's city centre. His tiny Hitech Communications shop in the busy bus terminus at Ngummo formerly housed a hardware parts business. The shop has now been refurbished, emblazoned with bright green, red and white Safaricom corporate colors. Burglar-proofing, in the form of vertical metal bars in the middle of the shop, separates the customers from Mwende, Mwanzia's attractive young assistant.

"Our busiest time is in the evenings, though at times we have customers lining up as early as 10 a.m. to use the service." Mwanzia has been running the business for two months and says that so far business has been good. The Ngummo area is adjacent to Kibera, believed to be one of the largest slums in Africa. Most residents of Kibera are low-income earners, usually casual laborers earning an average wage of KShs. 210 (approx $US 3) a day. Many of them cannot afford a bank account; an M-PESA account serves as a substitute. In the evening, after a hard day's work, residents can be seen queuing at the various M-PESA shops to deposit some of their wages into their M-PESA accounts to use later when work is hard to come by.

People across the country, especially in rural areas, have complained that agents often do not have enough float to cover customer withdrawals. This has not been an issue for Mwanzia, who says he allows "withdrawals of up to 35,000 shillings." As a customer walks in, Mwanzia hurries to serve him, whipping out the M-PESA record book that he uses to record each transaction. I turn my attention to Mwende who is peering at me intently from beyond the metal bars. I ask her about her experience working in the shop. She smiles broadly and finally responds, "Well, interesting! I am busy much of the day and I wonder if this happens in banks."

After a while Mwanzia returns and points out that he has "people coming in all the time to settle their debts using M-PESA." He hopes to open another shop in his native Kilome district in the future.

WHAT THE FUTURE MIGHT HOLD

M-PESA can formalize most of these informal usages by scaling out horizontally. And it can implement other services, such as managing pension funds, distributing wages, disbursing emergency loans, and providing insurance and credit. In addition, as banks and other financial institutions interconnect with merchants, we can together establish an ecosystem that could create many opportunities and simplify the way subscribers do their banking and conduct financial transactions. These are possibilities we never imagined before: As M-PESA gradually leads businesses to interconnect, other private sector players are joining in. We believe the government will provide leadership in setting up an appropriate regulatory framework.

Mobile Money Ecosystem

This issue has been discussed in several venues recently. Currently only Safaricom subscribers can register to use M-PESA, because Safaricom protects its proprietary system and uses it as a revenue stream. But it will likely provide even more benefits if more players can plug into this network and provide additional services.

One of the primary factors driving M-PESA's development has been the rapid growth of mobile phone users. Though Safaricom currently dominates the Kenyan market, more competitors entering the market can change the dynamics over time. Networks have greater value when more players become synergistically involved, recognizing that no one player can possibly offer all the needed services. M-PESA could offer even more benefits if it could be equally accessible, across all mobile operator networks.

Many other players can plug into the ecosystem: banks, microfinance institutions (MFIs), other mobile operators, merchants, non-governmental organizations (NGOs), and government institutions. To create such an ecosystem, we need a framework that will ensure fair play and collaboration, a task the government, banking and telecommunication regulators would be best placed to drive. During the inaugural GSM Association (GSMA) Mobile Money Summit held on May 14-15, 2008, in Cairo, leaders identified the three elements necessary to develop these ecosystems: utility, capacity, and an enabling environment; Figure 2 illustrates the relationship between the different potential players in such an ecosystem.[16] The usefulness of mobile money depends on how many ways and places it can be used. This insight raised several other issues, including interoperability, security, standards, switching environments, and bilateral agreements.

Capacity is the second major issue. Mobile operators have been willing to set up systems and experiment with them. Smart and Globe in the Philippines, Wizzit in South Africa and M-PESA in Kenya are just a few examples. But these experiments are not everyone's cup of tea. We need systems that will meet the needs of engineers, programmers, entrepreneurs, developers, merchants, agents, bankers, regulators—in other words, everyone—and without endless trial and error!

Finally, an enabling environment is critical. Regulation often carries a negative tone, especially for merchants and entrepreneurs. But it is regulation that will create the enabling environment, and sustain consumer confidence. The challenge is how to ensure that regulation provides stability, and still leaves enough room for innovation. And will the current forms of regulation advance the mobile money ecosystems? My reaction to this is a clear no. In the section below on regulation, I describe what regulation might need to look like.

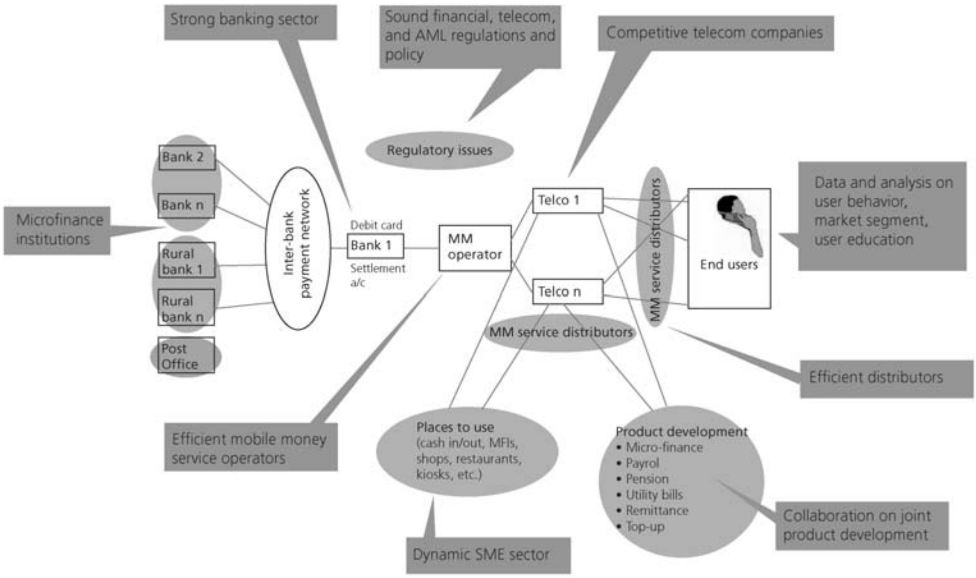

Figure 1. Sample mobile money ecosystem configuration
Source: Jenkins, (2008)

Possibility of regional transactions

In April 2008, Vodacom in Tanzania, a sister company to Safaricom, launched M-PESA in Tanzania. This was the second country in Africa to have this award-winning service in operation.[17] In Tanzania, more than 4 million Vodacom subscribers have access to the service. In combination with other Vodafone operations in other African countries, it's possible to envisage a cross-border system of money transfer and possibly financial transactions. Given recent efforts to integrate East Africa, politically and economically,[18] the financial integration of the block will be very appropriate, and this growing network of mobile transactions would enhance that process.

Zain, which is Safaricom's major competitor in Kenya, has operations in 14 other countries in Africa. While it was still called Celtel, Zain discovered a great deal of potential revenue in the cross-border movements of Africans. In September 2007, it launched its One Network service, enabling mobile phone customers to roam freely within the 14 countries without having to pay either roaming charges or charges to receive calls. Four months later, Safaricom, MTN Uganda and Vodacon Tanzania—three companies that could easily be viewed as competitors—responded to the competitive challenge posed by Celtel's innovation and launched the Just Like Home network. This network enables users of any of the three country-specific networks to make calls from any of the three countries at a standard rate as though they were calling within their home countries.

These two initiatives are considered the world's first and second borderless networks. The companies hoped that the single-network concept would encourage business growth and cross-border trade in the region. The director of government and regulatory affairs at the GSMA described Celtel's One Network as being "as important to East Africa as the fall of the Berlin Wall was to Germany."[19] I have not seen any publications that give evidence of the socio-economic impact of these innovations, but it is clear that cross-border travelers in the region have saved quite a bit on the costs of calling.

Such regional networks create a great opportunity to develop a framework for regional transactions and possibly an African "e-currency."[20] The cross-border networks are a testimony to the potential to create partnerships, given the compelling business prospects. Africans could easily develop a financial network enabling them to do business with each other regardless of their location.[21]

I have not yet seen any publications on an African e-currency, though many informal discussions revolve around the idea, especially in workshops and conferences. Those speakers see the idea as possible within a decade or so. The many current challenges, both within and between nations, involve policies, governance, administration, etc. But they can be tackled. The drivers of such an idea are likely to be the same private-sector players like the telephone companies, banks, and money transfer companies. Institutions like the World Bank and IMF could explore ways to help and would likely be the main facilitators. I see several possibilities for managing such regional operations. Two are a de-facto regional monetary union and a regional central bank, with the chief executives of mobile operators serving as board members.

Such an operation could save money for border-crossers who must change currencies as they move around: an inefficient and costly scenario. If people could carry out transactions across borders at minimal cost, it would boost trade and hence regional economies. Such benefits would result from lower transaction costs, price transparency and improved quality of goods and services. Transaction costs would drop once foreign exchange markets are eliminated within the region. Price transparency would be possible once one common unit of account is established, as it would facilitate price comparisons. Just like internet commerce, it would enable consumers to shop around the region at any time, increasing competition, which would then improve the quality of goods and services consumers receive. When the consumer is empowered this much, it tends to force prices down, lowering the profit margins for merchants. This is never attractive to merchants, but the convenience, lower dependence on cash, and wider client base would compensate for that loss.

An African e-currency would mean that online payments could be made across the region, a solution that would be truly homegrown and transformative. Poor infrastructures in many African countries, coupled with low access to financial services, limit the use of internet commerce. Models such as M-PESA and a gradually growing regional ecosystem could put Africa at the forefront of this evolution and the innovation of low-cost m-transactions and interestingly m-commerce.

Regulation

This issue arises constantly in discussions of M-transactions. Banks have often complained that M-PESA has been allowed to operate without much regulation, while banks are heavily monitored.

Currently, M-PESA abides by the minimal regulatory requirements set by the Central Bank of Kenya (CBK). On several occasions, the management of Safaricom has clearly indicated that it is ready to operate under any regulatory framework the government will implement.

These innovations and levels of growth were not envisioned five years ago, and with so much attention, we do not know what is awaiting us in the next few years. I expect many players will get involved and develop several applications to extend payment and money transfer services to consumers. Different players from different sectors are likely to engage in more collaboration and create networks we never imagined. The ecosystem will enable different players to co-exist, creating unimagined possibilities.

Amidst all these developments, what is the regulator doing—and going to do in the future? Excessive early regulation tends to choke innovation, and CBK has demonstrated that it can hold back on pressure, to allow M-PESA to grow. Currently M-PESA is not as tightly regulated as banks, because, according to the banking act, Safaricom is not operating as a bank. As long as the money is in transit and is not used for anything else, the operator is not qualified to be a bank. This is not the case in many other countries like South Africa, where accepting deposits from the public easily qualifies an operator to be viewed as a bank.

Regulation that limits innovation normally takes the form of tough rules, high fees and huge taxes on the new services that make the service costly to set up and expensive to run. For sustainability reasons, service providers transfer the costs to the consumers, which then inhibit adoption and diffusion. These regulations inhibit other potential entrants. This was the case with mobile telephony in Kenya and many other countries before the market was liberalized. Regulation certainly is medicine, but it can be poison to an otherwise healthy technology.

However, delaying regulation tends to cause genuine anxiety when innovations grow into complex systems and become too complicated to regulate. Several service providers have proposed partnerships with Safaricom to extend M-PESA services. Some partnerships have already launched; as mentioned earlier, users can withdraw cash from PesaPoint ATMs. Investors in the Old Mutual fund can top up their monthly contributions to their unit trust investments using M-PESA.[22] Other proposals are waiting in the wings. Gradually the network is growing more complex and boundaries are less clear—so supervision and monitoring will become more complex.

Banks in particular have expressed concern as to why M-PESA has been left to operate in some kind of regulatory vacuum. Their unease arises because many M-PESA subscribers actually use their M-PESA accounts as checking accounts, and thus a great deal of money has shifted from physical bank accounts to the M-PESA accounts. To address this issue, CBK is currently working on rules that would govern m-transactions in Kenya. There is a lot to learn, and unlearn, for the regulator who has consistently supervised traditional banks.

This is certainly not an issue that affects Kenya only; the many regulators in countries experiencing such innovations need to learn quickly how to grapple with issues beyond their expertise. Regulators are critical in facilitating the standardization and growth of these innovations, especially when different players are likely to collaborate in open business models.

If the technology grows into ecosystems, policy makers and regulators will have to face several significant issues. For example, who will dispense cash? What types of transactions will be permitted on mobile phone? How can they limit liability? What kinds of expertise are needed for regulation and conflict resolution? And how would the consumer be protected?

I see three reasons why CBK has not set out clear guidelines. First, quite understandably, CBK does not know what to do. This is a unique innovation and there is no clear expertise to regulate it. Meanwhile, the innovation is growing and changing so rapidly that guidelines set up today might not be appropriate a year from now. Second, the benefits associated with M-PESA are so enormous that those who try to place regulatory pressure on it might feel guilty if they appear to frustrate it. One way around this problem is to buy time, something the CBK could do. Third, M-PESA's services overlap with services offered by other types of business, including couriers, banks, mobile operators and money transfers, and thus the central bank can argue, quite reasonably, that some things are simply not its mandate.

I think the regulation of M-PESA and similar products should be isolated from the central bank. Kenya needs an independent monitoring entity, which would include banking officers, telecommunication officers, auditors, money transfer experts, and information technology experts. Of course such an approach has its pros and cons, but I see five reasons why my proposal will work:

- The banking industry is traditionally slow. The CBK can hardly keep up with the speed of growth of a new technology. These technologies need dedicated and dynamic supervision.
- The banking industry has stuck with old, established supervision models and it will struggle to adjust to and accommodate dynamic policies. The process of regulating m-transactions might be incremental and involve careful regular adjustments—after all, regulators do not have crystal balls! CBK could easily be seen to be playing to a double standard; in fact this is already happening.
- We do not know what direction products like M-PESA are taking. So many new innovations are possible. We have to be careful not to derail them with these administrative issues, arguing back and forth over who should supervise what and when to start. We need an enabling environment and it is clear people need these services; in fact, they are long overdue.
- An independent regulator sounds like a new or odd idea. But M-PESA is new and odd to begin with!

- M-PESA is not operating as a bank. CBK confirms that. So why should we require that only the central bank regulate the service?

Since M-transfers resulted from an integration of the retail financial systems and mobile services, it is not obvious who should actually regulate these services. In fact it is seen as a grey area, somewhere between the mobile telephony, banking, courier services and money transfer sectors. Will it be necessary to create a new regulator for m-transactions or to develop capacity within the current regulators? Or should we let the system regulate itself by enhancing competition? Whatever regulatory approach is taken, policy makers and regulators will always have to think carefully about the future. The innovative possibilities are many and so are the challenges—and regulators must deal with these uncertainties.

This will not be a one-man show; what will set us free is a collaborative engagement by regulators involving research institutions, development agencies, academic institutions and companies in the private sector. Well-crafted and inclusive regulation will increase confidence, and create a fair playing ground for all players and an enabling environment where these innovations can grow.

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1. Hughes and Lonie, M-PESA: Mobile Money for the "Un-banked," *Innovations*, 2:1/2 (winter & spring), 2007, pp. 63-81.
2. W. Thumbi Peter, *Kenya Country Report*. Report from the National Council for Population and Development, Kenya, commissioned by the United Nations Economic Commission of Africa (UNECA), available at <http://www.uneca.org/popia/peda/kenya.doc>.
3. Research ICT Africa! (RIA!) seeks to fill a strategic gap in the development of a sustainable information society and knowledge economy on the African continent by developing policy on information communication technology (ICT) and developing the capacity for regulatory research that Africa needs to inform effective governance. For more information, see http://www.researchictafrica.net.
4. The KCA is available at <http://www.cck.go.ke/policy_and_legislation>
5. World Telecommunications/ICT Indicators Database, 10th edition, available at <http://www.itu.int/publications>.
6. Kenya Information and Communication Policy 2006, Government Printer, Nairobi.
7. The Kenya Communications (Amendment) Bill of 2007 is available at http://www.kenyalaw.org and <http://www.information.go.ke/docs>; the Electronic Transactions Bill 2007 is available at <http://www.information.go.ke>.
8. The story of how M-PESA was conceived, piloted and launched is told in the January to June 2007 edition of the Safaricom magazine, *The Option*. More details are in the Innovations article by Nick Hughes and Susie Lonie; see note 1. The Electronic Transactions Bill 2007 is available at http://www.information.go.ke
9. Introduction to M-PESA by Pauline Vaughan, Head of M-PESA in Kenya, at Micro-finance Conference, Strathmore University, Nairobi, November 2007.
10. Safaricom Prospectus 2008, available at <http://www.dyerandbalir.com/IPO>.
11. Several publications including those by the International Telecommunication Union (ITU) show the enormous growth of mobile phones in Africa. For example, see the Africa Telecom News website at <http://www.africantelecomsnews.com/>. Details on mobile penetration in Kenya are available at <http://www.telkom.co.ke/telkom-kenya-archive-reinvigorated.html> accessed in December 2008.
12. Statistics about the forecast are in the ITU publication available at <http://www.itu.int/ITU-D/ict/newslog/Kenya+To+Scrap+Foreign+Investor+Rules.aspx> and <http://www.ecom-

merce-journal.com/news/mobile_money_services_in_kenya?drgn=1> both accessed in December 2008.

13. Survey by Financial Services Deepening, available at <http://www.fsdkenya.org/finaccess/index.html>.
14. See <http://www.fsdkenya.org/finaccess/index.html>.
15. Safaricom website <http://www.safaricom.co.ke/index.php?id=228>, accessed March 31, 2008.
16. B. Jenkins, *Developing Mobile Money Ecosystems*. Washington, DC: International Finance Corporation (IFC) and the Kennedy School of Government, 2008.
17. M-PESA has received several awards. It was a 2008 winner of the World Business and Development Awards (WBDA); the award ceremony was part of the special focus on the Millennium Development Goals (MDGs) during the opening week of the United Nations General Assembly in New York in September 2008. See <http://content.undp.org/go/newsroom/2008/september/award-winners-prove-that-fighting-poverty-is-good-for-business.en;jsessionid=aTiTO9rOjCYh?categoryID=349423#winners>. In December of 2007, it was recognized at the Renaissance Capital Kenya Banking Awards in Nairobi; the award for special product innovation reflected its impact on the Kenyan banking world, and on the daily lives of those who use the service. See <http://www.sagentia.com/News.aspx?path=/Press_release_and_News_archive/2007/MPesa_update>. It also earned an award during the Stockholm Challenge 2008; see <http://event.stockholmchallenge.se/project/2008/Economic-Development/M-PESA-Money-transfer-service>.
18. For example, see H. Ochwada, "Rethinking East African Integration: From Economic to Political and from State to Civil Society," *Africa Development*, Vol. 29, No. 2, 2004, pp. 53–79.
19. W. Stephen, "Celtel… and the walls came tumbling down," New Africa, No. 457, February 2007, http://findarticles.com/p/articles/mi_qa5391/is_200702/ai_n21284049
20. T.K. Omwansa, Increasing Access to Financial Services Using Innovative Virtual Banking Solutions. Presentation at 8th Annual ICT Conference, Strathmore University, Nairobi, 2007.
21. Aidan Evakuze, "One network and 'just like home' – regional integration by mobile phone," in the State of East Africa Report 2007: Searching for the Soul of East Africa. This publication was a response, by the East African Scenarios Project, to the rapid political, economic and social changes in East Africa and globally, which have created significant uncertainty for leaders, decision-makers and citizens. The publication is available at <http://www.sidint.org/files/SoEA_2007_Mini.pdf>, accessed in November 2008.
22. Old Mutual is a fund manager operating in Kenya and many other countries. The story of the partnership between M-PESA and Old Mutual can be found online at <http://computerworld.co.ke/articles/2008/10/17/old-mutual-use-m-pesa> and <http://www.nation.co.ke/business/news/-/1006/480978/-/jhurifz/-/index.html>.