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A Quantum Leap over High Hurdles to Financial Inclusion: The Mobile Banking Revolution in Kenya

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A QUANTUM LEAP OVER HIGH HURDLES TO FINANCIAL INCLUSION: THE MOBILE BANKING REVOLUTION IN KENYA

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Abstract

A powerful tool to achieve equitable development is promotion of economic empowerment for marginalized citizens by increasing formal financial services access and utilization. The provision of these services via mobile phones has shown great promise in overcoming geographic, demographic, and institutional constraints to financial inclusion, especially in Africa and led by the mobile banking revolution in Kenya. This is exemplified by the extraordinary success since 2007 of Safaricom's M-PESA, a mobile phone-based money transfer, payment, and banking service: as of June 2015, Safaricom had more than 22 million M-PESA subscribers served by over 90,000 M-PESA agents. The confluence of several factors have contributed to M-PESA's success, including Kenya's political and economic context, demographics, telecommunications sector structure, lack of affordable consumer options, and enabling regulatory policies. Equally important have been Safaricom's internal astute management and marketing of M-PESA. But M-PESA is now facing a strong new rival in Airtel Money, offered by Equity Bank, Kenya's third largest bank. Now two different models for mobile financial services are competing vigorously in Kenya: Safaricom, an example of telecom-led mobile banking and Equity Bank, an example of bank-led mobile banking. There are three key challenges in Kenya to further promotion of financial inclusion via development of mobile financial services: facilitation of increased competition; transformation of non-digital microfinance institutions; and enactment of greater consumer protection. Where Kenya's success factors might be present, many of Kenya's lessons can be adapted. Where conditions are significantly different, the challenge becomes how best to nurture home-grown innovative solutions to address specific local constraints.

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Acronyms

AML: Anti Money Laundering
ASCA: Accumulating Savings and Credit Association, sometimes called “table banking”
CAK: Communications Authority of Kenya
CBK: Central Bank of Kenya
CGAP: Consultative Group to Assist the Poor
Chama: Informal credit and savings group in Kenya
EBS: Equity Building Society
FSD Kenya: Financial Sector Deepening Kenya
Global Findex: World Bank’s Global Financial Inclusion Database
GNI: Gross National Income
GSMA: Groupe Speciale Mobile Association
HKS: Harvard Kennedy School
KYC: Know Your Customer
Ksh: Kenya Shilling
Lipa Na M-PESA: A mobile phone-based service for paying merchants
MFI: Microfinance Institution
MFS: Mobile Financial Services
MNO: Mobile Network Operator
M-PESA: Literally, “Mobile Money” in Swahili, a mobile phone-based financial service
M-Shwari: A mobile phone-based savings-and-loan product
MVNO: Mobile Virtual Network Operator
PostaPay: Kenya Post Office’s money transfer product
ROSCA: Rotating Savings and Credit Association, sometimes called a “merry-go-round”
SACCO: Savings and Credit Cooperative
SIM: Subscriber Identity Module, a data storage smart card for cellular telephone subscribers
SME: Small and Medium Enterprise
USSD: Unstructured Supplementary Service Data

A Quantum Leap Over High Hurdles to Financial Inclusion:

The Mobile Banking Revolution in Kenya

I. The Importance of Research on Financial Inclusion

In many low-income and transitional economies, most households and businesses do not have access to formal financial services. This "unbanked majority" therefore faces high transaction costs for payment services, cannot use cash savings services for income smoothing and asset accumulation, does not have the option of generating additional income and investment through conventional credit services, and lacks risk management tools such as health and crop insurance to decrease vulnerability to external shocks. High-income countries also have significant unbanked or underbanked populations, usually low-income households and family businesses, with similar high financial and opportunity costs.

The primary purpose of promoting financial inclusion is thus to ensure equal opportunity to utilize services that are essential in managing household and enterprise finances, regardless of one's income level or size of business. Financial inclusion initiatives seek to mitigate financial marginalization through innovations in financial product design, delivery, and regulation, thus promoting more equitable and sustainable growth through economic empowerment of the financially excluded.

The objective of this research is to increase our understanding of the most promising innovations in financial inclusion by documenting and analyzing them in a systematic and rigorous fashion. The focus is on sub-Saharan Africa, through the lens of Kenya, as this is a region where the benefits of financial inclusion can have a tremendous impact on poverty reduction. The focus is also on mobile banking, because this technology offers great promise in overcoming geographic, demographic, and institutional constraints to financial inclusion in sub-Saharan Africa.

II. The Context of Prior Research Sponsored by the SWIFT Institute and HKS

On 1 March 2013, the SWIFT Institute and Harvard Kennedy School (HKS) co-hosted an international conference on financial inclusion, "Bridging the Gap: How Can Banks Reach the Unbanked?"[1]

This conference brought together more than fifty scholars, government officials, and banking leaders from around the world to discuss new opportunities and challenges in bridging the gap between the unbanked and the formal banking sector. The conference offered participants an opportunity to assess over thirty years of research on financial services for low-income households and family businesses, and to evaluate the latest attempts to broaden coverage of the unbanked and the underbanked.

Not only did mobile banking receive considerable attention at the conference, but shortly before the conference the SWIFT Institute also published a related study on the use of mobile money to promote savings in Northern Ghana (Aker and Wilson 2013).

Regarding microbanking in Kenya, HKS has been studying this since it sponsored a case study on K-Rep Bank and an accompanying study of financial intermediation fifteen years ago (Rosengard 2001 and Rosengard et al. 2001) – K-Rep Bank was the first microfinance institution (MFI) in sub-Saharan Africa to receive a commercial banking license, which paved the way for many other MFIs in the region to follow suit. Much has changed since then, and K-Rep Bank has become a niche microfinance bank while Equity Bank has become Kenya's most dominant and innovative microfinance and SME (small and medium enterprise) bank. Moreover, the technology to promote financial inclusion examined in this paper was not even available just a few years ago.

In short, this research provides a wonderful opportunity to revisit a dramatically changed microfinance market in Kenya, as well as to present current achievements and challenges in very poorly documented Africa. It is also a nice follow-up to the HKS-SWIFT Institute March 2013 conference on financial inclusion.

[1] http://ash.harvard.edu/news/ash-center-bridging-gap-how-can-banks-reach-unbanked

III. Research Framework, Focus, and Methodology

Framework and Focus

This is not a study about mobile banking technology in a conceptual vacuum. Instead, it investigates the coupling of technological innovation with complementary innovation in product design, product delivery systems, and institutional structures to promote financial inclusion, using Kenya as a case study for the research. The study is market based and client focused, with mobile banking a part of an innovative tool kit to achieve the broad policy objective of more sustainable, equitable growth through enhanced financial inclusion.

Within this general conceptual framework and specific research focus, there are three issues of special interest that are explored in depth:

- The relationship between the telecommunications-led and bank-led models of mobile banking: M-PESA, a mobile phone-based financial service run by mobile network operator Safaricom that originally facilitated payments but now offers many other financial services, and Equity Bank's efforts to expand its branch and agency banking network through establishment of its own mobile virtual network operator (MVNO).
- Regulatory challenges to the Central Bank of Kenya (CBK) and the Communications Authority of Kenya (CAK) of mobile phone-based quasi-banking services, and the evolving regulatory regime in Kenya to address these challenges. For example, the study will analyze M-PESA's special license from Kenyan regulators, M-PESA's accommodation of KYC (Know Your Customer) and AML (Anti Money Laundering) requirements, and efforts to balance customer convenience with cyber security.
- General lessons from Kenya's experience, as well as the potential adaptation and replicability of Kenya's innovations to other countries both in Africa and beyond.

Methodology

The methodology for this study is applied and empirical rather than abstract and theoretical. It includes a review of the literature on both the current microbanking market in Kenya, with a special focus on Safaricom and Equity Bank, as

well as the latest developments in mobile banking, with a special focus on technologies now being used in Kenya. This desk review is complemented by empirical field research in Kenya, in order to confirm and add to data already collected, refine interpretation of these data, and enhance quantitative data with qualitative insights from key stakeholders in Kenya.

IV. The State of Financial Inclusion in Kenya

The state of financial inclusion in Kenya is extremely impressive, better than the norms for both sub-Saharan Africa and low-income countries. In 2014, for those fifteen years of age and older, the figures for Kenya are remarkable. On average, they are more than double those for sub-Saharan Africa and triple those for low-income countries, even when disaggregated by gender, income level, age, and location:

Indicator (% age 15+, 2014)	Kenya	Sub-Saharan Africa	Low-Income Countries
Account			
All adults	74.7	34.2	27.5
Women	71.1	29.9	23.9
Poorest 40% of adults	63.4	24.6	19.4
Adults 15-24 years old	66.4	25.9	20.2
Adults in rural areas	73.0	29.2	24.8
Financial Institutions			
Account	55.2	28.9	22.3
Saved at a financial institution	30.2	15.9	9.9
Borrowed from a financial institution	14.9	6.3	8.6

Source: World Bank, Global Findex (Global Financial Inclusion Database).

Even more encouraging is the rate of change in Kenya. When compared with a similar data set for 2011, Kenya's progress in making its financial sector more inclusive is extraordinary, as adults with accounts increased by 77 percent and the poorest 40 percent of adults with accounts tripled:

Indicator (% age 15+)	Kenya 2011	Kenya 2014	Change
Account			
All adults	42.3	74.7	76.6%
Women	39.2	71.1	81.4%
Poorest 40% of adults	20.7	63.4	206.3%
Adults 15-24 years old	40.3	66.4	64.8%
Adults in rural areas	n.a.	73.0	-------
Financial Institutions			
Account	42.3	55.2	30.5%
Saved at a financial institution	23.3	30.2	29.6%
Borrowed from a financial institution	9.7	14.9	53.6%

Source: World Bank, Global Findex (Global Financial Inclusion Database).

The change is even more dramatic going back to 2006, the year before the launch of M-PESA, and going forward to 2015 (FinAccess 2016):

- adults using formal (prudential and non-prudential)[2] financial services almost tripled, rising from 26.7 percent to 75.3 percent; and
- adults totally excluded from formal financial services dropped by more than half, falling from 41.3 percent to 17.4 percent.

Kenya's achievements in financial inclusion were highlighted in the 2015 Brookings Financial and Digital Inclusion Project (FDIP), which ranked Kenya first among 21 diverse countries around the world on financial access and usage according to 33 indicators covering four dimensions of financial inclusion: country commitment, mobile capacity, regulatory environment, and adoption (Villasenor et al. 2015).

While there is still a long way to go in Kenya to achieve universal access to financial services and optimal usage of financial services, Kenya's tremendous progress over a relatively short period of time is especially noteworthy given that

[2] The largest "formal prudential" providers are commercial banks, microfinance banks, and deposit taking SACCOs (savings and credit cooperatives); the largest "formal non-prudential" providers are mobile financial services, Postbank, credit-only MFIs, and non-deposit taking SACCOs; and the largest "informal" providers are self-organized *chama* groups such as ROSCAs (rotating savings and credit associations, or merry-go-rounds) and ASCAs (accumulating savings and credit associations, or table banking), supply chain credit, and moneylenders. See FinAccess 2016 for a more detailed breakdown of these categories.

Kenya just became a lower middle-income country with GNI per capita of only $1,290[3] in 2014.

V. The Mobile Banking Revolution in Kenya

Global Trends

Many of Kenya's financial inclusion achievements are attributed to its success in promoting mobile banking. The mobile banking revolution in Kenya is part of a larger global transformation in the use of mobile phones for financial services.

According to GSMA, an association of approximately 800 mobile operators around the world, the state of mobile financial services for the unbanked in 2014 was indicative of the tremendous progress made to date (GSMA 2014b):

- 255 mobile money services are now operating in 89 countries;
- In 47 of the 89 markets where mobile money is available, both banks and non-banks are allowed to provide mobile money services;
- There are almost 300 million registered mobile money accounts globally, with half of them located in sub-Saharan Africa; and
- There are 2.26 million mobile money agents in developing countries around the world, many more than the number of alternative financial access points comprising ATMs (1.38 million), commercial bank branches (524,000), post offices (501,000), and Western Union locations (500,000).

In 2014, 86 percent of mobile money account holders surveyed globally accessed their accounts via USSD[4], and excluding cash-ins and cash-outs, in the month of December alone conducted 479.5 million remittance and payment transactions totaling $7.5 billion; airtime top-up comprised 62.3 percent of the transaction volume but only 3.3 percent of value, whereas domestic person-to-person transfers made up 25.1 percent of volume but 72.8 percent of value (GSMA 2014b).

[3] All dollar figures in this text are United States dollars.
[4] USSD (Unstructured Supplementary Service Data) is the protocol for sending text across GSM networks (open, digital cellular technology used for transmitting voice and data services).

Kenyan Trends

Drawing on the World Bank's Global Financial Inclusion Database (Global Findex), the figures for Kenya are startling. To give just a few examples, transmission of domestic remittances via a mobile phone in Kenya are triple those in sub-Saharan Africa and low-income countries, while approximately five to six times the number of adults have mobile accounts in Kenya when compared with sub-Saharan Africa and low income countries:

Indicator (% age 15+, 2014)	Kenya	Sub-Saharan Africa	Low-Income Countries
Mobile account (all adults)	58.4	11.5	10.0
Sent remittances via a mobile phone (% senders)	92.0	30.8	42.8
Received remittances via a mobile phone (% recipients)	88.8	27.6	33.8

Other figures from the same data base for 2014 looking at mobile phone usage just in Kenya are equally impressive but not surprising, given that 90 percent of households surveyed in 2014 as part of an FSD Kenya[5] research project used mobile money (Zollmann 2014). For example, when the 58.4 percent of all adults with mobile accounts are disaggregated, the figures are still relatively high for demographics with the highest financial exclusion rates: mobile accounts are held by 52.5 percent of the poorest 40 percent, 50.6 percent of those with primary education or less, and 56.3 percent of rural adults. Even more encouraging is that 60 percent of Kenyans living on less than $2.50 a day have access to mobile phones.

Also, looking just at Kenya data from the World Bank's Global Findex, the use of mobile phones goes well beyond the transfer of domestic remittances. For example, 30.4 percent of adults receiving payments for agricultural products received these payments through a mobile phone and 25.5 percent of wage recipients received their wages through a mobile phone.

[5] The Financial Sector Deepening (FSD) Kenya program was established in 2005 "to support the development of financial markets in Kenya as a means to stimulate wealth creation and reduce poverty." It is funded by the UK's Department for International Development (DFID), the Swedish International Development Agency (SIDA), and the Bill and Melinda Gates Foundation.

The M-PESA Story

The primary driver of change propelling Kenya to its global leadership position in the provision of financial services via mobile phones has been the extraordinary success since 2007 of Safaricom's M-PESA, literally "mobile money," a mobile phone-based money transfer, payment, and banking service.

The story of M-PESA has been well documented elsewhere (for example Morawczynski and Pickens 2009, Kamana 2014, and Burns 2015). Suffice it to say that in Kenya today, according to the British telecommunications company Vodafone (owner of 40 percent of Safaricom), M-PESA has 19 million users transacting Ksh 15 billion (about $150 million) daily (Ochieng 2016). These transactions are dominated by domestic money transfers, but also include paying merchants via Lipa Na M-PESA[6], using a combined savings-and-loan product called M-Shwari[7], and most recently, managing accounts at commercial banks.

The confluence of several factors helps to explain M-PESA's success, the most important external ones being Kenya's political and economic context, demographics, telecommunications sector structure, lack of affordable consumer options, and enabling regulatory policies. Equally important have been Safaricom's internal astute management and marketing of M-PESA.

Although M-PESA was originally conceived as a system for repaying microfinance loans by mobile phone, it quickly became popular as a general money transfer scheme that was safe, convenient, and affordable amidst domestic sectarian violence in the aftermath of the 2007 elections that limited people's mobility and undermined their trust in banks. M-PESA then benefitted from network economies (increased value with increased number of users) because of the country's subsequent growth and stability. Kenya's skewed demographics further facilitated the growth of M-PESA, as it allowed Safaricom to concentrate its resources in relatively dense population centers.

Safaricom also benefited from its dominant position in Kenya's telecommunications sector, which was booming after a deregulation in the late 1990s that ended the state-owned monopoly and allowed for foreign investment like

[6] See the following link from Safaricom's web site for an explanation: http://www.safaricom.co.ke/personal/m-pesa/lipa-na-m-pesa
[7] See Cook and McKay 2015 for a detailed explanation of M-Shwari.

the takeover of Safaricom by the UK's telecom Vodafone in 2000. Safaricom had 73 percent market share when it launched M-PESA in 2007, which meant it could demand exclusivity rather than be compelled to offer interoperability. Moreover, despite increased competition today, it still has a two-thirds share of mobile phone subscribers and more than three-fourths of money transfer customers; its share of mobile telecommunications revenue is over 90 percent.

Safaricom's dominance of Kenya's telecommunications sector was amplified by the extremely high cost of money transfer alternatives such as Western Union, the Post Office's PostaPay, and local bus companies[8]; M-PESA was about one-third cheaper than Western Union and PostaPay, and two-thirds cheaper than the bus companies (Morawczynski and Pickens 2009).

The final key external success factor for M-PESA was the Government of Kenya's enabling regulatory approach. This was led by CBK, but has also been supported by CAK and the Competition Authority of Kenya.

Granting a telecom provider the authority to transfer money was unchartered territory with unknown consequences, especially since this combined two previously separate businesses, telecommunication services and financial services. Despite the insistence of commercial banks that CBK treat Safaricom as another bank, CBK instead granted Safaricom a special license to proceed with M-PESA on an experimental basis. This exempted M-PESA from many restrictions that serve as barriers to entry into the banking sector, for example stringent KYC and AML regulations, as well as branch banking requirements that would have made M-PESA agencies prohibitively expensive to establish and operate.

This is not to imply that M-PESA was completely unregulated by CBK in its early days. CBK was particularly concerned about protecting M-PESA customers and maintaining the integrity of Kenya's payments system. It therefore reviewed the safety of M-PESA's technology platform to address cyber security concerns, required Safaricom subscribers to provide national identity cards to meet KYC regulations and Safaricom to limit the size of M-PESA transactions to meet AML regulations, and

[8] Bus companies transferred money either as part of their letter and parcel services, like a courier company, or as a wire transfer company, like Western Union or MoneyGram. See Kabbucho et al. 2003 for a comparison of alternative money transfer services in Kenya when M-PESA was launched.

mandated that all customer funds be deposited in prudentially regulated financial institutions.

To this day, M-PESA funds are neither held nor used by Safaricom; instead, they are held by a trust that is owned by Vodafone and deposited in several commercial banks. Safaricom cannot access these funds, and is not even permitted to use the interest earned on these accounts; the interest is transferred to M-PESA Foundation to finance programs on education, health, and environmental conservation. Furthermore, if Safaricom went bankrupt, its creditors would not have access to M-PESA funds (McKay and Mazer 2014).

The primary role of CAK was to ensure its telecommunications regulations were consistent with, and complementary to CBK's financial regulations for M-PESA. For example, even though CAK granted Safaricom its license to operate in 1999 as a mobile network operator (MNO) and not as a bank, CAK required CBK clearance for M-PESA. CAK also focused on the telecom aspect of M-PESA rather than the payments function; the CAK saw its main responsibility as ensuring the accessibility, authenticity, and security of information transmitted to M-PESA customers.

The Competition Authority of Kenya was established in 2010[9], several years after the launch of M-PESA, so its role has been mainly to promote competition to M-PESA (see section below on the entry of Equity Bank into the mobile banking market).

These external success factors for M-PESA were adroitly exploited by Safaricom's strong internal management and leadership, exhibited in many ways, such as Safaricom's: close collaboration with CBK and CAK to address the concerns of M-PESA regulators, often by enhancing the regulators' understanding of M-PESA; popular marketing strategy with catchy tag phrases like "send money home" to tap the strong unmet demand for secure and inexpensive domestic money transfer services[10]; "learning by doing" implementation strategy, characterized by adaptation to market responses and market competition; easily accessible technology with friendly user interfaces; and product quality control, coupled with vigilant enforcement of sanctions against misconduct by M-PESA agents.

[9] The Competition Authority of Kenya was established under the Competition Act (Act No. 12 of 2010).
[10] For example, see this short television commercial: https://www.youtube.com/watch?v=nEZ30K5dBWU

The results? According to Safaricom's web site[11], as of June 2015, Safaricom had over 25 million subscribers (67 percent of Kenya's total market), including more than 22 million M-PESA subscribers being served by over 90,000 M-PESA agents. And the growth rates are still robust: in 2014, M-PESA subscribers increased by 23 percent and total Safaricom profits rose by 38 percent to $320 million (Mohammed 2015).

Competition from Equity Bank

But this telecom-led model of mobile banking is now facing serious competition from a bank-led mobile banking model spearheaded by Equity Bank.[12]

Equity Bank is Kenya's third largest bank in terms of net assets, and Kenya's second largest bank in terms of both gross loans and advances as well as pre-tax profit (CBK 2014). Equity Bank has 9.7 million customers, the largest customer base in Africa, and it has more than half of the bank accounts in Kenya.[13] Most of Equity Bank's business is conducted in Kenya, but it also has subsidiaries in Uganda, Tanzania, Rwanda, and South Sudan, and operates through an extensive regional retail distribution network of 228 branches, 17,523 agent outlets, 24,223 point of sale terminals, and 602 ATMs (Equity Group Holdings Limited 2014).

Equity Bank was founded as Equity Building Society (EBS) in 1984 to provide mortgages for low-income households; Equity Bank retains its original logo, a modest house with a brown roof, in recognition of its origins and to indicate its continued mission to serve primarily low-income customers. EBS was declared insolvent in 1993, and has since then had a spectacular resurrection as Equity Bank Limited (now Equity Group Holdings Limited), beginning first as a microfinance bank and then evolving into a full service commercial bank. It is still one of Kenya's most rapidly growing banks.

In April 2014, CAK granted Equity Bank, via its subsidiary Finserve Africa Limited, an MVNO license. The mobile banking services are hosted on the network of Airtel Kenya, a subsidiary of Indian telecom Bharti Airtel and a competitor of Safaricom.

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[11] http://www.safaricom.co.ke/about-us/about-safaricom
[12] Formally Equity Group Holdings Limited.
[13] From Equity Bank's website: http://ke.equitybankgroup.com/about-us/our-history/our-history

Equity Bank's mobile banking platform is Equitel, and Equitel's core product is Airtel Money, a mobile commerce service that was actually launched in September 2011 and competes directly with M-PESA. Airtel Money is available to all Equity Bank account holders for: mobile phone airtime top-up; payment of utility bills and purchase of goods and services from merchants; and Equity Bank account access and management. Other Equitel products are: Eazzy 247, a mobile banking service that provides Equity Bank account access via all MNOs, including Safaricom; and M-Kesho, a bank account that allows funds transfer between it and the M-PESA system of deposits and withdrawals.

Equity Bank believes that Equitel "will give us the opportunity to continue our mission of furthering financial inclusion and innovative service offerings to all our customers through offering banking products securely on a mobile platform and make the delivery of banking services more convenient, accessible and affordable." (Equity Group Holdings Limited 2014, p. 12)

Just as Safaricom decided to leverage its mobile phone customer base to extend its telecommunications services with the launch of its M-PESA financial products, Equity Bank decided to leverage its large number of bank account holders to extend its banking services by launching a new delivery vehicle as an MVNO, Equitel. In other words, Safaricom is an example of telecom-led mobile banking (new products via existing delivery channels) and Equity Bank is an example of bank-led mobile banking (existing products via new delivery channels).

Equity Bank's Chief Officer for Finance, Innovation and Payments, John Staley, gave three reasons for Equity Bank to embark on this expensive and risky initiative, namely full security, reliable speed, and fair price: "By becoming a mobile virtual operator, Equity Bank can take control of its customers' SIM cards, and through that of the secure elements and banking menu on their phone. It has also secured favorable pricing on substantial volumes of mobile connectivity across all channels." (Mas and Staley 2014, p. 2)[14]

There is also another sound business rationale for Equity Bank's aggressive move into mobile banking: the relative cost of handling cash transactions. Mobile

[14] Equitel can be accessed via a standard SIM card compatible with Kenya's dual SIM mobile phones, similar to Safaricom's SIM card, or via a "slim SIM" overlay for single SIM mobile phones.

phone-based cash transactions cost Equity Bank one-third of ATM cash transactions and one-tenth of branch cash transactions.[15]

Future Challenges

There are three key challenges in Kenya to further promotion of financial inclusion via development of mobile financial services (MFS): facilitation of increased competition both among commercial banks and between bank and non-bank MFS providers; transformation of non-digital MFIs; and enactment of greater consumer protection for MFS customers.

Although Kenya has made tremendous progress in increasing both access to, and utilization of formal financial services, there is still a long way to go to ensure financial inclusion for all of its citizens. Not only is there still a "digital divide" in MFS subscribers by age, income, and location, with relatively fewer older, poorer, and rural customers (Villasenor et al. 2015), but the large volume of MFS transactions is not yet accompanied by an equivalent transaction value: cash is still king in Kenya. Equity Bank's John Staley estimates that 98 percent of the value of all financial transactions in Kenya today is still made in cash. A year-long survey of 300 low-income households has similar findings: although roughly three-fourths of Kenya's adult population are mobile money users (di Castri and Gidvani 2013), just 1 percent of the value of expenditures and 3 percent of the value of all transactions for these surveyed households were made electronically (Zollman 2014).

Based on the results thus far of Equity Bank's entrance into the mobile banking market, increased competition is a very effective way of expanding the scope and improving the quality of financial inclusion in Kenya. For example, in August 2014, M-PESA changed its person-to-person tariffs substantially, reducing tariffs by 24 to 67 percent for transactions of Ksh 1,500 (about $15) or below (depending on the transaction amount) and raising tariffs by 21 to 82 percent for larger transactions (again depending on the transaction amount) (Mazer and Rowan 2016). Moreover, Equity Bank's market clout in banking and Safaricom's dominance in the telecom market has also forced both MFS providers to provide links on their

[15] Significant price differentials for alternative modes of cash transactions apply to other banks as well. For example, see Kambua 2015 for an analysis of the effect of agency banking on the financial performance of commercial banks in Kenya.

menus to the other's system, resulting in at least de facto interconnectivity if not full interoperability.

Unlike their counterparts in many other countries, Kenyan regulatory institutions have been critical enablers of competition among MFS providers:

- The National Payment System Act of 2011 and the National Payment System Regulations of 2014 clarified regulatory jurisdiction and established common standards for banks and MNOs.
- CAK's issuance of three MVNO licenses in 2014 (including Equity Bank's license) permitted new entrants into a sector dominated by one company (Safaricom).
- The Competition Authority of Kenya facilitated Equity Bank's challenge to M-PESA in 2014 when it ruled against agent exclusivity clauses, permitting individual agents to serve more than one MFS provider.

Although there has been progress on removing barriers to competition between MFS providers in respect to regulatory clarity and consistency as well as access to MFS delivery channels, there still appears to be a failure of competition between commercial banks, given that the six largest banks in Kenya control half of the country's bank assets (Central Bank of Kenya 2014). It is thus encouraging that the Competition Authority of Kenya has commenced a market inquiry in the banking sector, particularly in the areas of customer mobility between banks, price transparency, and consumer protection.

The rapid growth in financial inclusion in Kenya since 2006 noted earlier is indeed a very positive development. However, within aggregate figures that show the tripling of those using formal financial services and the decline by more than half of those totally excluded from 2006 to 2016, there are clear winners and losers in Kenya over the past decade.

The winners are "formal prudential" access channels, mainly commercial banks like Equity Bank and Kenya Commercial Bank, rising from 15.0 to 42.3 percent, and "formal non-prudential" access channels, mostly MFS providers like M-PESA and Airtel Money, rising from 4.0 to 32.6 percent; the losers are "formal registered" access channels, primarily credit-only MFIs and non-deposit taking SACCOS, falling from 7.7 to 0.4 percent, and "informal" access channels, predominantly ROSCAs and

moneylenders, dropping from 32.1 to 7.2 percent (Central Bank of Kenya et al. 2016).

Of particular concern are the relative decline of small microfinance banks and credit-only MFIs (AMFI 2014). These institutions, although comprising a relatively small share of Kenya's financial sector, have been vital access channels for especially marginalized demographics. Based on mostly anecdotal information to date, it appears that these institutions are finding it very difficult to adapt to the digital age of MFS in Kenya. The choices are all painful: adapt, wither away into insignificance, or succumb to mission drift; the latter option is a potential outcome of the recent acquisition of K-Rep Bank by the Centum investment group.

With the rapid uptake of MFS in Kenya comes the need for better consumer protection so that customers understand both the costs and benefits of MFS products, and are thus less vulnerable to misleading or abusive business practices. For example, M-Shwari, Safaricom's the new savings-and-loan product linked to an M-PESA mobile money account, does not charge any interest for loans, but the funds are not free. Instead, M-Shwari charges a 7.5 percent loan facilitation fee, which, on a typical 30-day loan, translates to an annual interest rate of approximately 90 percent; if the loan is prepaid after two weeks to accelerate issuance of the next loan, a common practice, the interest rate is effectively doubled. Moreover, if MFS providers do not share loan repayment performance with credit bureaus, borrowers will not be able to use their positive credit histories to access loans from other lenders (Mazer and Rowan 2016).

Other common consumer risks in mobile banking that can undermine the potential of MFS to increase financial inclusion are: inability to transact due to network downtime or service unreliability; insufficient agent liquidity; complex user interfaces and payment processes; poor or no recourse mechanisms; and recipient-targeted fraud (Zimmerman and Baur 2016). In Kenya, for example, over half of mobile money users surveyed in 2014 reported that: they were unable to complete at least one mobile transaction within the previous six months due to the network being down; and insufficient e-float or cash at the point of service prevented them from completing a transaction (Villasenor et al. 2015).

VI. Implications for Mobile Banking in Other Countries

The principal reasons for Kenya's success in marshalling the power of mobile banking to propel its quantum leap over high hurdles to financial inclusion are:

Demand Side

- Substantial need and latent demand among low-income households for a more accessible and affordable delivery channel for financial services – political unrest and traditional modes of household financial management created the need, and MFS technology was affordably priced to generate effective demand.
- Political and economic stability for an extended period of time – political unrest and economic volatility were followed by sustained relative political calm and steady economic growth.
- Sufficient population density to exploit economies of scale and agglomeration, as well as network economies – early service areas were the capital metropolitan area and the densely populated areas between Nairobi and Mt. Kenya.

Supply Side

- Market dominance of one telecommunications company – Safaricom's market share was 73 percent when it launched M-PESA, so it did not have to coordinate with other telecoms or provide system interoperability. This is not a necessity, and is less of an issue in countries where widespread use of smart phones enables internet-based banking, but it certainly made it easier for Safaricom.
- Provision of a safe, reliable, accessible, convenient, and affordable product.
- Lack of competitively priced comparable alternative services – M-PESA money transfer service was one-third cheaper than Western Union and PostaPay, and two-thirds cheaper than the bus companies.

Regulatory Environment

- An enabling regulatory approach by the government – CBK, CAK, and the Competition Authority of Kenya all facilitated entry to, and growth of MFS through the creative but responsible use of regulatory discretion.

No two countries are exactly the same: their historical, cultural, demographic, geographic, legal, regulatory, institutional, political, and economic contexts are all different. It would thus be ill-advised to suggest that Kenya's strategy for increasing financial inclusion simply can be transplanted to another country.

However, where Kenya's success factors might be present, albeit perhaps in a different form, many of Kenya's lessons can be adapted. Where conditions are significantly different, the challenge becomes how best to nurture home-grown innovative solutions to address specific local constraints.

The success of M-PESA to date in Tanzania and the recent decision to discontinue M-PESA in South Africa are vivid demonstrations of these replication principles.

M-PESA was launched in Tanzania by Vodacom in 2008, and although initial results were quite disappointing, after making adjustments to accommodate significant market differences (IFC 2010), Vodacom Tanzania now has over seven million M-PESA subscriptions (Semiono 2015).

In contrast, it appears that M-PESA was destined to fail in South Africa since it was launched in 2010. Not only is South Africa a much higher income country than Kenya, with one of the continent's most technologically advanced and accessible banking systems, and thus one of Africa's most inclusive financial sectors, but the telecommunications market and regulatory regime in South Africa are also quite different from those in Kenya. Consequently, after six years of service, M-PESA South Africa has only 76,000 active users (CGAP 2011 and MBele 2016).

The key for policymakers in other countries is to accurately identify pertinent similarities and differences between Kenya's opportunities and constraints and their own resources and challenges, and then to act accordingly to formulate the most appropriate path for utilization of mobile banking to promote greater financial inclusion.

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