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Mobile Money Services Development

The Cases of the Republic of Korea and Uganda

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Abstract

This study intends to increase understanding of how different types of mobile money services have developed in different environments. For this purpose, two countries were selected, the Republic of Korea and Uganda. From these study cases, some conclusions emerge. The development of mobile banking services can appear at different stages of financial sector development, but it requires a vibrant and competitive telecommunications sector. The regulatory environment does not need to be very sophisticated for the mobile industry to emerge. However, some elements appear to be important. The legal framework should allow (or at least not explicitly forbid) nonbank financial institutions to issue money and use banking agents or correspondents. To ensure wider use of the service by the population, it is important to educate the population on the benefits of mobile money services.

Mobile Money Services Development: The Cases of the Republic of Korea and Uganda

Eva Gutierrez and Tony Choi[*]

1.   Introduction

Mobile money is the term used to describe tools to perform banking and financial transaction services using mobile phones or devices.[1] Mobile money can serve as a platform for bill payment, person-to-person transfers (P2P), government-to-person (G2P) transfers, payment of services such as public transport, etc. As mobile phones have been widely spread all over the globe, mobile money has flourished both in developed and developing countries in various forms reflecting country context, level of financial sector development, market and competition landscape, relevant regulations, etc. Business models for mobile money can be led by mobile network operators (MNO), banks and third parties and collaborative efforts of them.

Additive mobile money model refers to the efforts to provide customers with more convenient and easy access to financial services largely driven by banks. Transformational models rather aim at providing the unbanked population with financial services. According to data from Global Findex, most mobile money users in the world have a bank account, reflecting the dominance of the additive mode.[2] Nevertheless, in some developing countries with large segments of unbanked population such as Kenya, the transformative model has developed successfully. Mobile money has the potential to offer the poor and unbanked population the means to manage their limited cash resources in safer and more efficient ways. It has also emerged as a way to enable people in the most remote areas to transfer money using their mobile phone.

This study intends to increase our understanding of how different types of mobile money services have developed in very different environments. For this purpose we select two very different countries—the Republic of Korea and Uganda—in which mobile money has developed following different models in responce to their structural characteristics.

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[1] IFC, Mobile Money Study 2011.

[2] http://databank.worldbank.org/data/views/variableselection/selectvariables.aspx?source=global-findex-(global-financial-inclusion-database)

The paper is structured as follows: section 2 discusses the evolution of mobile money service offerings in Korea; section 3 discusses the evolution of mobile money services in Uganda; section 4 provides some conclusions from these experiences.

2.   The Republic of Korea

Economic and Financial Development

Korea is a high-income country with relatively equal income distribution.[3] Korea has achieved rapid economic growth over the past four decades to become a high-tech, strong industrialized economy. In the 1960s, GDP per capita was comparable with levels in the poorer countries of Africa and Asia. In 2004, Korea joined the trillion dollar club of world economies, and currently is among the world's 20 largest economies.

During the industrialization period, the government encouraged financial market development and promoted financial inclusion with a view to foster economic development and to reduce inequality.[4] A specialized bank—Housing and Commercial Bank, later merged to Kookmin Bank in 2001—was established in 1967 to serve the low-income segment of the population. The government strategy also promoted a saving culture among the population and the intermediation of those savings towards productive investments through the financial sector.

Currently, virtually everyone, including the poorer, has easy access to financial institutions nearby. According to the Bank of Korea there were 190 million bank accounts at end June 2011, about 3.8 accounts per person. There is a wide network of ATMs (two per person in 2009, among the highest in the world) that facilitate access to the accounts. ATM transactions reached 40 percent of the total deposit and withdrawal transactions. Bill payment has been enabled on ATMs since 2003. Automatic transfer or direct debit has been widely adopted for many financial transactions including utilities (electricity, water, gas, etc.), tax, national pension and health

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[3] GNI per capita reached 22,670 US$ in 2012. Gini index of 2011 is 0.31. According to the National Statistics Office , 15 percent of the total population is below the national poverty line.

[4] Kim and Yoon (2005).

insurance, etc. Commercial banks and credit card companies have strongly promoted campaigns to attract more direct debit users as their marketing strategy. Bank customers also widely use noncash payment methods such as credit and debit cards with an average 4.9 credit cards per person at end 2011.

Telecommunications environment

Korea has one of the world's most active telecommunications and information technology markets backed by strong support from the government since 1990. Vigorous investment in telecommunications infrastructure over past decades helped the country develop solid internet resources to support the growing demand for communications. The number of households subscribing to high-speed internet service was ranked the top among OCED countries already in 2005. Individuals can access bank services through the internet with ease at home and work and internet banking has overpassed face-to-face transaction since 2005.[5]

The mobile phone industry in Korea has also grown rapidly based on technological superiority of infrastructure and devices. The world's first commercial CDMA service was launched in Korea in 1996 and Korea has the world's leading handset makers, including Samsung and LG. [6] Mobile phone tariffs are discounted for the low-income population and the disabled, and the market neared the 110% penetration rate mark in 2012. The 4G LTE has been rapidly gaining its footage after its first launching in 2011 and replacing 2G and 3G services thanks to the surge of smartphones adoption, which account for about 57 percent of all mobile phone subscriptions.[7] Most mobile phones are post-paid; pre-paid is only used for a tiny number of users or foreigners who use them for temporary communication. There are three operators currently offering mobile phone services in Korea: SK Telecom, KT and LGU plus. The first one accounts for about 50 percent of the total market while the second and third have market shares of about 30 and 20 percent, respectively.

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[5] *"*The present and future of Korea's Financial inclusion policy" Press Release from Financial Supervisory Committee, Sep 10, 2010

[6] Code Division Multiple Access communication standard. It was the dominant standard before GSM (Global System for Mobile Communications) was established.

[7] Source: Korea Communications Commission & Korea Telecommunications Operators Association.

Mobile money services deployed in Korea have developed thanks to technological advancements. Until the recent boom in smartphone applications, there were several types of mobile money models rolled out in the market over the last decade.

Table 1. Chronology of Mobile Phone Technological Developments in Korea

Type an launching time	Details
WAP browser model (2000)	WAP (Wireless Application Protocol) is an early technical standard for accessing information over a mobile wireless network. Users accessed their banks via mobile carriers' WAP browsers and carried out banking services through text-based interactions on these browsers.
IC Chip-based model (2003)	Personal and financial information is put on a microchip and the chip is embedded into a mobile handset. This model simplifies the process of inputting data and information for mobile banking by simply having the required data embedded on the IC chip.
USIM-based model (2007)	SIM (Subscriber Identity Module) card based mobile service became possible with the implementation of 3rd generation WCDMA network service in 2007 in Korea (Korea had previously used non-SIM based 2nd generation CDMA service). USIM (Universal Subscriber Identity Module) contains subscribers' identification information and a universal IC Card which enables additional value-added services such as transportation pass and credit card function capabilities.
VM (2007)	The VM (Virtual Machine) model is a service performed on a mobile program which can be downloaded from banks and works on any mobile phone's operating system. As VM was a software-based service, it did not require a special handset. It was perceived as the ideal alternative to chip-based mobile banking for banks.
Smart phone applications (2009)	With the most recent advent of smart phones based on multiple mobile operating systems such as Android, so did mobile banking services also become available to smart phone users in a form of mobile application.

Regulatory Environment

The Electronic Transactions Basic Act was originally enacted in 1999 to regulate all electronic financial transactions. After the enactment of the Basic Act, there were other efforts to cover newly emerging issues and matters, such as customer protection and electronic signature. However, because new services and business were emerging, there was a dire need to control all factors systematically. Thus, in 2006, the Act on Electronic Financial Transaction was enacted.

The 2006 Act on Electronic Financial Transactions stipulates the basic principles of electronic financial transactions and electronic payment transactions performed by financial and nonfinancial services companies.[8] This Act was later revised to reflect measures to enhance security, consumer and data protection, etc.

There is no clear definition on mobile money in the Act. However, all the relevant services discussed above are covered in related clauses of the Act. Mobile banking for P2P transfer service is included in internet banking (electronic financial transactions by financial institutions) and pre-paid mobile money is categorized in pre-paid electronic payment means which also includes pre-paid smart cards. A mobile payment service provider's micro payment belongs to electronic payment transactions.

To gauge Korea's regulatory environment and compare it with other countries, we used Porteous's regulatory environment model which comprises of two dimensions: openness (i.e does the regulatory environment encourage new entrants and innovation) and certainty (i.e. does it provide certainty that there will not be arbitrary changes to a firm's prospects).[9] Recent empirical work finds that, controlling for other factors, in countries with regulatory environments that rank high in both dimensions (particularly in the openness one) more people use mobile money.[10]

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[8] Joon and Kyungoh (2010).

[9] Porteous (2006, 2009).

[10] Gutierrez and Singh (2013).

Based on the Porteus framework, Korea's regulatory environment is both highly open and certain. Nonbanks can start certain types of electronic financial transactions services such as electronic cash and pre-paid electronic payment. Electronic cash service should be approved by the Financial Supervisory Commission while pre-paid electronic payment including pre-paid smart cards and pre-paid mobile money can be carried out without significant regulatory hurdles. The latter services can be made only through registration to the Financial Supervisory Commission (Electronic Financial Transactions Act). Mobile number portability was introduced in 2004 under The Telecommunications Business Act to provide customers with better options for mobile services including mobile money.

Mobile payment and mobile money services are comprehensively supervised by FSC under the Electronic Financial Transactions Act (financial transactions safeguard) and by Korea Communications Commission under the Act on Information and Communication Network Utilization and Information Protection (security on electronic transactions). Security has been one of the top issues for all financial transactions and has been well addressed with a comprehensive set of measures covering electronic signature,[11] IT security and data protection, etc. with clear individual clauses of the Electronic Financial Transactions Act.

Consumer rights are well protected in the Electronic Financial Transactions Act. Financial institutions are responsible for securing safe transactions and for keeping records of financial transactions, etc. 'The Act of Real Name Financial transaction,' which was established in 1993, guarantees consumers due diligence, anti-money laundering and combating terrorist financing.

Mobile money services and their development

The easy accessibility to bank accounts through internet banking, direct debit and the use of electronic payment systems reduce in principle the demand for mobile money. However, mobile money services have developed in niche segments such as P2P transfers, pre-paid mobile money

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[11] Korea is a leader in formulating digital transaction regulations. 'Digital Signature Act' came into effect in 1999 in order to secure the safety and reliability of electronic transactions.

and mobile micro payment thanks to its convenience and easy usage. Thus, despite the wide availability of alternative channels for payments, according to a TNS report issued in May 2012, Korea topped the global mobile banking usage rates among 58 countries.[12]

Mobile money services were developed by banks, MNOs or third parties exploiting opportunities created by the new technologies developed. Table 2 describes which services where offered, by whom and using what technology.

Table 2: Typology of Mobile Money Services in Korea

Type	SMS	WAP	IC Chip	USIM	VM (Virtual Machine)	Smartphone Applications
P2P Transfers (Mobile banking)		●	○	●	○	○
Public Transport				□ Δ		
Retail payment	□			□ Δ		□

○: Bank-led   ●: MNO-led   □: 3rd party   Δ: Credit card companies (banks included)

P2P transfers Commercial banks have provided the P2P transfer-centered mobile banking service since early 2000. Bank-led models evolved following the technological advancement of mobile phones and wireless technologies from the IC Chip model to the current smartphone applications. MNO-led mobile banking models such as WAP and USIM models were not successful because banks were not willing to collaborate as they saw those models as competition. Banks rather chose to promote their own models instead of depending on MNOs' initiative. Thus, only the IC Chip model and the VM model have sustained for an extended period.

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[12] http://www.tns-global.com.hk/news-centre-sub.php?newsId=127.

Table 3 shows many users have subscribed to a specific mobile banking service for P2P transfers. WAP and USIM models were not widely used enough to collect data on them according to Bank of Korea. One notable phenomenon is the sudden surge of smartphone applications in 2010 thanks to the booming of smartphones around the year.

Table 3. Registered users of mobile Money in Korea for P2P transfers (thousands

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012(1Q)
IC Chip type	189	894	1,861	2,979	4,412	4,694	4,627	4,529	4,434	4,420
VM type	-	-	-	-	597	3,783	6,528	8,561	8,928	9,019
Smartphone Applications	-	-	-	-	-	-	13	2,609	10,358	13,666
Total	189	894	1,861	2,979	5,009	8,477	11,168	15,748	23,720	27,105

Source: Bank of Korea

Public Transport. Transport smart cards based on radio frequency identification technology have been available for buses in Korea since 1996.[13] It later evolved into a unified card for both bus and metro usage. As technology developed, mobile phones have been used for payment of public transportation because they are easy to carry and use. Mobile phones embedded with a transport payment function were enabled when the third-generation USIM chip was first introduced around 2007.

Both pre-paid and post-paid payment type systems for public transport were introduced targeting different segments such as students and working commuters. Smart card companies which have provided conventional pre-paid smart card service for public transport embedded the function

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[13] Radio-frequency identification (RFID) is the wireless non-contact use of radio-frequency electromagnetic fields to transfer data, for the purposes of automatically identifying and tracking tags attached to objects. The tags contain electronically stored information. Unlike a bar code, the tag does not necessarily need to be within line of sight of the reader, and may be embedded in the tracked object. RFID tags are used in many industries; for example, an RFID tag attached to an automobile during production can be used to track its progress through the assembly line.

onto the USIM chip of handsets in collaboration with MNOs. There are two leading pre-paid mobile money companies in the market, T-money of Korea Smart Card and Cash Bee of EB card. Credit card companies also put their credit card function on the USIM chip working as a post-paid payment system.

Retail payments. The third-party smart card companies mentioned above have expanded their service areas into retail payment apart from public transport payment. However, these pre-paid mobile monies have a limit for recharge, which is 500,000 KRW (450 US$). They are now vastly expanding the service to other offline venues and services such as convenience stores, museums, theaters, parking lots, vending machines and more. As near field communication (NFC) technology in increasingly available in mobile handsets, this pre-paid mobile money is also loaded into NFC-enabled USIM, allowing for more convenient transactions.[14] This pre-paid money can be easily recharged at various venues such as 24-hour-operated convenience stores.

There is also a mobile micro payment service provider in Korea. Micro payment through mobile phones has been used to make a payment of small-scale online and offline shopping. For online purchasing, customers put their mobile number, ID number on the shopping website and verify their ownership of the mobile phone through SMS confirmation. For off-line shopping, they use a one-time bar code created through an application to encrypt their mobile phone number information. Payment is combined into the mobile phone bill. However, the limit of the service amount is 300,000 KRW (approximately 270 US$) to prevent excessive purchases by youth and scams. The service provider has collaborated with all three mobile carriers (SKT, KT and LG U Plus). Korea's micro payment market has been rapidly growing to reach 2,500 billion KRW (23 billion US$) in 2011.

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[14] Near field communication (NFC) is a set of standards for smartphones and similar devices to establish radio communication with each other by touching them together or bringing them into close proximity, usually no more than a few centimeters.

3.   Uganda

Economic and financial environment

Uganda is a low-income country with a GDP per capita (PPP) of about $1,300 in 2011 and population of more than 35 million inhabitants. About 40 percent of the population lives under the poverty line of 1.25 USD a day according to the latest figures available (2009).

Since 1990, economic reforms have ushered in an era of solid economic growth in Uganda based on continued investment in infrastructure, improved incentives for production and exports, lower inflation and better domestic security. Uganda is one of the fastest and most consistently growing countries in Africa, with substantial natural resources including copper, gold, and other minerals, and recently discovered oil.

Agriculture is the most important sector of the economy, employing over 80 percent of the labor force. About 90 percent of the population was live in rural areas. The remoteness limits the poor population's access to produce markets and financial services. Few banks cater to poor or rural consumers in Uganda—it is expensive to build branches in rural areas and it is difficult to make money serving customers who only have a few dollars a month to save or spend. As a result, only one in five Ugandans are banked and one in two lack access to any financial services at all. [15]

Telecommunications environment

Uganda's communications sector is one of the fastest growing sectors in the country. As in the rest of the Africa, this is largely due to the rapid expansion of mobile telephony. According to statistics from Uganda Communications Commission, the number of mobile subscribers had reached 16.7 million in 2011 (about half of the population) and most adults either own a mobile phone or have access to one. While the number of mobile subscribers is soaring, fixed line

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[15] Grameen Foundation AppLab (http://www.grameenfoundation.applab.org/challenges.html).

subscribers are merely 244,455 coupled with 96,890 payphones countrywide, bringing the national tele-density to 32.2 only. [16]

Mobile traffic is largely dominated by voice, logging about two billion voice minutes in the first quarter of 2010, of which 89 percent is in-network traffic, thanks to discounted in-network tariffs, which help explain multiple-SIM ownership strategies adopted by many subscribers. However, MSM usage has been growing fast as MNOs encourage use through campaigns and innovative services like missed call alerts, call me back, etc. that tend to be free. SMS usage is also still largely dominated by in-network usage.

Mobile internet access has grown thanks to increasing competition in data services among MNOs. The arrival of cheaper bandwidth via undersea cables coupled with increasing 3G-network coverage is driving down the cost of data services. In addition, MNOs have partnered with social networking sites like Facebook to provide free mobile access.

Since 2007, Uganda has opened up the sector fully to competition. Currently, Uganda's major mobile telephony providers are MTN Uganda, Orange Uganda, Airtel (formerly Zain), Uganda Telecom Limited and Warid Telecom. MTN is the dominant player with 41 percent market share in 2012, albeit it has been declining from 60 percent a few years ago. Airtel, Warid and Uganda Telecom each account roughly for 18 percent of the market and Orange has a 3 percent market share. In 2013 Warid was acquired by Airtel, threating the dominance of Warid.[17]

Regulatory environment

There is no legislation governing mobile money services in Uganda. Bank of Uganda has put in place guidelines to be followed prior to the licensing of a mobile money service. These guidelines point out the need for a partnership between a telecommunication company and a financial institution before start up. The essence of the partnership is to ensure that Bank of Uganda can protect the monetary value of the mobile transactions through appropriate regulation

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[16] BuddeComm, Uganda Mobile Market (2011)
[17] Wireless Intelligence.

of the financial institution.[18] Banks partnering with MNOs need to take proper measures for back-up and replication of data, KYC requirements, handling complaints, and liquidity management by agents.[19]

In a bid to strengthen controls around the mobile money transfer services, a national working group was formed comprised of Bank of Uganda and Uganda Communication Commission (UCC) to enhance cooperation and joint oversight of the mobile money services. UCC is in the process of drafting new rules that will oversee the Mobile Money trade in the country.[20]

Based on evaluation by Porteous' framework and when compared with other countries, Uganda's regulatory environment appears to be relatively open but ranks below the average in terms of certainty (see Figure 1). The legal framework does not prevent nonbank financial institutions from issuing mobile money albeit there is not a clear regulation on mobile money itself as mentioned above. Mobile financial services such as deposit and withdrawal through agents are possible with partnered banks and while there is no strict oversight on agents, banks have to ensure that agents properly manage liquidity, confidentiality of data, etc. There is no interoperability of platforms, which forces users of mobile money services to affiliate with multiple mobile providers. In fact about 43 percent of Ugandan customers use more than one operator.[21] Mobile number portability has not been introduced based on the perception that the time is not yet ripe. There are no specific KYC exemptions for small accounts or indication of a risk based approach to KYC.

As per factors related to certainty, an electronic signature Act was legislated in 2011 providing certainty for e-contracting. Customer protection is not always guaranteed and in some cases

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[18] Ssonko (2010).

[19] Bank of Ugand, (2011).

[20] During the Uganda Mobile Money Agents Association stakeholders meeting held at Serena Hotel in December 2011, Godfrey Yiga Masajja, Deputy Director of Commercial Banking at Bank of Uganda, remarked that the BoU, together with the UCC, is drafting a set of rules including self-regulating mechanisms, quality assurance standards and monitoring systems for mobile money transactions.

[21] http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2012/06/mmu_interoperability.pdf

customers are exploited by agents who are not directly supervised by banks.[22] Partner banks are recommended by Bank of Uganda to work with MNOs to handle customer protection and complaint issues.

Figure 1. Mobile Money Regulatory Frameworks: The Porteus Index

Source: Gutierrez and Singh (2013). Average values for the components of the index in red.

Mobile money services and their development

As competition has intensified, subscribers have been added but average revenue per user has declined. The operators started to increase their tariffs again in 2011 and at the same time have tried to find ways of generating additional revenue streams. Mobile data and 3G broadband services as well as mobile money service are at the forefront of this development in Uganda.

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[22] http://allafrica.com/stories/201301020025.html

Currently, all Ugandan MNOs offer mobile money services.[23] The mobile phone density has also contributed to growth of mobile money. The number of registered customers of mobile money services increased from 1,683,713 in 2010 to 2,879,968 during 2011, while the amount transferred by customers rose from Ushs.962.7 billion to Ushs.3.7 trillion over the same period. In terms of volume, the service registered a 204 percent increase in number of transactions from 28.8 million transactions in the year to December 2010 to 87.5 million transactions in December 2011.[24] According to Global Findex Data, Uganda is one of the countries with a largest share of the population using mobile phones to pay bills and send or receive money (about 27 percent of total adult population). About half of the users of mobile money services are unbanked.

Table 4. Mobile money services in Uganda

MNO	Mobile money service technology	Launch year
MTN Uganda	USSD / STK	2009
Airtel Uganda	USSD / STK	2012 (2009)*
Uganda Telecom	USSD	2010
Warid Telecom	USSD	2012
Orange Uganda	USSD	2013

Former Zain which was acquired by Airtel in 2012 launched the service in 2009. Mobile services of both companies were merged in 2013.

All MNO providers used similar mobile technology; an Unstructured Supplementary Service Data (USSD) protocol is used by GSM cellular telephones to communicate with the service provider's computers. USSD can be used for WAP (Wireless Application Protocol) browsing, prepaid callback service, mobile-money services, location-based content services, menu-based information services, etc. USSD is a common mobile financial transaction protocol, convenient enough to cover most mobile handsets used among users and to efficiently serve people living in underserved areas. The SIM Application Toolkit (STK) used by some providers also enables the Subscriber Identity Module (SIM) to initiate actions which can be used for various value-added

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[23] MTN Mobile Money(MTN Uganda), M-Sente from UTL(Uganda Telecom) and Orange Money(Orange Uganda, Close to launch), Airtel Money from Airtel and Warid Pesa (Warid Telecom).

[24] Bank of Uganda (2011).

services. As the mobile money service is recent and the users of advanced mobile devices such as smartphones are still very limited, it does not seem necessary to adopt more advanced technologies or services at the moment.

The mobile money offerings of the five providers have many similarities. They all allow registered users to load money into their accounts (cash-in), make transfers to other users (both registered or not), pay bills, buy airtime and withdraw money (cash-out). While mobile money registration is free, all transactions have a predetermined fee. Some MNOs (e.g., MTN) automatically deduct charges from the user's account while others (e.g., Airtel) have a set of recommended charges, but allow agents to set them based on market demand. Depending on the MNO, a registered user has access to other mobile money functions such as check balancing, receiving m-money account balance mini-statements and making PIN changes.

Ugandan MNOs partner with banks to provide money services. The mobile phone operator plays the dominant role in the partnership, contracting a network of agents to interface with customers and operating the telecommunications infrastructure for effecting transactions and storing virtual money. The role of the bank in the partnership is primarily to hold an account (termed variously as a settlement account or escrow account) in which all of the agents of the network hold balances and which are debited/credited when an agent sells/buys mobile money for cash.

In each partnership, the mobile phone company employs a network of agents to interface with their customers. Customers are able to purchase, with cash, virtual money from agents which can be stored electronically, in the customer's virtual account, transferred to another mobile money customer, used to pay utility bills and school fees and withdrawn by the customer in cash at a later date from an agent. The products currently offered entail a combination of transaction services and a store of value.

Households with registered mobile money users are likely to engage in a greater number of financial activities, including sending and receiving remittances, making and receiving payments, and saving money, than other types of households. Only 9 percent of households currently save with an m-money account; however, the service seems to fit well with

households' existing savings routines, and half of households with registered m-money users store money on their m-money accounts. There is also evidence that that mobile money helps bring some order to the domestic money transfer environment. And that m-money has the capacity to improve the national payments system by providing innovative ways to meet the transaction needs of ordinary people.[25]

Air time purchasing. The most common usage of mobile money is to buy airtime from the MNO. Users can buy airtime (or credit) either for themselves or others by entering a destination number on the parent network of the mobile money service. The cost is then deducted from their mobile money balance. Operators have heavily promoted this service, not least because it reduces costs that they incur along the conventional airtime distribution channel.

P2P transfers. Another popular use of mobile money is P2P transfers by both registered and nonregistered m-money users. The transaction fee can be calculated differently for registered and nonregistered users of mobile money. For example, in 2011 a registered sender of M-Sente was charged 700 UGX (US$0.28) to send between 1 and 2 million UGX (US$808.08), while a registered receiver paid between 0 and 17,000 UGX (US$6.87), depending on the size of the transfer. A nonregistered client was charged between 0 and 35,000 UGX (US$14.14) to send the same amounts, while the recipient was not charged. The maximum transaction amount also varies among providers. For example, the maximum total amount an MTN or Airtel mobile money user can send per day is 1 million UGX (US$404.86), while an M-Sente user is allowed to send 2 million UGX (US$805.72).[26] Most users of the service indicate they are both senders and receivers.

Public Transport. Uganda's mobile money services are not yet used for public transport payment. Transportation-related services are MTN Uganda's air ticket payment service which was recently launched in partnership with Kenya Airways and Airtel Uganda's street parking payment service.

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[25] Ndiwalana, Morawczynski, and Popov (2010).

[26] Intermedia (2012). http://www.microfinancegateway.org/p/site/m/template.rc/1.9.59357/

Bill and tax payment. Mobile money services offer customers the opportunity to pay a variety of bills including school fees, tuition, utility bills, and cable television bills. Paying utility fees tends to be free because banks accrue other benefits from having the utility company as their client. It is now possible to pay the electricity bill through mobile money in conjunction with real time bank reconciliations. The service enables subscribers to avoid disconnections that are caused due to delayed payment reconciliations. Also, the National Water and Sewerage Corporation (NWSC) is phasing out payment of water bills and in their place deploy more customer friendly tools like mobile money and over the counter payments with partnering banks. The utility company has partnered with M-Sente, the mobile money product by Uganda Telecom to enable M-sente registered clients to pay their water bills.

Warid telecom in partnership with the Uganda Revenue Agenda (URA) and Orient bank enables tax payers to pay the government fees using the mobile phone. The initial phase will cover express penalties and will cover the rest of payments like passport fees, customs duty, court fees etc. Tax payers need to register for the company's Warid Pesa service and use the service for all URA payments. According to observers, this service has great potential to reduce informality and grow government revenues.

In 2010, the previous Zain (later Airtel) launched a service that allows parents to pay school fees via their mobile payment platform, eliminating the long queues at the bank branches for the payment of school fees just before the beginning of each new school term.

Limited understanding of the possibilities offered by mobile money services might be preventing Ugandans from adopting mobile money at a higher speed.[27] According to a survey of registered users of the largest mobile money service in Uganda, 61 percent of its registered users said that m-money "is for sending and receiving money," 28 percent said it can be used "in many ways to manage money," 7 percent believed that m-money "can be used for storing money" and 4 percent said "it can be used for payments."

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[27] Intermedia (2012)

The coverage of the network of agents for mobile money services and the quality of the agents need to further improve in order to expand the number of users. About 45 percent of rural non-users indicate that they never use mobile money because they cannot find an agent close to their home. When describing their most recent transactions with an mobile money agent, registered MTN mobile money users in rural areas reported, on average, they had to cover three times the distance and had to pay more for transportation to see mobile money agents than did urban users. Four in five rural registered MTN mobile money users reported at least one problem with an agent in the past 12 months.

4.   Conclusions

Mobile money has flourished both in developed and developing countries in various forms in response to structural characteristics. From the study cases considered in this paper some conclusions emerge. The development of mobile banking services can appear at very different stages of financial sector development, but it requires a vibrant and competitive telecommunications sector. Fostering competition among telephone service providers will foster the development of alternative services as margins in the industry decline.

Services offered by mobile money providers will differ depending on the degree of economic and financial development with pre-paid mobile services and transformational mobile money services being more prevalent in developing countries. Basic mobile communication technologies can already support a variety of transactions including P2P and retail payments.

The regulatory environment does not need to be very sophisticated for the mobile industry to emerge. However, some elements appear key; the legal framework should allow (or at least not explicitly forbid) non-bank financial institutions to issue money and the use of banking agents or correspondents. An electronic signature law will help support the development of retail payment services. Lack of strong consumer protection regulation has not prevented the development of mobile money services in Uganda albeit if problems with agents persist it may hamper the extension of the network agent and curtail the provision of services. However, to ensure wider

use of the service by the population it is important to educate the population regarding the possibilities offered by mobile money services.

References

Bank of Uganda 2011. Annual Supervision and Financial Stability Report, Dec. 2011.

Demirguc-Kunt, A., and L. Kappler. 2012. "Measuring Financial Inclusion: The Global Findex Dataset", World Bank Policy Research Working Paper 6025, World Bank, Washington DC.

Gutierrez, E. and S. Singh 2013, " What regulatory environments are more conducive to mobile banking? Evidence from Findex data", World Bank Policy Research Working Paper 6652, World Bank, Washington DC.

International Financial Corporation. 2011. Mobile Money Study. IFC, Washington DC ,2011.

Im, J, and K. Jeong 2010. "Study on ex post regulation for promoting convergence services in the telecommunications market" Policy Research 10-27, KISDI, 2010.

Intermedia 2012. Mobile money in Uganda: Use, barriers and opportunities. The financial inclusion tracker surveys project.

R. Kyeyune, G. Kituyi , and E. Miiro 2012, "ICT Infrastructure, Mobile Money Systems and Customer Satisfaction in Uganda," *International Scientific Research Journal,* Volume 1, issue 1, June 2012.

H. Kim and Ya O. 2005, "Institutional development in the Korea financial sector accompanying globalization, and its economic effects," Bank of Korea, 2005

Ali N., O. Morawczynski Olga, and O. Popov 2010, "Mobile Money Use in Uganda: A Preliminary Study" . Mimeo.

G. W. Ssonko 2010, "The Role of Mobile Money Services in Enhancing Financial Inclusion in Uganda" Bank of Uganda Working Paper 08/10.

Porteous, D., 2006, "The Enabling Environment for Mobile Banking in Africa–Report

Commissioned by Department for International Development (DFID)."

Porteous, D., 2007 , "Just how transformational is m-banking." Commissioned by Finmark

Porteous, D., 2009 , "Mobilizing money through enabling regulation." innovations 4.1: 75-90.