Aalto University
School of Business

Mobile Money as an Enabler for Entrepreneurship: Case Eastern Africa

Entrepreneurship

Master's thesis

Aarno Jussila

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Abstract

Over the last 10 years, availability of mobile phones has increased dramatically, especially in the developing markets. At the same time, majority of the population living in developing countries are still lacking the access to official financial services. This gap has enabled an opportunity to mobile network operators and financial service providers to introduce mobile money transfer services that are addressing this need. In developed countries, many attempts have been made to introduce mobile payment into the lives of people, however, the most successful efforts to create sustainable ecosystems operating with mobile money has taken place in few developed countries.

This thesis work is studying what is mobile payment, the success factors of the most successful mobile money implementation M-PESA in Kenya and making the comparison to competing systems. In addition, the impact and importance of mobile money services is studied for businesses using the service, as well as what type of customer base is using the mobile money. Finally, a review is conducted over the recent and emerging business opportunities enabled by the mobile money, and innovations around it. The study is based on literature reviews, empirical experience-based analysis, and quantitative analysis of business and consumer survey data from World Bank.

M-PESA is a combination of well-planned and implemented product innovation, which is useful for both consumers and businesses. The service is easy to use, bringing solution to rural areas access to finance, and branded successfully. Businesses are reporting that the most important factors for using mobile money are the speed and low cost of the financial transactions, while barriers for using it are mostly the regulation limits of the transaction value. Typically businesses utilizing mobile money are using the service in addition to their other payment options. Customer base using the service come from all income and education levels, however, people with higher income and education, are more likely to use the service. Businesses enabled by the mobile money service are typically integration services for merchants and facilities starting to use mobile money, financial service providers with new distribution channel of money, or product innovators that utilize mobile money as a principal operating mechanism.

Keywords Mobile money, Entrepreneurship, M-PESA, Kenya

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LIST OF ABBREVIATIONS

API	Application Programming Interface
ATM	Automated Teller Machine
B2C	Business-to-Customer
BOP	Base of the Pyramid
C2B	Customer-to-Business
CGAP	Consultative Group to Assist the Poor
ECB	European Central Bank
GSM	Global System for Mobile Communication
GSMA	GSM Association
IFC	International Finance Corporation
ITU-T	International Telecommunication Union – Telecommunication Standardization Sector
KES	Kenyan Shilling
KPI	Key Performance Indicator
MFI	Micro-Finance Institute
MNO	Mobile Network Operator
NFC	Near-Field Communication
NGO	Non-Governmental Organization
P2P	Person-to-Person
ROI	Return on Investment
SACCO	Savings and Credit Cooperatives
SME	Small and Medium sized Enterprises
SIM	Subscriber Identity Module
SMS	Short Message Service
STK	SIM Application Toolkit
USSD	Unstructured Supplementary Service Data

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1. INTRODUCTION

'electronic money' means electronically, including magnetically, stored monetary value as represented by a claim on the issuer which is issued on receipt of funds for the purpose of making payment transactions as defined in point 5 of Article 4 of Directive 2007/64/EC, and which is accepted by a natural or legal person other than the electronic money issuer

- Directive 2009/110/EC of the European Parliament

Life in the 21st century is hectic with people carrying mobile phones that make them available all the time, regardless of their location and time of the day. Introduction of affordable smart phones, cloud computing and increasing capacity of data transmission has enabled new forms of applications in mobile devices, such as social media (Facebook), microblogging (Twitter), new instant messaging platforms (WhatsApp), picture sharing (Instagram), location based services (Google Maps), and as the latest candidate – mobile, electronic money (M-PESA). At the same time when people in developed Western countries are living wealthy lives (regardless of the economic and financial crisis started in 2008), major part of the World population are still living under poverty level with poor accessibility to services ranging from basic commodities, such as water and sanitation, to financial services, such as banking.

Mobile money is fulfilling the needs of people with worlds apart. In developed countries, fast and easy money transfer service is valued whereas in developing countries, mobile money is a solution to the problem of financial inclusion for the unbanked population. Even though money transfer services are emerging in developed countries, there are alternatives available, a luxury not shared by many people of developing countries. Access to financial services is a rudimental service, which explains why mobile money has got a head start in popularity at developing countries, especially in sub-Saharan Africa, far beyond the acceptance of the service in developed countries (GSM Association, 2013b). Additional factors affecting the adoption of mobile money services in the developing countries can be understood through the

availability of low-cost mobile phone, skipping step of developing landlines directly to mobile networks, and the cost of formal financial services in rural areas where the competition is minimal. Many researches have described M-PESA in Kenya as the most successful implementation of mobile money transfer service (e.g. Jack & Suri, 2011 and GSM Association, 2009b) with roughly half of the 45 million people population using the service, which makes it an intriguing topic for a case study about mobile money.

In addition of creating access to finance for the unbanked, mobile money transfer service is creating business opportunities for various operators in the market. These range from big players creating the infrastructure for the service to small enterprises exploiting the opportunity of growing ecosystem. All the sudden the money that used to be hidden away under mattresses, found its way into the electronic wallets inside mobile phones - safely, conveniently, and ready for use.

1.1. Research Gap

Current research over the topic of mobile money is concentrated mainly on the emerging technologies, consumer adoption of the mobile payment (Dahlberg et al., 2008), reviewing the key success factors of already implemented mobile money services and ecosystems (Mas & Ng'weno, 2010) and providing guidance for implementing a new mobile money service (e.g. International Finance Corporation, 2010). This study will also review the key success factors of the implemented mobile money transfer systems, but the main focus is on the relevance of mobile money to entrepreneurs and Small- and Medium-sized Enterprise (SME) owners as well as why they should be interested in using mobile money for business purposes. Customer focus and user group analysis is emphasized while studying the importance of mobile money to businesses. The consumer adoption of mobile money has been studied before; however, business level analysis has not been studied in detail. Finally, research has been conducted about the new innovations and business opportunities enabled by the mobile money (e.g. Kendall et al., 2011), and this research topic will be continued during this thesis work.

1.2. Research Objectives and Questions

The purpose of this study is to research the innovations and entrepreneurship enabled by mobile money, and the importance of mobile money to businesses utilizing it. The study will be concentrating on identifying the relevant factors of mobile money to businesses, especially for SMEs, and to provide case study examples of new ventures innovating through the possibilities of mobile money. The findings will be evaluated in the light of theoretic framework of competitive advantage and Nordic niche-strategy. The study will be based on the implemented mobile money services within Eastern Africa by evaluating survey responses and through market research. In order to understand the customer base utilizing mobile money and the market opportunity, a study is also conducted over the customer profiles and segments using mobile money. Finally, the relevance of the findings is also discussed in the context of developed markets and the business opportunities within established and new markets.

The research problem is the relevance of the mobile money to businesses. The main research questions are:

1) What differentiates (gives competitive advantage to) M-PESA in Kenya in comparison to complementary systems and why the M-PESA is more successful in Kenya than in other countries?
2) Which factors are important for businesses and companies in terms of using mobile money? What is the customer base utilizing mobile money for purchases?
3) How has mobile money enabled entrepreneurship in developing markets and what new forms of business/innovation it has created? Are any of the best practices applicable for developed countries?

1.3. Structure of the Thesis

This study is a thesis work that will follow the basic structure of an academic research. The thesis starts with an introduction of the research topic by presenting the research

gap, objective, and questions. The introduction is followed by a literature review, which consists of existing research around general topics of mobile payment, a case study of the M-PESA system in Kenya, and a theoretic framework linked to the topic of the thesis. For the case study of M-PESA, topics such as profitability of the service, review of existing complementary systems, ecosystem, success factors, and value chain of the service, are covered. The theoretic framework is based on the technology acceptance and adoption, push-pull theories, entrepreneurship and customer segmentation at the low income countries, and categorization of the businesses involved with mobile money. After the literature review, data and research methodologies are presented and they are followed with an analysis of the data. The used data is survey data from World Bank Enterprise Surveys and Financial Inclusion Surveys. Based on the analysis, findings are presented and they are followed by the discussion and conclusions.

Answers to the research questions are looked for in the following sections of this study. The first research question regarding M-PESA success is covered through literature review of case M-PESA in Kenya. The second research question regarding business and customer mobile money use is analyzed through the quantitative study of World Bank survey data. And finally, the third research question regarding mobile money as enabler for entrepreneurship and innovation is covered through the qualitative study of SMEs operating in Kenya.

2. LITERATURE REVIEW

Mobile payment is a topic, which is evolving rapidly as new entrants to the market are introduced with new technologies and applications. Some of the applications fail, some succeed, and some success stories are tried to repeat in other economic areas. Dahlberg et al. (2007) have conducted a thorough literature review about mobile payment with a conceptual framework adapted from Porter's five forces model, and generic contingency theory. The five forces in mobile payment context are competition, new services, traditional services, merchant power, and consumer power, whereas the four outer factors are changes in social/cultural, technological, commerce, and legal/regulatory environment. In their research, they have found out that majority of the existing literature is based on new technologies, and consumer behavior (e.g. technology adoption). Social/cultural changes, as well traditional services are not covered with research topics. However, as the research area is evolving rapidly, many updates to the conclusions are evident in the few years followed by the original research.

Earliest applications for mobile money were implemented already in the early 21st century, however, only during the last five years, the mobile money has been able to take foothold and generate an ecosystem profitable for the service provider and useful for the people and businesses using the service, especially in developing countries. Therefore, the mobile money in its current form is relatively new study topic, so the number of scientific articles concentrating directly on the latest breakthroughs is limited. However, there are numerous articles, reports and white papers from promoters group, such as GSM Association (GSMA) Mobile Money for the Unbanked, and researches funded by Non-Governmental Organizations (NGOs), such as World Bank, International Financial Corporation (IFC), Bill & Melinda Gates Foundation, and Consultative Group to Assist the Poor (CGAP), which are supporting the improvement of the lives of the poor and financial inclusion. The success of M-PESA in Kenya has been used for many case studies about mobile money and as an example case for the successful implementation. Therefore, M-PESA is covered also during this study.

Literature review is conducted over the different case studies and reports regarding the current status of available technologies and ecosystems around mobile payment and mobile money. Main focus is on the reported state of the mobile payments industry, mobile money profitability, journal articles regarding the applicable theory of entrepreneurship and technology adoption, as well as the demographics profile of the case countries. Based on the latest success stories and best practices, GSMA has developed a framework, or guideline, for mobile money implementation intended for potential service providers covering topics from distribution and marketing to technologies and regulations (McGrath, 2013). These guidelines are considered during this study as well.

2.1. Overview of mobile financial services

The mobile money can be split into different categories based on the distance, service provider, and the technology. Based on the distance, some of the services are relying on contact-based approach, where others are independent of the location of the parties involved. Based on the service provider, the players in the field are ranging from Mobile Network Operators (MNO) to commercial banks and credit companies to small application providers. And finally, based on the technology, the services can be split from using Near-Field Communication (NFC) to mobile networks and to internet-based cryptography (namely Bitcoin).

2.1.1. Electronic money vs. virtual money

Electronic money is, by the definition of European Union Electronic Money Directive 2009/110/EC (European Union, 2009), monetary value that is 1) stored electronically, 2) issued on receipt of funds of an amount not less in value than the monetary value issued, and 3) accepted as a means of payment by undertakings other than the issuer. Electronic money has therefore basically the same legal status as any traditional currency of a country in terms of regulations and legal framework (European Central Bank, 2012). Therefore, traditional financial institutes (including the mobile network operators) involved in mobile money, are operating with electronic money.

Virtual money, on the other hand, is "a type of unregulated, digital money, which is issued and usually controlled by its developers, and used and accepted among the members of a specific virtual community" (European Central Bank, 2012). According to European Central Bank (ECB), there are three types of virtual money schemes: 1) closed systems, where virtual currency and "real" money are not exchanged (with an example of money from World of Warcraft online game), 2) unidirectional flow, where real money is traded for virtual money (an example of Facebook credits), and 3) bidirectional flow, where real money can be traded for virtual money, and vice versa (an example of Bitcoin). Virtual economy is a trade of its own with clear characteristics, such as virtual goods, that separate the virtual economy from digital economy (eCommerce, online shopping), and also offer profit opportunities, e.g. through micro work (Lehdonvirta & Ernkvist, 2011). Differences of the electronic money to virtual money are summarized on Table 1.

For the purpose of this thesis work, the mobile money is understood as regulated, electronic money where the money is fixed into fiat currencies issued by the central banks. Electronic money cannot increase the supply, as there is 1:1 ratio between

Table 1. Comparison between electronic money and virtual currency
(adapted from European Central Bank, 2012 & Rothman, 2014)

	Electronic money	**Virtual currency**
Money format	Digital	Digital
Unit of account	Fiat currencies (e.g. EUR, USD)	Invented currencies, such as Linden dollars, Bitcoin
Customer identification	Financial Action Task Force (FATF) standards	From voluntary authentication of identity to complete anonymous
Issuer / Means of production	Issued by legally established e-money institute, digitally issued against fiat currencies	Issued by the developer/ company, produced e.g. by issuing freely, or through cryptography
Legal status	Legal tender, regulated	No legal tender status, unregulated
Acceptance	By undertakings other than the issuer	Within specified virtual community

electronic money and money in bank, and all customer funds are redeemable instantly (GSM Association, 2009a). From virtual money schemes presented above, the bidirectional scheme is the closest equivalent to mobile money, as it can be transferred back from the virtual form to the real money. Most interesting virtual money option is Bitcoin, which is described as a peer-to-peer electronic cash system (Nakamoto, 2008), as there is a limited supply of the currency, possibility to generate more through a process called mining, it has an own stock exchange (European Central Bank, 2012), and it is already accepted in various locations as a currency for buying goods. Even with the existing application in the mobile money world, Bitcoin, as unregulated money, is out of the scope of this study.

2.1.2. Global mobile penetration and geography of the deployed mobile money services in the world

Availability of the mobile phones and the number of subscriptions have developed rapidly since the late 1990's, as illustrated in Figure 1 a). In few years of time, between 2004 and 2010, the mobile phones have become well available in all income categories, except in the lowest category, even though there also has been good development (World Bank, 2012). It has been predicted that the number of mobile phone subscriptions will overtake the number of population in the world in next few years

a) b)

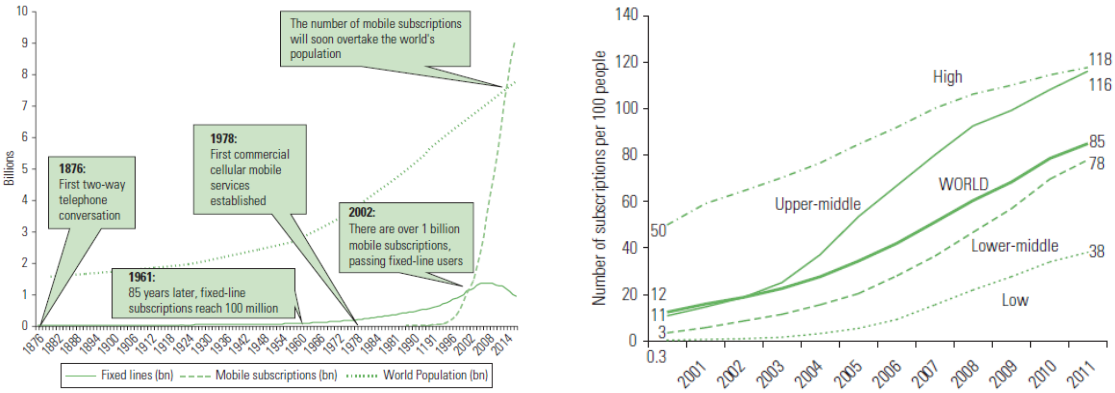

Figure 1. a) Worldwide mobile subscriptions, and b) percentage of subscriptions in income categories (Courtesy of World Bank, 2012)

(World Bank, 2012), and in the higher income categories, the number of subscriptions already is over 100% of the income group size, as illustrated in Figure 1b. The figure shows the dramatic increase of mobile phone subscriptions, while the fixed-lines are continuing to decline. The increasing number of mobile subscriptions is expected to follow the current trend, as the lower income categories are equipped with mobile phones, everywhere in the world.

According to GSM Association (GSMA) report from June 2013b, there are already 219 mobile money services for the unbanked in 84 countries with half of the services in the sub-Saharan Africa. This number does not take into account the global services (such as Google Wallet), or local services (such as Danske Bank MobilePay), which require a bank account, bank card, or in some cases advanced device for the using the service. The mobile money services for the unbanked are stand-alone service usable by anyone with a mobile subscription – not even own mobile phone is needed, only the SIM card, occasionally inserted into borrowed device. Figure 2 illustrates the countries with deployed or planned mobile money services with a notion that 52 markets have at least

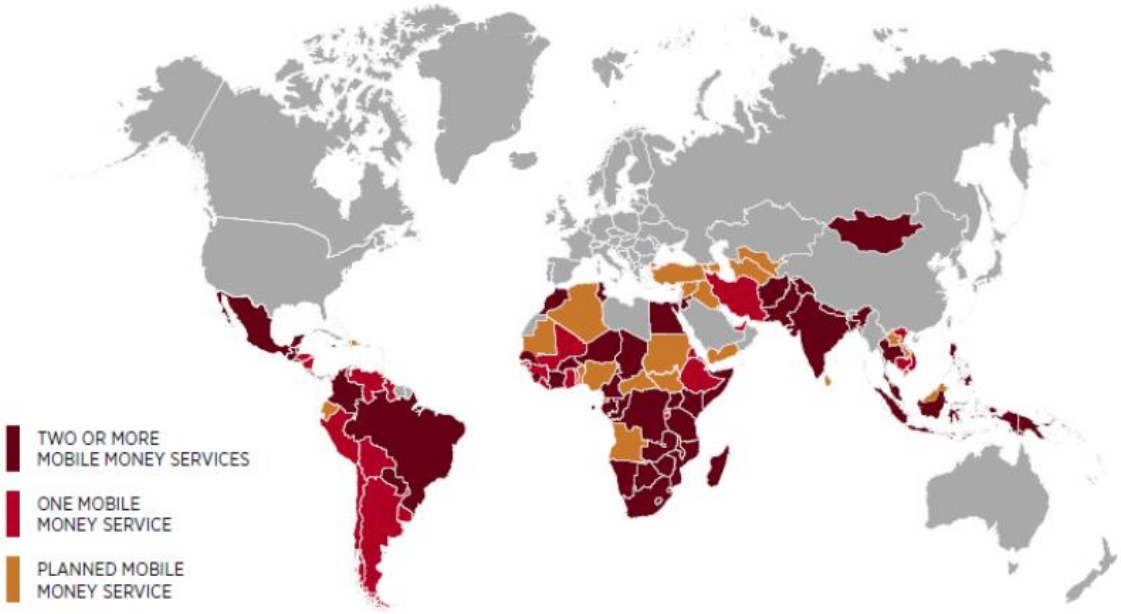

Figure 2. Number of mobile money services by country
(Courtesy of GSM Association, 2013b)

2 mobile money service platforms, which highlights the need of interoperability (GSM Association, 2013b).

Figure 3 presents the number of active and registered accounts for mobile money services. According to the GSMA report, over 200 million people in the world have already opened the service with 61 million active accounts, and the numbers are growing fast. Notable is that majority of the users are located in the southern part of the world, but there is also expansion towards more developed countries, as Vodafone has already opened an M-PESA service to Romania (Vodafone, 2014). Use-cases range from airtime top-up to bill/merchant payment to person-to-person (P2P) transfers, with the highest volume of transactions in airtime top-ups and by value in P2P transfers (GSM Association, 2013b).

2.1.3. Different forms of mobile financial services

Mobile services, internet and applications have developed dramatically since the development of more efficient, and affordable smart phones that are gradually increasing the market share over the feature phones. However, the foundation of the mobile money services is formed by the mobile money transfer services, service

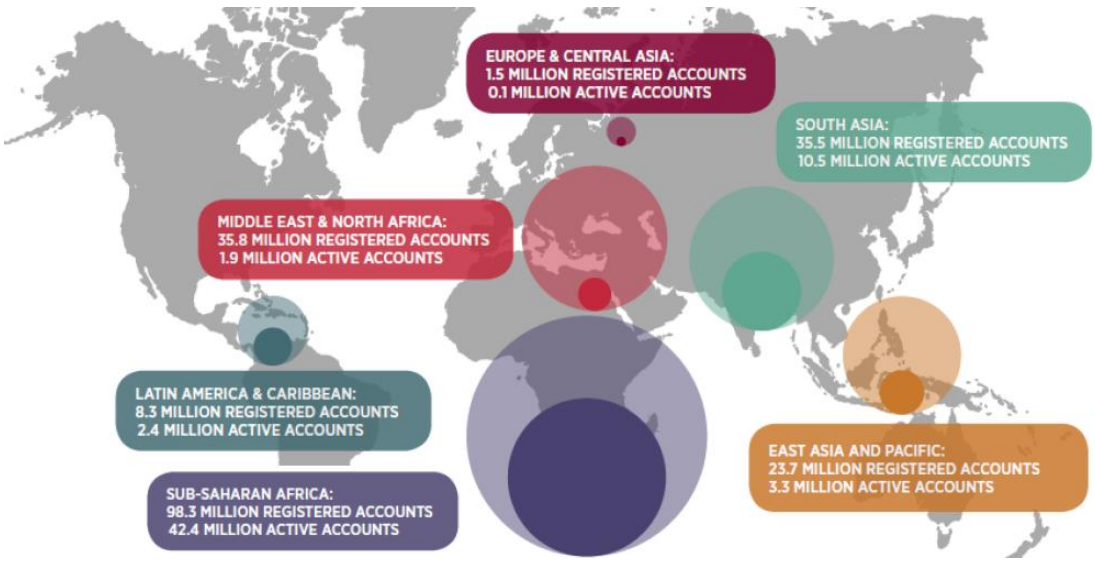

Figure 3. Number of active mobile money accounts
(Courtesy of GSM Association, 2013b)

originally intended to improve financial inclusion of the poor and unbanked population, which in-turn requires that the service must work on the most basic mobile devices. The mobile money transfer service is mobile money in its most native form, transfers between mobile wallets that are holding people's digital currency. The mobile money can be transferred from a phone to phone, or in a more advanced form, from online remittance service provider or from a bank account to a phone. The second step from a mobile wallet and money transfer is the mobile payment between people, government, and businesses. The payment can be for services, goods, utilities, salaries, etc. which requires that the mobile money provider services have been integrated into a system compatible in handling the transaction between the counterparts. The payment can take place from a close proximity, or remotely, with different forms of authentication of the payment. On top of the money transfer and payment systems, are standing the more advanced financial and banking services, such as credit, and savings, as well as insurances. The different forms of mobile money services are presented in the Figure 4.

2.1.4. Technologies enabling mobile money services

There are different technologies involved in enabling the mobile money services. From this study point-of-view, the most important alternative is the SIM Toolkit (STK),

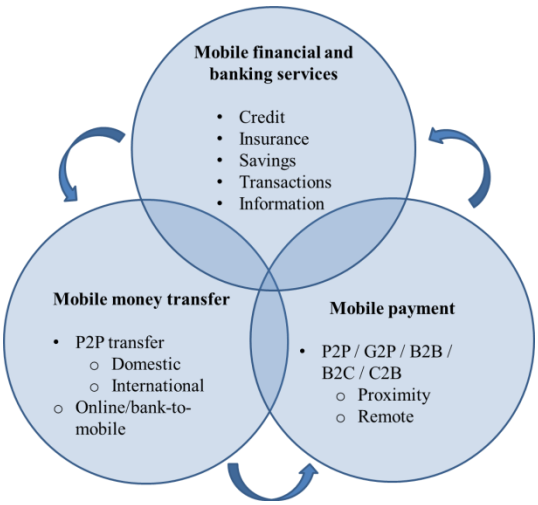

Figure 4. Different forms of mobile money services
(Adapted from ITU-T, 2013a & World Bank, 2012)

which is used to enable the mobile money service of M-PESA in Kenya, as well as Unstructured Supplementary Service Data (USSD), which is used for M-PESA implementation in Tanzania (Camner & Sjöblom, 2009). Majority of the mobile money transfer services are based on these technologies (ITU-T, 2013a) that are based on identifying the mobile user by the Subscription Identification Module (SIM) card. It is a convenient way for creating the service in developing countries, as it is operable with practically any cell phone (operated through a SIM card), and it is used as a basis of service in majority of the Mobile Network Operator (MNO) led services as they are controlling the SIM card content. Another MNO led service form is the SMS or call based technologies (GSM Association 2013a), however, it is limited to one-way transactions, i.e. purchasing, making it inoperable as a mobile wallet (Smart Card Alliance, 2011). Because of this, the funding mechanism for SMS based service is through operator billing, i.e. through post-pay or prepay options. STK/USSD and SMS/call based services are remotely used services, as well as application/browser/cloud based technologies (ITU-T, 2013a). The application, browser and cloud based technologies are efficient and flexible ways of handling mobile commerce; however, they are more suitable for countries with developed infrastructure as mobile internet is required for those service platforms.

The last mobile money options covered in this section are the proximity based services, such as Near-Field Communication (NFC) technology, that is a short-range wireless communication method (Smart Card Alliance, 2012). The contactless, proximity payment methods are currently being implemented in numerous European banks, as well as global services such as Google Wallet and ISIS mobile wallet. The contactless mobile money services are struggling with widespread consumer adoption due to limited availability of NFC-enabled mobile phones (ITU-T, 2013), even though the limitation can be overcome by e.g. NFC stickers. The Figure 5 presents the mobile money payment spectrum with different technologies, use cases, and service location.

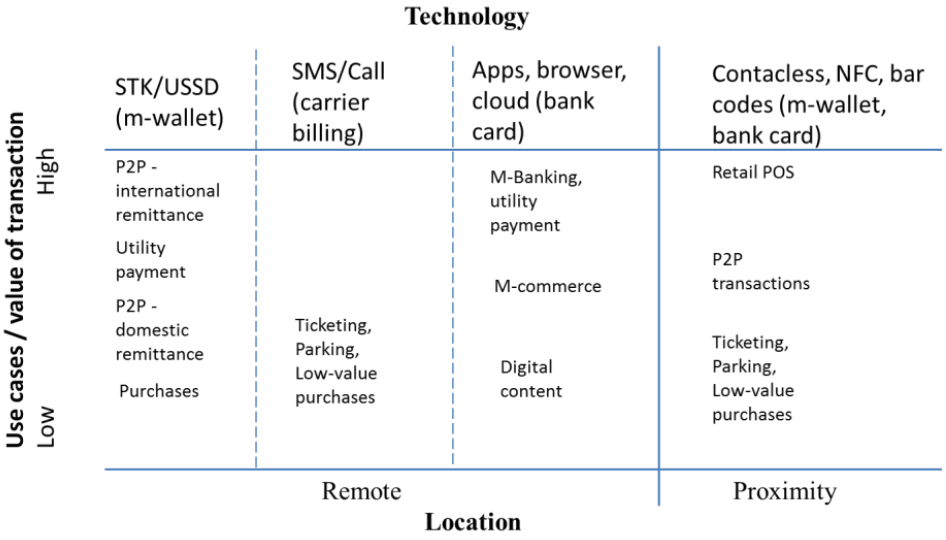

Figure 5. Use cases and technologies for mobile money
(Adapted from Smart Card Alliance, 2011)

In addition to the above presented technological methods, an emerging method called thin-SIM is under implementation in Kenya by Equity Bank (Economist, 2014). This method employs thin, 0.1 mm thick SIM card that is placed on top of traditional SIM card, in order to supply the device with additional SIM applications. This is especially interesting opportunity for banking institutes, as it may enable them to provide the mobile banking service to their customers without having to rely on the mobile money service of an MNO. This would make the mobile banking service provided as a Mobile Virtual Network Operator (MVNO), i.e. utilizing mobile network of an MNO. However, in Kenya, the idea of sharing the revenues of mobile money has raised the traditional MNOs to question the security of the service, which is currently being considered by the regulators (Standard Media, 2014).

2.1.5. Service providers and stakeholders for mobile money

Three separate business models are currently creating the business environment for mobile money ecosystem, and the business model depends highly on the regulatory aspects, culture, infrastructure, and population size. The business models are adapted through the entity that is running the business. The models are 1) bank centric, 2) mobile network operator-led or non-bank based 3rd party provider, and 3) through

partnership (ITU-T, 2013b). In bank centric model, the service is offered through a bank that has integrated mobile money service as a part of its services. In MNO-led and 3rd party model, the service is run by an entity other than a financial institution. And in the partnering model, the different stakeholders, banks, MNOs etc., form a collaboration to take advantage of each other's strengths. The strengths and weaknesses are obvious for banks, and MNOs, with banks having expertise in the financial world, and MNOs in mobile solutions, as well as in mobile money agent network management. In addition to the service provider and service user, there are two important stakeholders in the equation. These are the regulators setting the rules of the game in the market area, and the service enablers, which are the merchants, mobile money or retail agents' network, and bank branch network, depending on which service provider is running the business. Finally, the technology owners/licensors as well as mobile network/device manufacturers are part of creating the infrastructure that create the basic operation for the system. Figure 6 illustrates the stakeholders in the mobile money ecosystem.

The level of financial infrastructure development in the market/country is affecting the demand for mobile money and requirements for the service. Figure 7 is illustrating the difference between developing and developed economies in terms of financial infrastructure readiness, and the demand for cost/speed/frequency of transactions (World Bank, 2012). In developing countries with incomplete financial infrastructure,

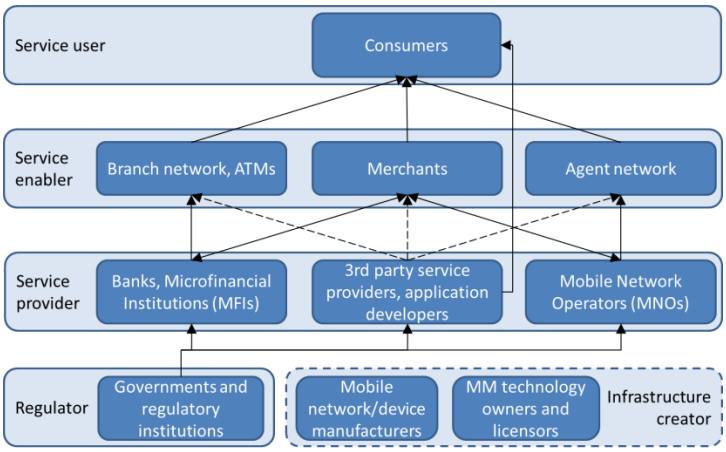

Figure 6. Stakeholders for mobile money services
(Adapted from IFC, 2010c & ITU-T, 2013b)

mobile money service introduced by MNOs is acting as an alternative infrastructure for the gaps in the financial infrastructure. In economies with relatively young banking sector, the mobile money service is often offered by banks or MNOs, and the mobile money service is a complementary service for the financial sector. In the developed economies, there are a number of banking and credit services available, so mobile money service providers need to integrate into the existing systems by partnering with the instances on the market already.

At the moment, MNO and bank centric mobile money service providers rule the ecosystem, but non-bank and 3rd party developers are also looking forward to enter the mobile money business, which are making the marketplace even more interesting. E.g. Mastercard is offering an NFC-enabled mobile device based PayPass service, which can be operated even with a prepaid Mastercard credit card, which in turn can be integrated into loyalty cards, such as Nakumatt Global smartcard in Kenya (Mastercard, 2012). This can be considered as an example of a service that is borrowing elements from each of the categories; alternative infrastructure, transition phase, and collaboration.

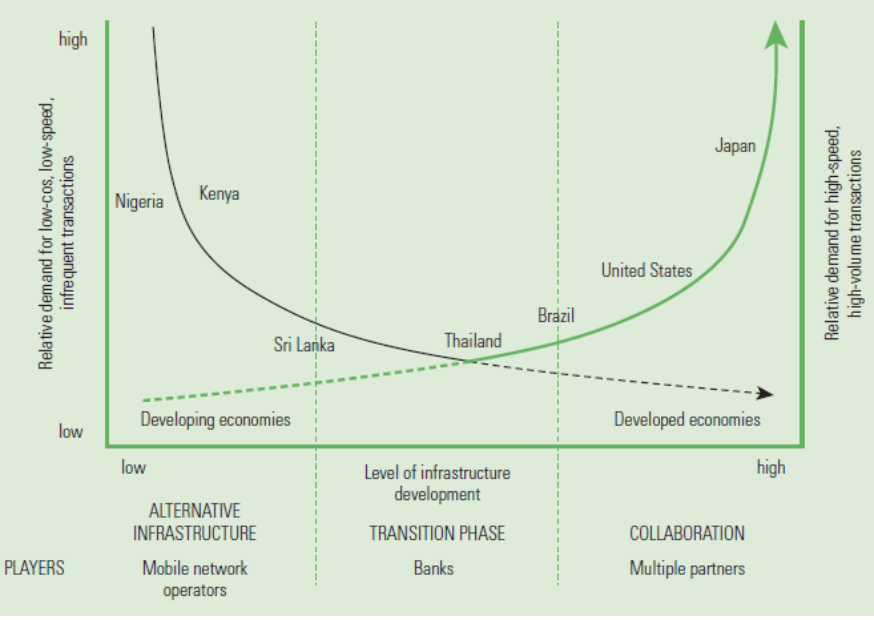

Figure 7. Differences in mobile money service demand in terms of infrastructure development (Courtesy of World Bank, 2012)

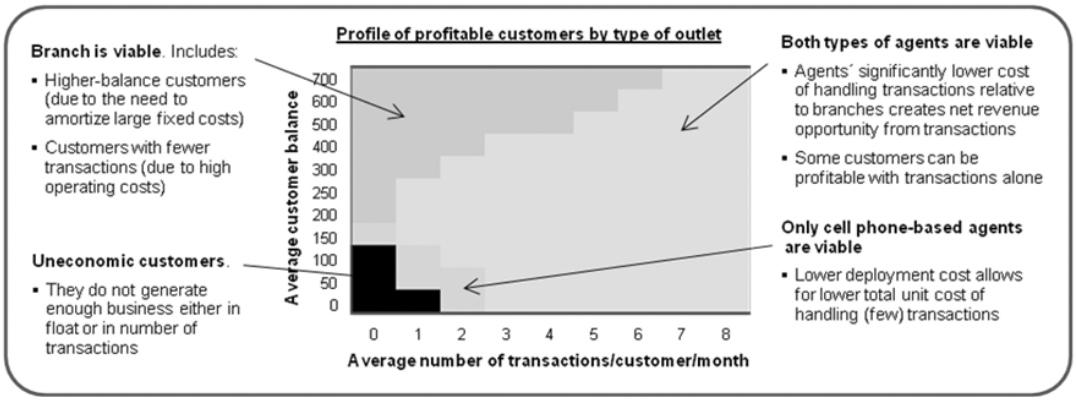

Figure 8. Profitability and viability of different customer profiles for traditional and mobile banking (Courtesy of Mas, 2009)

The customer use profile of mobile money, in terms of customer balance and average number of transactions, is determining whether a mobile money system is a viable solution for personal banking. Bank branch operated system is more suitable when customer base has higher number of high-balance customers with fewer transactions, whereas mobile money agent based system is more suitable with customers that have lower balance, but higher number of transactions (Mas, 2009). Lower handling cost of transaction at mobile money agent is driving transaction based model for mobile money system, but higher balance customers creates a need for large fixed costs (due to liquidity management), which makes high-balance customers more suitable for banks. The divide between the customer profiles is illustrated in Figure 8.

2.2. Case M-PESA in Kenya

"M-PESA is a Safaricom Limited service allowing customers to transfer and withdraw money or pay of goods and services using a mobile phone. Kenya was the first country in the world to use this service, which is operated under license from Vodafone."

- Safaricom Limited Annual Report, 2014

Safaricom M-PESA is often regarded as the most successful mobile money transfer system in the world. Therefore, this chapter is covering the characteristics and details of the M-PESA system. As the implementation in Kenya has been successful, Vodafone

Table 2. Countries with Vodafone's mobile money service
(Adapted from Vodafone, 2014)

Country	Date Launched	Provider	Product Name
Kenya	Mar-07	Safaricom	M-Pesa
Tanzania	Apr-08	Vodacom	M-Pesa
Fiji	Jun-10	Vodafone	M-Paisa
South Africa	Aug-10	Vodacom	M-Pesa
DRC	Nov-12	Vodacom	M-Pesa
India	Apr-13	Vodafone	M-Pesa
Mozambique	May-13	Vodafone	M-Pesa
Egypt	Jun-13	Vodafone	Vodafone Cash
Lesotho	Jul-13	Vodacom	M-Pesa
Romania	Mar-14	Vodafone	M-Pesa

has made an effort to spread the system in various markets in Africa, Middle-East, Asia, and as a newest entry in Romania, Europe, as illustrated in Table 2. The common factors within the markets are that Vodafone or its affiliates is present in the market, and there is a substantial population without formal bank account.

M-PESA is a very visible brand throughout the Kenya ranging from agents in rural conditions to ATMs on the street to high-end shopping malls. Figure 9 presents few implementations.

a) b) c)

Figure 9. Different implementations of M-PESA: a) Agent deposit/withdraw kiosk on street corner, b) ATM for withdrawal at a shopping mall, and c) Lipa na M-PESA merchant payment

a) b)

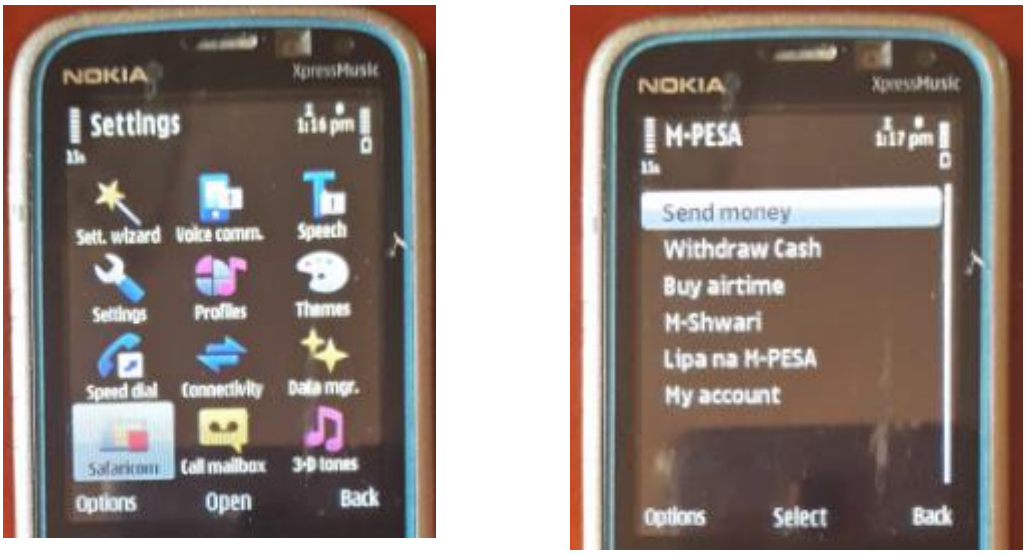

Figure 10. a) SIM application for M-PESA, and b) M-PESA user interface

User interface of M-PESA is directly through STK menu option enabled by Safaricom SIM card, which shows up as an application on the phone for any type of phone model without installation and prior to registration for the service. To use the service, registration is needed at Safaricom and it is granted for anyone with an active mobile subscription (which is granted for anyone with an identification card). Figure 10 presents the basic functionality of the M-PESA service on a mobile phone.

2.2.1. Country overview of Kenya

Kenya is a developing country located in Sub-Saharan Africa with neighbor countries Somalia, Ethiopia, Uganda, South Sudan and Tanzania. As many other African countries, Kenya has a colonial history, and it has gained its independence from England in 1963. Kenya is a low-income country with high unemployment rate, corruption, and crime. The main obstacles for business are identified as practices of the informal sector and corruption (IFC, 2013). Main industries are service and agricultural industry, with main products as tea, coffee, corn etc. The country is divided in high-density populated urban areas (along Kisumu-Nairobi-Mombasa highway, from Lake Victoria to Indian Ocean) and to scarcely populated rural areas (north-eastern parts of

Table 3. Key figures of Kenya
(Adapted from CIA World Factbook, 2014 & World Bank, 2013a & ITU-T, 2014 & FinAccess National Survey, 2013)

Region	Sub-Saharan Africa
Population	45 million (July 2014 est.)
GDP (USD$)	79,9 billion
GDP – per capita (USD$)	1800
Ease of doing business	129 (out of 189)
Unemployment rate	40%
Mobile subscriptions (per 100 habitants, 2013)	70,59
Financial services used by individuals (bank / mobile / informal)	5,4 million / 11,4 million / 5,1 million

the country). As many other emerging economies, Kenya is going through urbanization and rapid gross domestic product growth rate, and Kenya is sometimes regarded as the Silicon Valley of Africa with its promising IT industry. In addition, recent oil discoveries make near-future interesting period for Kenya. Key figures of Kenya are presented in Table 3.

2.2.2. General information regarding M-PESA

For the purpose of this thesis work, M-PESA is classified as a mobile money platform, operated by a Mobile Network Operator (MNO) Safaricom, which uses licensed SIM-based technology from Vodafone to facilitate the payments between the users (Safaricom Limited, 2014a). M-PESA in Kenya is globally the most successful mobile money platform in terms of users in a country and value of transactions performed (GSM Association, 2009b).

M-PESA is operated through SIM card options, enabling the use with any mobile phone (operated with SIM card), from high-end smart phones to the most basic devices in the market. Services offered through M-PESA are money transfers between Person-to-Person (P2P), payment of goods and services transfers between Customer-to-Business

(C2B) (e.g. Lipa na M-PESA), purchase of pre-paid airtime, micro-banking (e.g. M-Shwari), and utility bill payments. Money can be deposited to or withdrawn from M-PESA account through the agent network. The most common use cases are airtime top-up and saving money, however, it has been estimated that in most cases the deposited value is transferred and withdrawn right away, without saving in M-PESA account (Mbiti & Weil, 2011). The use cases are evolving rapidly in all user groups, such as saving habits between the service early and late adopters (Jack & Suri, 2011).

Impact of M-PESA to Safaricom Limited (2014a):

- Ecosystem: 19,3 million customers, 81 025 agent outlets, 122 000 Lipa na M-PESA merchants
- Financial impact: 26,56 billion KES revenue, annual growth 21,6%

Tariffs of the M-PESA are based on price ranges, or steps, i.e. there is a fixed service fee depending on which transaction size the transferred/withdrawn amount falls into. Figure 11 represents the amount of service fee based on the range of transaction size and Figure 12 represents the percentage of customer cost of the service in logarithmic scale. The transaction value for P2P transfers range from 10-70000 KES to registered users and 101-35000 KES to unregistered users (higher value limited by regulations).

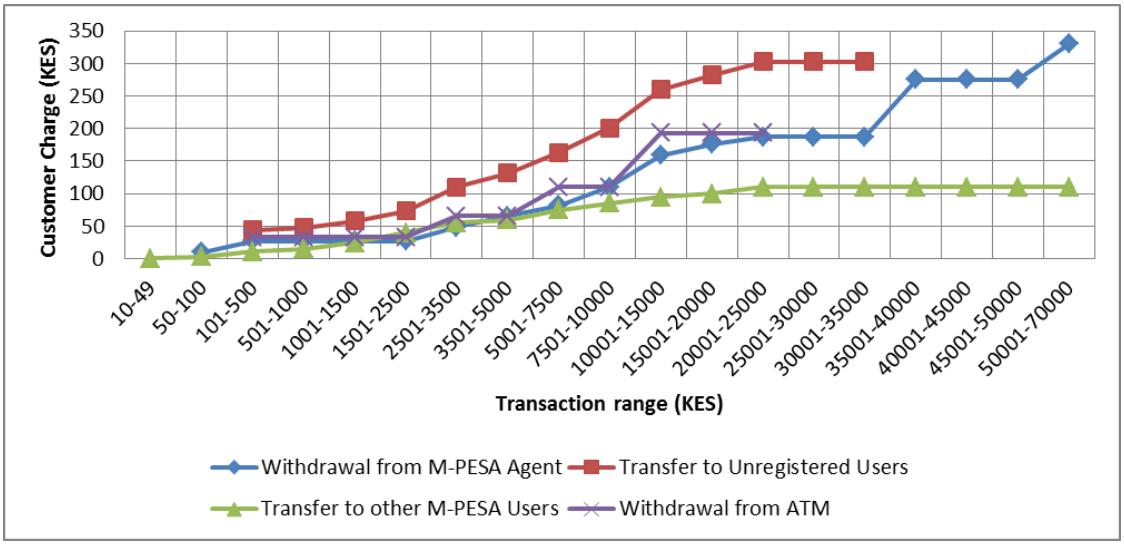

Figure 11. Customer charge for different transactions (Adapted from Safaricom Limited, 2014b)

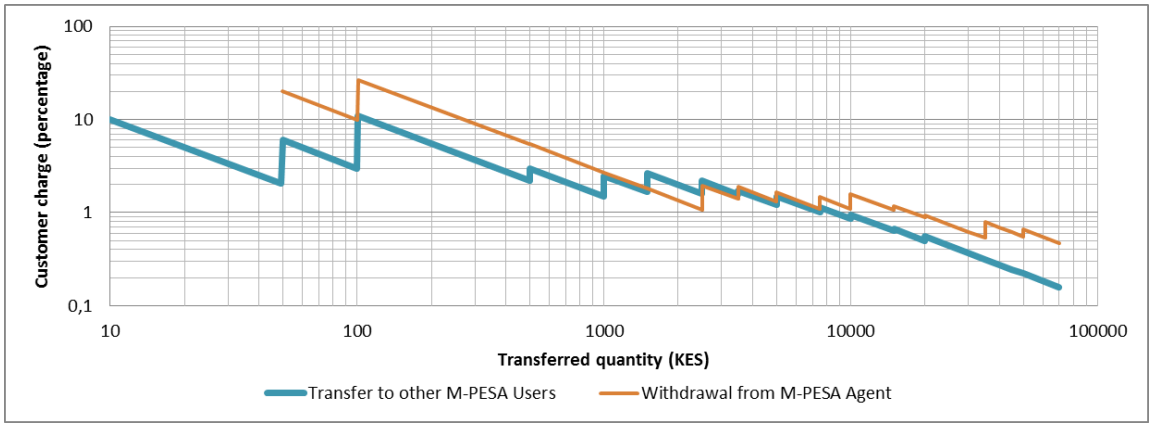

Figure 12. Customer charge (percentage) for different customer transactions (Adapted from Safaricom, 2014b)

Withdrawal value from agents is ranging between 50-70000 KES. The customer cost reduces rapidly with the increasing transfer amount as the low value transactions of below 3500 KES cost range between 2-10%, where higher value transactions of more than 3500 KES cost below 2%. Studies show that the users value the service more than it costs (Jack & Suri, 2011).

2.2.3. Ecosystem

Ecosystem is a set of devices, applications, services, platforms and technologies, working together to create a seamlessly compatible service for the users, such as the

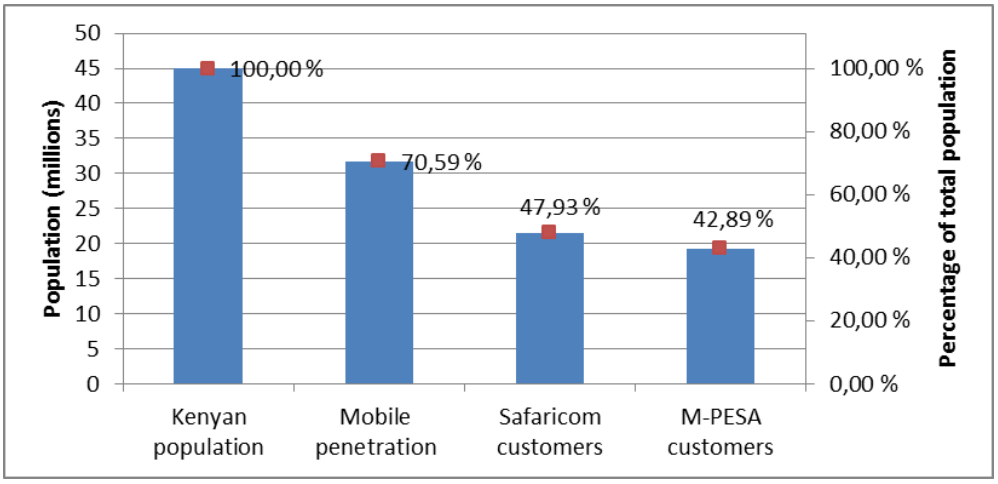

Figure 13. Size of Safaricom M-PESA ecosystem in comparison to Kenyan population (Adapted from Table 3 and Safaricom, 2014a)

ecosystem from Apple, i.e. iOS, iPhones, iPads, iCloud, and so on. The base and foundation for any ecosystem are created by the active users, and the ecosystem, as a whole, consists of all the applications and use cases that the users may employ. For any type of e-business, software or application, the value for the whole concept can be evaluated through the size of the ecosystem around it. Once the service creates a critical mass for a mature economy of scale, it can be considered as a sustainable ecosystem. Figure 13 illustrates the number of M-PESA users in comparison to the Kenyan population and mobile penetration in the country (to indicate the potential market size).

In order that mobile money service is useful and whether it can actually promote the financial inclusion, there needs to be sufficient availability of the service. Therefore, as one Key Performance Indicators (KPIs) for a mobile money ecosystem, the number of customers, agents dedicated for the service, and customers-to-agents ratio should be considered. These are represented in Figure 14 on a chronological scale in M-PESA lifespan to highlight the growth speed of the service. In the study of Mas & Morawczynski (2009) it was noticed that Safaricom has been maintaining balanced growth of customers and agents by keeping the number of agents high for customer satisfaction, but low enough for agent profitability. The customer-to-agents ratio has been reducing in the last few years, as presented in Figure 14 b), which is raising

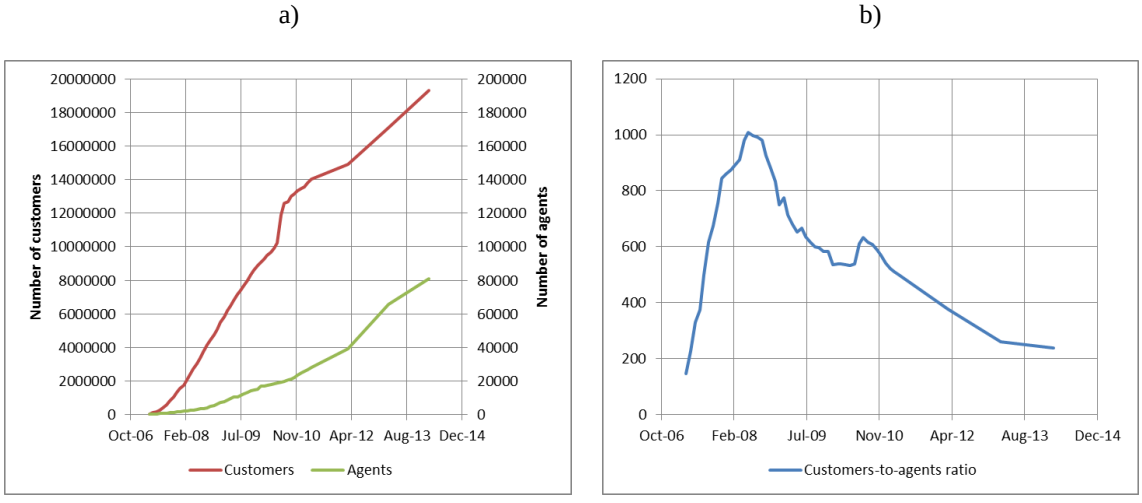

Figure 14. a) Number of customers and agents for M-PESA including b) customers-to-agents ratio (adapted from Safaricom Limited, 2011b, and annual reports 2012-2014)

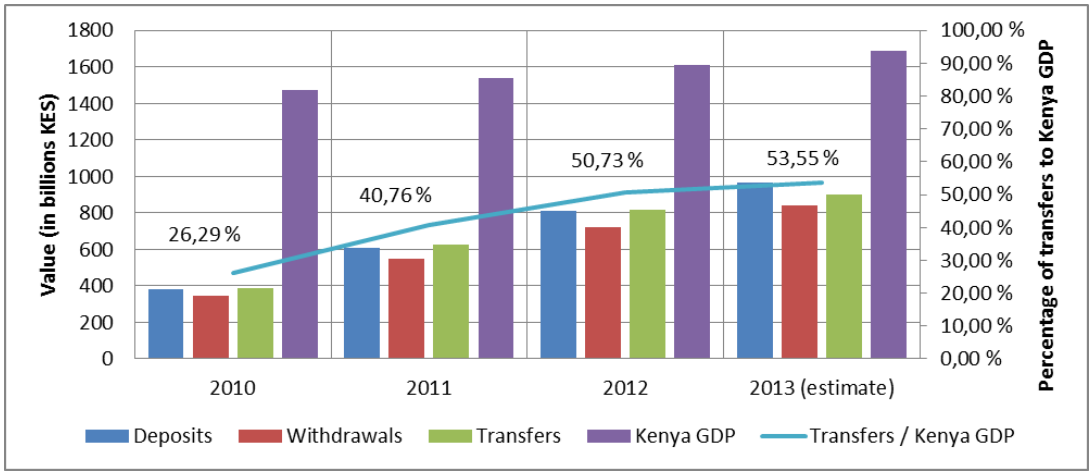

Figure 15. M-PESA deposits, withdrawals, transfers, and relation to Kenya GDP (adapted from Safaricom Limited, 2014c and Kenya National Bureau of Statistics, 2014)

questions regarding the future profitability of the growing agent base, as agent profitability is an essential characteristic of building up the agent network.

Use of M-PESA in Kenya is high, even when compared to Gross Domestic Product (GDP) of Kenya. In 2010, the amount of money transferred with M-PESA alone was one fourth of the Kenya GDP, when in 2012 it already overcame half of the Kenya GDP. Figure 15 presents the value of deposits, withdrawals and transfers of M-PESA system, and its relation to Kenya GDP.

Final consideration for the ecosystem of M-PESA is the vast network of stakeholders, such as described in chapter 2.1.5. In Kenya, there are already 122 000 merchants utilizing M-PESA for accepting payments (Safaricom Limited, 2014a).

2.2.4. Value chain and profitability of M-PESA

As mobile money transfer system is generating an ecosystem around it, it creates opportunities for business in numerous industry sections. The key players in M-PESA value chain are the stakeholders already discussed through section 2.1.5, regulators, technology owners, service providers, agent network, and finally the businesses, which are integrating the system into their operations and paying for the service, through their customers. This section covers the share of direct revenue created by M-PESA.

In case of M-PESA, the main operator is the mobile network operator Safaricom. Safaricom is operating the M-PESA system on a license basis, which means that it is paying fees quarterly for the use of the system to the owner of the M-PESA solution, The Vodafone Sales and Services Limited (VSSL). According to Safaricom Limited Annual report (2014a), "The license fee is based on either the higher of the number of active subscribers multiplied by a service fee rate which is graduated depending on the number of subscribers (the service fee rate reduces with increase in number of active subscribers) or 10% of M-PESA revenues and is capped at 25% of the revenue for that quarter with a floor of 10% of revenue per quarter." In fiscal year 2014, the revenue generated by M-PESA is 26,56 billion KES (contributing 18% of the total Safaricom revenue). The agent network revenue based on the commissions paid by Safaricom is 10,68 billion KES, and the license fees towards Vodafone is 4,19 billion KES (which is only partly for M-PESA license, as 6 million EUR is paid for other services, making the final revenue to Vodafone approximately 3,6 billion KES). The revenue share distribution is illustrated in Figure 16.

In addition to the direct earnings of mobile money transfer system to the mobile network operator, there is a possibility to have a reduction in operational cost by using the mobile money. One saving opportunity is the fact that customers buying airtime

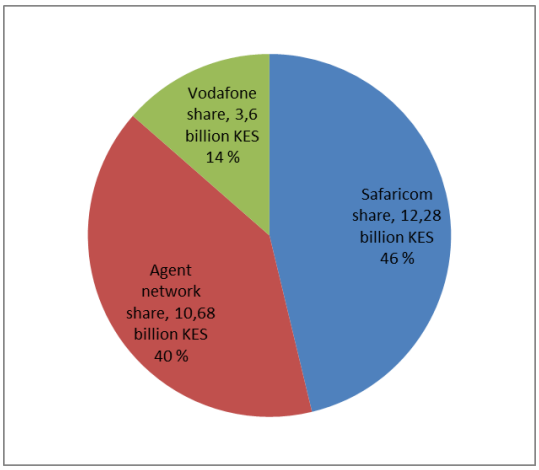

Figure 16. Direct revenue share between key players: MNO Safaricom, agent network, and technology licensor Vodafone
(Estimated based on Safaricom Limited, 2014a)

with mobile money instead of scratch cards create less cost in commissions, and cost is also reduced by manufacturing, storage, and distributing scratch cards (Leishman, 2010). However, there is a cost in setting up the infrastructure for mobile money system, which drives the need of active customer base making frequent transactions. Actually, deposits are free for customers, but Safaricom is paying commission from deposits to the agents, which creates certain use profiles of mobile money unprofitable for Safaricom.

According to study by IFC (2010a), the commission model of the M-PESA is a hierarchy model where each retail agent, performing the customer transactions, is working under a master agent. The master agent gets 30% of all commissions, and 70% ends up to the retail agent. It is highlighted that agents receive typically higher profit from M-PESA transactions than from selling airtime with scratch cards, leading to more than 3 times higher profits (CGAP, 2009). Regardless of the higher profits, due to capital employed to the liquidity management, Return on Investment (ROI) of M-PESA shop is less than with selling airtime alone. The fixed costs (including maintaining liquidity) also creates a risk for the shop owner as there needs to be sufficient number of transaction in order to make profit.

2.2.5. Comparison of Kenyan M-PESA to competing systems by number of users of the service

Table 4 presents the in-country comparison of different mobile network operators' market share in Kenya. Safaricom is controlling the market with approximately 2/3 of the total mobile subscribers, and slightly bigger market share for the mobile money subscribers. Safaricom M-PESA has the clear first mover advantage with more than 10 million customers in June 2010, when the other competitors were still just about to start, or recently started their business with mobile money. In addition to the MNOs' mobile money services, there are two independent mobile money service providers in Kenya, Mobikash Africa Limited and (Tangaza) Mobile Pay Limited, who are licensed as Content Service Providers (CSPs) (CCK, 2013).

Table 4. Kenyan mobile and mobile money market share per operator (in thousands) (CCK, 2012 and CCK, 2013)

	Mobile money subscribers				Mobile subscribers (Dec-12)		
Operator (mobile money system)	June 2010	June 2011	June 2012	June 2013	Pre-Paid	Post-paid	Total
Safaricom Limited (M-Pesa)	10233	14332	15084	17562	19621	193	19814
Airtel Networks Kenya Limited (Airtel Money)	379	2531	3752	4580	5101	104	5205
Essar Telecom Kenya Limited (yu Cash)	4	416	530	2291	3226	2	3227
Telkom Kenya Limited (Orange Money - Iko Pesa)	-	117	140	166	2481	4	2485

For continental competition figures of mobile money service users, in Figure 17 the major mobile money providers in Africa were selected. Majority of the mobile network operators are running the service in more countries than one, with Safaricom M-PESA

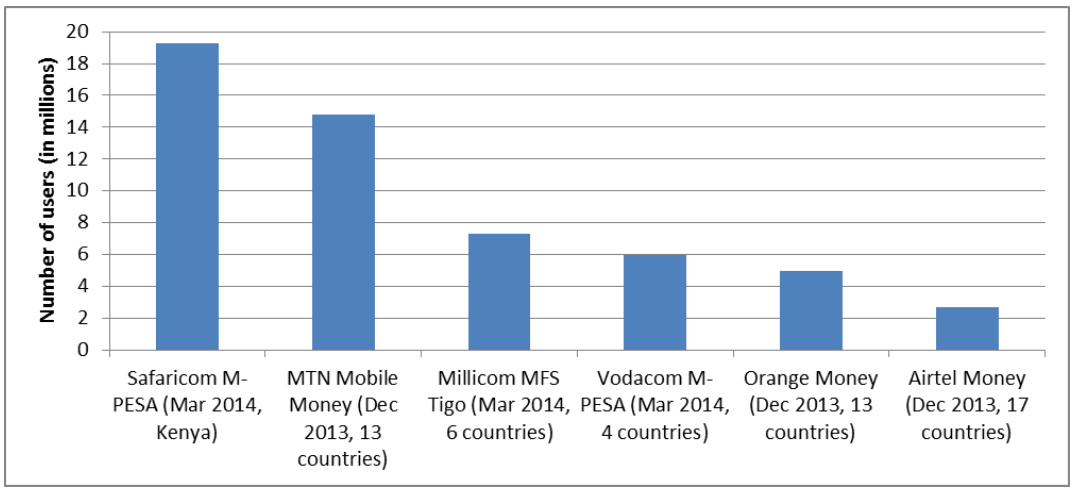

Figure 17. Registered users of mobile money per operator in Africa (based on data from company annual/financial reports from 2013-2014)

in Kenya making the exception as it is separate entity from Vodafone. Regardless of the larger customer base of the other mobile money service providers than Safaricom M-PESA, the slightly less than 20 million M-PESA customers in Kenya form the biggest user group. For the comparison of the customer base of a mobile money ecosystem, instead of comparing registered customers, more valuable comparison would be to compare active customers, as it differs from one country and operator to another. The active users also give the idea of ecosystem efficiency and profitability of the service. Industry average for active users is approximately 30% of the registered users (GSM Association, 2013a), whereas with Safaricom it is 63% (Safaricom Limited, 2013).

2.2.6. M-PESA success factors in Kenya

Key success factors are discussed through this chapter considering the Marketing Mix of 4P's, Product, Price, Place, and Promotion, as described by Needham et al. (1999).

Numerous research and reports have been conducted on M-PESA to investigate how the M-PESA became such a widely accepted platform within Kenya. M-PESA is a technology developed by Vodafone, and licensed to its affiliate in Kenya, Safaricom. The M-PESA project was a controversial topic within Vodafone, as it was deemed out-of-scope for a traditional MNO (Hughes & Lonie, 2007). However, the project was funded partly through development fund (Department for International Development (DFID), Financial Deepening Challenge Fund (FDCF)) as a part of improving the financial access of poor, rural people, the "unbanked". The first success factor for M-PESA was a detailed investigation of the environment, such as the cultural, social, regulatory and economic factors of the customer base in Kenya, prior to launch. Using this information, the product specification was generated which served the customers in a correct way.

Vodafone and Safaricom created the Product, and Mas & Ng'weno (2010), pointed out three keys to M-PESA's success, which are branding (Promotion), channel management (Place) and pricing (Price). The branding included launching with scale by giving out simple message of the service structure, having consistent store branding and customer

experience. Also, maybe as the most important factor was that M-PESA was intended for all, not only to the base of the pyramid living at rural area, but also to the trendy, middle-class, and city-dwellers. Mas & Ng'weno (2010) point out that based on a survey, M-PESA user is actually more likely to have a bank account than being actually unbanked. Channel management is an important factor as flawless customer experience requires a sufficient agent network to process the transactions. Building up the agent network was one of the key factors, as well as, structuring it with so called super-agents and aggregators, which create the driving force for network expansion. Pricing for a new service needs to be understandable for the customer, and competitive against the competing systems. Prior to M-PESA deployment, 58% of money was moved by hand, whereas after the implementation of M-PESA, the amount of money sent by hand was reduced to 32%, while M-PESA captured a share of 47% (GSM Association, 2009b). Alternative competing methods were formal domestic money transfer, i.e. remittance, through Western Union, Post PostaPay, and MoneyGram, which were also competing against the informal methods, such as delivering money from hand to hand by a friend or e.g. a bus driver (Kabbucho, 2003). M-PESA has been compared against the alternatives and in surveys 96-98% of the respondents consider that the service is quicker, safer, cheaper, and more convenient (Mas & Radcliffe, 2010). Implementation of M-PESA has also decreased the prices of competing service providers (Mbiti & Weil, 2011).

And finally continuing with the Place, which is Kenya as a market for mobile money service. The most important success factors enabling the success of the M-PESA were the mobile market structure, market for domestic remittance, lack of safe alternatives for the remittance, and entrepreneurial attitude of people in Kenya (Mas & Ng'weno (2010). Kenyan demographics played a part of their own with the number of population living in rural area, and missing access to financial services (GSM Association, 2009b). Also, the fact cannot be neglected that the leading position of Safaricom in the market of Kenyan mobile space (2/3 of the market share) was enabling the creation of compatible ecosystem with its huge customer base. The forming ecosystem was

introducing another pull-factor for the customers to use the service as well as a push-factor for the merchants to exploit the growing customer base. A big part of businesses in Kenya are informal, which are further limited by having a bank account, and therefore majority of the informal businesses are looking for the core financial values from mobile money such as easy payment to suppliers, receive money from customers, reduce cost of money transportation, manage cash flow, and be safe with the business information (Stork, 2013).

On a general level, Cobert et al. (2012) has identified different success factors during mobile money implementation, which is illustrated in Figure 18. During the design phase, the most important is to have the product which complies with the regulation. Partnership may be needed to achieve the agreement with regulation, and to find suitable technology platform, which suits the market structure. At the launch and when scaling up, the most important is to set up the agent network, and scale it with the growing customer base. The product needs to be compelling for the new customer, corporate committed for the system, and start following up the changing regulatory environment. Finally, partnership is needed to improve the ecosystem to keep the product interesting for the customers.

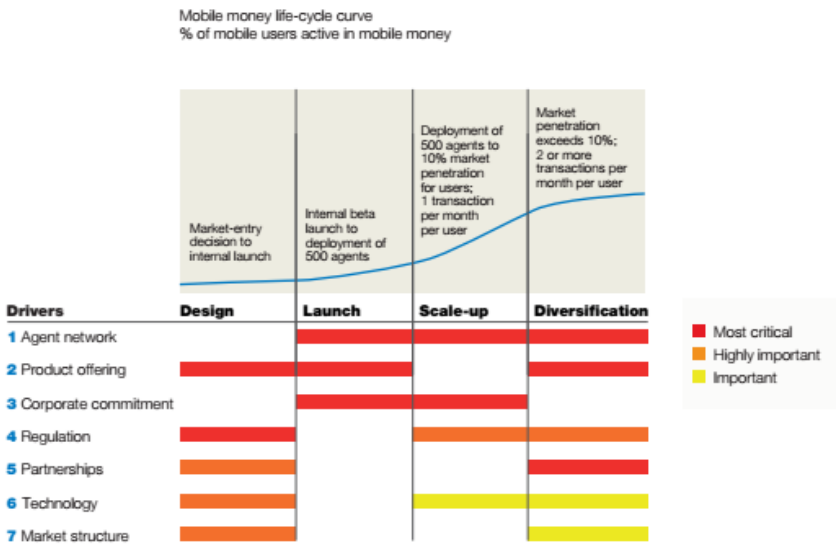

Figure 18. Success factors for mobile money in different phases of implementation (Courtesy of Cobert et al., 2012)

2.2.7. Mobile money regulatory framework in Kenya

The main objective for financial regulator towards mobile money is to 1) safeguard financial system against systemic/operational risk, 2) protect consumer funds, and 3) consider social aspects such as financial inclusion and preventing criminal activity such as Anti-Money Laundering (AML) and Combating the Financing of Terrorism (CFT) (GSM Association, 2009a). Part of AML and CFT is to rely on "Knowing Your Customer" (KYC), meaning that customers need to be registered, deposit and withdrawal is only possible between registered devices, and user is authenticated during payment. E.g. with Safaricom M-PESA, all SIM owners need to register with identification documents, identity is verified on deposits, and all withdrawals/payments are authorized with personal PIN number. In addition to above, typical requirements for a non-bank mobile network operator is to maintain liquidity, restrict use, diversify the e-float holdings and isolate funds from creditor claims (Tarazi and Breloff, 2010).

At the time of release of M-PESA in Kenya, the regulatory framework was still at infancy in Kenya, as well as in many other countries. In 2006, approximately half a year prior to launch of M-PESA, Safaricom approached the Central Bank of Kenya (CBK) regarding the service. CBK requested information regarding Safaricom risk mitigation program, and after a review of the assessment, CBK made the stand that M-Pesa is not a banking service, regardless of maintaining deposited value for customer. The factors leading to this decision was based on three facts: 1) cash exchanged remained in customer control, held in a local bank leading to no credit risk, 2) funds were pooled to a trust account which is out of Safaricom reach, and 3) there is no interest paid on customer deposits or received by Safaricom (Alliance for Financial Inclusion, 2010). As the M-PESA service became a commercial success, requirements were raised for CBK to perform an audit, but Safaricom M-PESA passed it. Up-to-date, M-PESA is not regulated under a full banking license, even though many commercial banks are lobbying towards CBK to require the full banking license, or stop the service (IFC, 2010a). It has been suggested that the banking industry, operating under CBK control, is too slow for keeping up with the speed of growth of new technologies (Omwansa,

2009). Safaricom is evidently trying to avoid the operating mode as a banking model, as the latest expansions to the M-PESA banking function is through a partnership with commercial banks, such as M-Shwari service that allows interesting-bearing deposits and loans (Safaricom Limited, 2014a). The regulation has been developed since the launch of the service in 2007, and the latest framework is the following (adapted from Safaricom, 2011a & USAID, 2011):

- Kenya Information & Communications Act: Regulatory framework for the licensing and operation of MNOs
- National Payments System (NPS) Act, 2011: Framework for electronic payment systems and instruments
- Proceeds of Crime & Anti Money laundering Act, 2009: Safaricom is a 'Reporting Institution'
- Central Bank of Kenya Act: Regulation for foreign exchange including international remittance
- Competition Act, 2011: Equal market opportunities
- Banking Act: Certain regulations for non-licensed institutions

From practical point-of-view for customers and businesses, the most visible regulations are probably the Anti-Money Laundering practices, which limit the amount of transferrable money, and are enforcing the identification requirement of the mobile money users.

2.3. Entrepreneurial opportunities and innovation trends around mobile money

In addition to the direct job and entrepreneurial opportunities offered by the mobile money service ecosystem, such as acting as an agent, which employs more than 80000 people in Kenya (CCK, 2013), mobile money is also offering other entrepreneurial opportunities and stimulates development. Through mobile money, new customers segments and geographic areas can be reached, integrations to existing products and

innovations of new products can be developed, and access to capital and market information is improved. One such an example is mobile microwork, such as Jana, where mobile devices are used to assign tasks for workers, and payment is made through airtime or mobile money (ITU-T, 2013). There are a number of mobile startups, and even mobile incubators, such as mLabs and mHubs, established by World Bank Group's infoDev program in collaboration with Government of Finland and Nokia. In addition, one of Safaricom targets in Kenya is to expand the M-PESA system so that it can truly act as an enabler for SME's to exploit its functionality (Safaricom, 2011a). In a survey of 4250 adults in 8 countries, it was found out that 93 percent of the respondents believe that wireless mobile technology is very or slightly important to entrepreneurship (West, 2012). This is in line with the studies showing that Africans are having their first internet experiences through Facebook on their mobile phones, and SME's have adopted internet as a platform for daily business operation, commerce, and promotion (Masita-Mwangi et al., 2012).

Entrepreneurial opportunities and innovation trends related to digital finance have been analyzed by Parada & Bull (2014). The following trends are directly related to the mobile money:

- Integration services and product innovations for businesses
    - Application developers supporting financial institutions with mobile money integration
    - Technology companies enabling merchant acceptance of digital payments in-store
    - Payment aggregators enabling online payments and e-commerce
    - Agriculture insurances, payment and selling through mobile money platform
- Product innovations for consumers
    - Pay-as-you-go for essential goods and service integrated with mobile payment infrastructure and machine-to-machine interface
    - Mobile financial services ranging from savings and credits to insurance

    - Traditional financial institutes utilizing the mobile money platforms
- Data analytic services through the use of mobile money
    - Data sources for credit decisions
    - Data sources for business intelligence and market information

2.4. Theoretical framework

2.4.1. Technological development cycle

According to research conducted by the World Bank (2012), the number of mobile subscriptions is predicted to overtake the world's population in few years of time. The nature of technological development (and business) cycles is reviewed in this section.

Schumpeter (1939) contributed in the development of definitions of different business cycles:

1. Kitchin inventory cycle (3-5 years)
2. Juglar fixed-investment cycle (7-11 years)
3. Kuznets infrastructural investment cycle (15-25 years)
4. Kondratieff long cycle (45-60 years)

In the context of mobile payment, Kondratieff long cycle can be considered as the development fixed-line telephony and as a next step the development of mobile telephones (or the whole ICT sector). Kuznets infrastructural cycle can be understood as building the network infrastructure for the telephones (fixed line or mobile). Juglar investment cycle is a typical business cycle, e.g. for a company to invest into the development of a mobile money transfer platform. And Kitchin inventory cycle is a smaller scale business investment, e.g. for an inventory.

Interesting point regarding the theory of technological cycle is that a certain market may contain a vacuum, which is not covered by any existing infrastructure. In many countries in Africa, the infrastructure cycle has stepped over the deployment of country (and continent) wide fixed-telephone network, and moved directly towards a mobile

phone infrastructure. In developed countries, the infrastructure existed before for the fixed-line telephone, which is at the moment being down-scaled in the benefit of a mobile telephone infrastructure. Also in the developed countries, majority of the people have a bank account, which is a service out-of-reach for many in the developing countries. Therefore, the business investments for mobile money transfer system has spread over in developing world much faster than in developed countries, even though the mobile infrastructure that enables the use of mobile money, exists all over the world.

2.4.2. Technology acceptance, adoption and use of mobile payment by consumers and businesses

In order to create an ecosystem, the people need to get excited about the service in use. And to understand the behavior model of people why they start to use a certain service, Technology Acceptance Model (TAM) is among the most used framework models. Figure 19 presents the TAM model from Davis (1989), where the behavioral intention to adopt a new technology, is based on the perceived usefulness and perceived ease of use.

The basic TAM model is not covering the relative advantage of adopting mobile payments, as studied by Mallat (2007), as there should be factors such as independence of time and place, availability of service, queue avoidance, as well as several barriers inhibiting the use. The model has been extended for different purposes, in order to explain the behavioral model more explicitly for the mobile payment used by businesses (Mbogo, 2010) and in the context of mobile banking for the unbanked (Tobbin, 2012).

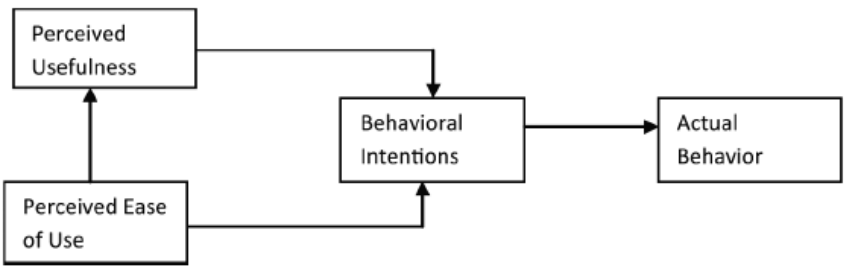

Figure 19. Technology Acceptance Model (TAM)
(Courtesy of Davis, 1989)

Mbogo extended the perceived usefulness with factors of easy accessibility, low cost, security, satisfaction, convenience, and support. Tobbin's extended TAM model is in line with Mbogo's model with economic factors, affordability and convenience, but taking also into account trust to the service, which is affected by the Mobile Network Operator (MNO) and the network quality. Finally, Tobbin's model is affected also by the demographics of the user, in terms of age and gender. Schierz et al. (2010) found out in their study that the most important drivers are perceived compatibility (mobile payment in line with existing behavior), individual mobility (lifestyle), and subjective norm (social environment), which are actually not accounted in many of the TAM models. Duane et al. (2014) point that from personal traits, personal innovativeness and mobile self-efficacy are not playing major part in the adoption of mobile service's unless they are confident the system is safe and reliable, i.e. have trust towards the system. Acquiring customers is important, but equally important is to retain the customers at the post-adoption, and for that Zhou (2012) point out that the quality of service, system and information is important for the continuation of using the service.

The Technology Adoption Lifecycle is applicable for mobile money, with product life-cycle phases of Introduction, Growth, Maturity, and Decline. International Financial Corporation (2010b) is pointing out in their report that there is, however, a clear difference between a product and a service. Mobile money, as a service, has three unique characteristics compared to a product, is that the service is individualized, intangible, and consists of two steps: starting to use the service and continuing to use the service. In other words, the number of mobile money adopters is not the key to the success, the usage rate is, which determines whether the system is successful in the implementation. Figure 20 illustrate the user segments in the Technology Adoption Lifecycle, as well as, highlight the steps needed to take in order to gain mainstream acceptance towards a viable ecosystem. A parallel framework has been studied by Davidson & McCarty (2011) that a consumer must go through the steps from unawareness to awareness and understanding, before reaching knowledge of the system and the user performs trials, which are leading to regular use. Each of the steps has

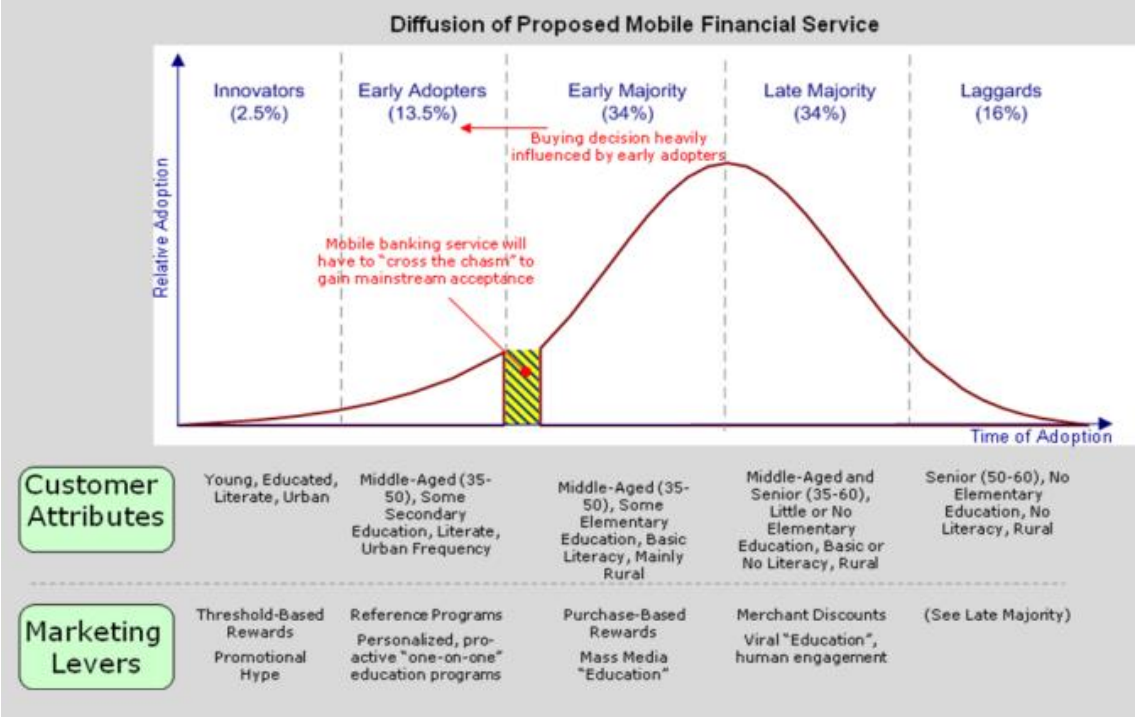

Figure 20. Mobile money adoption curve
(Courtesy of International Financial Corporation, 2010b)

success factors and barriers, which advance or prevent the adoption of the system, making each step important for the service provider to take into account.

2.4.3. Market pull and technology push theories in the innovation context

The classical definition of innovation, as defined by Schumpeter (1934), states that innovations are "new combinations" of new or existing knowledge, resources, equipment etc. Innovations and utilization of new ideas exists anywhere and are in the reach of anybody with entrepreneurial and creative mindset. Entrepreneurial innovation can be considered in a narrow sense as the knowledge-intensive entrepreneurship, which is utilizing product, process, or technological innovations to create new, added value for the users. In a more broad sense, innovation can exist anywhere, ranging from the new product development, new processes, new source of supply, to the exploitation of new markets or new organization structure (Szirmai et al., 2011). As common people can be pushed into the entrepreneurship e.g. due to unemployment, or pulled into the entrepreneurship e.g. by having a lucrative business idea, innovations can born in

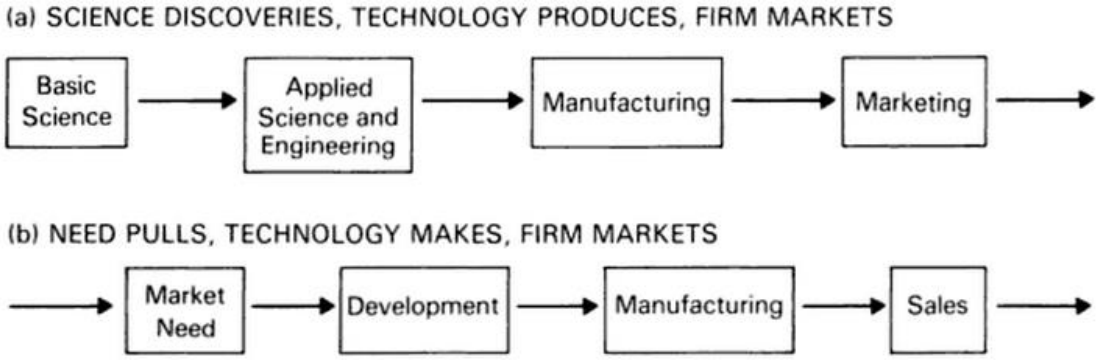

Figure 21. Innovation models based on technology-push and need-pull
(Courtesy of Rothwell, & Zegveld, 1985)

different ways. Technology push and market pull theories as foundation for innovation is covered in this chapter.

Driving forces for innovation have been explained by technology push and market (or demand) pull theories as illustrated in Figure 21 and Figure 22 (Rothwell & Zegveld 1985). The technology push is a linear model of innovation concentrated on the science in a sense that new applications of basic technologies can be developed that will fulfill the customer needs. Companies' research and development activities are in the focus of technology push theories. Demand pull theory is offering the innovation theory from the other side, as the market needs are considered as the driving force for the development

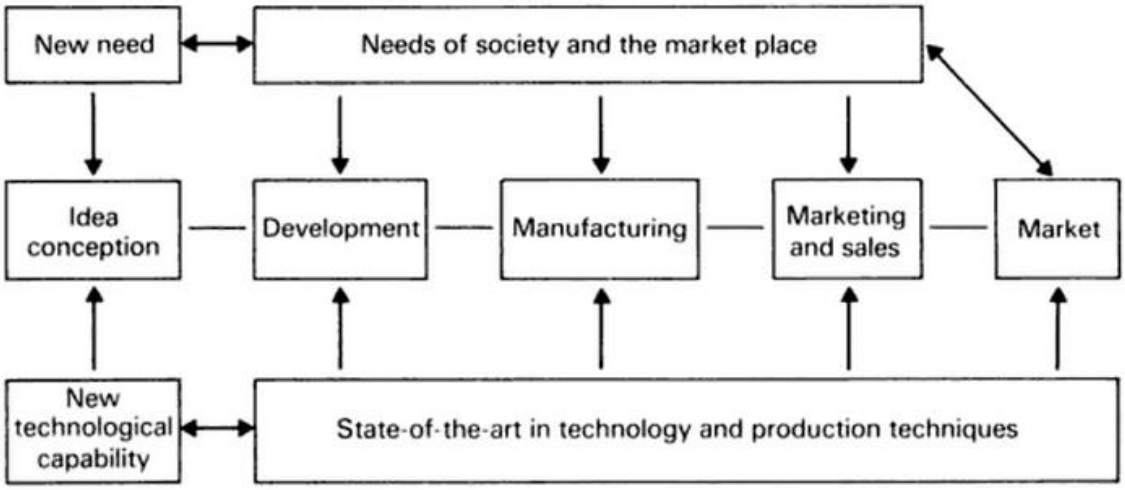

Figure 22. Interactive model of the innovation process
(Courtesy of Rothwell, & Zegveld, 1985)

activities of the companies. The one-sided theories have developed over time to multidimensional models and they have been linked more closely together, even though for demand pull there has been identified competition between the values of science and the values of society (Godin, 2013).

2.4.4. Entrepreneurship, opportunities and innovations in high-income vs. low-income countries

Starting the definition from the Schumpeterian entrepreneurial interpretations, a Schumpeterian entrepreneur is performing entrepreneurial function (innovation in an economy), entrepreneurial leadership (creative energy for innovation), and gaining entrepreneurial profit from the temporary monopolistic advantage (Lintunen, 2000). Schumpeter's entrepreneur is performing creative destruction with innovations to the economic space (Schumpeter 1934), but more contemporary definitions add that entrepreneurship is 'discovery and exploitation of opportunities' (Shane & Ventakaraman, 2000). As a business environment, the high-income and low-income countries are very different for an innovative entrepreneur in terms of the infrastructure, customer expectations, education, availability of capital, and so on. Kaplinsky (2011) is comparing innovations between the high-income and low-income countries, where it is identified that innovations from high-income countries are mostly intended for high-end consumers with high quality standards, requiring capital intensity, sophisticated infrastructure, and labor saving production technologies. However, innovations in low-income context are involved with the opposite, as labor intense, robust, working with low-level infrastructure, and with less focus on the R&D (even though the R&D activities at low-income countries are also increasing). Because of this, the market demand and entrepreneurial opportunity of the fast-growing markets in low-income countries can be unidentified by the companies from high-income countries (or below the radar, as described by Chataway, 2009). By definition of Porter (2009) for competitive development stages of nations, low-income developing countries are considered as factor-driven nations, in contrast to investment-driven, innovation-driven, and wealth-driven countries.

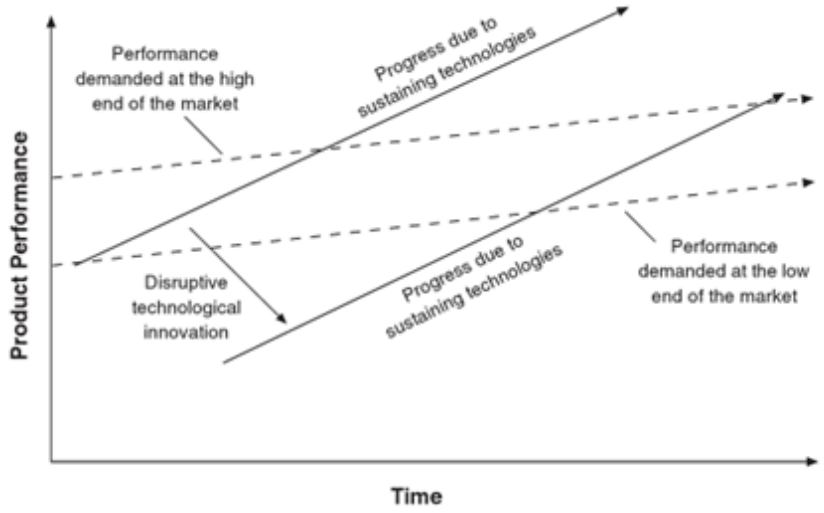

Figure 23. Sustaining and Disruptive Technological Changes
(Courtesy of Christensen, 2003)

In the context of low-income countries, work of Christensen (2003) is recognized by his framework of sustaining and disruptive innovation as presented in Figure 23. Sustaining innovation are improvements to the existing product or service in contrast to disruptive innovations, which are changing the market place. Low-end disruptions are identified to occur when products are introduced to markets and customers that are willing to accept a lower performance level of products or services at a more reasonable price.

Entrepreneurship is understood in a broader term than a single person running a (growth) business. In addition to the owner-operated company, the entrepreneurial function can be also accomplished by a management team, intrapreneur of an organization, or e.g. a multinational company (Szirmai et al., 2011). This also explains that there is the entrepreneurial function can be accomplished through different levels of managerial competences, as described by Lahti & Pirnes (1988) with definitions from craftsman behavior to managerial behavior to opportunistic behavior. In low-income countries with high unemployment rates, there is a high number of craftsman behavioral, owner-operated and informal businesses, which do not fit in the Schumpeterian definition of “new combinations”. Rather than creating something new, innovation in low-income concept is often using existing technologies, products, and

processes which are differentiated to satisfy the local, sometimes unique, needs. For strategic and operative governance of a company, there are three processes identified, from agency to ownership to innovation process, moving the focus from control to creation (Lahti, 2010b). In the context of M-PESA, Safaricom can be considered as moving from mobile money innovation creation to controlling the service, while leaving the market free and supporting SMEs in their effort of innovating new products for a well-functioning ecosystem of services, intended for the local people.

2.4.5. Relevance of customer segmentation for mobile money users in low income countries, i.e. at the Base of the Pyramid

There are roughly 7 billion people in the World and Prahalad (2005) has categorized them in 5 tiers according to the purchasing power parity (PPP) that they have in the disposal. This is illustrated in Figure 24 in the form of a pyramid. Tier 4-5 population of 4 billion, are people that have purchasing power parity (PPP) of 1.500 USD or less. Tier 2-3 population of 1.5-1.75 billion people have the PPP of 1.500-20.000 USD, and finally tier 1 population of 75-100 million people have the PPP of over 20.000 USD. The tier 4-5 is often characterized as the Base, or Bottom, of the Pyramid (BOP).

Kaplinsky (2010) summarized from Prahalad's work three main points, which characterize the topics why companies should not ignore the BOP as a market opportunity for profits. First, even though the people at the BOP have low-income,

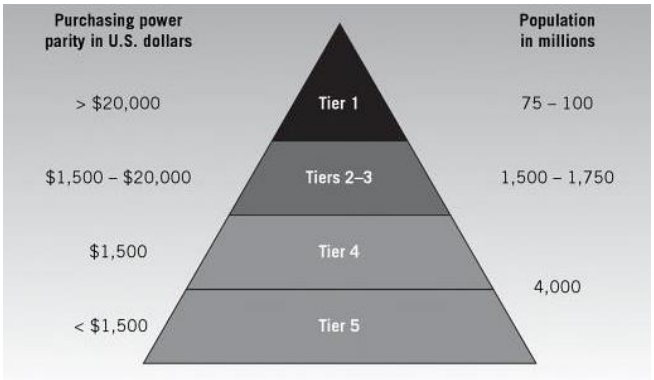

Figure 24. Population pyramid based on the purchasing power (Courtesy of Prahalad, 2005)

however, they are active consumers with more socialized consumption habits, e.g. community owned products and services, in comparison to the wealthier population. Second, poor consumers can be actively engaged into using new technologies, which is an efficient test ground for new innovations. And third, the BOP as a market is growing in significance for potentially profitable production. As the people with low-income are representing more than half of the World's population, it cannot be ignored in the importance of creating an ecosystem.

Rangan et al. (2011) have studied the different value creation strategies at the Base of the Pyramid, and have identified four strategies for different segments at the low-income entity, as illustrated in Figure 25. The most efficient strategy to address the needs of low-income population (people living at 3-5 USD per day); products and services need to be appropriate and affordable. In the case of M-PESA, the money transfer service is serving its purpose for people without access to formal banking system. Second, the subsistence population (people living with 1-3 USD per day, the most efficient is to involve people to provide efficient reach and coverage as well as to engage community to co-produce value. Again in the case of M-PESA, this is e.g. to recruit M-PESA agents by providing them ready business model. Finally, the people living at extreme poverty (under 1 USD per day), the best practice is to form partnerships with governments and non-governmental organizations (NGOs).

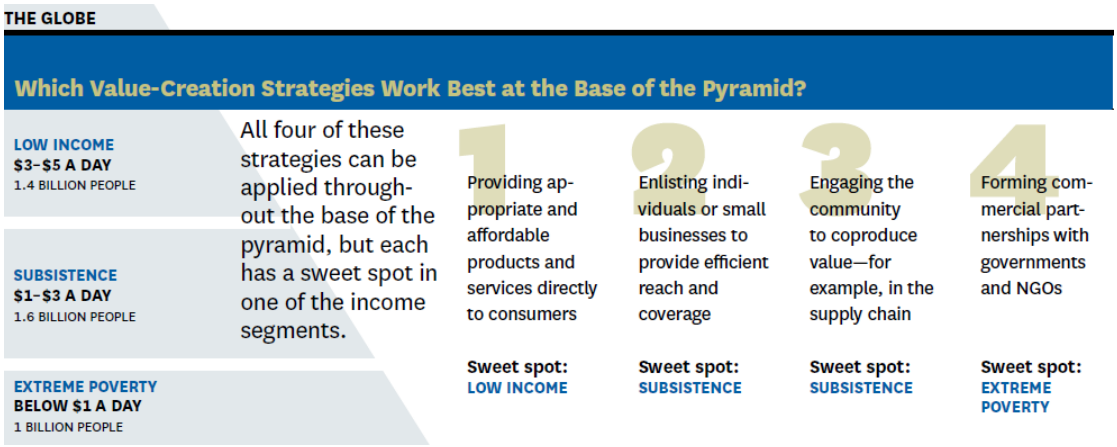

Figure 25. Value-Creation Strategies at the Base of the Pyramid
(Courtesy of Rangan et al., 2011)

2.4.6. Categorization, differentiation, and competition of businesses involved in mobile money

Mobile money as a business spectrum offers a wide array of business opportunities. To categorize the companies involved in mobile money business, this section reviews the theories between companies' competition and differentiation strategies. Classical model of competition consists of the two theoretical poles for competition between companies, a perfect competition and a monopoly, as described by Chamberlin (1933). On one end, there is the perfect competition, where conditions for all companies are equal, and competition takes place mostly through price competition. On the other end there is the monopoly, where one company rules the market, and sets the price for the products. Lahti (2010a) presents an interpretation of Chamberlin's analysis on Figure 26, as well as classification of competitive models. Perfect competition and monopoly can be considered as theoretical core for the competitive model analysis; however, they only consist of about 10% of the markets, whereas practical case is that 80% of the markets are controlled by different oligopolies (controlled by few companies). In addition to the price competition, differentiated products can be used as a mean to gain monopolistic profits. Lahti (2010a) makes a statement that "differentiation through innovativeness (economies of scope) is an entrepreneur's best strategy in competition against the market power of multinationals (economies of scale)". Another aspect to the competitive model through product differentiation is the number of competitive

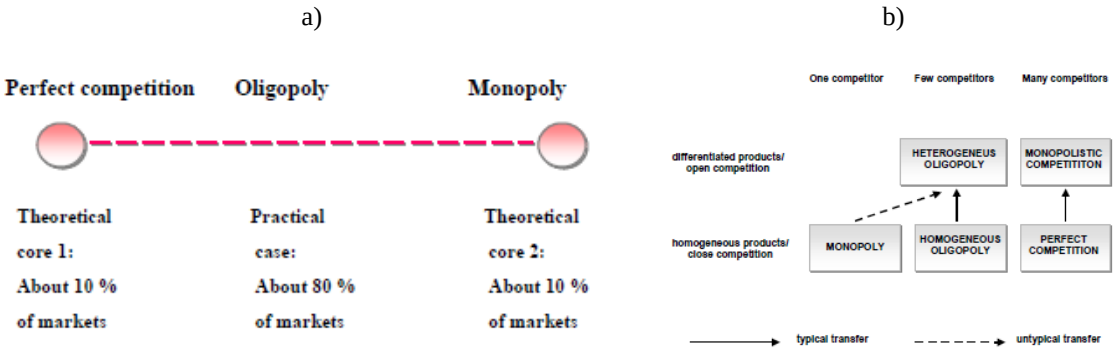

Figure 26. a) Market share between competitive models, and b) Chamberlin's classification of competitive models
(Courtesy of Lahti, 2010a)

companies in the marketplace, whether there is high number of substituting services offered by the specialized competition.

Figure 27 a) presents the difference between monopolistic competition and oligopoly, through the categorization of ICT product complexity (from infrastructure to content). In the context of mobile money transfer system, the following is applicable. The companies capable of generating the infrastructure are large companies, such as mobile network operators or banks leading to oligopoly, i.e. M-PESA from Safaricom and Airtel Money from Airtel in Kenya. The products are only slightly differentiated, so actually the competition is rather homogeneous. The companies creating middleware or software are typically consultancy agencies or software houses helping companies to integrate the mobile money transfer systems into their current payment methods. The content providers can be considered as the true innovators of mobile money system, which generate specific content that rely on the mobile money transfer system to enable their product or service. Lahti (2010a) presents an application of Chamberlin's positioning model as a Nordic niche-strategy at software industry, as illustrated in Figure 27 b), which is also considered as a suitable model for price categories in mobile money system. Regardless of the low-level of differentiation of mobile money system,

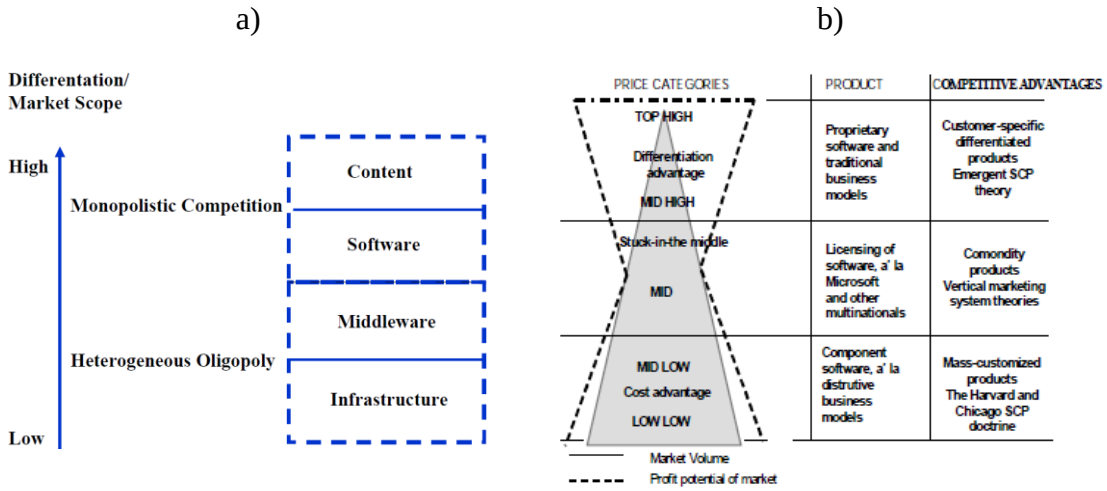

Figure 27. a) The distinction between monopolistic competition and heterogeneous oligopoly, and b) Nordic niche-strategies
(Courtesy of Lahti, 2010a)

the infrastructure providers can gain high profits through the high number of transactions (providing that the ecosystem can be created for the system). Mobile money agents, and service providers, e.g. licensing the software for integration, are facing lower profits as the agent business models are regulated by the infrastructure providers, and the number of companies using mobile money integration services is limited. For the differentiated products, the profit potential is increasing regardless of the shrinking market volume for the differentiated product. In case of mobile money transfer business, it is also intended for the unbanked, poor population, which makes the market volume potential higher in both ends, at low and high differentiated products, if correctly positioned for the people living at the bottom of the pyramid.

3. DATA AND METHODS

Using the East African countries Kenya, Uganda, Tanzania as a geographic area, included with Zambia from southern Africa as a reference, the intention is to analyze quantitative survey data for the importance of current mobile payment channels to businesses and reasons to use (or not to use) the existing systems. The data is derived from the World Bank Enterprise surveys, which are conducted in different countries over hundreds of enterprises in different size bands (World Bank, 2013b). The correlation of the enterprise survey data is compared to World Bank Financial Inclusion survey data (Global Findex database), which is measuring the consumer behavior towards mobile money and access to financial services (World Bank, 2011b).

World Bank is a United Nations international financial institution that has the goal of reducing poverty globally. It provides low-interest loans, interest-free credits, and grants those to developing countries in order to finance and support the investments in different sectors. In addition, World Bank supports developing countries through policy advice, research and analysis, and technical assistance, which serves as guidance for the development activities.

Empirical and qualitative research is done over the recent innovations enabled by the mobile money in Eastern Africa. Part of the research is done by searching through different internet resources, but part of it is studied on-site during extended stay in Nairobi, Kenya.

World Bank Enterprise Survey data is compared against the Financial Inclusion survey. Correlation between the survey responses from enterprises and consumers are analyzed. Main reasons for using (or not to use) the mobile money is researched based on the data.

Findings to the research questions are reviewed against the theoretical entrepreneurial framework. Based on the findings, there will be an analysis whether the findings are applicable for developed, high-income countries and whether there is business potential or lessons learnt to be transferred from developing countries.

3.1. Data

3.1.1. World Bank Enterprise Survey

The Enterprise Survey is an effort from World Bank to bring standardized knowledge regarding the business environment that companies in developing countries are facing. It is conducted through survey questionnaires that are answered by business owners and top managers of the companies. Different entities of World Bank have been conduct firm-level surveys since 1990's, but since 2005-06 the data collection efforts have been centralized to the Enterprise Analysis Unit. The data used in this work is the most recent Enterprise Survey for the countries of Kenya, Tanzania, Uganda, and Zambia, from the year 2013 (World Bank, 2013b). Collection of data has taken place for these countries between December 2012 and February 2014.

The sampling method for Enterprise Surveys is stratified random sampling, where all population units are grouped within homogeneous groups and simple random samples are selected within each group (World Bank, 2009). In this method all members of the population have the same probability of being selected and no weighing is deemed necessary. Formally registered companies with 5 or more employees are targeted for the survey. In the survey, firms with 100% government/state ownership are excluded from the survey. The strata for Enterprise Surveys are business sector, geographic region and company size. World Bank is classifying the size of the firm as small for companies with <20 employees, medium for 20-99 employees and large for >100 employee companies. According to World Bank, most economies have majority of firms from small- and medium-sized enterprise (SME) category. Therefore the Enterprise Surveys oversample large firms as they are considered the engines for job creation. Sectors consists of manufacturing, retail and service, and for geographic regions are selected the countries' main areas of economic activity. Number of companies selected for the sample population is based according to the size of the country's economy, including the number of different industries. Based on World Bank's guidance based on the Gross National Income (GNI) the number of samples should be 1000 responses, however, the

Table 5. Number of respondents to the survey split among the industry and size of the company (Derived from World Bank, 2013b)

		Industry						
Country	**Number of employees**	**Food**	**Textile & garments**	**Chemicals, plastic & rubber**	**Other manufacturing**	**Retail**	**Other service**	**Total**
Kenya	**<20**	68	14	15	43	104	87	331
	20-99	39	15	23	43	38	58	216
	100+	28	13	17	28	8	24	118
	Total	135	42	55	114	150	169	665
Tanzania	**<20**	27	55	4	123	51	141	401
	20-99	16	12	3	49	26	37	143
	100+	7	5	5	12	2	13	44
	Total	50	72	12	184	79	191	588
Uganda	**<20**	47	35	5	109	121	98	415
	20-99	31	7	6	27	30	34	135
	100+	12	1	3	5	3	7	31
	Total	90	43	14	141	154	139	581
Zambia	**<20**	25	31	12	131	88	138	425
	20-99	24	5	19	83	22	40	193
	100+	12	2	4	10	7	16	51
	Total	61	38	35	224	117	194	669

number is slight smaller due to number of non-responsive survey candidates. (World Bank, 2009)

Table 5 represents the number of responses from the selected countries of the research. In this research, the same firm main characteristics are selected as with the World Bank Enterprise Survey. The industries from the companies responding the survey, food is the largest entity from manufacturing sector and retail from service sector (excluding Tanzania, where textile, garments and furniture are the largest manufacturing and hotel/restaurant the largest service sector). Figure 28 represents the proportions in the geographic areas where the businesses are located.

The full survey data is extracted from World Bank Enterprise survey database in the native STATA .dta format. The survey consists of 300+ variables (questions), including questions regarding performance, regulation and taxes, trade, work force, business environment and so on. For qualitative questions, the question setting is in the form of

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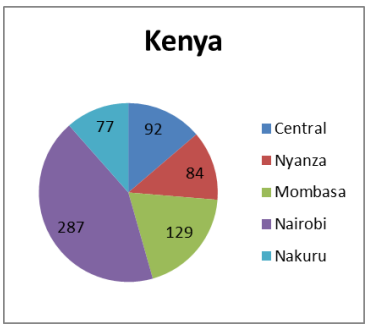

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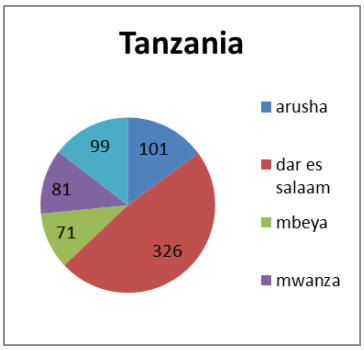

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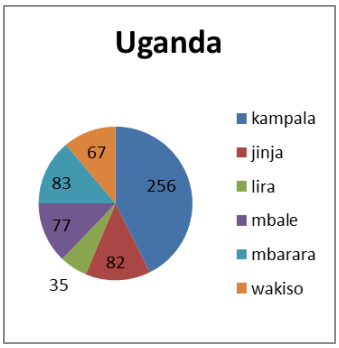

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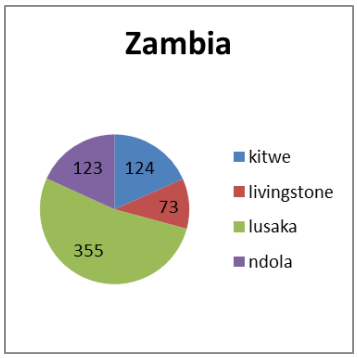

Figure 28. Number of respondents per geographic area (country/region)
(Derived from World Bank, 2013b)

multiple-choice answers with ready-made responses, or yes/no type of questions. Only quantitative questions are in a free-form, such as the annual sales, number of employees and so on. In this work, the qualitative questions' response percentages are summed up and pareto charts are created to highlight the most favorable responses.

3.1.2. World Bank Financial Inclusion survey data

The data for Financial Inclusion is survey material collected by World Bank regarding the people's access to finances globally. The data is received from World Bank micro data archives at the web page of World Bank (World Bank, 2011b). Table 6 summarizes the number of responses, languages and mode of interview. For Uganda, the sample excludes the Northern region because of security risks, representing approximately 10% of the adult population. The selected countries, Kenya, Uganda, Tanzania, and Zambia, all have 1000 people interviewed face-to-face at the survey in 2011. World Bank has

Table 6. Survey conducted for Financial Inclusion at Kenya, Uganda, Tanzania, and Zambia. (Derived from World Bank, 2011a)

Economy	Data collection period	Interviews	Mode of interviewing	Languages
Kenya	Jun 3–Jun 14 2011	1000	Face to face	English, Swahili
Uganda	Aug 11–Aug 21 2011	1000	Face to face	Ateso, English, Luganda, Runyankole
Tanzania	Jun 18–Jul 1 2011	1000	Face to face	English, Swahili
Zambia	Jun 25–Jul 6 2011	1000	Face to face	Bemba, English, Lozi, Nyanja, Tonga

developed weighing factors for the sample, which ensure that representative sample is obtained for the nation, and enables the calculation of margin of error and design effect.

Table 7 presents the demographics of people responding to the Financial Inclusion survey per country, in terms of gender, age, education, and income quintile. The group responding to the survey show similar characteristics between one country to another, except for the higher education level at Tanzania in comparison to the other countries. Also the economy quintile is leaning towards the richer population in Uganda and Zambia in comparison to Kenya and Tanzania.

Table 7. Demographics of the people responding the survey (percentage of respondents). (Derived from World Bank, 2011b)

		Kenya	Tanzania	Uganda	Zambia
Gender	**Male**	54,1	50,7	53,1	50,4
	Female	45,9	49,3	46,9	49,6
Age	**15-29**	49,1	47,1	54,0	56,4
	30-49	38,7	39,0	35,6	37,5
	50-69	10,3	10,9	8,8	5,6
	70+	1,9	3,0	1,6	0,5
Education	**completed primary or less**	34,7	63,5	37,8	18,5
	secondary	62,4	35,4	61,4	69,1
	completed tertiary or more	2,9	1,0	0,6	12,3
Within-economy income quintile	**poorest 20%**	23,2	23,2	19,2	19,2
	second 20%	23,1	23,1	15,2	15,2
	middle 20%	14,5	14,5	15,7	15,7
	fourth 20%	27,7	27,7	24,4	24,4
	richest 20%	11,5	11,5	25,5	25,5

3.2. Methods

3.2.1. Quantitative study of the World Bank Enterprise Survey and Financial Inclusion Survey

World Bank Enterprise survey consists of 600+ responses and Financial Inclusion consists of 1000 responses for each of the selected countries Kenya, Uganda, Tanzania, and Zambia making it possible to study the responses qualitatively. The survey databases were downloaded from World Bank data repositories. Analysis of the raw data was conducted with IBM SPSS Statistics version 22. Further analysis was conducted and charts were built using Microsoft Excel 2010. The World Bank data for Financial Inclusion was in the IBM SPSS native format .sav directly, however, statistical data from Enterprise survey was transferred from STATA native format .dta to IBM SPSS format using Stat/Transfer version 12.

Pareto bar charts from the responses' descriptive statistics were constructed to highlight the most important factors for the businesses and people using the mobile money services. From the responses, percentages for using the service was calculated for each country and the percentages were sorted by the sum of the percentages, highest first. For analysis between different data groups, response matrixes were built by using the crosstabs feature of IBM SPSS.

Finally a correlation analysis was conducted to find out whether selected key responses regarding business nature and environment had any statistically significant correlation towards the use of mobile money or reasons for using it.

The correlation was calculated using IBM SPSS according to the following algorithms, including the calculation of mean deviation (1) and cross product deviation (2),

$$\overline{X}_k = \frac{\sum_{l=1}^{N} w_l X_{kl}}{W_k} \quad (1)$$

$$C_{ij} = \sum_{l=1}^{N} w_l X_{il} X_{jl} - \left(\sum_{l=1}^{N} w_l X_{il}\right)\left(\sum_{l=1}^{N} w_l X_{jl}\right) \Big/ W_{ij} \quad (2)$$

where *X* is the value of the variable, *w* the weight for the case. From the cross-product deviation, Pearson correlation *r* (3) was calculated, as well as the significance level *t* of *r* (4),

$$r_{ij} = \frac{c_{ij}}{\sqrt{c_{ii}c_{jj}}} \quad (3)$$

$$t = r_{ij}\sqrt{\frac{W_{ij}-2}{1-r_{ij}^2}} \quad (4)$$

where, under the null hypothesis, is distributed as a *t* with *Wij*-2 degrees of freedom for a two tailed significance level. The Pearson correlation shows the direction and strength of the correlation on a scale to -1 to 1, where 0 means there is no correlation (i.e. data randomly distributed). The correlation is considered statistically significant if t is less than 0,5.

3.2.2. Qualitative study of the innovations and entrepreneurial opportunity around mobile payment

The qualitative study consists of two parts, 1) literature review and internet search for Kenyan businesses involved in mobile money is performed, and 2) empirical study of the importance of mobile money for Kenya businesses is performed. The innovative and/or entrepreneurial companies are searched from existing literature and through internet search engines. These are then categorized by sector and business model, as adapted from Kendall et al. (2011). There are three business sectors, i.e. 1) financial service providers, 2) on-line and in-store payment providers, as well as, 3) application developers and service providers. The business models are also split to three categories, which are called 1) innovators, which are companies performing new entrepreneurial activities around mobile payment, 2) integrators, which are using mobile money as a new service delivery method for existing products, and 3) bridge-builders, which are application developers specialized in mobile money integrations.

Empirical study is performed by monitoring Kenyan business environment and approach towards mobile money while staying in the country for 8 months in the year of 2014.

3.3. Trustworthiness of the study

The responses are from World Bank so they are in a standardized format and sampled in a same way, which enables the cross-country comparison of the responses. The sampling takes into account different environments, regions, demographics, business sizes, industries and areas, which enable this study to cover the topic on a general level.

The data from World Bank uses multiple choice questionnaires, which enable processing of large group of data efficiently and fast. The main problem with multiple choice questionaries' is whether they can capture the truth behind the answers or are the selected multiple choice responses only answers with secondary importance. For example Table 8, presents the total percentage why the businesses are not using mobile money. In Kenya, Tanzania, and Uganda, the total percentage is ranging from 47% to 66,5%, meaning that major part of the respondents have not find a single reason why not to use the mobile money. As a contrast, the percentage of Zambia is 200% meaning that the respondents have on average two issues why not use the mobile money, but it still does not give guarantee whether that is the major bottleneck.

The qualitative study of the industries in Kenya can reveal a glimpse or a narrow segment of business using mobile money as their main business method, or at least an

Table 8. Percentage (%) of companies reporting the reason why not use mobile money for financial transactions

	Kenya	Tanzania	Uganda	Zambia	Total
This firm's payment are too large	28,0	10,9	13,7	35,6	88,1
Customers don't use mobile money	12,7	12,5	11,8	50,2	87,3
Suppliers don't use mobile money	14,5	10,2	10,5	49,0	84,2
Don't know enough about mobile money	3,0	4,0	3,2	33,9	44,1
Fees are too high	4,8	6,0	5,3	14,2	30,4
Not easy to use	3,6	3,4	4,0	17,0	28,0
Total (cumulative percentage)	66,5	47,1	48,5	200,0	

important tool for getting ahead with their business, but it cannot give the overall picture of the topic. Many emerging businesses are piloting their products within a controlled customer base, and therefore are not promoting their business yet heavily, which makes it difficult to find them only through internet, or by going through literature of the area. However, a qualitative study can anyway point out the trends in the area of entrepreneurial opportunities enabled by mobile money. More detailed overview of the emerging companies and technologies would have required interviews, e.g. at the technology incubators and hubs, or start-up events with people that are monitoring the emerging companies' performance and deciding on the funding.

4. ANALYSIS AND FINDINGS

4.1. Quantitative study of the businesses' experience of mobile money and the customer base using mobile money

4.1.1. Businesses using mobile money and its impact

From the selected countries, Kenya, Uganda, Tanzania, and Zambia, firms reported their use of mobile money according to the percentages in the Figure 29. Kenya is leading the comparison, where slightly below 50% of the companies are using mobile money, however, Uganda and Tanzania are close with 40%-46% of the companies reporting that they use mobile money for business transactions. In Zambia, the use of mobile money is very limited, as only 3,6% of the companies report that they have used mobile money for any business-level transactions. Therefore, for this study point-of-view, there are actually two cases: 1) Responses from countries (Kenya, Uganda, Tanzania) with relatively high proportion of mobile money users, and 2) responses from a country (Zambia) with an existing mobile money infrastructure, but a low proportion of mobile money users.

In Table 9, the number of responses is listed for the companies by their size. In Kenya, Uganda, and Tanzania, the smaller companies are more likely to use mobile money for the business transactions, as the use is decreasing when the size of company is growing.

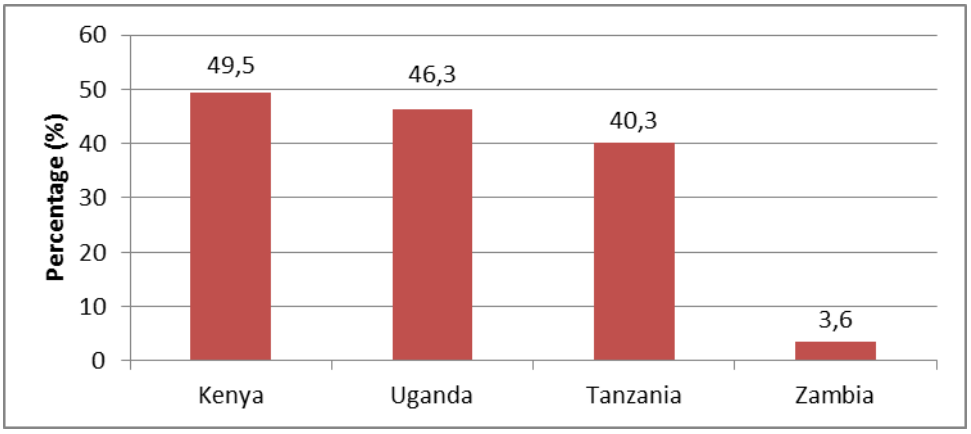

Figure 29. Percentage of the businesses using mobile money for financial transactions

Table 9. Percentage of businesses using mobile money and number of responses by the size of the company

Country	Size	Don't know (DK)	Using mobile money	Not using	Total responses	Percentage using mobile money (%)
Kenya	**DK**	0	1	3	4	25,00
	<20	0	172	159	331	51,96
	20-99	0	106	110	216	49,07
	100+	0	52	66	118	44,07
	Total	0	331	338	669	49,48
Uganda	**DK**	1	6	12	19	31,58
	<20	3	214	198	415	51,57
	20-99	1	50	84	135	37,04
	100+	1	8	22	31	25,81
	Total	6	278	316	600	46,33
Tanzania	**DK**	5	31	54	90	34,44
	<20	2	180	219	401	44,89
	20-99	0	55	88	143	38,46
	100+	0	7	37	44	15,91
	Total	7	273	398	678	40,27
Zambia	**DK**	0	0	6	6	0,00
	<20	3	15	407	425	3,53
	20-99	1	8	184	193	4,15
	100+	1	1	49	51	1,96
	Total	5	24	646	675	3,56

In Figure 30, it is further analyzed what type of business transactions the companies are using for mobile money. In the chart, the companies that reported using mobile money were asked whether they used mobile money to receive money from the customers

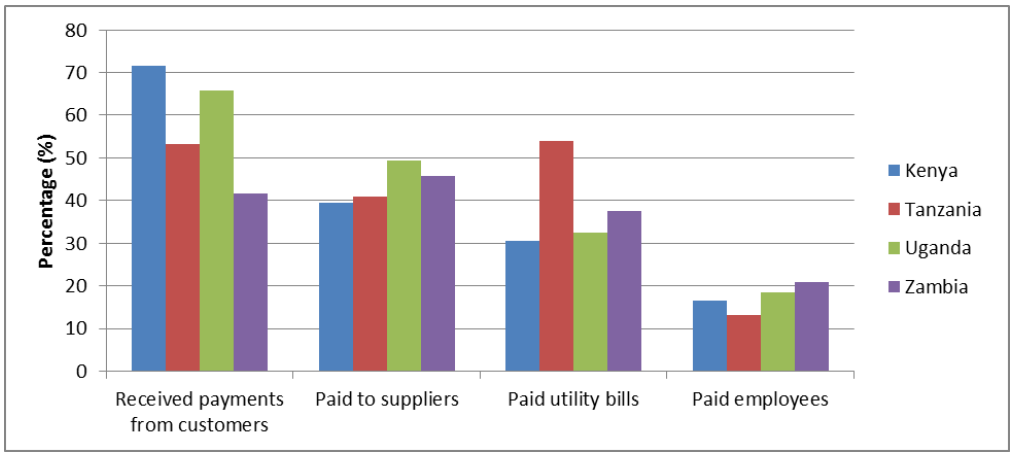

Figure 30. Type of financial transactions businesses performed with mobile money (in percentage)

(C2B), or if they used it to pay for utilities (B2B), employee salaries (B2C), or suppliers (B2B). The most frequent use-case for the companies is to receive payment from customers, which ranges from more than 70% at Kenya to 40% at Zambia. For the payment use-cases, the most frequent case is business to business transactions with suppliers, which is followed by the daily-basis utility bill payment. Least frequent use-case is to pay the employees the salary through mobile money service.

The impact of the business transactions with mobile money is analyzed in the Figure 31. According to the responses to the questions regarding the different use cases, the companies were requested to report the percentage of turnover coming with mobile payments, as well as the percentage of cost paid with mobile money, related to labor, material, and utility cost. Responses from Kenya, Uganda and Tanzania are well aligned, as the different use-cases show a transaction volume of 15%-30%. This shows that even though companies are using mobile money as a business transaction method, it overcomes other payment methods only partly in each of the categories. Responses from Zambia can be considered as a special case, since the number of businesses using mobile money is very limited in Zambia – therefore few responses are driving the percentage and the number cannot be considered representative for the whole economy.

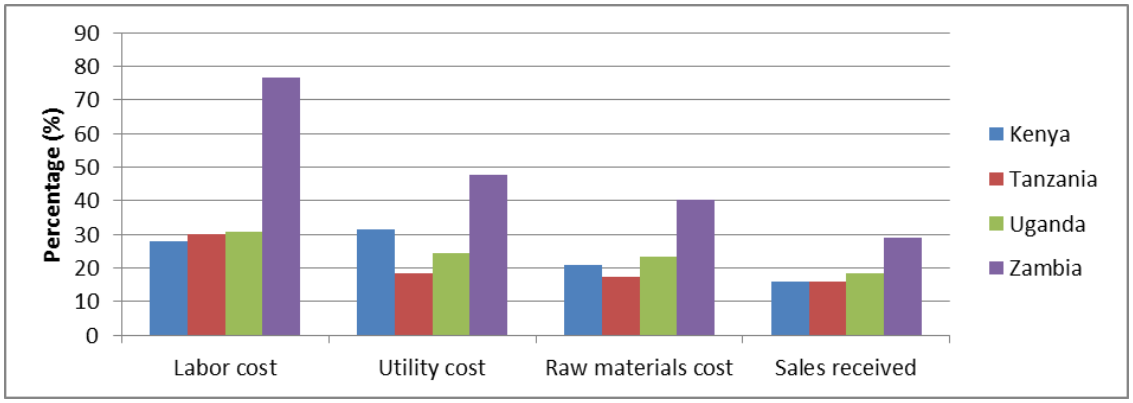

Figure 31. Percentage of financial transaction value by type of transaction conducted with mobile money by companies utilizing mobile money

4.1.2. Motivation for businesses to use mobile money and limiting factors

Companies were asked the main reasons for starting to use mobile money for business transactions. Figure 32 illustrates the percentage of responses that indicate the company is using the mobile money for the selected answers. The main motivation for the companies to use mobile money was to reduce the time spent in financial transactions, which was selected on average by 40% of the companies using mobile money. This is understandable in countries that do not have the financial framework, such as bank accounts, and credit/debit cards, within the majority of the people or even businesses. From technology adoption point-of-view, "reducing the time spent for financial transactions" can be considered as perceived usefulness. The second most favorable response is to reduce cost for financial transactions (perceived cost). There is a difference between Kenya and the three other countries in this response, as for Kenyan businesses the second most favorable response is to satisfy customer response, and the cost of financial transactions is only a fourth favorable response, behind the reduce risks in financial transactions. This can be understood from the fact that Kenya has a higher proportion of mobile money users within the customer base (making the customer request more important factor) and the cost of alternative financial transaction methods is lower in Kenya than in Tanzania, Zambia, or Uganda.

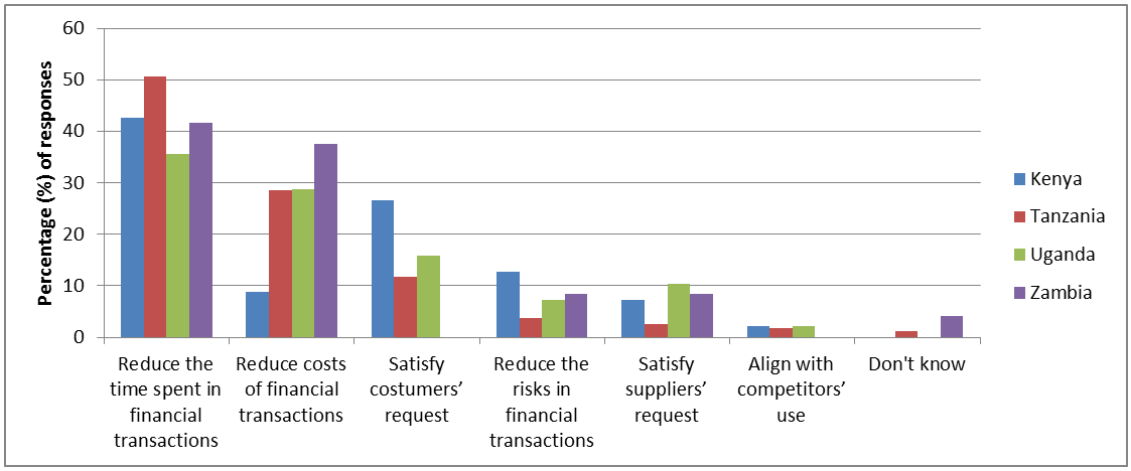

Figure 32. Percentage of reasons for using mobile money as responded by companies using mobile money

Enterprise survey is trying to capture the barriers why the companies would not use mobile money for the business transactions. From the companies that do not use mobile money, the percentage of responses for reasons for not using is presented on the Figure 33. There is a consensus between responses from Kenya, Uganda, Tanzania (the high-proportion countries), but a clear discrepancy to the responses from Zambia. Main reason for the high-proportion countries for not using the mobile money is the fact that customers or suppliers do not use mobile money, or the business transactions are limited by the transaction limit of mobile money, which is too small for businesses (assumedly majority of B2B transactions, as well as high-value purchases by customers). Major reasons at Zambia for not using mobile money are also the facts that customers and suppliers are not using it, or the payments are too large, but in addition, major part of the businesses report that they do not know enough about mobile money. Also, the percentage of responses saying customers or suppliers are not using mobile money is in a different scale than in the other countries, i.e. approximately 50% in Zambia vs. 10% in Kenya, Tanzania, and Uganda. The difference of perceived value and usefulness of the service in Zambia vs. other countries can be seen from the responses, as in Zambia the fees are considered higher and use of service more difficult than in the other countries, even though the fee-structure and technology is the same between the countries.

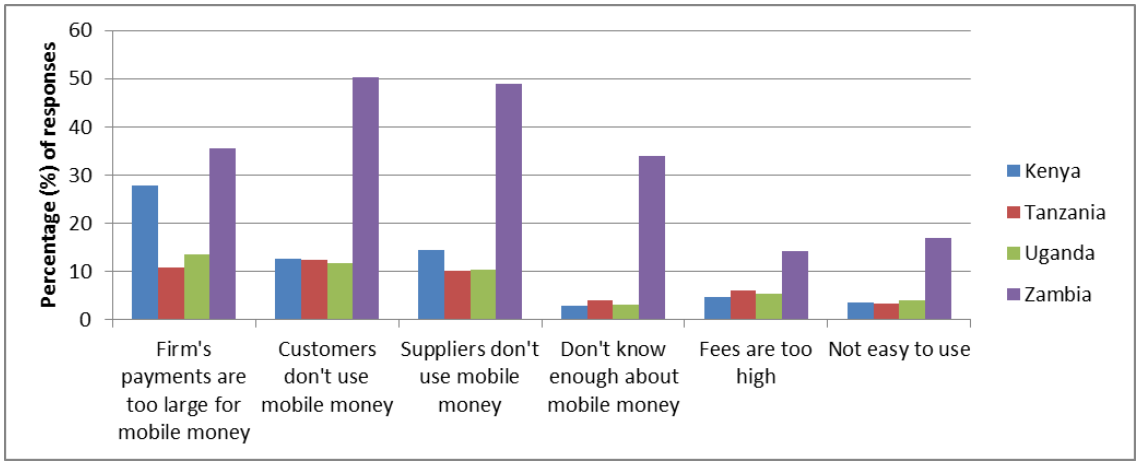

Figure 33. Percentage of reasons not using mobile money as responded by companies not using mobile money

4.1.3. Customer base using mobile money

Figure 34 represent the percentages of people, responding to survey, having bank accounts, debit cards and using mobile money for either sending or receiving money. Kenya is leading the use of mobile money at approximately 70% usage rate to Tanzania and Uganda at 20%-30% usage rate. Use of mobile money is marginal at Zambia with less than 10% usage rate. Kenya is also leading marginally the frequency of having a bank account or debit card over Zambia, Uganda, and Tanzania. All countries have a slightly higher proportion of people receiving mobile money over people sending mobile money, which represent also the fact that mobile money is commonly used for domestic and international remittance for sending money from cities or abroad back to home region at rural areas.

The mobile money is supported heavily by organizations involved in improving the living conditions of poor people; however, in fact the most active user groups of mobile money are interesting for businesses. As represented in Figure 35, the use of mobile money is increased as the education and income of the users are increasing. Therefore, the primary user group for mobile money is not the poor people living in rural areas, but moreover the driving force is the educated people with good income, starting from the

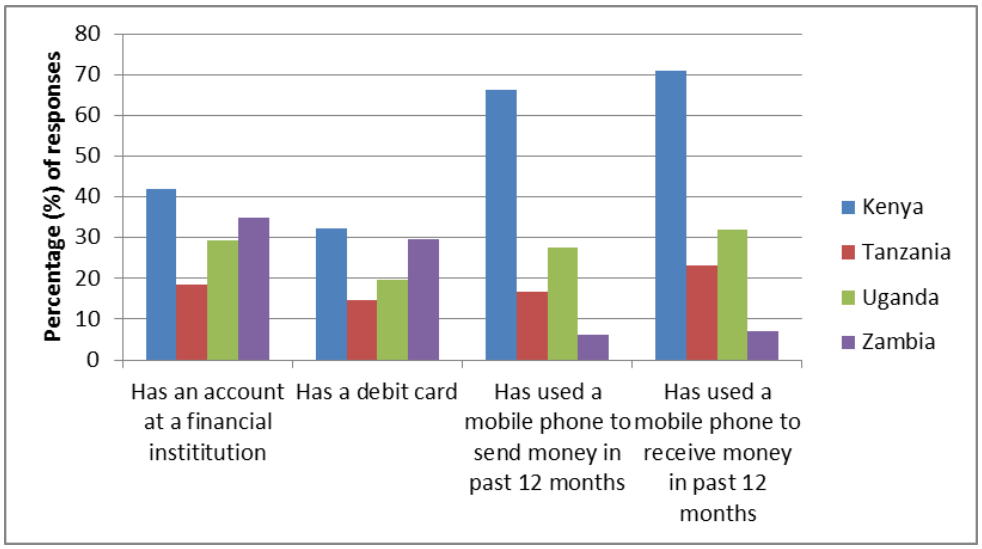

Figure 34. Access to financial services of people in the selected countries

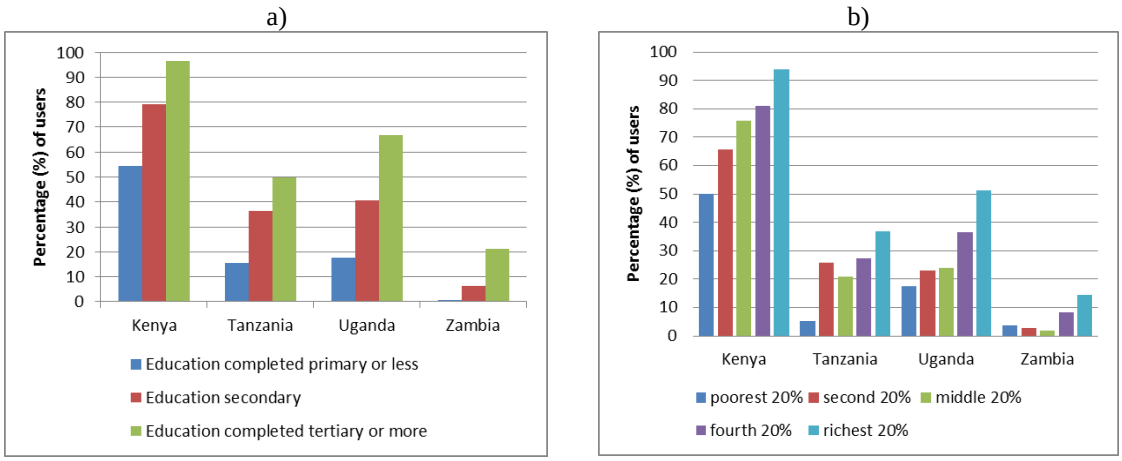

Figure 35. Percentage of mobile money users by a) education, and b) income quintile

middle class. Nevertheless, even the lowest quintile is an interesting opportunity for many businesses, as at the moment the number of people living at the bottom of the pyramid is huge with business potential that is not yet effectively captured.

4.1.4. Correlation study between businesses' mobile money use and other business critical factors

Correlation analysis for the four countries was performed between selected business critical factors and for two questions: 1) whether the companies use mobile money for business, and 2) the main reasons for using mobile money. The results of the analysis are presented in Table 10. Kenya's mobile money usage showed a correlation between the industry, region business operated, and percentage of national sales and exports of the company. Kenya's motives for the mobile money use indicate that the external, surrounding business environment is driving the use of the mobile money. Tanzanian companies' mobile money use on the other hand has correlation between the use of cell phones, internet and availability of bank/savings account, indicating that in Tanzania the companies' internal progressive attitude towards technology and business instruments is driving the use. Uganda and Zambia seem to be divided between the internal and external push/pull factors towards the mobile money, as there is a correlation between the type of sales (national sales, export) and the use of other technology (cell phones, internet). For the reasons of using the mobile money, there was a correlation towards Kenya's and Zambia's business regions, and Kenya's industries. In Kenya, the divide

between rural areas and cities showed different proportions of businesses reporting that the main reason for using mobile money in rural areas is to reduce cost and time for business transactions in comparison to the cities that were satisfying customer request.

Table 10. Correlation analysis between use of mobile money and reason for using mobile money against selected business environment responses (using Pearson Correlation algorithm)

		Correlations							
		Does this establishment use mobile money for any of its financial transactions?				Main reason this establishment started using mobile money			
		Kenya	Tanzania	Uganda	Zambia	Kenya	Tanzania	Uganda	Zambia
Region Of The Establishment	**Pearson Cor.**	-,043	*,093**	-,023	-,029	*,123**	,007	,039	**,566****
	Sig. (2-tailed)	,272	,015	,571	,452	,026	,912	,513	,004
	N	669	678	600	675	331	273	278	24
Industry Sampling Sector	**Pearson Cor.**	**-,100****	,029	,068	-,041	**,168****	,005	,030	,337
	Sig. (2-tailed)	,010	,457	,096	,284	,002	,932	,624	,108
	N	669	678	600	675	331	273	278	24
Year Establishment Began Operations	**Pearson Cor.**	-,052	-,031	,001	-,013	-0,0217	,067	-,113	0,1422
	Sig. (2-tailed)	,181	,414	,989	,732	,693	,270	,059	,507
	N	669	678	600	675	331	273	278	24
Communicate With Clients And Suppliers By E-Mail?	**Pearson Cor.**	0,0212	*,089**	-,018	**,346****	0,0260	,045	,044	,168
	Sig. (2-tailed)	,584	,020	,652	,000	,636	,454	,465	,431
	N	669	678	600	675	331	273	278	24
Establishment has its own website	**Pearson Cor.**	,047	*,083**	,011	**,400****	0,0333	,009	,034	-0,0039
	Sig. (2-tailed)	,227	,030	,785	,000	,545	,880	,572	,985
	N	669	678	600	675	331	273	278	24
Cell phones used in operations of the establishment	**Pearson Cor.**	0,069406	**,276****	,043	**,256****	-0,052	-,115	-,043	-,043
	Sig. (2-tailed)	,073	,000	,297	,000	,344	,059	,474	,843
	N	669	678	600	675	331	273	278	24
% of sales: National sales	**Pearson Cor.**	**-,126****	-,021	**,131****	,073	*,119**	,041	-,015	-0,1963
	Sig. (2-tailed)	,001	,587	,001	,059	,031	,497	,806	,358
	N	669	678	600	675	331	273	278	24
% o sales: Indirect exports	**Pearson Cor.**	**,155****	,061	-,061	-,095*	*-,130**	,005	,032	,168
	Sig. (2-tailed)	,000	,110	,133	,013	,018	,928	,592	,432
	N	669	678	600	675	331	273	278	24
% of sales: Direct exports	**Pearson Cor.**	,045	,050	-,074	-,038	*-,123**	,049	-,067	0,0964
	Sig. (2-tailed)	,242	,196	,069	,319	,025	,423	,264	,654
	N	669	678	600	675	331	273	278	24
Does This Establishment Have A Checking And\Or Saving Account?	**Pearson Cor.**	-0,0129	**,121****	**,139****	,003	0,0253	-,050	-,082	,043
	Sig. (2-tailed)	,739	,002	,001	,933	,646	,414	,172	,843
	N	669	678	600	675	331	273	278	24
How Much Of An Obstacle: Access To Finance	**Pearson Cor.**	-,007	,066	**,235****	,034	-0,0786	-,020	,040	0,2485
	Sig. (2-tailed)	,866	,088	,000	,379	,154	,740	,512	,242
	N	669	678	600	675	331	273	278	24
Num. Permanent, Full-Time Employees At End Of Last Fiscal Year	**Pearson Cor.**	0,0176	,062	,040	-,016	-0,0829	-,004	-,078	,038
	Sig. (2-tailed)	,648	,104	,332	,670	,132	,944	,194	,859
	N	669	678	600	675	331	273	278	24

****. Correlation is significant at the 0.01 level (2-tailed).**

. Correlation is significant at the 0.05 level (2-tailed).

4.2. Qualitative study of the innovations and entrepreneurial opportunity around mobile money in Kenya

4.2.1. Case study of businesses enabled by mobile money in Kenya

A qualitative study was performed over a range of businesses, operating or targeting Kenyan markets, which employ or are enabled by a mobile money transfer system, M-PESA as the most notable case study topic. Mobile money creates a major business opportunity and a source of revenue for these companies. Following the Nordic niche-strategy, the mobile network operators offering the mobile money service for customer masses, are gaining a cost advantage in a form of oligopoly, as the market space is limited for the operators in the market. In addition to the MNOs and independent service providers of mobile money (new products pulled into market by customer need), there are three category and sector combinations that are identified as the majority of the businesses enabled by the mobile money in Kenya.

The three identified combinations of cases are covered in more detail. As case 1, there are companies that are offering integration services of mobile money to companies ranging from major financial institutions to small-and-medium sized enterprises (SME) to merchants (new processes). These would be considered as Nordic niche-strategy stuck-in-middle companies offering licensed solutions for their customer businesses. As case 2, there are typically financial institutions that are employing the opportunities created by mobile money in distribution of their existing products (new distribution channels). And as a case 3, there are companies that are exploiting the possibilities of new market resources (e.g. people living at the bottom of the pyramid) with new or existing products (such as mobile insurance, pay-per-use products) in order to gain differentiation advantage.

The companies studied for the case study are listed in the Table 11. The service providers for mobile money network infrastructure, such as mobile network operators, are excluded from the list, as they are often monopolistic or oligopolistic, large companies, leaving little space for competition by entrepreneurial SMEs.

Table 11. Companies in Kenya enabled or enhanced by mobile money

		Sector			Category			
Company	**Product**	**Financial services (including insurance)**	**In-store/online payment**	**Applications, services, consultancy**	**Innovator**	**Integrator**	**Bridge Builder**	**Description**
Kopo Kopo				x			X	Integrate M-PESA payments for merchants, statistics of purchases, transfer between accounts
Intellect group				x			X	Web development, mobile apps, M-banking, M-Pesa integration
Coretec systems and solutions				x			x	M-Pesa integration services for financial institutions
Cellulant				x			x	M-Pesa integration services for financial institutions
Zege technologies	M-PAYER			x			x	M-Pesa integration, customer database and communication towards customers
Lipisha Consortium Ltd	Lipisha		x	x			x	Integrated platform for In-store, online and mobile sales using mobile money systems, collection of data, portfolio management
Tangazoletu	Spotcash, Lipa Na M-Pesa			x			x	Spotcash - Savings and Credit Cooperatives (SACCO) and Microfinance institute deposits and withdraws via SMS, which is transferred to M-Pesa account Lipa Na M-Pesa - Safaricom's official M-Pesa payment channel for merchants and businesses
Verviant Consulting	Pesapal		x				x	Online and mobile payment integrations, as well as payments for bills, schools fees, airtime, event tickets using M-Pesa, credit/debit cards
Webtribe	Jambopay		x				x	Online and mobile payment integrations, as well as payment for fees, bills services using M-Pesa, credit/debit cards
Intrepid Data Systems	iPay		x				x	Online and point-of-sale transaction processing gateway using M-Pesa, credit/debit cards
Western union, Moneygram, Xpress money, Worldremit		x				x		International remittance to M-Pesa account
Skrill		x	x			x		International remittance, online payments using M-Pesa
Bitpesa		x				x		International remittance in Bitcoin to M-Pesa
Equity Bank	M-Kesho	x				x		Mobile banking with micro-credit and savings
Commercial Bank of Africa	M-Shwari	x				x		Mobile banking with micro-credit and savings
Paynet Group	PesaPoint	x				x		ATM network for financial institutions with or without existing ATM network, M-PESA ATM withdrawal
iBiz Africa	PesaTracker			x	x			Application for tracking M-Pesa transactions for android phone owners and businesses that use M-Pesa' Paybill to accept payments.
M-Kopa	Solar systems			x	x			Home owned solar systems for rural areas including microfinancing the acquiring cost using M-Pesa as payment method
Grundfors	LIFELINK			x	x			Community/business owned or donated water pump systems for fresh water, paid by consumption via M-PESA
I&M bank	Pre-paid VISA card	x				x		Pre-paid VISA card, loadable directly from M-Pesa
Paddy Micro-Investment	Mobikopa, Pesapata	x				x		Microfinance institute (MFI) using M-Pesa for loan payment and disbursement
Musoni	Business, individual, emergency loans	x				x		Microfinance institute (MFI) using M-Pesa for loan payment and disbursement
Changamka Microhealth	Linda Jamii, m-Kadi	x			x			Pre-paid smart card for saving money for healthcare and microinsurance. Payments via M-Pesa.
Kilimo Salama		x			x			Index-based weather insurance for farmers against drought. Payments via M-Pesa

Case 1: Bridge-builders. As with any technological product, such as a website, mobile application, and so on, mobile money is used by common people without the knowledge of the system working behind it. In order for a company to start using the mobile money, they need usually outside support or consultancy to integrate the mobile money transfer system into their use. The companies referenced here as bridge-builders are dedicated for offering either ad-hoc solutions to integrate mobile money into the existing IT infrastructure of the company or standardized solutions/products, which are easily imported into various systems. Examples of the former companies are e.g. Intellect Group, Coretec Systems and Solutions, and Cellulants. Examples of the latter category companies are e.g. Tangazoletu and Lipisha. Typically these companies are either consultancy agencies or software houses.

Case 2: Integrators. A number of financial service companies have identified the opportunities of mobile money transfer system as a new distribution channel for their existing products. Under this category, three typical cases were identified. First are the domestic/international remittance companies, such as Western Union and Moneygram, which are traditional money transfer companies with agents/shops in hundreds of different countries. Transferring money from developed countries to back home into developing countries is a big business; however, setting up agencies in rural areas is often not feasible solution. Mobile money is offering a solution for reaching the customers in vast areas. Second there are traditional banks integrating mobile money into their service portfolio by offering money transfer between mobile wallet to a bank account, mobile banking services, or e.g. a pre-paid VISA card by I&M Bank. Finally, micro financial institutes, such as Musoni and Paddy Micro-Finance, have noticed the customer potential of mobile money users, which are out of the reach of traditional bank, i.e. the unbanked without accounts. However, third-party MFIs are in a tough competition against the “official” Safaricom backed microbanking solutions, such as M-Shwari from Commercial Bank of Kenya, which offer the same services directly from the SIM card applications.

Case 3: Innovators. In the context of entrepreneurial opportunity, the last case is the most interesting one as there are companies that are trying to find solutions to create brand new business innovations out of the mobile money ecosystem. From Kenyan business environment, two types of businesses were identified as such that they would not exist without the mobile money: 1) Pay-per-use products, and 2) mobile insurance. In a country with restricted access to clean water and reliable energy, these are logical choices for companies generating affordable products directly to customer (in low-income segment, as proposed by Ranglan et al., 2011). M-Kopa is an example of a company that has developed a solar power system for homes, and payment is handled via M-PESA based on the consumption. The acquisition of the solar system is financed by the company, and the cost of the system is paid back little-by-little. For clean water, Grundfors LIFELINK is an example of a water distribution system, however, it is more expensive system than a solar power for a domestic use. Rather than using similar financing as with M-KOPA system, Grundfors is using the subsistence segment (Ranglan et al, 2011) as a value-creation strategy by offering the system to communities. In addition, they are also looking towards NGOs and governments to donate the system to the community, with still leaving Grundfors in-charge for the maintenance of the system. Second innovation category is the mobile insurance, which relies on the opportunity that even people at the bottom of the pyramid are willing to invest into insurance when it is protecting either their livelihood (as farming insurance Kilimo Salama) or their lives (as health insurance Changamka Microinsurance), and acquisition of the insurance is made easy for them through the mobile money transfer system. The insurance is vital in a country with limited social security system.

In the context of developed countries, it is hard to see the above business models to gain very high popularity for any of the services, as there is an established network of financial services available. However, through the ease of use of a service, which is provided with good compatibility and fast transactions between the service providers, it could be possible to build a viable ecosystem based on mobile money also in developed countries. For example micro-financial services, such as quick loans, are services that

people are used to paying a service fee in the form of high interest rate, rather than transferring money between person-to-person, which is typically free of charge in developed countries.

4.2.2. Empirical findings of using mobile money in Kenya

Mobile money is everywhere in Kenya. Places where business transaction can be completed with mobile money, range from anywhere between the most high-end retail stores and restaurants to the informal street vendors and taxis on the street. It does not matter whether the business is small or big, most likely the sales can be made with a mobile phone, thanks to the mobile penetration in Kenya, and the fact that cheapest mobile phones cost less than a safety deposit box or cash register. Agent network is spread widely, and agents can often be found in any location with even a minor business activity. Mobile money also makes the utility bill payment easy as the major corporations, such as Kenya Power and Lighting Company (KPLC) for electricity, and Zuku as well as DStv for television and internet. Alternative way to pay for KPLC electricity bill is with cash at a numerous locations such as selected banks, supermarkets, and post offices. However, the typical Northern European way of paying through internet banking is not an option, which makes the mobile money payment as a tempting option for busy people. The convenience and speed of mobile money transfer between people and availability of business locations where mobile money is accepted make up easily for the cost of the service.

In Kenya, M-PESA is the most visible mobile money brand; however, also other brands are can be seen in certain regions. By empirical experience, it appears that cash is still the most used method of payment in Kenya, but at times cash is not always a viable option as the merchants are often short on change, especially when moving outside of the high-end store areas. The options then are to wait until the merchant can round up enough change from other people, leave the purchase, or pay with mobile money the exact quantity. Availability of cash is also affecting the agent network performing the deposit and withdraw functions. Occasionally the agents are limiting the quantity of

transactions to a certain low-value limit in order to maximize the number of transactions done by the customer (and securing the commission from MNO) as well as minimizing the needed cash and e-float for their operations. This requires also management of the agent network by the MNO in order to secure the effective and healthy operation methods of the agent network, as it is the highest expense for mobile money service provider with the infrastructure and/or licensing costs. In a country with high unemployment rate, recruiting agents is easy; however, building up the network requires high effort from the MNO. Role of the super agents as network builders is vital, and it is also good business for the super agents with numerous agents channeling commissions through them.

There are at least three effective ways that mobile money is enabling entrepreneurship and business operations: 1) by offering the people a choice in payment method (gaining competitive advantage through improved customer satisfaction), 2) reaching wider customer base (new markets) with new or existing products, and 3) cost effectiveness and security of the operations. Main issue of the mobile money from customer perspective is that the low-value purchases (less than ~10 EUR) have a relatively high cost of the transaction, and the high-value purchases (more than ~600 EUR) are limited by the regulations, which is also restricting B2B transactions, usually in higher value.

5. DISCUSSION AND CONCLUSIONS

The purpose of this study was to research and analyze the importance of emerging mobile money transfer systems to entrepreneurship in the context of eastern Africa. The success factors of M-PESA in Kenya were especially interesting as it is very successful implementation of mobile money transfer system. Through the wide acceptance of M-PESA in Kenya and other systems in the region among the consumers and businesses, study of different use cases of mobile money transfer and related innovations is enabled. This chapter concludes the study with research summary and key findings, contribution to existing literature, practical implications and limitations of the study.

5.1. Research summary and key findings

The success of M-PESA was considered to be a combination of meeting customer demand with a good product and properly executed implementation. The product was easy to use and suitable for the socioeconomics landscape of developing countries by bringing a solution to financial inclusion, i.e. lack of formal financial services. Careful study of the country was performed to implementation, which was executed with good timing considering the relevant factors such as branding, channel management, and pricing.

According to the survey data, the businesses in Kenya, Uganda, Tanzania and Zambia, are more likely to use mobile money if they are small companies, as there is decreasing trend of using mobile money when the size of the company goes up. Most common use case is to receive mobile money from the customers. Also supplier payments and utility payments are used; however, employees are typically paid with other means than mobile money. When using mobile money, below one third of the value is transferred through mobile payment, and the rest is transferred with traditional ways.

Even though most common use case is to receive mobile money from the customers, the main motivational factors to use mobile money is to reduce the time in financial transactions and to reduce the cost of financial transactions. Only in Kenya (with 70%

of the population using mobile money), the businesses are reporting that they are using mobile money to satisfy customer request. Also, even though many people in Africa are lacking the access to formal financial institutes, making cash the most important mean for payment, small percentage of the businesses are reporting risk-reduction as a major motivation for using mobile money. Only one factor for not using mobile money stands out, and it is that the payments of the business are too large for mobile money. Regulations intended for preventing the money laundering and other criminal activity are therefore at the same time hindering the use of mobile money by businesses. The cost of the service, knowledge about the service, or user base is typically not preventing companies from using mobile money.

Correlation study for identifying use patterns of mobile money in terms of business characteristics did not show a consensus between the countries. However, it did show certain use patterns applicable for certain countries, which serves as an evidence that not even the countries close to each other (i.e. in East Africa), are not sharing the same culture in using mobile money. The study showed strong correlation in Kenya between the type of industry, and whether the sales came from national sales or exports, towards the use of mobile money. In Uganda and Tanzania, there is a strong correlation between the (traditional) financial access of the companies and the use of mobile money.

In order to understand the customer base of using mobile money, demographics of the mobile money users were studied. The study showed that the mobile money is not only engaging rural population as the users, but actually majority of the users is well-educated and belonging to the wealthier population, considering that mobile money has gained some foothold in the country. It was also noted that the financial access is not explaining the whole picture of mobile money use, as in all selected countries except Zambia, the higher the financial inclusion in terms of access to financial institutions and debit cards, the higher the use rate of mobile money.

The companies enabled by the use of mobile money are selecting different strategies to utilize the mobile money. The selected strategy varies from using new processes, new

distribution channels to new markets. The new processes are, for example, integration services of the mobile money to the existing payment repertoire, new distribution channels can be international remittance to mobile money account, and strategies aimed for new markets are typically customized, innovative products to new markets that can only be reached through mobile money (and sometimes through innovative financing methods).

5.2. Contribution to the existing literature

Majority of the existing literature are studying how mobile money is improving financial inclusion, success factors of existing mobile money implementation, mobile money adoption by consumers, different technologies, and few reports exists that are investigating the type of businesses enabled by the mobile money. This study is contributing to the existing literature by researching the motivational factors that businesses have experienced while using mobile money. This is giving guidelines for future research what are important factors for companies using mobile money, and what are the disturbing factors preventing the use. In addition, a contemporary review to amend the existing literature is made for the current businesses employing mobile money, and what are the industries the businesses are operating in.

5.3. Practical implications

Studying the survey information, listening to your customer, is important from practical point-of-view for the service providers, regulators, and entrepreneurs. The service providers need to assess the information in order to improve the service in that sense that it can benefit both the business and personal users in the best ways. This will promote the use of the service and increase customer satisfaction, which in turn increases the user base and makes the ecosystem grow even larger. The ecosystem grows when, not only the people, but also other businesses and SMEs are engaged into creating services using the mobile money. For regulators, the information is important to understand the customer point-of-view, when balancing between protecting the customer, fighting against financial crimes, and creating regulatory landscape, which is

improving the financial inclusion in countries with gaps in the access to the financial services. Entrepreneurships need to understand the customer base and competition when developing suitable product and distribution channel for their selected market niche. The information and the best practices identified in this study can be used partly while developing a business model for a new enterprise.

During the study, it was noticed that there is a gap between the interoperability of the mobile money transfer service providers, which could provide a business opportunity for the bridge-builders to start providing seamless money transfer between the different service providers.

5.4. Limitations of the study

The benefit of using survey data gathered from a large organization such as World Bank, is the fact that it has been standardized and sampled for comparable results between different countries and that there is a large set of data available. However, the limitation is that it uses multiple choice responses, which does not necessarily give as much freedom in responses as free form responses do. On the other hand, they allow quantitative comparison of the results. Survey directed for the use of mobile money would allow more in-depth and specific analysis of the mobile money use by enterprises, as well as deeper understanding about the impact of the mobile money for the businesses.

5.5. Suggestions for further research

Future research should focus on understanding the impact of mobile money to the businesses in terms of loss business due to financial inclusion. Is there, e.g. a correlation between the payment options of a merchant to the business revenue in before and after cases of implementing the service? In addition, the new innovations enabled by mobile money are an interesting topic, whether some of the emerging use cases and products can be used at different geographic areas as such, or with some customization. Africa as a region is currently leading the mobile money implementation, but further study is

needed to find out which type of innovations implemented in developing countries are potentially viable in developed countries.

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