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The Development, Use and Cultural Context of M-PESA in Costal Kenya

Micah S. Berman
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The Development, Use and Cultural Context of M-PESA in Coastal Kenya

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Islam and Swahili Cultural Identity, Fall 2011
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Abstract

Launched in early 2007 by Safaricom, Kenya's leading mobile service provider, the M-PESA mobile money transfer service has met with unparalleled consumer adoption and rapidly revolutionized money transfer throughout Kenya. Seen as the "mobile money success story," the service allows users to transfer money to any other mobile phone user in the country instantly using even the most basic mobile telephones, and has become a model for the development of similar systems around the globe. The result of one month of full-time archival research and field work, this study presents a history of the development and acceptance of M-PESA by placing it in context with other money transfer services and methods, examines the service's present-day use in three towns in Kenya's Coast Province through interviews with more than 30 participants, and concludes by developing culturally-contextualized recommendations for future service offerings and improvements.

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A Note Regarding Names:

In this study, the names of people, places and businesses remain unchanged; however, in the author’s attempt to preserve reasonable participant privacy, only the first names of interviewees have been cited in this report. Details about relevant interviewee’s places of employment are provided as an annotation to the first citation bearing their name in the Works Cited.

For short but important interactions in which the participant’s name was unknown, “Unknown” is cited as the participant’s name followed by an identifying number; the author regrets that additional information is unavailable.

Publication Notes:

M-PESA is a mobile money transfer service owned and operated by Safaricom, Inc., a subsidiary of Vodacom. The author has no affiliation whatsoever with Safaricom, Vodacom, or their subsidiaries or contractors.

The unit of currency in Kenya is the Kenyan Shilling; at the time of this writing, the exchange rate was approximately 95 Kenya Shillings to 1 US Dollar or 120 Kenya Shillings to 1 Euro.

Important Terms and Definitions

agent	An M-PESA “store,” operating as an independent contractor of Safaricom
ATM	An Automated Teller Machine that allows cash withdrawals and sometimes deposits with the use of an ATM card.
Customer Care	Safaricom’s 24/7 support line for M-PESA, reached by dialing “234” from any Safaricom phone.
deposit	M-PESA term for a user adding value to their M-PESA account
e-float	Used interchangeably with “float,” defined below.
float	M-PESA term for electronic stored value – cash and float are exchanged for one-another during deposits and withdrawals.
give cash	Internal M-PESA term for a disbursement to an unregistered M-PESA user
head agent	An M-PESA agent in charge of selling/buying float to/from agents and Safaricom (agents may not buy float directly from Safaricom)
Ksh	Kenya Shillings, also sometimes abbreviated as /=
master agent	See “head agent”
matatu	Fourteen-passenger vans used for local and regional transport
M-KESHO	A savings service tied to M-PESA launched jointly by Equity Bank and Safaricom
M-PESA	“m” for mobile, “pesa” for “money” in Swahili; the name of Safaricom’s mobile money transfer service
PesaPoint	Company that has partnered with Safaricom to allow ATM withdrawals from M-PESA accounts; also the name of their ATM product
Paybill	An M-PESA function allowing users to send money to registered companies who have a six-digit Paybill Number
PIN	Personal Identification Number, a secret four-digit code known only to the subscriber
reconcile	To update all accounts to current – the process of posting transactions.
riba	An term used in the Qur’an, meaning interest charged or earned on a loan
Safaricom	A partially-owned subsidiary of Vodacom, and the major cellular communications company in Kenya
SIM	Subscriber Identification Module, the removable chip in a phone that registers the subscriber’s phone number with the GSM cellular network
SIM-EX	A replacement SIM (see above) that can be programmed to use any existing phone number, used to restore service when a subscriber’s phone is lost/stolen
SMS	Short Message Service, also known as “text messages” – messages (maximum 160 characters) that can be exchanged between cellular telephones and/or computer systems
subscriber	A user of a mobile carrier’s network
super agent	See “head agent”
withdrawal	M-PESA term for a user cashing out value from their M-PESA account

Background and Introduction

Launched in 2007, M-PESA (“m” for mobile, and *pesa* for “money” in Kiswahili) rapidly became the largest mobile money transfer network of its kind. Despite tough competition in the cell phone market in Kenya, as of 2010 M-PESA has 11.9 million users (a staggering 54% of Kenya’s adult population)¹, and transfers each year that net more than 11% of the country’s GDP². In fact, despite an average of fewer than two transfers per month per registered user³, M-PESA completes more transactions within Kenya’s borders each year than Western Union transacts across its entire global network. Within Kenya, M-PESA locations outnumber traditional ATMs by a factor of more than 10. And the customers rave: 98% of customers in one independent survey said that they were satisfied with M-PESA, with almost all surveyed responding that the service was quicker, faster, safer, and more convenient than any alternative money transfer method; 84% of respondents claimed that losing access to M-PESA would have a significant negative impact on their life⁴.

This report examines the development and use of M-PESA, Safaricom’s mobile phone money transfer service, in three communities in the Coast Province of Kenya relative to the history of the service’s development. Specifically, this report seeks to explore the history and context of money transfer services in East Africa in combination with cultural factors that led to the rapid development, deployment, and immediate and unparalleled success of M-PESA in Kenya and on the Kenyan coast specifically. This study will place the success of M-PESA within the cultural environment that surrounded it, and discuss its current-day usage and future directions given these cultural considerations.

Well before the invention of mobile phones, money was moved from country to country in the African region – and eventually around the globe – using a network of members of the Somali community. To use this system, described using the blanket term *hawala*, the sending customer would

¹ Mas and Radcliffe: *Mobile Payments Go Viral: M-PESA in Kenya*

² *Out of Thin Air: The Behind-the-Scenes Logistics of Kenya’s Mobile-Money Miracle*, The Economist

³ Mas and Radcliffe: *Mobile Payments Go Viral: M-PESA in Kenya*

⁴ Ibid.

visit a member of the money transfer network close to them. Often, these vendors were working out of other businesses that involved the movement of high-value commodities (eg, a flower shop, perfume retailer or electronics importer) or out of their own homes. Once the money was received from the sending customer, the sending member of the network would write a letter to be mailed to another member of the network, instructing him or her to dispense the appropriate amount of cash to the recipient in the other country upon receipt of the letter. Both members would record the debt between them, and would cancel the debt through customer transactions in the opposite direction or by through goods sold at a discounted price or for free: for example, a TV shop owner in Kenya might restock in Dubai without taking along any cash by simply using his *hawala* settlement to purchase new inventory. Later, with the evolution of cell phones, the transfer process was completed via cell phone or SMS and became much faster.

Based in Islamic law, the concept of *hawala* is at its simplest: one person owing a debt to a second person, whom in turn owes a debt to the third person. The middleman is removed, and the debt then becomes between just the two “outside” transactors. The collection of the fee for the transfer is separated from the amount transferred; this has precipitated a change in the way that modern-day *hawala* networks operate. Modern-day *hawala* agents (known as *hawaladars*) do not routinely reconcile amongst each other as long as they have enough money to pay out the requests they are receiving. Money is moved only if necessary, and each Hawaladar makes their living off of the percentage-based commissions they charge on each transfer⁵. The *hawala* system was and continues to be particularly valued by participants because it avoided government impositions of any kind, including taxes and fixed exchange rates, and required only trust in the sender rather than formal banking credentials. To this

⁵ Schramm, Matthias, and Markus Taube. "Evolution and Institutional Foundation of the Hawala Financial System."

day, sending money via *hawala* is the only way for it to reach some regions in the developing world with little development and unstable governments⁶.

The concept of *hawala* itself (“payment” or “debt transfer” in Arabic) is long – some researchers date the idea back to “very early medieval commerce in pre-modern societies of the Near and Middle East”⁷, while others place its origins on the Silk Road or ancient Greek civilization⁸; scholarly debate aside, the system developed in early civilization as a necessity of financial life and expanding trade in the absence of reliable or fair government systems and banks. Transfers began locally: tribal groups were only tied together loosely by their adherence to the pillars of Islam, and transactions that stretched outside of a tribal region were encumbered by inadequate and inconsistent governmental systems and a clash of differing legal precedent. Over time, a shortage of silver coins caused an adaptation to a barter economy that made reconciliation over longer distances easier.

Enormous amounts of money continue to travel the globe by *hawala* every day: recent estimates suggest more than \$200 billion is moved via *hawala* each year, mostly within Islamic countries⁹. However, the *hawala* system is not practical for all people and for all uses: foremost of the system’s limitations is that networking requirement. Usage of the network requires knowing someone in the location you wish to send money who knows someone in the location to which money is being sent. Additionally, the system remains no help in sending money to rural areas, as branches are located only in areas where transfers will occur in both directions and constant debt accrual and reconciliation will not be necessary. And while the system is generally quite reliable, it is based solely on the trust of both parties without checks or balances. It was only a matter of time before the informal *hawala* system was transformed into an incorporated company.

⁶ Schramm, Matthias, and Markus Taube. "Evolution and Institutional Foundation of the Hawala Financial System."

⁷ Ibid.

⁸ Glushchenko, Galina. "Hawala - A Vestige of the Past in the Service of Globalization."

⁹ Ibid.

In fact, today, there are a number of prominent companies running *hawala* networks throughout the world. The best known organization is DahabShiil, which has a network that spans the globe and allows money transfers via a system similar to the independent *hawala* dealers but with a little more technological flare. DahabShiil is *hawala* with a storefront: the company's locations have signs, there's a corporate logo, sizable and centralized charitable giving, a new and fancy computer program that has replaced the letters and phone calls of a previous era, and a marketing scheme to sell the service to the public. However, in the author's personal experience, the network is still only available to those who meet certain criteria and are accepted by the community running the service in a given location¹⁰ - the limitation of knowing someone in the community continues to exist in some form.

Although in East Africa the *hawala* system is used mostly for international transfers, the services offered by DahabShiil are valued by the population and helped to lay the theoretical backdrop for the development of the M-PESA system in both the service concept and experience with a pay-to-send electronic cash transfer system. DahabShiil remains logistically superior to any other service for international transfers, but transfers within Kenya into rural areas and over shorter distances necessitated a different system to meet ever-increasing demand.

Many interviewees reported that they frequently sent money home to their families using *matatus*, local fourteen-passenger vans that make regular trips to and from rural areas, before the advent of M-PESA. A similar system existed with larger bus companies between more developed metropolitan centers as well. These services have improved in lockstep with the roads in coastal Kenya, and today are relatively reliable. Users typically pay a fee that is a percentage of the amount being transferred, usually around 10% of the total value¹¹. The user meets the bus or *matatu* to deliver the cash to transport, and the receiver meets the *matatu* as it passes near their home to pick up the cash.

¹⁰ Based on the author's personal experience when visiting the local DahabShiil branch in Mombasa, Kenya. Though not listed on DahabShiil's website, the branch's existence was confirmed by numerous local residents and by a large logo painted on the side of the building. The author was told by the clerk that his office was most certainly *not* a DahabShiil location, that anyone can have such a sign on their building, and that the author must be confused.

¹¹ Joyce. Personal Interview. 18 Nov. 2011.

The service is expensive, but the drivers of these vehicles have their professional reputations to uphold and most transfers arrive intact at their destination. Some customers have even reported hiding money in packages and the sending the package because they felt more secure¹² - in fact, depending on the denomination transferred, this could result in a cheaper transaction cost as well.

Nonetheless, sending cash via drivers is not ideal because of the fact that it generally requires transportation for both parties in the transaction to meet the vehicle carrying the cash, and the transaction is very public: neighbors, friends, and the driver all know your finances, cited by a number of interviewees as a downside to this service. And although *matatus* eventually make it to their destinations, they are notoriously late, unpredictable and subject to frequent breakdowns. Nonetheless, it was the *matatu* that successfully carried cash into rural areas for long periods of time before the deployment of M-PESA. Between the *matatu* and bus systems, hawala and DahabShiil, coastal Kenya had an occasionally improvised and often expensive but generally functional system to carry money from place to place within the country and around the globe.

Kenya's socioeconomic setup and patterns of migration had created a significant demand for money transfer services before cell phones existed, and these factors continue to drive the evolution of money transfer offerings today. Today, approximately 41% of the country's population lives in urban areas¹³, with more people arriving each day in cycles of rural-urban migration. The cycle of circular rural-urban migration began during colonial times, stemming from the clash of policies designed to discourage the settlement of rural migrants in urban areas with a general neglect for the development of rural economies. The policy clash meant that many families were forced to send a few members to urban centers to find temporary work, only to return home when work dried up. Today, although the

¹² Remy. Personal Interview. 9 Nov. 2011.

¹³ Camner, Gunnar, and Emil Sjöblom. *Can the Success of M-PESA be Repeated?*

colonial policies have long vanished, the uncertainty of low-skill jobs in urban areas and the high cost of urban living have continued to strengthen the cycle¹⁴.

Many academicians argue for a “dual system” model of migration, in which migrants remain strongly financially connected to their families back home - both as a method of support while the new migrants establish themselves in the city, and later, as a critical source of support for the part of the family in the rural area. The amount of money sent home is quite significant: estimates suggest households send between 13% and 21% of the household’s income home, with the exact percentage depending largely on the family’s location. Continued neglect of rural development means that the money sent home is often essential for survival: one estimate pegs the number of households who rely on remittances for *basic survival* at a staggering 30%. Undoubtedly, many more households are relying on remittances for other important needs, including school fees, the purchase of farm equipment¹⁵ and medical care.

Often, only one or two members of a family will go to the urban area. Families find it more efficient to support the minimum number of people at the higher urban cost of living, while leaving the majority of the household in the urban area where living is extraordinarily economical¹⁶. In addition to the presence of their families in rural areas, many urban workers remain tied to their roots through ownership of land or cattle¹⁷ back home, even as they find new employment in the city. Further strengthening ties are cycles of circular migration: many family members head to the city but return when work runs out or after a certain period of time. Additionally, a reverse physical linkage, in which urban dwellers depend on rural relatives to send food, has also been shown to be significant in both reducing urban hunger as well as further strengthening ties between the two separate households to

¹⁴ Owuor, Samnuel O. "Migrants, Urban Poverty and the Changing Nature of Urban-Rural Linkages in Kenya."

¹⁵ Morawczynski, Olga. "Surviving in the 'Dual System': How M-PESA is Fostering Urban-to-Rural Remittances in a Kenyan Slum."

¹⁶ Agesa, Richard U. "One Family, Two Households: Rural to Urban Migration in Kenya."

¹⁷ Morawczynski, Olga. "Surviving in the 'Dual System': How M-PESA is Fostering Urban-to-Rural Remittances in a Kenyan Slum."

unify them as one family. These connections help drive an unusually strong need for city-dweller migrants to remain linked with and contribute financially to rural areas from afar.

Finally, in addition to regular payments home, the open financial linkage of households serves a very practical purpose by allowing families and extended families to self-insure one-another against catastrophe, pulling together with the Kenyan spirit of *harambee* in times of need to make ends meet. Increasingly tough economic times have caused a strengthening in bonds for the sharing of people, food and monetary resources even as resources available to be shared have declined¹⁸. The continued cycle of rural-urban and urban-rural migration, in the highly family-centered culture prominent in coastal and Islamic Kenya, creates high demand for a reliable, fast and economic money transfer service; a demand that, in 2007, existing services were not fast enough, cheap enough, or convenient enough to fulfill.

The beginning of the solution to Kenya's growing money demand arrived in the form of Safaricom. The company was founded in 1997, just as the lower-cost mobile phone was moving "from the car to the pocket"¹⁹ and becoming common the world over. Since then, the operator has built a reputation with the Kenyan public as reliable and trustworthy, and has gained and held a reliable lead over the competition. In 1999, shortly after it was founded, Safaricom predicted that the total Kenyan market for mobile phones among all service providers would comprise three million subscribers by 2020; in 2009, Safaricom alone found itself surpassing the 14-million-subscriber mark²⁰ while total mobile subscribership in Kenya was well north of 17 million connections²¹ - more than five times their original estimate for a benchmark for a time that was still eleven years away.

Once cell phones moved from the rich elite to a commonplace device owned by the masses, they impacted Dahab Shiil's business, as well as the business of *matatu* drivers, for the better. Drivers and agents were now able to easily and instantly communicate with their clients as well as track goods

¹⁸ Owuor, Samuel O. "Migrants, Urban Poverty and the Changing Nature of Urban-Rural Linkages in Kenya."

¹⁹ Kalba, Kas. *The Global Adoption and Diffusion of Mobile Phones*.

²⁰ Aker, Jenny C, and Isaac M Mbiti. "Mobile Phones and Economic Development in Africa."

²¹ Kenya National Bureau of Statistics. Economic Report 2010.

in transit. The organizational boon resulted in easier transfers, and the ability to more easily coordinate *matatu* shipping. The popularity of cellular telephones continued to grow faster than expected, with subscribership jumping nearly 50% each year between 2002 and 2007 across all of East Africa²²; it would soon be the same mobile phone that improved money transfers for *matatu* drivers that would begin taking their business away.

As with most cellular networks in Kenya (and, in fact, East Africa²³), the majority of Safaricom's subscribers are pay-as-you-go thus necessitating frequent airtime "top-ups" for thousands of users. In order to fill this need, Safaricom had deployed thousands of airtime resellers across the country, reaching well into rural areas, selling top-up cards on a commission basis. Eventually, systems were implemented to allow the transfer of airtime credit from one phone line to another, and users began using airtime as an informal value transfer system – an unofficial and grassroots beginning to the service that would become M-PESA. Urban users would buy airtime and transfer it to relatives in rural areas, who would in turn sell the airtime back to the local airtime dealer in exchange for cash. This system was never very widely used, but was in existence for a number of years before the launch of any official money transfer system.

The British Government's Department for International Development approached Safaricom in 2003, offering challenge funding for the development of a mobile money service in Kenya. The fund provided fifty percent of the funding, matched by Safaricom in their contribution of employee time and network resources, and development began. In 2005, after two years of software development, representatives were on the ground in Kenya setting up field tests of the system and fine-tuning procedures, outreach and training material in preparation for the launch a few years later²⁴. It was widely recognized that, in order for the service to succeed, it would need to rapidly reach a critical mass

²² Aker, Jenny C, and Isaac M Mbiti. "Mobile Phones and Economic Development in Africa."

²³ Ibid.

²⁴ Hughes, Nick, and Susie Lonie. "M-PESA: Mobile Money for the 'Unbanked': Turning Cellphones into 24-Hour Tellers in Kenya."

of users and that aggressive public outreach and trainings would be required simultaneously, country-wide.

In March of 2007, almost exactly ten years after Safaricom was founded, that the company combined its huge network of mobile subscribers and unrivaled base of trust from the population with its logistical acumen and widespread network of phone card refill dealers to launch the most successful mobile money transfer service in the world²⁵. Today, the service has become a critical component of Kenya's economic system thanks to its ability to move money quickly and easily between people, including into and out of rural areas reliably and without a significant security risk²⁶, and increasingly to pay bills, purchase goods and services and most recently, to move money internationally.

Statement of the Problem

Primarily, the author wishes to provide an understanding of what M-PESA is, how it works, and how people are using it, that was specific to the Swahili coast and linked to the social trends in the region. M-PESA and its development have been studied extensively in the extant literature, particularly in the fields of anthropology and economics. However, the existing literature focuses on areas in Nairobi (particularly the Kibera slum) and surrounding rural communities while neglecting areas on the Kenyan coast. The author wished to investigate potentially differing usage patterns in coastal areas, especially given the Islamic nature of the Swahili coast. Furthermore, the author wished to contextualize the existing M-PESA research in a history of the service's roots in money transfer services on the African continent, within cycles of rural-urban migration, and within users' conceptions of the service and reasons for using it.

²⁵ For an excellent recounting of the details of the funding, corporate development and field testing of the service, please see: *Money for the Unbanked: Turning Cellphones into 24-Hour Tellers in Kenya*, written by Nick Hughes – a Safaricom executive – and Susie Lonie, the person on the ground in Kenya charged with testing and implementation of M-PESA.

²⁶ Mas and Morawczynski. *Designing Mobile Money Services: Lessons from M-PESA*

Objectives

This study seeks to:

- Develop a history of money transfer services and cultural factors leading to the development and success of M-PESA on the Kenyan Coast
- Review current usage trends in M-PESA usage in Kenya's Coast Province, in both rural and urban regions, through personal interviews
- Integrate interview data with existing literature to examine changing uses of M-PESA
- Analyze future directions for M-PESA in Kenya given the cultural context surrounding the service on the Kenyan Coast

Research Methodology

In order to accomplish the objectives above, the researcher examined the viewpoints and perceptions of M-PESA agents and of Safaricom staff with as much geographical diversity along the coast as possible in the study's timeframe, including interviews in the city of Mombasa, nearby Likoni and inland, rural Taita. M-PESA agents were targeted for interviews in each area because they are easy to locate, are readily available (there is a lot of downtime in an average M-PESA agent's day), see many customers each day and thus they have a good perspective on the usage of M-PESA on the ground in a given area, are in theory selected by their employers for their ability to speak at least practical English, and have a good technical understanding of the system itself. As M-PESA users themselves, they are affected by all of the practical M-PESA issues that customers face in addition to problems with M-PESA agency, and see enough customers over a long period of time they can provide opinions about longer-term change. Particularly in rural areas, many clerks had worked at their M-PESA outlets since they first opened. M-PESA agents naturally become the face of the service in any area area, problem-solving when

something goes wrong, being the intermediary to Safaricom, and often get to know their customers personally as a business strategy²⁷.

Although filtering individual customer stories through agents abstracts and biases them to a degree, agent interviews became the primary vehicle of this study. In order to obtain interviews with agents, the author deposited a large sum – approximately \$400 – into his M-PESA account through the course of many small deposits at the beginning of the study. Throughout the remainder of the study, many small withdrawals were transacted, using each interaction as an opportunity to start up a conversation with an M-PESA agent. Initial experience had shown that successfully completing an M-PESA transaction, whether a deposit or a withdrawal, builds significant trust between the researcher and the M-PESA clerk. Agents were selected informally to provide as much variety as possible in the sample, and a number of particularly helpful agents were selected for a series of return visits to build a longer-term relationship.

In total, 29 semi-structured interviews were conducted and written-up, including 17 with M-PESA clerks, 5 with employees in other aspects of the money transfer business, 3 with bank employees, and 2 with leaders of community organizations - in addition to innumerable casual interactions with the general population regarding the subject. Additional interviews with individual users, others studying M-PESA, and with Safaricom corporate representatives were arranged via in-person appearance whenever possible, and alternately via e-mail. Interviews also targeted Islamic organizations utilizing M-PESA, given the predominance of Islamic culture on the Kenyan coast.

Questions in all were generally similar and chosen from the same list of standard questions. Nonetheless, the vast majority of interviews were informal: brief experience in the field indicated that people are much more comfortable talking in an informal setting, and generally all of the necessary

²⁷ Getting to know customers, “good people skills,” and a happy demeanor were referenced by almost every clerk that interviewed as the main reason that customers choose one M-PESA outlet over another; it seems that hiring personable employees is a priority for M-PESA shop owners.

information can be easily obtained through this method. A notebook was carried but generally not used during the interview, as initial experiences showed the notebook made clerks nervous; rather, the interviewer wrote up the interview in full immediately after the interview had concluded, usually right around the corner from the interview location.

During the interview itself, the interviewer asked questions regarding uses of M-PESA and its perception in the community, how the system worked as well as how it developed, how it changed over time, the service's future direction, and the state of money transfer before M-PESA's arrival. Questions were modified to correspond to the particular clerk's grasp of English. Since country-wide studies on the demographics of users and their M-PESA usage patterns and such research could not be replicated within the scale of this study, extensive socioeconomic data was not collected during this study and published data will be used when necessary.

This research required many interactions with human subjects, however it was not anticipated that the research would put subjects into any significant emotional or physical distress. Interviews were conducted in locations chosen or frequented by the subjects and comfortable to them. The interview questions presented were basic and not personal in nature. All subjects were advised prior to participation in the research of the purpose of the study, and were reminded that their participation is voluntary and they may discontinue participation at any time. Furthermore, it was emphasized that subjects need not answer questions that make them feel uncomfortable, and the researcher was available before, during and after the interviews by phone and in person to answer any questions that the subjects may have had.

Literature Review

Due to the length of this paper, the Literature Review section has been included as an appendix.

Please see Appendix E, Literature Review, for a brief review of important literature in the field.

Analysis and Results

How M-PESA Works:

Before analyzing the uses of the system, we must understand how system functions, both for users and “behind the scenes” – an understanding of the details of the system is critical to understanding the challenges it has overcome and the reasons it has been so successful. The basic transaction underlying M-PESA is the conversion of cash to electronic credit and back again; in other words, many M-PESA transactions are the sale and purchase of electronic credit, in some ways similar to the Safaricom airtime purchase system. Safaricom subscribers have access to an M-PESA menu on their phone, which contains all services available through M-PESA²⁸; all transactions are initiated by the user.

Prior to being able to deposit funds, the user must register for M-PESA. The process is simple, and in theory can be accomplished at any M-PESA agent; however, a number of agents the author visited were unable to register users, often because they had run out of forms. User registration is highly incentivized by Safaricom²⁹, free for users, and the majority of agents are happy to complete registrations. To register, users need a Safaricom SIM card that is active, and must complete a short half-page form with basic demographic data indicating their full name, citizenship, ID number. Users must sign the form to indicate their agreement to Safaricom’s use agreement and must also present a valid identification card from Kenya or a Passport. Although there is no explicit age requirement placed on

²⁸ For a diagram detailing the structure of the M-PESA menu system, please see Appendix C, M-PESA Menu Structure.

²⁹ Jack, William, and Tavneet Suri. "The Economics of M-PESA."

membership, Kenyan citizens cannot receive an ID card until after their 18th birthday. Users then receive a temporary PIN (“start key”) via SMS that allows them to set their M-PESA PIN, along with a secret word for use with Customer Service if necessary, and instantly have fully active M-PESA accounts.

Once registered, a user can visit any M-PESA agent to deposit cash in his or her account. Using the application on their phone, the user selects “Deposit cash,” and the M-PESA system prompts the user for the M-PESA agent’s number³⁰, the amount the user wishes to deposit, and the user’s secret PIN number. All of this information is encrypted and sent to the M-PESA system, at which point two SMS messages are returned: one to the shop agent, notifying them of the deposit, and one to the user, telling them to give the cash to the agent and updating their M-PESA balance to reflect their deposit.

The electronic value of the user’s deposit is instantly stored in his or her account, and is saved indefinitely. The user can send the value to someone else at any time using their phone, whether or not the recipient is an M-PESA subscriber and regardless of whether they are on Safaricom’s network. Any subscriber can withdraw value at any time by going to an M-PESA agent, or by using an M-PESA-enabled PesaPoint ATM³¹. To send money, a subscriber chooses the “Send Money” option, enters the amount, the recipient’s phone number, and their PIN, confirms all of the above, and then both subscribers receive an SMS a few seconds later notifying them that the transaction is complete and updating their respective available M-PESA balances.

³⁰ Agent numbers are required to be posted clearly in all M-PESA agencies. Nonetheless, sending money to the wrong agent number is a common user problem.

³¹ PesaPoint has an ATM partnership with Safaricom, in addition to the other mobile money service providers in Kenya. There are a number of PesaPoint ATMs available, generally at office buildings and other public gathering places; the PesaPoint ATM network is separate from bank ATM networks. The ATM withdrawal system itself is interesting: requesting an ATM withdrawal through M-PESA sends the subscriber an SMS message containing a reminder of their current balance along with a six-digit Authorization Code, which is entered into the ATM along with the subscriber’s phone number. Codes may be requested up to two hours prior to the withdrawal. Once the code and phone number are entered, the ATM is used to select the withdrawal amount, cash is dispensed, and the user receives another SMS message providing the remaining balance in their M-PESA account.

Fees for the transaction are deducted instantly but always separately from the amount of the transaction and always from the initiating user's account³². If a user sends 6,000 Ksh to another user, the full 6,000 Ksh are sent to the other party while the sender's account is debited 6,040 Ksh to reflect the 40 Ksh transaction fee. When cash is withdrawn, the full amount of the cash withdrawal is given to the customer, while their account is additionally debited for the fee; for example, a 2,000 Ksh withdrawal precipitates a 2,025 Ksh debit from the customer's M-PESA balance.

M-PESA also allows other functions that revolve around the same principle: an amount, a destination, and the secret PIN. To name a few, users can pay bills by choosing the Paybill option and entering a six digit Paybill number in place of a phone number as well as their account number with the organization they are remitting to, the amount, and their PIN; M-PESA also now allows users to "buy goods" under a similar procedure, although this feature is still very seldom used by merchants; and users can purchase airtime via M-PESA at no additional charge and in any amount, allowing users to top up without having to visit a shop to purchase an airtime card. Of course, users can send money to other registered users for the flat fee of 30 Ksh (about 30 cents). In all of these transactions, users initiate the operation from the M-PESA software and then wait for a text message reply confirming the transaction.

Money can be sent to non-M-PESA users – anyone with a valid phone number on any carrier in Kenya - for a much higher fee (depending on the amount, between 100 Ksh and 400 Ksh, about \$1-\$4), but the high fee charged to the sender that allows the non-user to withdraw cash for free. This fee structure ensures that first-time users have a good experience and want to register for the service, while the high fees put pressure on the sender to ask the receiver to register.

Although very simple for the end-user, understanding transactions from the agent's point of view is a little more complex requires understanding "float," the e-currency of M-PESA. To understand float, we'll use the example of a fictitious agent. At the beginning of the day, the agent has 50,000 Ksh in

³² For a complete list of M-PESA tariffs as posted in M-PESA agent shops, please see Appendix B, M-PESA Tariff Structure (Safaricom, Ltd., n.d.)

cash and 50,000 Ksh in float. Their first customer of the day makes a deposit of 10,000 Ksh; when M-PESA processes this transaction, the merchant accepts the 10,000 Ksh and sends the subscriber 10,000 Ksh of that M-PESA agent's float. The agent now has 60,000 Ksh in cash and 40,000 Ksh in float, and the customer's M-PESA (float) balance has increased by 10,000 Ksh. In the reverse manner, float is exchanged for cash when subscribers wish to make a withdrawal. If the agent's next customer makes a 5,000 Ksh withdrawal, the agent gives the customer 5,000 shillings in exchange for 5,000 Ksh in float, bringing the agent's current balances to 55,000 Ksh in cash and 45,000 Ksh in float, and lowering the user's M-PESA (float) balance by 5,000 Ksh. In effect, as Jack and Suri propose in *Economics of M-PESA*, M-PESA agents are running stores that buy and sell float as a commodity³³ and M-PESA agent visits can be thought of trips to the "float store".

It quickly becomes clear that the M-PESA agent's primary job and most significant challenge is balancing stores of float and cash³⁴: if an agent runs out of float they cannot accept deposits, and if they run out of cash they cannot process withdrawals. Float must be purchased through super agents (also known as "master agents" or "head agents"), who are intermediaries between Safaricom and the agents themselves; individual agents cannot buy and sell float from Safaricom³⁵. Safaricom sells float in exchange for cash from super agents, which is deposited one of two standard current accounts at Kenya's major banks for safekeeping³⁶. To this end, float is often rebalanced multiple times per day remotely, and the agent receives a notification each time that transaction takes place. Managers can use

³³ Jack, William, and Tavneet Suri. "The Economics of M-PESA."

³⁴ Eijkman, Frederik, Jake Kendall, and Ignacio Mas. "Bridges to Cash: The Retail End of M-PESA: The Challenge of Maintaining Liquidity for M-PESA Agent Networks."

³⁵ Jack, William, and Tavneet Suri. "The Economics of M-PESA."

³⁶ One of the few regulatory demands made by Kenya's Central Bank on the M-PESA system is in regards to the cash that Safaricom holds. The Central Bank requires an amount of cash equivalent to the amount of float in circulation to be held in liquid form at regulated banks, and furthermore requires that Safaricom cannot keep interest earned from these deposits; instead, any interest earned is placed into a charitable trust (Mas, Ignacio, and Dan Radcliffe. "Mobile Payments go Viral: M-PESA in Kenya.")

computer software to drill down to the individual transaction level to analyze trends and stock stores appropriately³⁷.

And while float can be sent electronically between agents (agents who work for the same company may loan float in informal arrangements to meet customer demand³⁸), head agents, and Safaricom electronically, cash must be physically moved from one place to the next. This is an easy proposition in Mombasa, but becomes quickly more complicated in rural and outlying areas, which may be an hour or more from the nearest branch of a major bank. In return for orchestrating cash movement, super agents receive a commission on each transaction: the exact amount varies depending on the transaction amount and averages around 17 cents (of which 70-80% goes to the retail agent)³⁹, but for deposit or withdrawal transactions the total amount paid in commission to the super agent and in turn to the retail agent is the same as the fee paid by the customer.

Safaricom as a corporation makes no net profit on withdrawals or deposits, and in fact may lose money as they effectively advance agents half of the withdrawal commission when money is deposited (which is free for the user), despite the fact that deposits may outnumber commissionable transactions like transfers or withdrawals⁴⁰. All of the organization's profit lies in the transfer of money from one person to another, the service for which they can charge the most (this is the core of the M-PESA business and the part that users cannot replicate elsewhere), and also the part that costs Safaricom nothing above the maintenance of the network infrastructure that they already have. The business model has contributed to the service's success by allowing Safaricom to provide agents with very attractive commissions to encourage agent proliferation, while still making a healthy profit margin on the core service.

³⁷ Irene. Personal interview. 18 Nov. 2011.

³⁸ Ibid.

³⁹ Eijkman, Frederik, Jake Kendall, and Ignacio Mas. "Bridges to Cash: The Retail End of M-PESA: The Challenge of Maintaining Liquidity for M-PESA Agent Networks."

⁴⁰ More explanation and quantitative details of agent compensation can be found in: Mas, Ignacio, and Dan Radcliffe. "Mobile Payments go Viral: M-PESA in Kenya."

Why M-PESA Has Been Successful:

Why has M-PESA met with such great success? Answers are innumerable and the truth lies in a complex combination of many of the factors described by clerks during this research, from the pricing structure of the service to the requirement to paint M-PESA shops in “Safaricom Green” so that they are easily visible from the road, in addition to external environmental factors. Ignacio Mas and Dan Radcliffe of the Bill and Melinda Gates foundation define the following three categorical drivers of M-PESA’s success: environmental factors, the design of the M-PESA service, and Safaricom’s delivery of the product⁴¹.

No one category could have driven M-PESA’s success; rather, it is all three categories in combination that have caused the service’s wide adoption. Environmental factors are least often considered: Societal patterns of close-knit family life and urban-rural migration, as discussed in the Background of this report, as well as Safaricom’s singlehanded dominance in the mobile phone market and its giant network of resellers, were important environmental considerations. Furthermore, the relaxed and supportive regulatory stance of Kenya’s Central Bank as well as Safaricom’s reputation with the general Kenyan public as public as a reliable, fair and stable company were both key in enabling the service to take off. Finally, the service’s implementation in a market and at a time when the population was comfortable with the increasingly popular cellular phone technology was important.

But these environmental factors wouldn’t singly have supported a successful service were it not for careful operational considerations in the service’s design, the second category presented by Mas and Radcliffe. M-PESA’s two years of field testing are apparent in the number of clever and local pieces of the service. While no one factor is most important, here we will consider one example of the service’s operational design as a representative example: the implementation of the M-PESA logbook.

⁴¹ Mas and Radcliffe: *Mobile Payments Go Viral: M-PESA in Kenya*

During each transaction, the M-PESA agent records almost all of the information sent to both the agent and to the user via their phones in a paper log book, and the customer signs the log book at the conclusion of the transaction. The written record makes customers – and even agents - feel comfortable⁴². For customers who are worried about losing their money, the written log provides a feeling of safety as they watch their transaction written down and sign verifying the transaction has been completed. In a society that takes receipts and formal documents very seriously, the lack of a paper logbook has enabled trust in the service and allows agents to be the “first line” customer care about previous transactions⁴³.

The log book has changed over time: at M-PESA’s launch, log books were carbon-copied in triplicate and sent to Safaricom⁴⁴. The entire process duplicated the information sent to Safaricom instantly and electronically (with the substitution of a PIN for a signature), and so imaginably the log books held little business value for Safaricom outside of the feeling of security it created for their customers. Now, instead of customer phone numbers – important when tracking transactions – customer names are recorded, which are much less useful in accounting but presumably more personal. Instead of triplicate, today’s logbooks are only single-leaf. And recently, Safaricom has instituted a two-up logbook design, with two full pages per sheet. Unless the clerk has very neat handwriting, the content of the book has to be written so small it becomes hard, if not impossible, to decipher accurately⁴⁵.

Most tellingly, log books are no longer sent to Safaricom, nor are they even inspected during Safaricom’s monthly compliance visits to all M-PESA retailers. The inspectors re-stock logbooks and SIM-

⁴² Irene. Personal Interview. 17 Nov. 2011.

⁴³ Mas and Morawczynski. *Designing Mobile Money Services: Lessons from M-PESA*

⁴⁴ Ibid.

⁴⁵ Irene. Personal interview. 18 Nov. 2011.; Morawczynski, Olga. "Surviving in the 'Dual System': How M-PESA is Fostering Urban-to-Rural Remittances in a Kenyan Slum."

EX⁴⁶ cards if the retailer is running low on either, but to verify the retailer's transactional business they inspect only the monthly "target sheet" that lists aggregate transaction volumes by day⁴⁷. The logbook has now fully become what it always was: a simple mechanism of keeping customers and agents happy and feeling safe, a clever operational adaptation to the culture surrounding the service.

A few other examples of operational cleverness include the provision of SIM-EX cards at all agents so users are never without access to their money; the ability to look up obscure Paybill numbers via free text message; charging nominal fees for balance inquiries and PIN changes so that customers keep track of these pieces of information. The final factor given by Mas and Radcliffe as a driver of success is Safaricom's delivery of the service, which is examined by region in the next section.

How M-PESA Is Used On The Kenyan Coast:

This study examined M-PESA operations in three distinct areas and found different usage patterns in each: Mombasa's main island, a bustling commercial and tourism hub on Kenya's southern coast; the mainland environs of Likoni, a short ferry ride from metropolitan Mombasa island but a town with a different way of life: most homes lack running water, clay is eaten for nutritional purposes, and there are few paved roads; and finally the inland, mountainous and very rural Taita-Taveta region, including the proximate villages of Mgange Dawida, Mgange Nyika and Werugha - all within a five-kilometer radius of one-another. Please see Appendix A for a map showing research locations relative to one-another.

⁴⁶ See "Important Terms & Definitions"; SIM-EX cards allow a clerk to replace a subscriber's lost or stolen SIM card on the spot by programming a new card with the subscriber's old number.

⁴⁷ Irene. Personal interview. 18 Nov. 2011.

Taita-Taveta

Before M-PESA arrived in Taita, most money was moved into and out of the region via *matatus* that make the ten-hour roundtrip journey from the Taita-Taveta region, passing through the regional center of Voi before arriving in Mombasa each day and turning around to return to the countryside. Many families tried to send money with people that they knew travelling to the destination, and although the whole amount rarely arrived in these arrangements one study reported that 58% of Kenyans used this method of money transfer in 2007⁴⁸. Posta, the Kenyan postal service, offers a money transfer service, PostaPay – but it is rarely used by individuals, who see it as slow, expensive and unreliable – the service’s main customer is the government moving money to fund schools and other local institutions⁴⁹. As an alternative, in an informal arrangement, drivers would accept cash from people who met the bus or *matatu* at its departure point and carry that cash to the recipient, who would in turn need to meet the vehicle when it arrived at their location. These services typically charged a fee of 10% of the total amount being transferred (a common example during interviews was 2,000 Ksh for a fee of 200 Ksh)⁵⁰. *Matatu* drivers will accept cash even from those they don’t know, and because they are known in the community and their professional reputation is on the line, they tend to be reliable⁵¹. This *matatu* transfer system is still in use today, but M-PESA has become the preferred method for transfer into and out of Taita-Taveta as it is less expensive, faster and private, generally arrives at a predictable time, is almost totally reliable, and unaffected by frequent vehicle breakdowns on the unmaintained roads between Mombasa and the countryside.

M-PESA outlets opened in the Taita-Taveta region shortly after the service’s national launch in 2007, beginning with branches in two nearby larger towns: Buramishi and Undanye, followed shortly by a branch in the local area’s market in Mgange Nyika. Today, there are a number of branches in the area,

⁴⁸ Morawczynski, Olga. "Surviving in the 'Dual System': How M-PESA is Fostering Urban-to-Rural Remittances in a Kenyan Slum."

⁴⁹ Mwalukuku. Personal interview. 17 Nov. 2011.

⁵⁰ Irene. Personal interview. 18 Nov. 2011.; Joyce. Personal interview. 18 Nov. 2011.

⁵¹ Remy. Personal Interview. 9 Nov. 2011.

including one in the very small village of Mgange Dawida. Although Airtel was the first cellular carrier to cover the area, most people in the area now use Safaricom as a primary or secondary line thanks to pull of registering for M-PESA service^{52, 53}.

Most transactions in this rural area are, predictably, withdrawals – many users come weekly to take out cash that has been sent to them by their families in urban centers. Withdrawal transactions are not very large: transactions observed during the course of research in this area ranged between five hundred and two thousand shillings, and clerks say that customer frequency varies significantly. Presumably, this is due to an inconsistency on the part of the money sender as well as the money receiver; money is sent when it is available, and then retrieved whenever possible. Aside from a varying transaction volume (about fifty customers each day at the smallest counter located in Mgange Dawida⁵⁴ up to seventy at the busiest counter in the market center⁵⁵), the more outlying branches do nearly exclusively withdrawals, while the more centrally located branches also transact some deposits – mostly from users who are passing through town⁵⁶. The non-exclusivity of withdrawal transactions confirms earlier research suggesting that while urban-rural is the primary remittance direction, there is significant and reliable flow back into urban centers to support families while they get set up in urban areas, and to support students studying in urban areas⁵⁷.

Most of the M-PESA agents in the area noted a similar change over the past two years: previously, very few users were registered for the M-PESA service. As discussed in the previous section, unregistered users on any cellular carrier can withdraw cash at no charge, but the sender pays a significant fee for this service. According to Irene, a clerk in Mgange Nyika, increasing comfort with the

⁵² Irene. Personal interview. 18 Nov. 2011.

⁵³ Many cellular phone customers in Kenya have more than one SIM card so they can take advantage of the best features and pricing available on each operator's network. SIM cards can easily be switched in and out of a phone, and today there are some phones on the market that allow the use of two SIM cards at once.

⁵⁴ Joyce. Personal interview. 17 Nov. 2011. Second interview.

⁵⁵ Irene. Personal interview. 17 Nov. 2011.

⁵⁶ Ibid.

⁵⁷ Morawczynski, Olga. "Surviving in the 'Dual System': How M-PESA is Fostering Urban-to-Rural Remittances in a Kenyan Slum."

service has led users to register⁵⁸. Also seemingly a trend in urban areas, users feel far more comfortable registering for the service once they've experienced it working as advertised for themselves once or twice.

Today, even in rural areas like Mgange Dawida, most users are comfortable with the service even if they don't know how to use it. Older customers, many of whom are illiterate, will give their phones to the clerk to operate – necessitating a high level of trust in the clerks. Customers observed in these transactions seemed completely relaxed, either pressing in their PIN when the phone was passed back to them or, in a few cases, quietly disclosing their PIN to the clerk.

Interestingly, even in this remote area where the number of M-PESA branches is limited, there is more than one outlet in Mgange Nyika. One of the two outlets does significantly more business than the other, despite their proximate location; the clerk at the busy outlet asserts that this is because the shop has been around much longer, so people are used to it, as well as the friendly and charming service that she provides⁵⁹.

Clerks and customers alike in Taita-Taveta were mostly concerned about network reliability: when the network goes down, M-PESA isn't functional. One clerk in the village of Werugha was particularly concerned: many of her customers live down in the valley where there is no cellular service coverage, let alone M-PESA services. "My customers leave home at 5am and walk until 10am to arrive here," she says, and she has to tell them that there's no network today – and they turn around and walk the five hours back home in the heat of the day⁶⁰. A Safaricom network upgrade in 2008-2009 helped ease network connectivity issues in the area, but clerks feel the network is not as reliable as it should be, - especially when people are relying on it for money they need to buy essential goods and services.

⁵⁸ Joyce. Personal interview. 18 Nov. 2011.

⁵⁹ Irene. Personal interview. 18 Nov. 2011.

⁶⁰ Esther. Personal interview. 18 Nov. 2011.

Another concern in the area was cash availability. Particularly at the branch in Mgange Dawida, there is no cash inflow from deposits so the branch is entirely reliant on deliveries of cash to process withdrawals. These cash deliveries come from the nearest commercial bank via a dedicated courier on a motorcycle or *matatu* and reliably arrive, but are often late – between 2pm and 3pm – rendering the shop dysfunctional until that time. Each night, any excess cash is picked up from the Mgange Dawida shop and returned to the bank, meaning that the shop is again dysfunctional until the afternoon of the following day⁶¹. It was observed that many regular customers know about this limitation and plan their trips such that they arrive at the shop around mid-afternoon.

Mombasa

The availability of cash and M-PESA locations is certainly not an issue in Mombasa, where it's hard to walk down any paved road without encountering at least one M-PESA outlet each block. The use of M-PESA in the city is different, too: the clientele are more affluent, and business is a central focus. Many customers also send money home to relatives in rural areas: when asked what his customers used M-PESA for, one clerk replied "average people sending money to their family"⁶². M-PESA's ubiquity in the city, combined with the wealth of commerce in the area, provide a fertile ground for use of M-PESA in business.

One clerk interviewed during the course of this research worked at an M-PESA desk just down the street from four jewelry counters: his business was primarily transacting withdrawals for the jewelry dealers who had accepted payment for their products via M-PESA from customers who did not want to carry around large sums of cash⁶³. Often, clerks and users would talk of ordering goods from Nairobi or another part of town, using M-PESA to pay for them, and then having the goods delivered. One user

⁶¹ Irene. Personal interview. 17 Nov. 2011.

⁶² Anwahr. Personal interview. 22 Nov. 2011.

⁶³ Ibid.

who is often alone at home said that she pays her uncle via M-PESA to purchase charcoal for her on the outskirts of the city and deliver it to her home⁶⁴. When asked what most people use M-PESA for, many clerks in Mombasa replied “business” – perhaps simultaneously indicating both the assumed ubiquity of sending money home, as well as the changing face of M-PESA in the big city.

M-PESA’s use in business, however, seems limited to business-to-business transactions and large business-to-customer transactions (such as buying a diamond ring), in addition to using M-PESA as a secure overnight cash storage location⁶⁵.

In transactional business, many interviewees noted that, despite the increasing frequency of M-PESA transactions, merchants would be reluctant and likely unwilling to accept M-PESA payment for purchases less than 500 Ksh (about \$5). This finding was initially surprising, given the ubiquity of M-PESA usage and of convenient outlets at which to transact business. However, upon further consideration, the impracticalities become clear. Merchants don’t want to bother having to go and cash out for smaller amounts. In addition, given the flat transfer fee and the fact that the sender typically must cover all fees incurred as part of the transaction, the system can become expensive for small-value transactions. And without a significant transaction volume to make the cash out transaction worth the merchant’s while, their hesitation seems reasonable. Despite M-PESA’s use as a small-value savings mechanism (below), transactions through the system for commercial purchases in Mombasa and the surrounding areas remain at a higher value, with an effective floor of around 500 Ksh.

Likoni

M-PESA use across the ferry from mainland Mombasa changes again. Socioeconomically, Likoni is more impoverished than the island, and many workers commute to work each day across the ferry. While most transactions at M-PESA outlets in Likoni are deposits, most of them are much smaller than

⁶⁴ Nuzla. Personal Interview. 22 Nov. 2011.

⁶⁵ Syria. Personal Interview. 14 Nov. 2011.

on the island. Most clerks interviewed said that they had a regular list of customers who came daily to make small deposits, from the minimum 50 Ksh through 150 Ksh (about \$0.50 to \$1.50). One clerk's customers were so regular that she had a notebook containing each regular customer's name, phone number, and ID card number so that customers could simply drop off cash and she could complete the phone transaction and fill out the logbook for them. One clerk even said that almost all of her customers used their M-PESA accounts as savings accounts⁶⁶.

This highlights a trend in the unbanked community and one of the significant benefits of M-PESA. Although the account doesn't pay interest, it is a safe and secure place to store money that doesn't require a setup or maintenance fee. As the World Bank astutely notes in its article *Want Tips On Mobile Money Design? Here Are Two From A Motorcycle And A Jerry Can In Uganda*, safe, secure and non-tempting money storage mechanisms are something that people with the least money will most readily pay huge fees to access. In one example outlined in the article, a motorcycle driver seals his savings in resin and drops them into the petrol tank of his motorcycle, saving to purchase a new one. Once he has enough to buy a new motorcycle, he has the tank cut open and the money removed, using it to make his new purchase, but in the process he spent about \$110 to have the tank cut and replace it with a different one he'd purchased so he could resell the old motorcycle⁶⁷. M-PESA, as it is used in Likoni, provides a way to make these small deposits into a safe and secure storage mechanism for free, while charging a nominal price for even large withdrawals: 175 Ksh to withdraw 35,000 Ksh, or about \$1.75 to withdraw \$350⁶⁸. The only significant limitation on this application of the service is the maximum M-PESA account balance of 50,000 Ksh (\$500).

⁶⁶ Naume. Personal interview. 24 Nov. 2011.

⁶⁷ Pickens, Mark. "Want Tips On Mobile Money Product Design? Here Are Two From A Motorcycle And A Jerry Can In Uganda."

⁶⁸ Safaricom, Ltd. "M-PESA Tariff."

General M-PESA Usage Trends

In a survey of 3,000 Kenyan households, Jack and Suri found that withdrawals were almost as common in urban areas as rural ones (42% versus 45%), although deposits were much more common in urban as opposed to rural areas (61% versus 38%). There was a more fine-grained analysis than this one, but the fact that withdrawals are more even makes logical sense given transfers within and between rural areas. Additionally, the two researchers found that the average transaction frequency nationwide was far smaller than this study has estimated, pegging it at one remittance every three to four months. This discrepancy most likely owes to the time that has elapsed since Jack and Suri's study and changing economic trends, or particularly strong ties between the areas surveyed in this study; Safaricom employees and Head Agents interviewed for this study who had experience in both Nairobi and Mombasa noted no differences between M-PESA use upcountry as opposed to on the coast.

M-PESA transactions are certainly not limited to person-to-person transfers and use as an impromptu savings account. From their original "send money home" marketing scheme, M-PESA has expanded to offer bill pay services, launched in 2009: about 20% of Kenya Power and Lighting's one million customers pay their bills each month using M-PESA's bill pay service, and paying water bills via M-PESA is commonplace, along with 73 other companies that utilize the Paybill service as of fiscal year 2010⁶⁹. Clerks in all three research locations, including rural Taita-Taveta, mentioned paying bills as one of the common uses for M-PESA, avoiding lengthy travel and lines at Posta offices. Users trust the Paybill service because not only has it proven reliable in the past but because Safaricom vets companies who apply for Paybill numbers⁷⁰, ensuring that money is going to a legitimate organization.

⁶⁹ Mas, Ignacio, and Dan Radcliffe. "Mobile Payments go Viral: M-PESA in Kenya."

⁷⁰ Awadh. Personal interview. 24 Nov. 2011.

Use of M-PESA in Islamic Organizations

Although the public utilities are seemingly the biggest and most popular users of the Paybill service, its use is spreading. Customers of Fly540, a low cost airline, can pay for their tickets using the service as of this year – British Airways and Virgin Atlantic Airlines have also recently added M-PESA payment options⁷¹. It only makes sense that organizations capitalize on this opportunity to make the collection of money easier – but response has not been as good as one might expect.

At the One Shilling A Day Foundation, an Islamic charity based in Nairobi focusing on improving the lives of the Muslim community in Kenya, the organization already uses SMS messages extensively to encourage donations. An M-PESA paybill number was only recently established for the Nairobi branch, which has created more headache than it has alleviated here in Mombasa. The centralization of the number in Nairobi requires the office in Mombasa to contact the Nairobi office to confirm donations, and causes delays in sending receipts to donors of up to two weeks. Although users have been asking for a number in Mombasa for a long time, and although the staff of the Foundation hold M-PESA in very high regard (“whoever invented that service was a genius!” said one staff member), the organization hasn’t yet set up a number here in Mombasa⁷². Clearly, there is a significant shift in organizational practices required to use M-PESA effectively.

Perhaps some additional explanation is offered by the case of Radio Salaam, a local Islamic radio station. The radio station has conducted a number of fundraising drives in the recent past for worthy and pressing causes, including M-PESA as part of its campaign for donations. The donations received via M-PESA are funneled directly into a bank account, so the station manager said he wasn’t sure how much was donated through that avenue. Nonetheless, he said that M-PESA is not widely accepted – especially in the Islamic community – for donations of this sort. “Sure, people use M-PESA,” he said, “but people want to be *seen* giving.” As it turned out, in their last donation drive for victims of the Faza fire, many

⁷¹ Garuke-Mwangi, Peter. "Think M-PESA."

⁷² Awadh. Personal interview. 24 Nov. 2011.

people brought tuk-tuk vehicles, cattle, and furniture to the station in person as their donation. In these situations, people are still accustomed to giving whatever they can – and often, that’s not cash.

Hurdles in M-PESA use in the community are present both in the organizational restructuring needed to truly embrace M-PESA donations and in the cultural context already surrounding giving in Islamic communities. Nonetheless, there are some very creative partnerships in the field as well that serve as an example of integration as it should work. One favorite is the Grundfos Lifelink system⁷³, a partnership between the Grundfos pump company and Safaricom’s M-PESA team that has produced a pay-as-you-use clean water service for impoverished rural communities.

Grundfos installs a pumping, filtration and distribution system for clean water in the communities using its own products, and the service is linked up with a set of wireless “keys” that can be topped up with value using M-PESA. Users hold up a key to the system to obtain water, and are charged a rate per liter of water used. The fees collected from the pump go into a community fund to pay back the installation loan and pay for ongoing maintenance of the pump system⁷⁴. Other notable applications of M-PESA include microinsurance for subsistence farmer’s crops, supporting teams of government and NGO employees dispersed widely around the country, prepaid healthcare schemes, and layaway for large farm purchases⁷⁵.

M-PESA and Islamic Law

Banking integration is much touted by banks, but has met with lackluster reception from the general population. Before understanding the way that banks have integrated with M-PESA’s systems, it’s important to understand the ways that the Islamic community views banking. There is a prohibition in the Qur’an against *riba*, or charging interest on loaned money. This prohibition has been a

⁷³ Peter. E-mail interview. 23 Nov. 2011.

⁷⁴ Grundfos Lifelink. "Grundfos LIFELINK: Sustainable and Transparent Drinking Water Solution for the World’s Poorest.;" Gakure-Mwangi, Peter. "M-PESA in Partnership with Grundfos for Rural Water Provision."

⁷⁵ Garuke-Mwangi, Peter. "Think M-PESA."

contributing factor in the development of Islamic banks, which avoid the prohibition on technicalities: instead of charging a percentage-based interest on a mortgage, the bank will purchase the house at the sale price, add a significant sum (the bank's profit), and then resell the home to the customer at the much higher price but at no interest. There is some confusion in the Islamic community about whether or not the transactional fees charged by M-PESA, or by banking accounts linked with M-PESA, are *riba* and thus *haram* (illegal under Islamic law).

According to two local Sheikhs⁷⁶, experts on Islamic law and trusted spiritual advisors to the community, M-PESA fees aren't *riba*. In the case of M-PESA, Safaricom is moving money for you – something that would otherwise cost you money and time – thus, the company is providing a service and they are allowed to charge for the service. They clarified that *riba* is the act of charging interest for the use of money itself. Additionally, the transfer fee and the withdrawal fee aren't *riba* since they deal with the transfer and conversion of electronic credit into cash, rather than cash itself. Although these definitions of *riba* do create some grey area with respect to online banking, it is safe to conclude for our purposes here that M-PESA fees are within the limits of Islamic law. The effect of the confusion regarding M-PESA fees is not to be neglected, however; it may be a deterrent for some members of the community from utilizing the service.

Bank Integration on the Coast

Although many banks in Kenya are offering M-PESA integration to their customers, an astute user immediately gets the impression that these services are not ready for widespread use and suffer in a number of critical aspects that have otherwise driven M-PESA's success throughout the coast. At Kenya Commercial Bank (KCB), they eagerly advertise their ability to tie any of their accounts – both personal and business – with M-PESA through their KCB Connect service. The only exceptions to this

⁷⁶ The researcher briefly consulted RadioSalaam's two spiritual advisors via a translator at their office in Mombasa.

policy are joint accounts with a requirement for a countersign on all transactions and their limited, four-withdrawal-per-annum Simba savings account; the ability to tie any of their other innumerable accounts to M-PESA is a very significant and industry-leading offering.

However, the system KCB uses to transfer money is mediated through Western Union, a step that adds both confusion and delays. An average transfer takes about thirty minutes according to one Personal Banking Consultant, though they sometimes take longer. The consultant said that occasionally money gets lost in the transfer process, and he was concerningly confident about the bank's procedure for handling this contingency, which included calling Western Union to locate the funds⁷⁷.

Down the road at CFC Stanbic, the clerk offered a card detailing the procedure for using the bank's M-PESA Paybill number to make deposits to current accounts. She said that reconciliation occurs "hourly, although sometimes it doesn't happen" and transactions take much longer to post to the member's account – and she noted that the bank can only process M-PESA deposits, as withdrawals via the service are not yet available⁷⁸.

Equity Bank, one of Kenya's largest banks and the sole servicer of the newly-launched M-KESHO savings account line, should be a bright spot. Safaricom and Equity Bank partnered to launch the co-branded, simple savings account product tied to M-PESA. Months after the service's launch, the two companies remain mired in negotiations and even the branch's operations manager did not have much confidence in the system. Asked whether the accounts were popular, he related that "they used to be" – but that recent problems with the interoperation of Safaricom's network with Equity Bank's network had caused significant issues in transacting through the M-KESHO system and had stemmed new sign-ups for the accounts in the past few months. The number of open M-KESHO accounts is quite significant,

⁷⁷ Anthony. Personal interview. 25 Nov. 2011.

⁷⁸ Unknown 4. Personal interview. 25 Nov. 2011.

the idea is “generally popular,” and the service provides a significant portion of the bank’s operating revenue, but he said that problems had been significant of late⁷⁹.

Concerns with the M-PESA Service on the Coast

While M-PESA is used in different ways in each of the three research sites included in this study, the service’s ability to quickly, easily, and safely transfer money from one party to another is universally lauded. The service has become so ubiquitous that most clerks and users are taken aback when they learn that the system and its acceptance in Kenya are unlike anywhere else in the world, and particularly when compared to America and Europe where no equivalent mobile money transfer service exists. But the service is not without problems: users have come to depend on M-PESA to meet their needs upon demand. And the service has a responsibility to do so if they expect their customers to continue placing trust in the service. Delays in the system are becoming more common, according to most agents included in this study. Furthermore, the agents’ perception is that Safaricom is not investing properly or equitably to improve network access in places where customers already depend on its services. And although customers are happy with Customer Care, Safaricom’s dispute resolution policies are despised by its user base, particularly in rural areas, for the delays they impose on money they were depending on to meet basic needs.

According to one M-PESA agent in Mombasa, Safaricom used to send notifications to M-PESA agents about upcoming downtime with the system, alerting them so they could alert their customers that they should transact essential business before the outage occurs. Lately, though, he said that notifications have stopped coming before the outages⁸⁰. Another clerk shared that the dreaded “M-PESA has received your request and there will be a fifteen minute delay. Please do not resubmit” SMS

⁷⁹ David. Personal interview. 25 Nov. 2011.

⁸⁰ This could also be due to the fact that outages are now unplanned – in fact, an increase in the reliability of the system that Safaricom has control over. Desperate economic times may have led to an increase in theft, suggested as the cause of some of the recent outages (Anwahr. Personal interview. 22 Nov. 2011.)

messages have been coming more and more frequently, and often taking as long as a day to resolve and for a request to process through the system⁸¹.

Fraud is another ubiquitous concern, equally feared in the city and in the countryside. Fraudsters send fake, non-system-generated M-PESA messages claiming to have transferred funds for the purchase of goods in one scheme, when no funds have actually been moved. An alert user could notice the incorrect M-PESA balance and, upon further investigation, the fact that the message didn't actually come from the M-PESA system. In another setup fraudsters call a subscriber's number insisting that they accidentally sent a large sum of money to him or her – "and while you wait for the confirmation to come through, could you kindly send them back a small part of it?", claiming they are awaiting the funds to complete a critical transaction.

This sort of fraud is also easily combatted through user and agent education, an effort that Safaricom and its agents are taking very seriously. Agents in Taita-Taveta reported gathering regularly, sometimes as often as once a month for education on fraud-related topics⁸², and Safaricom ran a "PIN Yako Siri Yako" ("your PIN is your secret") advertising campaign nationally when fraudsters started calling users claiming to be Safaricom employees and asking for their PIN numbers. As users learn to spot fraud, tactics will no doubt increase in complexity. Safaricom seems to recognize the importance of minimizing fraud, and is taking preventative measures seriously: they recently partnered with the Kenya Prison Service to block cellular phone reception in prisons, where most of the fraud was originating⁸³. As one Mombasa M-PESA user pointed out, though, there are fraudsters that utilize M-PESA just like there are fraudsters that stand in the street hawking fake goods – in a way, fraud is a cost of business with any successful system.

⁸¹ Alice, and Pahani. Personal interview. 24 Nov. 2011.; Anwahr. Personal interview. 22 Nov. 2011.)

⁸² Irene. Personal interview. 18 Nov. 2011; Joyce. Personal interview. 18 Nov. 2011.

⁸³ Mark, Okuttah. "Safaricom Partners With Kenya Prisons to Tame Fraudsters."

One concern that was common in both urban and rural areas was interpreted very differently in each. It is unfortunately common for subscribers to send money to the wrong person when using M-PESA. Although the system confirms the number that money is being sent to, the name stored in the system isn't confirmed until after the transaction has taken place⁸⁴ and users often don't realize they're sending money to the wrong recipient until the transfer has been completed.

Once money is sent to the wrong person, it's instantly deducted from the sending user's balance and credited to the receiving user's balance (here, a strength of the system becomes its own weakness). Sometimes, users who receive cash they hadn't been expecting will return it to the sender in good faith; other times, they'll start running as fast as they can to the nearest M-PESA shop to withdraw the money. When money is mis-sent, unless it is returned immediately, either the sending party or an M-PESA agent they've frantically sought out in the meantime will call M-PESA Customer Care. While all agents encountered in this study knew this number by heart, many users didn't⁸⁵.

When Customer Care is reached, they will immediately put a block on the account that received the errant funds so that no withdrawals can be made – keeping the sending user's funds safe but imposing a significant inconvenience on the receiving user. Once funds are collected for return to the sending user, the receiving user's account is unblocked immediately but it takes a full 72 hours for the mis-sent funds to reappear in the sending user's account. If the errant receiver does manage to

⁸⁴ This is partially due to limitations present in the SIM Toolkit, the simple but ubiquitous software platform on which M-PESA runs: once a request is sent to the system, the application must exist – there is no facility to await a reply. A two-step transaction would have been much more technically and logistically complicated, as well as much more complicated for the users of the system. There was a notable improvement two years ago when Safaricom added support for phonebook searches when sending M-PESA transactions; previously, users had to look up a number in their phonebook, write it down or remember it, and then launch M-PESA and manually input the number. This upgrade is standard on all new Safaricom SIM cards, and, according to posters in shops visited for this research, was offered as a 50 Ksh (about \$0.50) upgrade to early users.

⁸⁵ The general M-PESA Customer Care number is 234 from any Safaricom line, although there is also an M-PESA menu option to call customer care. Agents also have access to an agent-only customer care line (5234) through which they receive service that, according to one agent, is substantially faster than the service received through the standard customer care line (Naume. Personal Interview. 24 Nov. 2011.)

withdraw the funds, Safaricom takes no liability for the missing money but does block the thief's M-PESA account indefinitely⁸⁶.

In urban areas, they looked very favorably on the actions taken by Customer Care to retrieve misdirected funds: the subscribers say that they are getting the funds back, and many clerks had a 100% success rate with their calls to Customer Care resulting in returned funds. However in rural areas, where the success rates of money return are nearly the same as urban areas, subscribers expressed significant practical concern about the 72 hour delay in getting misdirected funds returned. The misdirected money is money that the subscriber was counting on that day and that they may even have spent all day walking to the M-PESA location where there is cellular service only to find out the funds were unavailable and couldn't be re-sent for three days⁸⁷. In urban areas, other avenues of cash procurement are available – but this is often not the case in rural areas. Although the misdirected money is eventually returned, and although the mistake was not Safaricom's doing, the delay in returning the funds leaves many rural users struggling to make ends meet.

Surprisingly, a concern that was expressed only once was physical theft of cash. Many of the clerks that were interviewed for this study simply sit behind a desk in an open area with a log book, a phone and a pile of cash. Only one location visited for this research had a security guard, and some locations didn't even have a security cage around the M-PESA agent. Nonetheless, only one agent mentioned the possibility of physical robbery; all of the others spoke only of electronic theft and fraud.

While agents are unconcerned about theft of cash, one of their primary concerns is "theft" of business by nearby agents. Agents in Mombasa and Likoni spoke of competition as a significant and increasing impact to business. "Business isn't good" was a common opening line at M-PESA agencies in

⁸⁶ Joyce. Personal Interview. 17 Nov. 2011.

⁸⁷ Esther. Personal interview. 18 Nov. 2011.

Mombasa. Most agents blamed the wild proliferation of M-PESA agencies that has spread business too thinly, while a few also mentioned the shrinking of disposable incomes⁸⁸.

In Mombasa proper, where the saturation of M-PESA storefronts is many times higher than in Likoni or in Taita-Taveta, not a single M-PESA agents said that business was very good⁸⁹. Safaricom may be reaching a critical mass of M-PESA shops at which convenience to the customer ceases to increase while dealers lose revenue and M-PESA agency becomes an untenable business option. Furthermore, M-PESA customer growth is slowing and the growth of agencies must change correspondingly.

Despite these customer and dealer concerns, everyone interviewed during this study spoke very highly of M-PESA as a whole. M-PESA clerks spoke over and over again of what a good business opportunity the shop had created for them, allowing them to bring home regular and very respectable incomes for their families – and with Safaricom’s latest numbers putting the total number of agents alone topping 32,000⁹⁰, the number of jobs the services has created is significant.

M-PESA Into The Future: Thoughts and Recommendations

Why M-PESA has been successful is a discipline of study in and of itself, with many articles published each year trying to reconstruct the many causes of the service’s success. But what does the future hold? What lies ahead for M-PESA? Safaricom has made it clear that they want to continue to expand M-PESA’s service offerings and their stream of revenue from the service. In the first half of 2011, the 7.9 billion Ksh in revenue from M-PESA made up a full 17% of Safaricom’s operating revenues⁹¹. Safaricom has emphasized growth in service offerings and revenue from M-PESA as a primary strategic focus in its last few annual reports⁹².

⁸⁸ Patricia. Personal Interview. 14 Nov. 2011.

⁸⁹ A piece of this is cultural: the culturally appropriate response is always that business is “okay.” However, most clerks expanded on the thought saying that business was actually underperforming their expectations.

⁹⁰ Safaricom, Ltd. “Half-Year Results Presentation.”

⁹¹ Ibid.

⁹² Safaricom, Ltd. “FY 2011 Results Announcement.”

However, M-PESA user growth is slowing - from a 197% growth in fiscal year 2008, the service dropped to a 45.5% growth in fiscal year 2010⁹³. M-PESA is at 82.4% market penetration with 18.1 million customers according to the latest numbers available from Safaricom⁹⁴. Where the company will find new money in the service, and how the population will respond to these growth attempts, is going to determine the future of the service. Avenues of expansion being proffered by corporations include bank integration and creating a "market ecosystem" around the M-PESA, and this section will consider each of those ideas briefly while offering the author's own opinion regarding M-PESA expansion.

Without a course correction, the future for M-PESA bank integration, including the flagship M-KESHO service, is dim: the factors described time and again by customers and by clerks as reasons to use and trust M-PESA are not present in the numerous attempts at bank integration currently on the market. M-PESA's general reliability, ease of use and utter simplicity, as well as the system's speed – the fact that transactions would clear while users watched - were all crucial to the service attracting a critical mass of customers. The banking integration systems as they are currently implemented offer none of these things. Transactions are delayed for long and unpredictable windows of time, using the services requires operating a number of different phone menu systems and an understanding of the way that the accounts are linked. Also critically, if something goes wrong, M-PESA's large network of retail agents can offer no assistance because they often have little knowledge of the systems themselves. The integration service runs into the same issues with the traditional banking system's reach that helped make M-PESA successful in the first place.

While the mobile banking integration is an appealing idea and may eventually satisfy a wealthier segment of the population, the implementations are not ready for the general population and does not present an appropriate future avenue for M-PESA expansion. There are opportunities for M-PESA integration with microfinance payments and capital distribution that look promising; however, visions of

⁹³ Safaricom, Ltd. "Half-Year Results Presentation."

⁹⁴ Ibid.

M-PESA as a gateway to traditionally “banking the unbanked” are too far-sighted. Full bank integration is not yet what most subscribers desire, and their needs will always drive adoption of the services offered. People know and understand M-PESA, appreciate its simplicity, and are reluctant to fix what (from their point of view) isn’t broken.

M-PESA will face notable competition from Orange Money, a mobile money product released by Safaricom’s competitor Orange Wireless. Launched in 2010, Orange Money effectively a phone-based “front end” for accounts at Equity Bank⁹⁵ - the account from which users withdraw via phone is the same full bank account from which they can draw checks and access with an ATM card. Orange has a lot of ground to make up in terms of ubiquity of agencies, but the Orange Money product will be a key field test of a fully-integrated model.

In addition to competition from new services, there has been a rapid and confusingly large proliferation of derivative products that rely on an existing money transfer platforms, both M-PESA and its competitors. One example in this category is a rechargeable Visa Electron card that is purchased at a bank but that can be topped up via phone. The mobile money market is opening up as other carriers gain the courage to take on Safaricom’s longstanding dominance, and these competitive pressures will drive change in the mobile money market over the next few years⁹⁶.

Another strategic objective in Safaricom’s plan is the creation of a “market ecosystem.” Although the words are catchy and appealing, practical success seems unlikely. Although M-PESA is relatively fast, it is too cumbersome become a primary method of payment for daily transactions (although occasional small value purchases, and payments for small value services – such as transportation – would be viable), and without network improvement delays are too frequent.

⁹⁵ Lyon, Ben. "The Kenyan Mobile Money Ecosystem."

⁹⁶ For a simple and comprehensive summary of all of the mobile money services and aggregation companies currently in the market, please see The Kenyan Mobile Money Landscape, a well-written summary compiled by payment systems startup Kopokopo’s co-founder Ben Lyon: <http://whiteafrican.com/2010/12/08/the-kenyan-mobile-money-ecosystem/>

Additionally, as it currently stands, the pricing structure of the service doesn't make small purchases economically feasible. It is likely to be the middle and upper classes who would be the first adopters of expansion of the service into a more complex purchasing service, and they would undoubtedly desire access to more detailed accounting and budgeting tools, as are common with many credit cards.

The author sees three primary and viable directions for M-PESA improvements⁹⁷: service quality, pricing structure, and community engagement. The first avenue is service improvement: before service expansion can take place, steps need to be taken to make M-PESA a no-downtime service. If customers are going to expand their trust, the network will need to improve the reliability of its services through whatever means necessary, including the provision of additional towers or redundant data systems. Such network improvements would have a tangential benefit of improving voice and increasingly-important data service for all Safaricom subscribers, whether or not they chose to utilize M-PESA.

Secondly, the M-PESA pricing structure, which with the exception of deposit and transfer minimums, has stayed consistent since the service's launch, needs an update to encourage smaller-value transactions. Market research would need to be conducted to understand the correct pricing levels in a new structure, but by providing a reasonable pricing structure to allow for 50, 100 or 150 shilling purchases, Safaricom would allow the market ecosystem it seeks to develop naturally and with little further intervention - in much the same way that M-PESA has grown until this point in time. With a clear marketing message coinciding with the pricing change and with a release in concert with the release of M-PESA integration products for small and medium enterprises currently under development

⁹⁷ There are two notable developments in service improvements that fall outside the scope of this paper. Firstly, Safaricom has recently formed a partnership with Western Union, to allow money transfers into and out of foreign countries. While the author was unable to test the system, it seems to be well designed: payments can be sent from any Western Union location using only the recipient's Safaricom phone number as the delivery address, and payments are processed quickly. The international payment market is another promising extension of the service, taking its original purpose and adding simple and in-line international functionality. Secondly, there are a number of rapidly maturing startup companies – most prominently PesaPay and KopoKopo – that are backed by national and international investors and developing software and services to integrate M-PESA payments into business systems for small-and-medium enterprises. Software at KopoKopo is currently in beta testing.

at startup firms in Nairobi, the author believes that the new pricing structure would naturally build a network of support in both customers and business owners.

Finally, avenues of innovation in community partnerships hold strong possibilities for service expansion and increased revenue for Safaricom while creating an improved social situation. The basic M-PESA service is well understood and accepted, and applying the M-PESA technology to serve community needs in clever ways should be an area of focus for Safaricom. The company can look to examples of applications in rural areas, including Grundfos' LifeLink project, for examples. In addition to the social benefits that would be derived from such programs, revenue from M-PESA has never come from extraordinarily high-value transactions but rather has come from the combination of hundreds of thousands of smaller-value transactions: there remains a strong business case for such integration. There is a very real danger for Safaricom in alienating its existing subscribers by making the service too complex in their attempt to make M-PESA ubiquitous; the path to ubiquity lies not in increased service complexity but in increasingly clever and fine-tuned applications of the service.

Conclusion

M-PESA transformed inter-country money transfer in Kenya nearly overnight and in doing so has made practical improvements in the lives of countless individuals. From unsuspecting roots, suspicious mobile phone executives and a population without any formal banking accounts, M-PESA has grown to drive the Kenyan economy by storing and transferring money at a scale previously unimagined in the developing world. There is no doubt that it has significantly improved the lives of countless people, rich and poor: it has moved money to pay for hospital bills where there are sick people, buy food where there is famine, and has helped abused spouses save up enough money to get out of their oppressive

situations⁹⁸. It has and will continue to enable many more entrepreneurs the opportunity to put their ideas into action than ever before, and has allowed many already successful businesspeople to expand their reach.

The varying usage across the three regions considered in this study demonstrates how the service has been adapted to suit local needs. It is clear that M-PESA's use by NGOs in distributing famine aid has expedited the delivery of money to where it's needed and reduced costs, allowing each aid dollar to go farther, faster. Even the significant amount of interest earned from all of the money held in escrow is going toward a good cause. In a way, M-PESA – both simple and flexible - has helped democratize money in Kenya, reaching old and young, rural and urban, farmers, beggars, doctors and lawyers alike.

The strength of Kenyan families, the shared nature of finance Kenya, and the consistent rural-urban migratory patterns have driven heavy adoption of the service. The ways in which M-PESA has enabled families and friends to support one another through crisis and everyday life alike are notable, and while the service does not change any of the structures that create poverty, it does allow a safety net when living hand-to-mouth with no cash reserves. At its core, M-PESA is a service that enables two, three, four or thousands of people to come together to achieve a common goal; it is a structured version of the concept *harambee* (coming together) that has driven many acts of public and private good in Kenya since independence.

The future of the service is uncertain; the success of bank integration or the success of a “market ecosystem” around the core service is even more uncertain. What is certain is that the Kenyan population will continue to support one-another with the service, and that entrepreneurs will continue to invent new and clever implementations of the technology to conduct business and improve lives. The example of M-PESA will always remain in the history books as an example of a public-private partnership

⁹⁸ For more about the impacts of M-PESA, please reference the excellent work done by Plyer, Megan G, Sherri Haas, and Geetha Nagarajan. *Community-Level Economic Effects of M-PESA in Kenya: Initial Findings*.

that succeeded, as a service that is both profitable for a company, affordable for the customer, and quite beneficial for both. And in the meantime, the Shillings flow to and from rural areas as M-PESA continues to hum away, instantly moving money hundreds of miles at the press of a button.

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- Naume. Personal interview. 24 Nov. 2011. Naume is a clerk at an unbranded M-PESA shop near the police station in Likoni.
- Nuzla. Personal interview. 22 Nov. 2011. Nuzla runs a number of businesses from her home and is a long-standing community coordinator for the One Shilling A Day Foundation.
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- Peter. E-mail interview. 23 Nov. 2011. Peter is an undergraduate student at the University of Nairobi who runs the website <http://www.thinkm-pesa.com/>, a showcase for M-PESA's applications for social impact.
- Phyllis. Personal interview. 9 Nov. 2011. Phyllis is the supervisor at the Safaricom Outlet on Moi Avenue, Mombasa.
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- Solange. Personal interview. 25 Sept. 2011. Solange works for a major international charity managing emergency services in the East African region.
- Sulvana. Personal interview. 18 Nov. 2011. Sulvana is a clerk at Webb Communication's outlet in Werugha, Taita-Taveta district.
- Syria. Personal interview. 14 Nov. 2011. Syria is an M-PESA clerk at Asiss Communications on Nyerere Road, Mombasa.
- Tawfiq. E-mail interview. 14 Nov. 2011. Tawfiq works at ServTel, an M-PESA superagent located on Moi Avenue in Mombasa.
- . Personal interview. 11 Nov. 2011.
- Thompson, Edwina A. "An Introduction to the Concept and Origins of Hawala." *Journal of the History of International Law* 10 (2008): 83-118. *Academic Search Premier PLUS*. Web. 25 Oct. 2011.
- Unknown. Personal interview. 10 Nov. 2011. Clerk at DahabShiil Outlet, Digo Road, Mombasa
- Unknown 2. Personal interview. 22 Nov. 2011. Clerk inside Missisipi Communications booth on Moi Avenue, Mombasa.
- Unknown 3. Personal interview. 23 Nov. 2011. Clerk at Brit Travel & M-PESA business, Likoni.
- Unknown 4. Personal interview. 25 Nov. 2011. A teller at Cfc Stanbic Bank, intersection of Nkrumah Road and Nyerere Road, Mombasa.

Appendices

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Appendix A – Map of Research Locations



Original map courtesy of the Nations Online Project: <http://www.nationsonline.org/maps/kenya-administrative-map.jpg>

Appendix B – M-PESA Tariff Table

Transaction type	Transaction range (KShs)		Customer Charge (KShs)
	Minimum	Maximum	
Value Movement Transactions			
Deposit Cash	100	35,000	0
Send money to a registered M-PESA user	100	35,000	30
Send money to a non-registered M-PESA user	100	2,500	75
	2,501	5,000	100
	5,001	10,000	175
	10,001	20,000	350
	20,001	35,000	400
Withdraw cash by a registered M-PESA user at an M-PESA Agent outlet	100	2,500	25
	2,501	5,000	45
	5,001	10,000	75
	10,001	20,000	145
	20,001	35,000	170
Withdraw cash by registered M-PESA user at PesaPoint ATM	200	2,500	30
	2,501	5,000	60
	5,001	10,000	100
	10,001	20,000	175
Withdraw cash by a non-registered M-PESA user	100	35,000	0
Buy airtime (for self or other)	20	10,000	0
Pay Bill Transactions	–	–	0 - 30
<ul style="list-style-type: none"> Transaction fees of between KShs 0-30 applicable depending on the organization you are paying to Confirm that the company you intend to pay to accepts payment via M-PESA before transacting 			
Information Transactions			
Show Balance			1
Change Secret Word			0
Change PIN			20
Update Menu			0
Change Language			0
SIM Replacement			20

- **FREE REGISTRATION**
- No minimum balance required
- Maximum Account Balance KShs 50,000
- Maximum daily transaction value KShs 70,000
- No monthly fees / No hidden charges
- All SMS sent to and from M-PESA are FREE
- To use M-PESA, your Safaricom phone needs to be ACTIVE

- All charges are deducted by M-PESA from your M-PESA account
- To send PESA you must first deposit money into your own M-PESA account. You cannot deposit money directly into another person's M-PESA account.

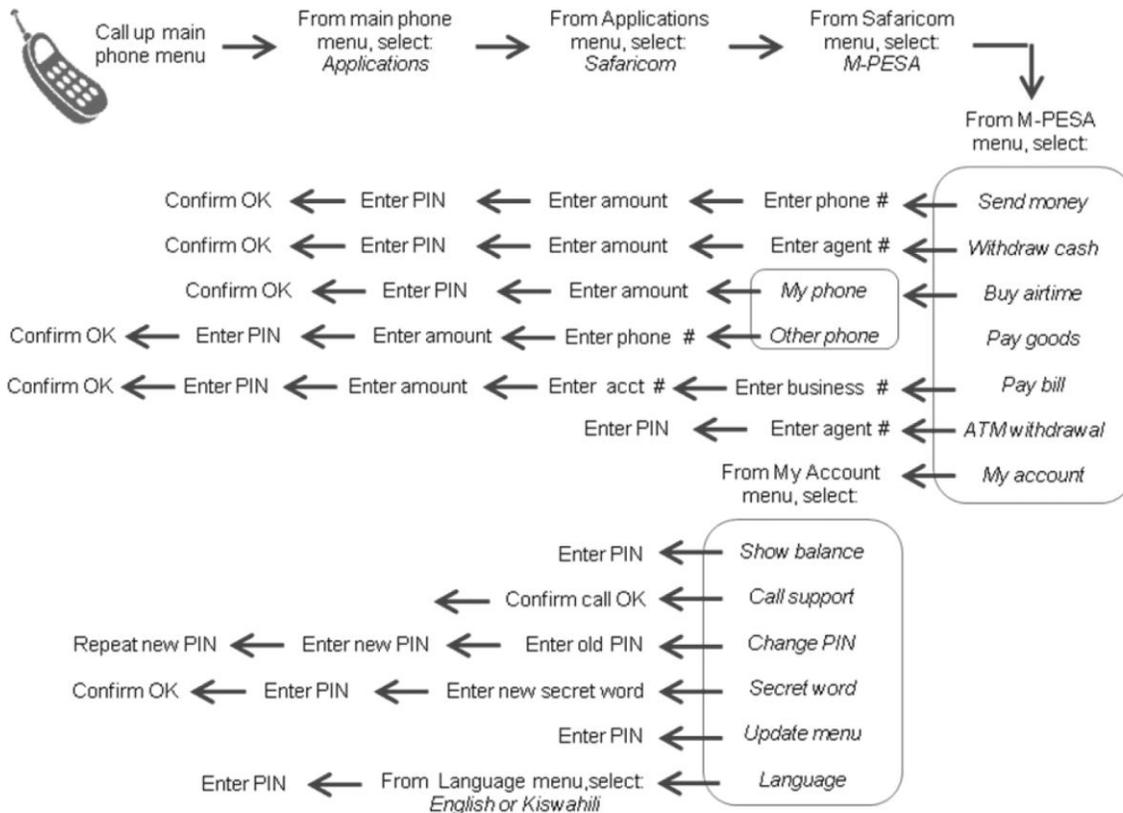
To register or transact at any M-PESA agent you will need your original identification document: National ID, Passport, Military ID, Diplomatic ID or Alien ID.

Customer Care: Dial 020-4272234 (Chargeable Call) or Dial 234 FREE from your Safaricom Mobile (Registered Customers). Safaricom Ltd., Safaricom House, Waiyaki Way, P.O. Box 46350, 00100 Nairobi. Tel: (020) 427 3272
www.safaricom.co.ke Terms and conditions apply.



Safaricom, Ltd. "M-PESA Tariff." Safaricom. Safaricom, Ltd., n.d. Web. 24 Nov. 2011.
<http://www.safaricom.co.ke/fileadmin/M-PESA/Documents/MPESA_TARRIF.pdf>.

Appendix C – M-PESA Phone Menu Structure



Mas, Ignacio, and Olga Morawczynski. "Designing Mobile Money Services: Lessons from M-PESA." *Innovations* 4.2 (2009): 80. *Social Science Research Network*. Web. 20 Oct. 2011.

Appendix D – Photographs of M-PESA Agencies



Mombasa



Likoni: two M-PESA agencies, one building



Mombasa



Mombasa



Likoni

Appendix E – Literature Review

Published literature is quite important to this study, and a few notable works are reviewed in the following pages. In *3 Keys to M-PESA's Success*, published in 2010 by Ignacio Mas and Amolo Ng'weno under funding from the Bill and Melinda Gates Foundation, the authors examine the ways in which Safaricom's approach to developing the service has led to its success. The authors begin by exploring Safaricom's marketing strategy and its evolution from the simple, direct and relevant "send money home" at the service's launch into more complex variations in time with the development of the service and the development of understanding in the population. Next, consideration is given to "channel management," or the ways in which Safaricom manages its retail outlets, including the hierarchical organization structure Safaricom has implemented and an overview of the ways it manages to balance cashflow throughout the network. Finally, the authors turn to the pricing structure for consumers and the commission structure for the retail outlets. The paper provides significant technical and business strategy background on the setup of M-PESA as well as its trial and rollout phases and its later success.

The article is an excellent resource: it offers quite detailed consideration of each of its three foci, and both authors are highly reputable: each has a wide range of industry experience and is a de-facto mobile payments expert in the academic community. In particular, Mas has been involved in the majority of the scholarly work regarding M-PESA in Kenya. Although the article is well written and the information trustworthy, the authors do not address the historical development of M-PESA in Kenya, nor do they provide any analysis whatsoever of the cultural context surrounding Safaricom's corporate strategy.

Mobile Payments Go Viral, coauthored by Ignacio Mas and Dan Radcliffe of the Bill and Melinda Gates Foundation and included in the *Yes Africa Can* collection published by the World Bank is a superb source of figures and analysis. Any work on M-PESA that carries Mas' name is reputable, and he is the

primary author of this study. The study begins with raw figures aggregated from many different sources that give the reader a good feel for the popularity and adaptation of M-PESA. The authors then examine the success of M-PESA from three separate angles: Kenya's environment, the service design, and Safaricom's execution.

The article is structured similarly to Mas' previous publications and, although the article claims to evaluate the cultural factors surrounding M-PESA in Kenya specifically, it fails to do so from more than a perfunctorily non-economic viewpoint. The article evaluates Kenya's urbanization ratio and references the continual and significant rural-urban migration and the underbanked nature of the society, but that is the extent of the article's evaluation of the cultural situation on the ground in Kenya. This article is referenced here particularly because it highlights gap in the extant literature that this study is designed to help fill.

In their 2007 article in *Innovations* magazine entitled *Mobile Money for the Unbanked: Turning Cell Phones Into 24-Hour Tellers in Kenya*, Nick Hughes and Susie Lonie, a Vodafone executive who was the sponsor of the M-PESA project since its beginnings in 2003 and an m-commerce expert responsible for the on-the-ground testing and implementation of M-PESA respectively, outline their views on the development of the service. Mr. Hughes writes first about how the idea for M-PESA developed in his mind and how he secured executive support and funding for the project. Mr. Hughes is followed by Ms. Lorie, who shares her experiences on the ground pilot-testing and how she and her team overcame hurdle after hurdle toward the successful launch of M-PESA.

The article is not very technical, provides few quantitative figures, and was published too soon after the launch of the service to provide any significant retrospective on the service's rapid expansion. Nonetheless, the article provides critical background on the way that ideas formed in the initial and later stages of the development of the service; what was on the minds of the people who were behind the

service. A comparison of the ideas expressed here with the ways that the service has, in fact, developed and is being used is quite instructive.

Megan Plyer and her colleagues have significantly shaped the field with the first major and in-depth study of M-PESA's direct effects on communities with their work, *Community-Level Economic Impacts of M-PESA in Kenya: Initial Findings*. The study was focused on Kibera, Murang'a and Kitui and included market observation, focus group discussions, short surveys, and individual interviews with key informants. The study identified four major areas affected by M-PESA, listed in order from most to least impacted: local economic expansion, security, capital accumulation and the business environment. Each effect is then sub-divided resulting in eleven community-level effects, which are then further sub-divided and examined in-depth using the study's "deep dive" methodology.

The team's work is particularly detailed and thoughtful, and they have very clearly outlined their uniquely comprehensive methodology and the motivations behind it. The present results in a very detailed and organized manner. Although the results of their work are outside the scope of this present study, the article provides a good background to any research about M-PESA with its analysis of the system's effects in almost every sector of the economy. The strength of this study is in its simultaneous breadth and depth: the research team has found a way of exploring what M-PESA *means* to the well-being of communities and individuals on both quantitative and qualitative levels.

Articles, including the few reviewed above, provide the foundation of this study. Since this study cannot possibly compare in scope to the research already in the literature, an attempt at a comparison study between this work (generally country-wide) and specifics on the coast is neither feasible nor helpful. Nonetheless, while many articles that claim to provide a background on M-PESA's unreplicable success in Kenya provide valuable material used in the formulation of the research questions in this report and useful in framing this report's findings, none of the existing studies give a thorough anthropological consideration to the reasons for the service's success. Rather, most of the literature is

written by academic economists and focuses primarily on the business case for the service's success, treating the cultural factors only tangentially.

Appendix F – Limitations and Recommendations for Future Studies

Although many interviews were conducted for this study, research work was limited by a number of factors. Primarily, the present security situation in Kenya and restrictions time impacted research for this study. Travel to Nairobi was not allowed by the program during my stay in Kenya, where many important offices, companies and facilities relating to M-PESA are located. Additionally, this study suffered from a lack of time to interview as many participants as the author had hoped.

Tying both of these factors together is an inadequate topic selection process. While the topic of this study originally sounded specific enough, the length of this paper demonstrates the amount of information that was obtained. Any sub-section of this paper (for example, “M-PESA Use in Taita-Taveta,” or “M-PESA and Bank Integration on the Kenyan Coast”) could become a full-fledged research project of its own.

The author spent a significant amount of time developing a detailed understanding of the M-PESA system, a time-consuming process that was necessary to contextualize interviews that, because it composed a significant portion of the author’s work, also composes a significant portion of this write-up. In order to understand the system’s uses, the author and readers must understand the system, and to do so takes time in the field and space in a paper.

Another significant limitation in the research method used for this paper is the focus on clerks as sources of information. As mentioned in the paper, clerks are great interviewees – they are easy to find, available, knowledgeable, generally have a historical perspective, and know many customers – their role as the “face of M-PESA” in the communities they serve means they see some of the best and the worst the system and its users have to offer. However, since almost all user responses were aggregated through clerks, there is an inevitable imposition of a significant and additional bias from the clerks themselves. In a study with a longer timeframe or a smaller geographical focus, this could be avoided by

interviewing or surveying a wide pool of users in a given area, or selecting a small case study of users to cover in detail.

The author recommends that further research focus research questions and “deep dive” into a particular sub-category of research covered in this study or in other published research. Future authors can use the outline of M-PESA’s systems provided here and in other published sources as a guide and as a way to expedite the initial learning curve. Generally, there is a lack of published literature about M-PESA and its uses on the coast and that void can be filled by student work.