

Mobile payment systems

# The Influence of Financial Markets, Telecommunications and Culture on success of M-Pesa

By Esther van den Berg



# Master Thesis

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## The Influence of Financial Markets, Telecommunications and Culture on success of M-Pesa



UPPSALA  
UNIVERSITET

### **University of Groningen**

*International Business & Management – Specialization International Financial  
Management*

### **Uppsala University**

*Business & Economics – Specialization International Financial Management*

Esther L. van den Berg, s1529188  
Supervisor: Mr. Dr. B.J.W. Pennink  
Co-assessor: Mr. Drs. H.A. Ritsema

**Abstract:** This paper investigates which specific factors contributed to the success of mobile payment system M-Pesa in Kenya. Central aspects are the financial and telecommunication industry, cultural and lifestyle characteristics, and the position of the players. The methods to gather data are 40 questionnaires with agents, 91 structured interviews, 3 in-depth interviews and desk research. The PEST framework and actor-oriented approach were the guiding principles in presenting and analyzing the results. Besides culture and lifestyle, main factors that impacted the usage of M-Pesa positively are the underdeveloped financial market, demand for a new transfer system, trust in Safaricom, and leading position of Safaricom. The combination of these factors results in the success story called M-Pesa.

Key words: mobile payment system, M-Pesa, financial markets, telecommunication, Safaricom, culture and lifestyle agents



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## GLOSSARY OF ACRONYMS

<b>ASCAS</b>	Accumulating Savings and Credit Associations
<b>Deposit</b>	Deposit cash at agent/ super dealer and receive e-float on M-Pesa account
<b>E-float</b>	Electronic money on M-Pesa account
<b>Kshs</b>	Kenyan Shillings (100 Kshs. = € 0,957)
<b>MFI</b>	Micro Financial Institutions
<b>M-Pesa</b>	M stands for Mobile, Pesa is money in Kiswahili
<b>NGO</b>	Non Governmental Organisations
<b>RoSCA</b>	Rotating Savings and Credit Associations
<b>SACCO</b>	Savings and credit co-operative organizations
<b>UK</b>	United Kingdom
<b>Withdrawal</b>	Receive cash for given e-float to agent/ super dealer

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## 1. INTRODUCTION

Internationally, Kenya received much attention the last years because of a successful implementation of the innovation mobile payment system called M-Pesa. M-Pesa gives unbanked access to financial services through a simple system. Currently, this system enables over 40% of the adult population to transfer and store money, and make bill payment. Many countries followed Kenya and developed similar systems, however unfortunately these systems did not come up to the expectations. This triggers the question which factors contributed to the success story of M-Pesa in Kenya.

Infrastructure is one of the fundamentals for a society; it underpins all economic and social activities. A good working infrastructure results in a good economic and social working society. Successful implementation of infrastructure works only if there is a nature of demand for a specific service (Kessides, 1993). Infrastructure includes all sectors of transport, water and sanitation, power, telecommunications and irrigation. Infrastructure contributes to the development of economic growth by influencing the marginal productivity level of capital positively (Hardy, 1980; Cronin, Parker, Colleran, & Gold, 1991; Kessides, 1993; Röller & Waverman, 2001; Calderón & Servén, 2004; Zhang & Fan, 2004). Therefore, improved infrastructure is a solution to poverty reduction.

Hardy (1980) is one of the first researches investigating the potential impact of telecommunication on economic development and concludes that telephones contribute to economic development. More recent studies find that growth of an economy require more telecommunications facilities, however an investment in telecommunications will increase prior an increase in economy (Cronin et al., 1991; Röller & Waverman, 2001). Telecommunications have an additional characteristic, namely network externalities; the more users, the more value is derived by each user (Röller & Waverman, 2001; Shy, 2001). This externality is especially visible in countries with an infrastructure penetration rate of higher than 40%, which is the case in developed countries. Developing countries, however, have a mean penetration rate of 4%, meaning that these countries have lower growth benefits (Röller & Waverman, 2001).

Most developing countries have leapfrogged in mobile phone systems as a quick and inexpensive way to increase the telecom penetration. Governments supported this trend by deregulating the telecommunication sector (Mansall, 2001; Pinstrup-Andersen & Babinard, 2003; Sridhar & Sridhar, 2009). The introduction of new wireless technologies resulted in a quick adaption of mobile phones, especially in developing countries' rural areas (Pinstrup-Andersen & Babinard, 2003).

Developing countries still remain poor, even though a positive relation between mobile phones and economic growth is found. Sridhar and Sridhar (2009) therefore question if developing countries

have benefited from recent developments to further economic growth or not. This would mean that the introduction of the mobile phone is not enough. Three billion people owning a mobile phone create an opportunity to execute e-business through this wireless technology. Mobile banking and mobile payments systems can give access to the poor. Mobile banking and mobile payment systems are often used in one breath. The main difference between the two is that a mobile banking system is attached to a financial institution that offers mobile banking to extend the services with their depositing customers. A standalone mobile payment system has no initial relation with a financial institution. Mobile payments are wireless transactions through a mobile device that initialize, activate, and/ or confirm a payment (Hassinen, Hyppönen, & Trichina, 2007; Jacob, 2007). Mobile payment systems work on either a chip-based system or an interactive system based on e.g. SMS, voice, Bluetooth. Hassinen et al. (2007) describe the four actors that are needed in the system, although in practice there are often 2 or 3 players. The four principal actors are (1) customers who own a mobile phone, (2) merchant/ content provider, the (3) provider of the payment service is responsible for the payment system process, and the (4) trusted third party for certifying the service by authorizing the payment requests.

Current systems often rely on network operators; however, to be successful, many organizations should cooperate in order to create a large customer base. For reaching a mass, a wide available and standardized technology is needed according to Mallar, Rossi and Tunnainen (2004). Success depends on the size of the customer base and the volume of transactions. A drawback of having many organizations involved is an unclear overview of who is in charge of the system. In addition, linking different organizations is complicated due to conflicting interests. Trust in the organization offering the payment service plays a significant role. In USA e.g., consumers prefer financial institutions over third parties or mobile operators (Jacob, 2007). Salz (2007) emphasizes that it is unlikely that developed countries would switch completely to mobile payment systems, because an well working financial sector already exists. Developing countries are on the other hand a potential target for mobile payment systems, since many people in Asia and Africa are still unbanked. With a prepaid system, unbanked become able to make remittances, payments and transactions. An example of a successful mobile payment system is M-Pesa in Kenya, which will be the focus of this research.

The upcoming section introduces the mobile payment system M-Pesa. The method of analyses is presented in section 3. In section 4, the results are presented. Section 5 is the discussion including limitations and recommendations for further research. The conclusion, section 6, will summarize the main findings.

## **2. THE MOBILE PAYMENT SYSTEM M-PESA**

M-Pesa is a mobile payment system which enables customers to deposit and withdraw money, make transfers, bill payments, purchase airtime and since recently M-Pesa offers connections with a selected group of banks. Through a simple system of SMS, customers are able to make transactions anywhere at any time.

In 2003, the development of M-Pesa started. The Millennium Development Goals were signed by most of the developed countries, which meant that these countries were committed to reduce poverty by 50% in 2015. Vodafone UK understood that this development needed input from the private sector. Vodafone's approach was as followed: 'access to finance facilitates entrepreneurial activity. In turn this creates wealth through economic activity, job creation, and trade' (Hughes & Lonie, 2007). This was in line with major donor and fund organizations which were seeking for more efficient ways to deliver funds in emerging countries, in order to deploy capital more productively. Most emerging countries have a poor developed infrastructure and few people have a bank accounts resulting in expensive, slow and risky money movement. Kenya is a small market for Vodafone.

Local research among banks, MFI and NGOs resulted in two improvement goals within the financial services field, namely (1) the improvement of internal management process so it becomes more efficient and (2) that it should be very simple for customers to get access to financial services. After investigating all possibilities for developing a system that satisfy both criteria, it resulted that a system should be developed based on SMS services, because it enables financial services through a common African asset, a mobile phone.

Agents were needed for depositing and withdrawing money. Existing distribution networks of air time seller were approached to become an M-Pesa agent as well. However, it is not straight forward to become an agent as an air time seller. Being an M-Pesa agent requires more entrepreneurial capabilities and consequently a higher working capital than being an airtime seller (Heyer & Mas, 2009). 300 airtime sellers were willing to take the challenge.

A problem before launching the system was that neither Safaricom nor Vodafone owned banking licenses. The Central Bank of Kenya needed to be involved due to no existence of clear e-money regulations within the financial industry. After approval of the Central Bank, M-Pesa was launched in March 2007. The Central Bank monitored the developments of the mobile money transfer services and acknowledged the potential of M-Pesa for the enhancement of the availability of financial services within the country. The Central Bank and Safaricom worked closely together, with the Central Bank supervising regulations to protect customers and the market. An example of a change in regulation is



that in the summer of 2009, the Central Bank decided that taxes on the commissions fall under another category, meaning that agents receive more commission and their tax rate was lowered from 21% to 5% (Hughes & Lonie, 2007).

To make the population aware of the existence of M-Pesa, Safaricom launched a broad campaign with the slogan 'send money home'. This campaign is held through televisions and bill boards, reaching 70% of the users of the current M-Pesa customers (FSD Kenya, 2007). The early adopters were banked people. Within Nairobi, but also in other parts of Kenya, the risk of robbery is high. The higher class population is more likely to take the risk of trying newer, eventually safer systems. Young, urban, male migrants were driving the uptake of the service, forcing their family in rural areas to subscribe to M-Pesa as well (Rosenburg, 2008).

In March 2009, two years after launching M-Pesa, it obtained over 6 million subscribers and more than 8000 agents in the whole country. In the summer of 2009 the market was almost saturated with agents, leaving only rural areas open for new outlets. Safaricom controls its market by visiting agents frequently, investigating new locations for outlets and to maintain quality of the service.

### **3. RESEARCH METHODOLOGY**

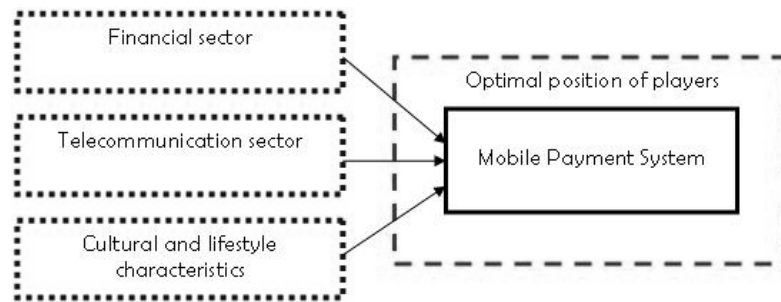
#### **3.1 Conceptual model**

Current literature on mobile payment systems focuses mainly on developed countries. Papers including developing countries mostly compare mobile payment systems between countries. These papers often discuss the differences between technologies of the different mobile payment systems and security and trust issues. A starting point for this research is the literature review of Dahlberg, Mallat, Ondrus, and Zwijewska (2008). 73 articles were reviewed and twenty gaps identified according to eight different areas based on Porter's five forces theory and the contingency theory. Dahlberg et al. mark the impact of social and cultural factors as entirely uninvestigated concepts.

In this research, four gaps defined by Dahlberg et al. (2008) are transformed into the objectives of this research. The objectives are (1) the impact of the financial industry on the success of mobile payment systems, (2) the impact of the telecommunication industry on the success of mobile payment systems, (3) how cultural and lifestyle characteristics affect the demand for mobile payment systems, and (4) what are the optimal positions for the different players of the mobile payment system.

These objectives are represented in figure 1, the conceptual model for this research. The financial sector, telecommunication sector and the cultural and lifestyle characteristics influences the success

**Figure 1: Conceptuel Model**



(Source: Dahlberg et al., 2008)

of a mobile payment system. Financial sector includes banking and financial institutions, but also electronic payments and money transfers within Kenya. The telecommunication sector consists of all players on the telecommunication market. Cultural and lifestyle characteristics involve the cultural values and behaviour of the Kenyan, the different tribes and responding lifestyles that influence the usage of M-Pesa.

The optimal position of the players is closely related with the mobile payment system. Without the players, the system would not exist. The players already existed before the introduction of M-Pesa. Safaricom, super dealers, agents and customers are the four most important players involved in M-Pesa. This box investigates what the optimal positions are for each of the players for obtaining and sustaining a successful system.

### **3.2 Research location and demarcations**

To research M-Pesa, I spent 10 weeks in Kenya during the summer of 2009. Kenya has a population of approximately 40 million (July 2010). 42% of the population is younger than the age of fifteen. The labor force is 17.5 million including an estimated unemployment rate of 40%. 75% works in the agriculture and 23% in industry and services. The GDP, however has another composition, agriculture represents 21.4% of the GDP, industry 16.3% and services 62.3%. 20% of the population lives below the poverty line of \$1.25 per day.

The population exists out of 42 different tribes; the largest tribes are the Kikuyu (22%), Luhya (14%) and Luo (13%). National languages are English and Kiswahili. Beside these languages, each tribe has its own indigenous language. Nyanza Province, in Western Kenya, is the homeland of Luo and Kisii (6% of population) (CIA Factbook, 2010; KPIA, 2008; Rural poverty portal, 2010; Unicef, 2010; World Bank, 2010).

**Figure 2a:** Overview of Kenya

**Figure 2b:** Overview of Nyanza and the area of the cooperating outlets



(Sources: Finaccess 2009, Google Maps)

The research was conducted as a case study in Western Kenya, in the province Nyanza (Figure 2). A super dealer has been the subject of the research, including 40 of its agents and 91 customers. From the 40 agents, 10 were owned by the super dealer and the others were franchisees.

The research is limited to one area in Kenya, namely Kisumu and its surroundings. Several towns and villages are involved in this research. This area is mainly populated by Luos. Even though rural areas, district centres and urban areas are equally presented, generalization should be done carefully on topics concerning cultural and lifestyle values. Gill and Johnson (2006) state that in case of generalization, a case study should be replicated several times under all different conditions and settings. This implies that the impact of different tribes, culture and lifestyle on M-Pesa would need further investigation.

In addition to that, M-Pesa is not compared to other mobile payment systems or countries different environment. The relation between the environment and the successful implementation of the system is the central theme. The results of this research can serve as a starting point for comparison studies between countries. In addition, this research contributes to the literature by providing information on mobile payment systems in developing countries.

### **3.3 Research method and framework of analyses**

To analyse the impacts from each different factor, two frameworks assist in analysing the impact of the different factors in the success of a mobile payment system, these are (1) the PEST framework and (2) the actor oriented approach. The impact of the financial sector, telecommunication sector

and the cultural and lifestyle characteristics will be examined by the macro-environment PEST framework. The cultural and lifestyle characteristics will also be analyzed through the actor oriented approach, together with the optimal position of the players.

The **PEST framework** is useful for a broad external analysis of the environment of an organization. In this research, the framework will be used to illustrate all trends that might impact the mobile payment system M-Pesa. The PEST framework represents four different factors. Political factors include the level of interventions of the government in the economy, political stability, tax policy, trade restrictions and laws. The economical environment falls under economic factors. Social factors include the demography, health, safety, trends that can affect demand for a company's product. Technological factors embrace development of new technology, entry barriers, but also ecological and environmental aspects (Palmer, Dunford & Akin, 2006).

The financial sector, telecommunication sector and the cultural and lifestyle characteristics will be described on basis of all relevant factors of the PEST framework and is mainly based on desk research, followed by interviews and field observations. The secondary data comes from, amongst others, statistical databases, international telecommunication union, annual reports, FinAccess and literature on tribes.

In 1984, Long came up with the **actor oriented approach**, which has its origins in the field of sociology. The human and social aspect plays a major role in this approach. The approach focuses on all different actors involved in a research subject and how they shape the outcomes of a development (Biggs & Matsuert, 2004; Segers et al., 2010). The actors of M-Pesa are studied through questionnaires, interviews and observations for being able to identify and explain their interrelations. An overview of the research methods for the actors is given in table 1.

Agents received questionnaires as it is a fast method of collecting data. It gives the agents more time to respond to questions, which is especially beneficial for financial questions (Cooper & Schindler, 2003). Questionnaires containing open-ending questions are often used to explore a substantive area. This method of research implies an inductive form of data collection (Gill & Johnson, 2006).

The questionnaire consisted out of open and nominal scale multiple-choice questions and takes around 45 minutes to complete. Open questions have as advantage that respondents are not limited in answering the question. Open ended questions are richer in data, however it complicates analysis.

**Table 1:** Overview of research methods

	<b>Agents</b>	<b>Customers</b>	<b>Safaricom employees</b>
<b>Sample</b>	40 out of 43	91 out of 97	3
<b>Regional clusters</b> -Kisumu/Kakamega -District Centres -Rural Areas	13 outlets 15 outlets 12 outlets	31 customers at 5 outlets 32 customers at 4 outlets 28 customers at 2 outlets	
<b>Method</b>	Questionnaire	Structured interview	Semi-structured interviews
<b>Appendix</b>	A	B	C
<b>Pre-research methods</b>	7 Interviews 2 test cases of questionnaire	8 Interviews 5 test cases of interview	Observations, results from questionnaires and structured interviews
<b>Topics included</b>	-motivations to deal with M-Pesa -location preferences -usage and behavioural patterns -influence of competitors -perceived values that are important for being an agent -financial advantages	-motivations to deal with M-Pesa -location preferences -usage and behavioural patterns  -important values for selecting agents	-agents and chains -competition -Safaricom -challenges -customer requirements -current patterns -future expectations -network coverage -agent performance -safety
<b>Duration</b>	45 minutes	10 minutes	60-75 minutes
<b>Remarks</b>	-Several open questions are categorized into multiple choice answers -Questions involving time or money are not most reliable -Ranking answers did not work -3 questions are skipped because of unclear definitions	-Usage of translator in rural areas -Additional questions were asked if interesting topics came up -Suggestions for answers were sometimes given to customers	-I went on an one day road trip with one employee to accompany him during his job

Seven agents were interviewed before the development of the questionnaire. Before sending out, two agents tested the questionnaire for mistakes and unclear questioning. These two agents were observed while filling out the questionnaire. In this manner, the researcher could easily observe how questions were interpreted and responded to. After testing, a final hard copy was sent to all agents, together with a cover letter to explain the purpose and instructions.

Topics covered in questionnaire are motivations to deal with M-Pesa, location preferences, usage/behavioural patterns, influence of competitors and perceived values that are important for being an agent.

40 agents returned the questionnaire after several advanced notifications and reminders by phone and SMS. In case of unclear, remarkable or doubtful answers, it is reconfirmed with the agents before

analysing the data. Also, in case that additional information is needed, agents are contacted. Appendix A contains the questionnaire as it is sent to the agents.

Customers were interviewed through structured interviews. Benefits of structured interviews are a good cooperation of the respondents, the usage of follow up questions and the possibility to gather information by observation. One of the main advantages for this research is the possibility to survey illiterate people as well (Cooper & Schindler, 2003). Main disadvantages are that this method is time consuming and respondent who are unwilling to cooperate. This method is chosen to increase reliability of the results. Respondents can be observed while questioning and the researcher is able to make sure that the questions are well understood.

The selection of agents happened randomly. Several outlets are visited at different times of the day. During a visit, all customers visiting the outlet are approached to participate in the interview. In rural areas, customers often only speak Luo. A translator is involved by translating the questions to Luo.

Topics covered in the interview are motivations to deal with M-Pesa, location preferences, usage and behavioural patterns, and important values for selecting agents. Eight customers are interviewed before developing the interview. Afterwards, the interview is tested in five other customers. In total, 91 interviews were usable for this research (Appendix B).

Personal semi-structured interviews are carried with three different employees of the operator of the mobile payment system, because it gives the opportunity to raise follow-up questions or to deepen out specific topics more thoroughly. Current patterns and future development expectations, together with the role of the operator are questioned. The semi-structured interviews are held after analyzing the initial outcomes of the questionnaires and interviews and lasted around one hour. The perspective of these employees was useful to compare and validate the empirical findings and to clarify unexpected outcomes in empirical results (Appendix C).

During the research, many field trips for interviewing agents and customers gave the opportunity to make observations while interviewing agents or customers. 20 different agents are visited. Observations have given additional information on the behaviour and usage of M-Pesa. The observations are non verbal, personal, and direct.

A major advantage of the observation of the usage of M-Pesa is the capturing of the whole event in the natural setting. The observations are not recorded, which may make reconstruct difficult. In this research, observation is used as an additional source of information and for a better understanding of the process.

### **Data collection**

The research took place in a time frame of 10 weeks during the summer of 2009. In the first weeks, seven agents and eight customers were interviewed for gaining a good understanding the mobile payment system. When I was comfortable enough on the topic, the questionnaire was developed, followed by the customer interview. While waiting for returned questionnaires, the customers are interviewed.

All data from the questionnaires and interviews are entered in MS Excel for data analyses. For some questions, location determines the behaviour of M-Pesa, therefore all results are also tested for the different locations. If location had a significant influence, only this data is used.

The agents and customers are clustered in three equally distributed groups according to the location of performance. The selection is based on the function of the town or village in the area, as illustrated below.

- City (Kisumu/ Kakamega): larger towns with an urban population higher than 50,000.
- District centres: capital of a district.
- Rural areas: small villages with few facilities available.

### **3.4 Reliability and Validity**

Reliability refers to “the consistency of results obtained in research” (Gill & Johnson, 2006). Consistency of results is maximized in this research by taking all interviews by our selves. For the interviews which inquired a translator, an employee from the company assisted. The whole interview, including the purposes of each question, was explained to the translator before he assisted.

For the results of the questionnaire, all answers are checked and if irregularities are discovered, agents are contacted for additional information. Some questions of the questionnaire are left out, because of contradicting responses. In this way, internal reliability increased.

Gill and Johnson (2006) identify three different sorts of validity, namely internal, population and ecological validity. Internal validity refers to the justification of the cause and effects in conclusions. A characteristic of this research is induction, meaning that conclusions have to be considered as hypotheses. Therefore, the conclusions need further investigation for increasing the validity. To Triangulation is used within the research for increasing internal validity. Interviews, questionnaires, observations and achieves were used to gather information. The different methods of gathering data improved triangulation, giving an in-depth and balanced picture of the situation. Reduction in bias is a positive side effect.

Population validity includes the generalization of conclusions to the whole population. Ecological validity implies the generalization to social contexts other than those in which data have been collected (Gill & Johnson, 2006). Ecological validity within this research is closely related to population validity due to the existence of tribes.

The research includes different locations, rural, district centres and urban areas. Each location is represented equally in the research. This makes generalization possible across areas. However, since the research occurred in one area, the sample only includes one tribe, meaning that the influence of different tribes is not included. Generalization on conclusions referring to cultural and lifestyle behaviour is difficult. Results on the financial and telecommunication sector are applicable to whole Kenya.

#### **4. RESULTS**

This section presents the results of the research in four different sections. First, the financial market will be described for being able to discuss and analyse the impact of this sector on the success of the mobile payment systems. The PEST aspects will help to describe the financial market of Kenya. Thereafter, the telecommunication market will be described on basis of the PEST framework. The third section is on the province Nyanza and differences in tribes. The sector ought to contribute to the cultural and lifestyle characteristics by explaining the lifestyle and cultural aspects. Political, economical and social aspects of the PEST framework will assist in explaining the environment. The last section explains the optimal position for the players Safaricom, super dealers, agents and customers by first describing the current tasks and motives to become involved with M-Pesa followed by sections on competition, usage patterns and regional differences. The section will conclude with the weaknesses of the current system and expectations for the future. The results will form the basis for the discussion and conclusion.

##### **4.1 Financial Sector**

The degree of development of financial sector influences the economy. In 2007, the government developed a vision for 2030, namely "*A globally competitive and prosperous nation with a high quality of life by 2030*" (Kenyan Vision 2030, 2007). One of the goals is to become a leading financial hotspot in Eastern and Southern Africa. Currently, the financial sector is not able to serve the whole population, even though the financial sector developed seriously. The economy of Kenya still relies on cash. The number of bank branches almost doubled from 512 branches in 2000 to 930 branches in 2009, and is owned by 43 different banks. ATMs experienced a high increase rate in the last couple of years. In 2005, there were 666 ATMs and three years later 1,510. The usage of ATMs is still limited; there are only 2.5 million plastic cards in circulation (2008).



The majority of the branches and ATMs are in hands of Barclays, Co-operative, Equity, Family Bank and KCB. In the province Nyanza, there are 38 branches owned by the five largest banks of which 7 are located in Kisumu and 6 in Kisii. These 38 branches cover an area with a population of 5.2 million. Disadvantages of banks are the limited opening hours, long waiting lines in branches, delay of four days in transactions and the fees that have to be paid for each transaction. In 2009, 22.6% of the adult population had access to a bank (Finaccess, 2009).

**Illustration 1:** Many larger villages do not host branches yet. An example is Ahero, which has no branch or ATM. Ahero is a community with approximately 8,000 habitants in the village and a total population of around 62,000 including its surroundings (1999). The village is located 20 KM south of Kisumu; a 40 minute drive from Kisumu. For access to formal financial services, the population of Ahero has to travel to Kisumu.

Outside urban areas, banking is difficult. Involvement of micro financial institutions (MFIs), savings and credit co-operative organizations (SACCOs) and other similar organizations is necessary to improve access to financial services, especially for the poor, low income households and small enterprises (Kenyan Vision 2030, 2007; KPIA, 2008). MFIs and SACCOs are non-deposit taking institutions and serve 17.9% of the adult population though one of the 5350 institutions.

26.8% of the population is depended on informal financial service providers, namely Accumulating and Rotating Savings and Credit Associations (ASCAs, RoSCAs) and groups/ individuals other than family and friends. There is hardly any supervision in this sector and transactions go unrecorded. Next to that, there are not clear interest rates (Finaccess, 2009; Heyer & Mas, 2009).

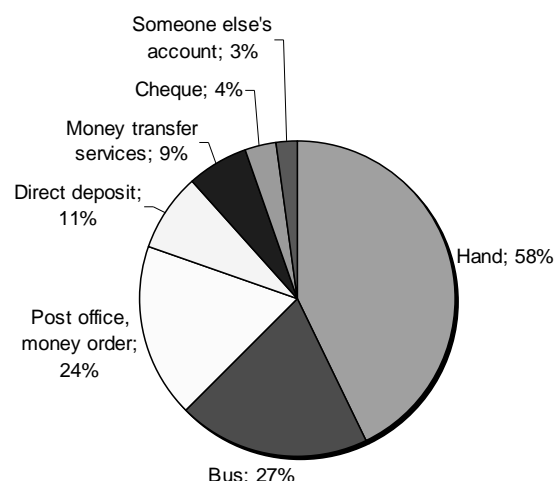
The last group is the unbanked, people who are excluded from access to both formal and informal financial services and products. In 2009, 32.7% of the adult population belonged to this group, a decrease compared the 38.4% in 2006 (FinAccess, 2006; 2009).

### ***Dual system***

The term dual system relates to “the continuing commitment of the urban migrant to the village” (Morawczynski, 2008:1). Migrants maintain the relation with the rural by visits, and the transfer of remittances. In 2009, 52% of the households received remittances according to FinAccess (2009), compared to 16.5% in 2006. 21% of the households depend on remittances for survival. Especially when there is a cultural pressure to retain connections with the ancestral community, the remittances are more frequent. Besides the migrant- rural area stream, there is also a stream going to boarding school pupils and students (Heyer & Mas, 2009).

M-Pesa is nowadays the most popular way to send remittances, because it is perceived as the safest, cheapest fastest and easiest method to transfer money. In 2009, 39,9% of the adults use M-Pesa. 26% of these users use M-Pesa to save money. Around 16% store money on their M-Pesa while they travel. Before the introduction of M-Pesa, the transfer of remittances went by handing over money, or transfers through bus companies, post offices and money orders as can be seen in figure 3 (Finaccess, 2006; 2009).

**Figure 3:** Money transfer methods in 2006



(Source: Finaccess 2006)

**Illustration 2:** Migrants are eager to use M-Pesa; it enables migrants to transfer specified amounts with the security that it will arrive safely at destination. The control of migrants increases by using M-Pesa. Migrants are not obligated anymore to visit the rural area for a physical transaction. Visiting rural areas has the drawback that migrants are expected to share all savings with their relations because of strong cultural values. M-Pesa prevents this, resulting in a possibility for migrants to save up some money, which can be used for entrepreneurial activities.

#### 4.2 Telecommunication sector

In the last years, major changes are visible in the telecommunication industry. Before the introduction of the mobile phone, landlines covered all telecommunications. The number of landlines in Kenya is low, in 2004, 0.8% of the population had a landline. In 2008, this number doubled to 1.7% of the population. The number of mobile phones increased at a higher pace, from 7.2% in 2004 up to 49% in 2009. In 2008, 16.5 million people were subscribed to a landline or mobile phone (ITU, 2010). The population coverage by the mobile phone network grew to 83% by 2008, with 54.4% of the population having access to a mobile phone. In urban areas, 52.3% of the population owns a mobile phone, whereas in rural areas this is only 18.6%. The wider population access to the mobile network is due to the phone sharing habit, which is common practice in Kenya. The highest growth rates of mobile access is in Nyanza (Finaccess, 2009; KPIA, 2008; WCIS 2009; ITU, 2010).

In 2009, the competition within the telecommunication sector changed from partial into full competition. Kenya has four network operators, namely market leader Safaricom (79.3% of market share), Zain (13.2%), Orange Kenya (4.2%) and Yu (3.3%). Safaricom, Zain and Yu offer mobile payment services based on SMS. Safaricom introduced M-Pesa in March 2007, whereas Zain implemented Zap in February 2009. In December 2009, Yu followed with YuCash. The main

difference between these systems lays in the tariffs; Zap and YuCash are both cheaper in usage than Safaricom.

**Illustration 3:** The presence of Safaricom is recognizable through 'Safaricom-green' painted shops and kiosks. Each telecommunication operator has its own colours: Zain has pink with black as colour, Orange has orange painted shops and Yu is represented by red with green combined with black. While travelling, it is easy to recognize which shop represents which company. Kenyan are proud represent Safaricom and consequently to paint their shop Safaricom-green.

Safaricom started as a department of the Kenyan Posts and Telecommunications Corporation. By 2002, Safaricom turned into a public company. Vodafone UK owns 40% stake and management responsibility for the company. The Government of Kenya holds another 35% of the stakes, which results in a free float of 25% of the stakes. Currently, Safaricom is lead by the American manager Michael Joseph. In the financial year 2010, Safaricom had revenue of 83.96 billion Kshs. and a net income of 15.15 billion Kshs. With 2400 employees, it serves a customer base of 14.5 million clients (Safaricom, 2010).

#### **4.3 Cultural and lifestyle characteristics**

##### ***Nyanza and its inhabitants***

The province **Nyanza** is in Western Kenya, and lays on Lake Victoria (Figure 2a). Approximately 5.2 million people live in Nyanza, resulting in a high density. With 323.000 inhabitants, Kisumu is the largest town. Nyanza is one of the poorest provinces within Kenya, rural income levels are the lowest of Kenya. Next to that, it has low levels of livestock ownership. The rates of unemployment are the highest in Nyanza. Youth, in particular, face difficulties finding jobs.

A large problem is the underdeveloped health state; many people suffer from malaria, water-borne diseases and malnutrition. Moreover, Nyanza bears high rates of HIV/ AIDS infected people, in particular in rural areas. The estimated rate of HIV/ AIDS in these areas is 20-30% (CIA Factbook, 2001; KPIA, 2008; Unicef, 2010).

Nyanza is the homeland for two tribes, the Luo and the Kisii. North Nyanza is populated by **Luos**. Within the Luo culture, the tradition of social organization is still strongly present: Luos who do not live in rural homes are expected to build them self a house on ancestral land and maintain relations with the local community. Taking care of the family is an important value, Luos make sure that their family will not go and sleep hungry; how little they may have to share. Luos are very religious, and fall back to God for protection and providence of their needs. Luos like to receive respect: the English spoken by Luo is known as Queen's English, jobs should be noticeable e.g. white collar jobs.

Approximately 20% of the Luos work in Nairobi of Rift Valley as migrants, since it is difficult to find work close to home. The local economy is based on agriculture and fishing, however families are not able to support themselves anymore due to sale of land in difficult times and the scarcity of land. Agricultural productivity is low, which makes cash remittances an important source of income (Grigorenko et al., 2001; Prince & Geissler, 2001).

The **Kisii** mainly live in the Kisii district (population of 60.000) in south Nyanza, which is one of the wealthiest areas of Kenya. The soil of Kisii district is volcanic; the climate conditions are good for a large variety of crops. Every piece of land is used for cultivation. Family life is important, families are large and cohesive and live close to each other. In Kisii, the economy is mainly based on large scale agriculture, which is mainly done by women. Kisii are foremost occupied in the art craft and agricultural industry. In comparison to Luo, less Kisii migrate. Kisii have less cultural pressure to share money with poorer family members than Luo. Kisii are therefore able to save money and consequently undertake entrepreneurial activities. A direct result is a higher economic activity (Silberschmidt, 1999).

**Illustration 4:** Even though Luo and Kisii are neighbouring tribes, there are some major differences between the two tribes. Luos like respect and jobs that give them status. Referring to an interviewee: 'Luo like to be treated as a King'. These characteristics can result in a perceived laziness of Luo, especially if compared to other tribes. Kisii are famous for their high levels of entrepreneurship. Kisii prefer jobs that can be done manually, like agriculture and art crafts. A result of the higher levels of entrepreneurship and differences in jobs is a more economic prosperity under the Kisii.

#### ***Recent political impact in Nyanza***

The elections of 2007 caused post election violence. Odinga (Luo tribe), the opposition of the current president Kibaki (Kikuyu tribe), declared fraud in the counting of votes, and declared thereby that the victory was unfair in favour of Kibaki. Odinga's supporters started demonstrations against the elections and against Kikuyus victory. The country was divided along tribal and ethnic lines which left anarchy and a major power vacuum. Kisumu became one of the most affected places as it is close to the hometown of Odinga. Death, destruction of properties, increasing prices of food and transport are some of the effects which the uprising brought by. The economy became injured by the violence: the fishing industry collapsed and many businesses were looted, burned or smashed by crowds. Unemployment increased.

The post election violence caused a fast uptake of M-Pesa, due to safety and the mobile ability to send money to those who have no cash at hand.

**Table 2:** Busy days and months

<b>Busy day</b>	<b>Explanation</b>	<b>Busy Month</b>	<b>Explanation</b>
<b>Monday</b>	After weekend	<b>January</b>	School fees
<b>Friday</b>	Preparation for weekend	<b>April</b>	School closure
<b>Saturday</b>	Weekend	<b>May</b>	School fees School opening
<b>Location specific:</b>	Market day Only shop open in area on that day/hour	<b>August</b>	Holidays School closure Harvest
		<b>September</b>	School fees
		<b>November</b>	Preparation Christmas
		<b>December</b>	Festivities
		<b>Other reasons:</b>	Festivities Planting & Harvest

(Source: agent questionnaire)

### ***M-Pesa in Nyanza***

M-Pesa is most successful in Nyanza. Luos are open minded and accept changes if it makes life more easy. M-Pesa's wide availability made it easy to transfer money in places where banks are far away. Moreover, M-Pesa became the first place in these rural areas to deposit funds; a service for which was a strong demand, especially after the post election violence of 2007. In the first semester of 2009, the number of outlets expanded rapidly. The increase went from 624 to 1873 outlets, resulting in a growth of over 200% on average in Western Kenya. As a result, existing outlets show a decline in performance. The growth rate of district centres and Kisumu and Kakamega are almost equal, though the largest growth rates occurred in rural areas. Kisii had 54 outlets by the end of 2008, this amount grew to 125 outlets by July 2009, and Kisumu grew from 67 to 205 outlets in the end of July 2009.

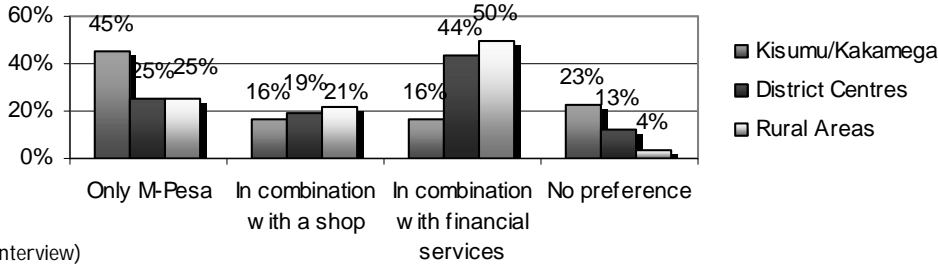
### ***Usage Patterns***

Patterns of M-Pesa usage are recognizable as is shown in table 2. Within a day, M-Pesa is mostly used during lunch hours (11am-1pm) or after work (3pm-5.30pm). Market days and weekend gives a boost to the M-Pesa usage. On average, most of the transactions take place on Monday, Wednesday and Friday.

Salary payments (end of month/ beginning of month) and advanced salary payments (16<sup>th</sup> of every month) influence the number of transactions positively. In the first half of the month, there is a higher cash demand than in the second half of the month.

During the year, school fees, school closure and festivities like Christmas are perceived as main drivers for making transactions. Harvest is not perceived as a main trigger for using M-Pesa, funerals and weddings neither.

**Figure 4:** Customer preferences for shop type per location



(Source: customer interview)

***Influences of locations***

In urban areas like **Kisumu and Kakamega**, outlets are heading to bank standards; outlets without side activities are preferred by customers (figure 4). Customers in urban areas are familiar with the system, almost 25% of the customers use M-Pesa in a daily basis or even more. Customers trust the system and have low loyalty to outlets. Location, presentation and waiting lines are important factors on which urban customers select outlets. Quick service is important; if the line it too long, people tend to move to another agents. Security and privacy, opening hours, location and good assistance are highly valued by customers. Customers like to be able to do transactions at any moment of the day. Agents perceive reliability in cash and e-float, good assistance and the possibility to do large transactions as important values for attracting customers.

M-Pesa in **district centres** has a higher adoption rate than rural areas, but district centres are still behind urban areas. District centres are mainly withdrawal areas, meaning that agents need cash to serve customers. The highest needs of cash are in the first 10 days of the month and around the 16<sup>th</sup>. Privacy and security, opening hours and good assistance are the most important values for customers. Customers value the possibility to do large transaction significantly higher than in other areas.

M-Pesa is still unfamiliar for many customers in **rural areas**. The frequency is usage is low, normally once or twice a month and customers still require assistance in making transactions. The average transactions per agent is lower than the advised 60 transactions to break even per day. Training is still important. A consequence is that loyalty is higher; customers do not mind waiting to make a transaction, or even come back when the outlet is not able to serve them. 68% of rural customers are loyal to one agent, because customers trust and know this person. There is, however, a trend visible that customers go to any agent if there is a high familiarity with M-Pesa.

Customers do not have strong opinions on how an outlet should operate compared to district centres and Kisumu/ Kakamega. Opening hours are absolutely not important; people tend to use M-Pesa after finishing the core task on the field or in house. Thursdays are the busiest days in rural areas, probably because of market days.

In rural areas, 50% of the customers acknowledge a preference for an outlet with financial services besides M-Pesa (figure 4).

#### **4.4 Optimal position of the players**

##### ***Tasks and motivations of Safaricom***

Safaricom is the owner of M-Pesa and is responsible for running the system and the authorization of transactions. Other tasks are to change cash and e-float with agents and super dealers, paying out of commissions and handle inquiries. To secure a high quality service under the agents and super dealers, Safaricom frequently visits its agents and gives them access to education, furthermore, Safaricom controls the operations of her agents and super dealers. Beside these activities, M-Pesa offers the service of bill payments, for which Safaricom tries to involve many companies to increase network externalities.

Safaricom benefits from M-Pesa in the form as an additional source of revenue and consequently profit. However, M-Pesa can also be perceived as a method to retain customers. Internationally, Safaricom received lots of attention due to her leading position in mobile payment systems.

##### ***Tasks and motives of super dealers***

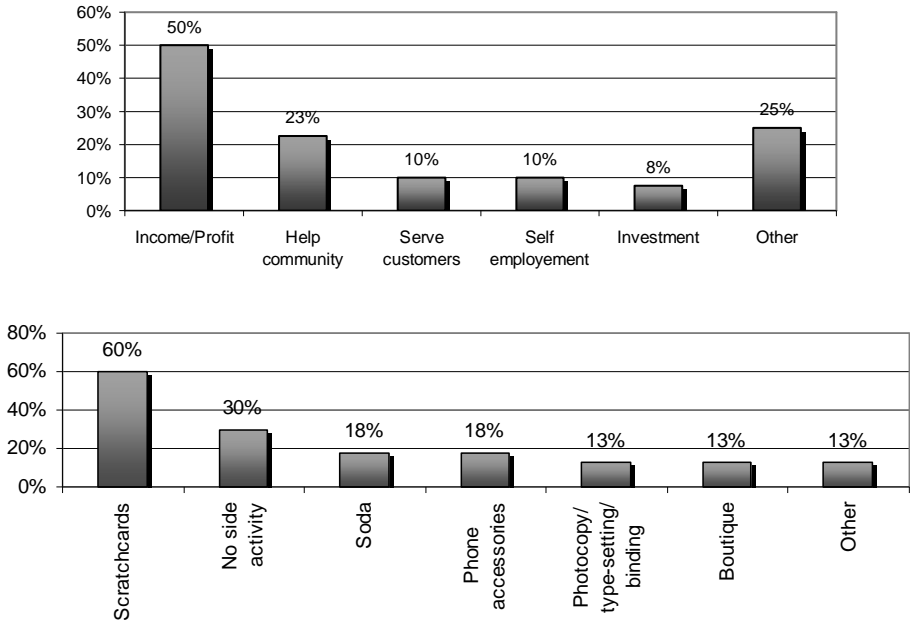
Super dealers are intermediaries between Safaricom and agents. Super dealers change e-float and cash for agents and balance out the different needs between their agents. Next to that, agents' commissions are paid through super dealer. The service offered by super dealers can be enhanced by offering additional services like loans, assistance, training and administration. For super dealers to be successful, reliability in cash proficiency and being trustworthy is important. The larger the super dealer, the more power it has towards Safaricom.

A super dealer can manage 3 to 10 outlets efficiency as a side activity. If the number is more, one should make it into a full time job, because a super dealer is ought to know what is going on in each outlet. Super dealers are most beneficial if they have franchise contracts with the agents. Owning outlets as a super dealer gives lots of administration and supervision costs. Next to that, the super dealers bear all risk and the average recurrent costs are higher.

Motives for becoming a super dealer are several. First, if managed well, it is a good business with high revenues and interesting return on investments. Secondly, super dealers change cash and e-float immediately and consequently secure the availability of cash and e-float in the market. This results in stimulation of the local economy.

##### ***Tasks and motivations of agents***

**Figure 5a:** Motivation to start working with M-Pesa  
**Figure 5b:** Side activities in franchise outlets



(Source: agent questionnaire)

Agents are a “human ATM” for customers; customers are able to change cash or e-float. Agents are important within the system, since they are responsible for registration and education of (new) customers. Initially, M-Pesa was meant as a side activity to attract more customers to a shop; however, M-Pesa became in most cases the main activity in an outlet. As can be seen in figure 5a, 50% of the agents start with M-Pesa to gain profit; it is perceived as an easy and fast way to receive income. 23% mentioned to help the local community as motivation to start with M-Pesa. Other reasons are to serve customers, self-employment and investment opportunities. M-Pesa is perceived as an easy job with little logistics, no stress and easy accountability. 30% of the outlets do not have side activities (figure 5b), and 60% of the outlets sell scratch cards. Other side activities are mostly related activities like selling phone accessories and photocopying. In case side activities were present, M-Pesa was still the major source of income. The most valuable side activity is having a boutique, which is more beneficial than M-Pesa. Having side activities also causes competition within the outlet because of the access of funds.

Agents are also responsible for their own **float management**; if agents are out of cash they are not able to provide services. 45% of the agents report that they do not run out of money, as in terms that they are not able to serve customers. Another 45% say that they run once or twice a week out of cash, the other 10% is more than two times per week out of cash. It is mostly at different days throughout the week that agents run out of cash, however market days are frequently the days that agents run out of cash.



**Table 3:** Factors influencing agents' performance

Reasons for improvements	Reasons for decline
Increase in working capital	Reduction of working capital
Closure of M-Pesa shop in the area	Opening of M-Pesa shops in the area
Improvement in branding and visibility	Robbery
Relocation	
Good assistance	
Availability of cash & e-float	

(Source: agent questionnaires, interviews)

Agents' performance is positively related to their working capital size. A higher working capital results in continuity of operations; agents are less frequently out of cash (table 3). On the other hand, being close to other M-Pesa agents will result in a performance decline. Increased visibility and branding can positive stimulate the number of transactions.

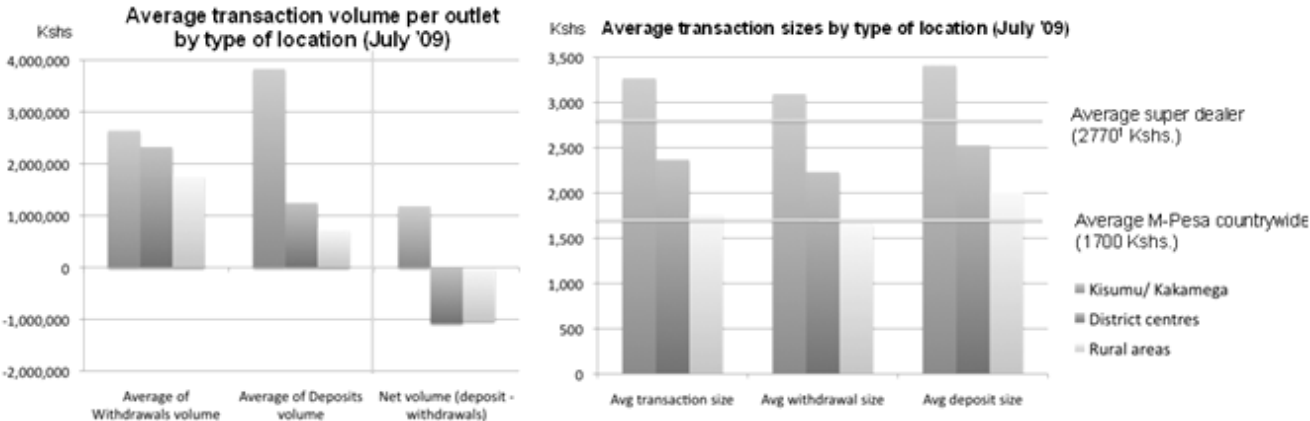
**Illustration 5:** All agents have an own method of cash management: most agents travel to the super dealer to change cash or e-float, some agents wait for customers to come with either cash or e-float for continuing operations. Some other agents mention to call loyal customers with the request to come and deposit money or e-float.

The **location** together with high **visibility** is important for being successful in business. High traffic zones like market places/ main roads/ bus stations/ shopping malls are the best spots for outlets. The larger the size of the community, the more important location becomes. Only 5% of the agents mention their location as advantage over their direct competitors. Direct competition is perceived as a threat. 62% of the agents recognize good assistance and reliability as their main competitive advantage.

**Illustration 6:** An outlet in the rural area is located on a road at the beginning of the village. The agent favours this location for the reason that customers who pass his outlet change money on the way to the market square or when they return from the market. On market days, the number of transactions is around 100, while on normal days the average number of transactions is around 40.

A **successful agent** is quick, understands the technology and is trustworthy. Being outgoing and able to make social talks is highly valued. Gender and age do not have influence; however a local person is preferred, because he speaks the local language and knows the culture and people. In cases customers gave a preference, it was for younger people since they are quicker and understand technology and women because of the social skills and trustworthiness.

**Figure 6a:** Average transaction volume per outlet by type of location  
**Figure 6b:** Average transaction sizes by type of location



(Source: M-Pesa system, based on July '09 data, Safaricom)

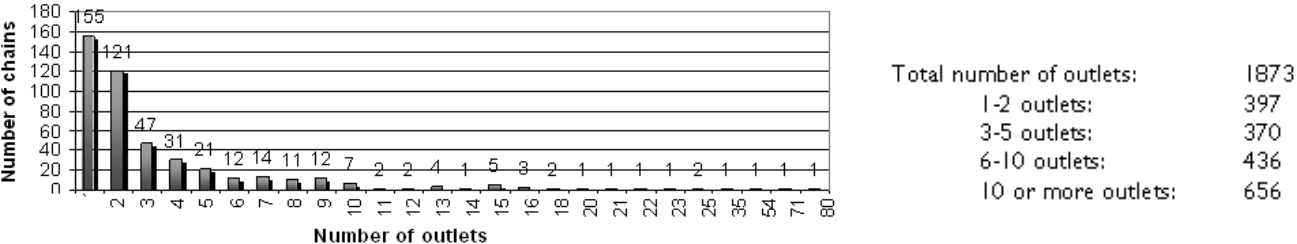
Not all agents work in the outlet themselves; in 40% of the cases agents **hire assistants** for working in the outlet. In addition to that, in almost 70% of the outlets, 2 or more people are working. A second employer is helpful for exchanging cash/ e-float, so the outlet can stay open, which increases reliability and continuity of operations. In 10 cases, a family member or friends is hired, against 29 cases where no relation was present at the moment of hiring. Reasons for hiring strangers are that relatives do not take their work seriously and seek protection in the relationship status towards the owner. The same happens in case of misbehaviour, the relative will expect sympathy by the virtue of the relationship. Relatives are the first to spread rumours and lies. Luos prefer to hire someone based on qualifications. Employees leave because salary is not paid on time, salary is too low and integrity issues (when assistants start to feel too comfortable).

Agents receive **commission** for every transaction performed. The type and size of transaction influences the height of the commission; a high average size of the transaction leads to a higher average commission per transaction. In addition to that, commission on withdrawals is higher than on deposits (independent of the average size of transactions).

Each location has its own usage pattern that also influences the received commission (figure 6a and 6b). Nairobi, Mombasa and Rift Valley are overall deposit areas, whereas Western Kenya is mainly a deposit area. In addition, in larger towns, most transactions are deposits and in the rural areas withdrawals dominate. Next to that, urban areas have a higher average number of transactions and larger transaction sizes as can be seen in figure 6b. For an agent to turn break even, he should make 60 transactions each day, whereas 80 till 100 transactions keeps agents satisfied.

**Costs** for running an M-Pesa outlet are mostly made through recurrent costs like rent, salary, utilities, bank fees, business permits and licenses, maintenance, stationary, and governmental taxes.

**Figure 7:** Number of chains with X number of outlets in Western Kenya (July 2009)



(Source: Data received from Safaricom)

Even if agents are operating in a deposit area and handle many deposit transactions, withdrawals are the biggest contributor to the total commission. However, being an agent is not risk-free. Robbery, theft, false transactions and fake money cost on average 4500Kshs per month per agent. Moreover, almost 30% of the agents do not feel safe in their outlet. Being close to a police station reduces the feeling of being unsafe.

Agents operate either **independently** or as a **franchisee**. Being independent can give cash problems. For changing cash into e-float with Safaricom or vice versa, it takes four days. Agents try to prevent these transactions by only make small transactions with customers. If an agent has a franchise contract, it benefits from the super dealer in several ways: agent is possible to change cash and e-float quickly, administration with Safaricom is out sourced, support, loan facilities, early salary payment, longer opening hours than banks and no waiting lines. Agents are able to enlarge their commission between 20%-66% due to the advantages offered by the super dealer. The downside for an agent to be part of a chain is that 20%-30% of their commission goes to the super dealer for the service they offer.

In the current market there are many small **chains** and two large chains with over 100 outlets. Within Western Kenya, most outlets belong to a chain as illustrated in figure 7, 21% of the outlets are stand alones or together. Another 20% belongs to small chains of 3-5 outlets, 23% belongs to chains which have between 6 and 10 outlets, and 35% is enrolled in larger chains of outlets. The two larger chains had an existing relationship with Safaricom as air time dealer before the introduction of M-Pesa. Being a member of a good working chain can increase the average transaction size as well: the average transaction size in Kenya is 1700 Kshs, whereas the super dealer of this research has an average transaction size of 2770 Kshs (figure 6b).

Agents have to compete against **Pesapoint ATMs**, which Safaricom introduced to withdraw cash from the M-Pesa account without the use of an ATM card. Currently, there are 110 Pesapoint ATMs in 46 towns from which 12 in Western Kenya. Three of the ATMs are in Kisumu; the other nine are located in larger towns. Between 4pm and 9pm Pesapoint faces most of the transactions, since banks

**Table 4:** Advantages of bank account and M-Pesa

Bank Account	M-Pesa
For receiving salaries	For sending and receiving money
Savings	Savings (normally up to 1 month)
Loans	Fast, Cheap, Convenient
Big withdrawals/ deposits	Payment of bills and purchase of airtime
Business	Personal business (shopping)
	Business use (payment of supplies)
	Travelling (not to carry cash)

(Source: customer interview, team analysis)

are closed during these hours. Pesapoint has an estimated 40% higher average transaction size than agents, however the number of transactions at a Pesapoint is still low.

Pesapoint has the advantage of 24/7 service, customers do not like an ATM: they do not trust an ATM that is not of their own bank, because in case of a problem, there is no human face to turn to; and people like to talk to an operator. In general, people do not like ATMs at all.

**Illustration 7:** In a shopping mall in Nairobi is a Pesapoint located directly besides an agent. During busy hours, there is a line for the outlet, while Pesapoint is free for usage. This demonstrates that people prefer agents over ATMs.

**Tasks and motivations of customers**

Customers embraced M-Pesa; it became a part of their lives. Customers described M-Pesa as easy, fast, safe, convenient, cheap, and reliable (table 4). Customers use M-Pesa for personal reasons or in combination with business. M-Pesa is used for sending and receiving money, short term saving, bill payments, business transactions and purchase of airtime. Next to that, customers deposit money before travelling, in order to carry no cash during the travel. The service is perceived as fast, cheap and convenient. Initially, M-Pesa had as target the unbanked population, however, people owning a bank account use M-Pesa as well. Motives for using a bank account are to receive salaries from governmental institutions, savings, loans, big withdrawals or deposits and for business motives.

The selection on M-Pesa outlets is based on several factors: familiarity with the system, location, knowing a certain agent or availability of cash and e-float. A good explanation and service during registration increases loyalty for an agent. Worth of mouth advertisement for the promotion of agents is not working for customers who are familiar with M-Pesa. This is against expectations of agents.

**Illustration 8:** A fish seller in town transfers money to a fisher to secure fish. The fisher receives the payment and sends the fish order to the fish seller by a middleman.

#### **4.5 Weaknesses and future trends**

Within the current system, there are three important weaknesses that should be taken into account. The first is that the unexpected growth rates burdens the network resulting in delays in transactions or transactions not coming through, especially in the first 10 days of the month. A second drawback is that many rural places do not have electricity, which is needed to charge a mobile phone. Recently, Safaricom introduced a phone working on solar energy; however it has a limited battery. The final weakness is network coverage; it excludes some parts of the country.

Several trends will influence the mobile payment system market in the future. The first expectation is that the advantages of using M-Pesa will increase even more, since more companies connect themselves with M-Pesa. Banks will also create opportunities to make transactions between bank accounts and M-Pesa accounts. Expected is that M-Pesa will be more integrated in financial and commercial market. The standards of M-Pesa outlets will become like banks: formal, fast and neat.

A second expectation is saturation of the agent market on short term. The concept 'survival of the fittest' will take place, competition between outlets increases and only healthy outlets remain. Loyalty, float management and brand building is therefore important to be successful in future. Additionally, transactions will be balanced out between all agents in the neighbourhood. Growth is possible by attracting new customers.

A third expectation is that the competing systems Zain and Yu will increase competition, since they offer similar services at lower costs. Increased competition leads to improvements of services all systems for retention customers.

The last expectation is that mobile payment systems are imposed to more regulations by the government and Central Bank, resulting in limitations in growth, extensions and prices of mobile payment systems.

### **5. DISCUSSION**

The discussion summarizes and discusses the main findings of this research on basis of the four different objectives as set at the beginning of the research. The different reasons that could have led to the success of M-Pesa will be highlighted in this section. Next to that, optimal positions for each player of the system are discussed, because the success of M-Pesa depends also on each of the players. After that, the limitations and recommendations will be pointed out.

**Objective 1: What is the impact of the financial industry on the success of mobile payment systems?**

The financial industry of Kenya had a major impact on the success of M-Pesa. Even though this sector changed majorly over the last decade, there are still many shortages. Formal financial institutions are not able to serve the entire population; in Nyanza, 38 branches of the five larger banks should serve a population of 5.2 million. Over 60% of the adult population is either unbanked or has only access to informal financial services. For the rural population, access to banks is difficult because banks are far away and expensive. M-Pesa gives unbanked easy access to financial services. This result corresponds with Salz's (2007) finding that mobile payment system have more chance to be successful in developing countries than in developed countries because of the high number of unbanked. This would implicate that one of the reasons why M-Pesa became successful is because of the high number of unbanked Kenyan.

Kenya has a strong dual system, meaning that migrants send remittances back to family in rural areas. Before M-Pesa, money was transferred by post, bus companies, or handed over physically. These methods are time consuming, risky and expensive. There was demand of the market for an alternative method to transfer money. Vodafone reacted on this demand for a secure system to deploy capital more efficiently. This is in line with Kessides (1993) who describes that successful implementation only works if there is a nature of demand for a specific service. This means that due to existing unsafe, expensive and unreliable money transfer systems, there was a need of the market for a safe and efficient system. Vodafone reacted on this demand successfully.

A last, political factor that should be highlighted as reason for success in the financial sector is the support and cooperation of the Central Bank of Kenya towards Vodafone and Safaricom during the process of developing and implementing the financial service M-Pesa. As there were no regulations on e-money at the time of implementation, it would have been possible for the government to limit the possibilities of M-Pesa. However, M-Pesa could be beneficial for the government as well as it would assist in improving the financial market and contribute to the vision of the government to become a globally competitive and prosperous nation in 2030. In 1980, Hardly already pointed out a positive relationship between telecommunications and economic growth. This implies that an increase in telecommunication has a positive influence on economic growth. Sridhar and Shridar (2009) reveal that only mobile phones would not be enough to benefit economic growth in developing countries. In this case, mobile phones also gave access to financial services, meaning that there is an extra economic stimulation.

***Objective 2: What is the impact of the telecommunication industry on the success of mobile payment systems?***

The telecommunication in Kenya had some significant changes in the last decade. First of all, the telecommunication sector and consequently Safaricom became public in 2002. The literature (Mansall, 2001; Pinstруп-Andersen & Babinard, 2003; Sridhar & Sridhar, 2009) describes the trend of becoming public as an inexpensive way to leapfrog in mobile phones and to increase telecom penetration. Due to leapfrogging, a fast introduction of the mobile phone in Kenya was possible as the number of landlines is low. In 2008, 42% of the population has a mobile phone connection against 7% in 2004. Entry barriers for mobile phones are much lower than for land lines, this explains the high increase in connections. In reality, the access is even higher since phone sharing is a popular habit. Liberalizing the telecommunication sector resulted in leapfrogging in mobile phone technologies with outcome that the mobile phone became an asset that many Kenyan received easily access to.

Trust in the organisation that offers mobile payment systems is important as mentioned by Jacob (2007) in his article. The high level of trust is clearly observable in the case of M-Pesa. After becoming public, Vodafone UK immediately purchased 40% of the shares of Safaricom and the management responsibility. A direct consequence is that the CEO is an American. Kenyans have trust in the CEO and accordingly Safaricom; if it was a Kenyan, it would have belonged to a tribe and other tribes would suspect the CEO to give its own tribe benefits. The post election violence aggravated distrust in other tribes. Therefore, the high trust of Kenyans in Safaricom and its CEO resulted in trust to use M-Pesa.

Without the involvement of Vodafone UK in Safaricom, M-Pesa would not have been existed in this setting as it currently exists. It was Vodafone who initiated M-Pesa as a method to reduce poverty by increasing access to financial services.

At time of implementation of M-Pesa, the competition was partial; Safaricom had approximately 80% market share. M-Pesa is only applicable to Safaricom connections; there is no integration with other networks. Because of the high market share, most people already had access to M-Pesa resulting in high network externalities. After implementation, Safaricom added several services like bill payments to increase the attractiveness of using of M-Pesa. Switching to another provider would mean the loss of the high network externalities of Safaricom. Hence, high market share and network externalities of Safaricom contributed to the success of M-Pesa.

***Objective 3: How do cultural and lifestyle characteristics affect the demand for mobile payment systems?***

Kenya has 42 different tribes. Within this research, two tribes (Luos and Kisii) are described and compared. There are clear differences between the two tribes. Luos prefer white collar jobs. Unemployment is high and the health state is underdeveloped. Remittances are an important facet in the life of Luos: partly because of the unemployment and health state. A main driver of remittances is the cultural tradition that 'forces' Luos to take care of the family.

A distinctive characteristic of the Kisii is the high entrepreneurial spirit. Kisii is a wealthy district and the level of migrants is lower than the level of Luos. The number of transactions in the Kisii district is much higher than in Kisumu, even though Kisumu has population that is 5 times the population of Kisii. The number of outlets also illustrates the high usage of M-Pesa activities in Kisii: Kisumu is saturated with 200 outlets on a population of 323.000 and Kisii with 125 outlets on a population of 60.000. In this case, the entrepreneurial attitude of Kisii positively influenced the usage of M-Pesa. From this example it can be concluded that the usage of M-Pesa is influenced by tribe culture.

A strong feature of M-Pesa is personal service; customers are attended by agents. If M-Pesa would have worked on cards and ATMs, Kenyans would have refused to use the service. This is already visible at Pesapoints. Kenyans like to have social talks with the agent while making transactions. Besides that, there is someone to talk to, in case that the service gives trouble. It can be said that the personal service corresponds with cultural values and is highly valued by Kenyans.

Kenya is known for its dual system. Sending remittances are part of the culture and lifestyle of Kenyans. As discussed before, it was complicated to make remittances in the past. M-Pesa simplified sending remittances: in 2009 52% of the households received remittances compared to 17% in 2006. The growth in remittances shows that M-Pesa improved the transferring money part of the financial sector and that there was a need for a new system.

M-Pesa is completely integrated in the lifestyle of Kenyans. Events and different locations have their own impact on the demand for M-Pesa. Market days, salary payments, school fees and festivities like Christmas are activities influencing the number of transactions positively. The average number of transactions is higher in the periods that an event takes place. Each location has its own influence on the demand for M-Pesa. In urban areas, customers are familiar with M-Pesa, resulting in a high usage frequency and demand for a fast and 'formal' service. Urban areas are mainly deposit areas. District centres follow the trends of urban areas, though there is some delay. District centres are, together with rural areas, mainly withdrawal areas. M-Pesa is still unfamiliar in rural areas; consequences are a low usage frequency and high loyalty. It can be concluded that each location has a different lifestyle



and consequently different usage pattern of M-Pesa. Besides that, certain events stimulate the usage of M-Pesa

The last issue in this section is that M-Pesa is considered to be most successful in the Nyanza province, especially during the first years. The question rises why M-Pesa is more successful in Nyanza than in other provinces. There are several possible explanations. A first explanation is that Nyanza has a high population density compared to other provinces. For agents this means that many there are many (potential) customers to serve and that it is therefore attractive to start with M-Pesa. The Nyanza population (potential customers) does not have to travel far to reach an M-Pesa outlet, since it is available at many places. The high density in Nyanza results therefore in attractiveness to use M-Pesa.

Secondly, Luos are perceived as lazy. Luos accept changes if it makes there life easier: M-Pesa makes life easier, and therefore it could be that Luos were keener to use M-Pesa from the beginning than other tribes.

A third reason could be the role of sending remittances in the Luo culture, together with the high level of migrants. Combining this with the fact that young migrants in urban areas that started to use M-Pesa to send remittances could explain why M-Pesa was picked up quickly in Nyanza as rural people were forced to use M-Pesa in order to receive remittances sent.

As fourth, the post election violence made the population suspicious and could have led to an increase in usage of M-Pesa. M-Pesa is a safe location to store money and to receive remittances.

A last reason could be the high involvement of the super dealer of the sample. From the start, this super dealer is committed to M-Pesa. They believed in the concept and opened immediately some outlets in district centres where customers could use the service. In these outlets, there was always enough money available to make transactions, leading to trust in the service.

To point out one specific reason for the success of M-Pesa is not possible. Most likely, it is a combination of the high density, open culture of Luos to accept new changes easily, importance of remittances, post election violence and a dedicated super dealer.

***Objective 4: What are the optimal positions for the different players of the mobile payment system?***

To determine the most optimal position for the different players of M-Pesa, the individual role will be discussed. Referring back to the actor-oriented approach, each actor has its own influence on how M-Pesa works. Therefore, the optimal position of each player will be described below.

**Safaricom** is the owner of M-Pesa. Throughout the country, Safaricom is recognizable by the Safaricom-green painted outlets and strong marketing slogans, and known as owner of M-Pesa. To keep its leading position in the market, Safaricom should stay attractive by adding value to M-Pesa

though introducing new services. In this way, it can stay ahead of its competitors who offer similar services for lower fees. Mobile payment systems have low entry barriers; therefore it is important to retain customers.

**Super dealers** are intermediaries between Safaricom and agents. Super dealers should either work with maximum ten outlets as a side activity or operate with many agents as a full time job. To own an outlet involves the complete responsibility which includes providing working capital, float management and bearing the risk. For super dealers, it is easier to operate with franchisees, because it involves less control and it is risk free. A disadvantage of working with franchisees over own outlets is the commission received, however, this should be traded off against risk.

To be attractive as a super dealer, trust and reliability in float proficiency are important. Offering extra services like loans to agents makes super dealers more attractive. By providing these services, super dealers indirectly stimulate the local economy.

To be successful as **agent**, it is important to be local, trustworthy and outgoing. Moreover, outlets should be located at a visible location with lots of human traffic. The best location is a withdrawal spot in an urban area, this leads to the highest commission since that is the major motivation to start M-Pesa. M-Pesa provides most of the times the main income of an outlet; therefore, agents should focus on M-Pesa.

A good float management is important for a continuation of operations. Always having money available can service as a competitive advantage, especially now the market is saturated. It could therefore be worthwhile for an agent to operate as a franchisee under a super dealer. This gives benefits like fast service in changing float, longer services hours compared to banks and a significant increase in average transaction sizes. The costs of being a franchisee are mostly lower than the benefits received. Other factors influencing the continuation of operations are a high working capital and a second employee in the outlet.

**Customers** have integrated M-Pesa in their lifestyles and can not live without it anymore, as it is a fast, efficient, cheap and reliable service to make transactions. M-Pesa is used for business and personal purposes. The most optimal position for customers is to be unlimited at outlets while making transactions. Familiarity with M-Pesa decreases loyalty to certain agents and increases demand for outlets with high service standards. In rural areas, customers like to receive assistance as familiarity with the system is low.

Competition of other mobile payment systems is beneficial for customers since it improves services and decreases the transaction fees.

## **6. MAIN CONCLUSION**

The mobile payment system M-Pesa is a success story of Kenya, especially because other countries did not reach the same levels of success with similar systems. This research attempts to explore which factors caused the success of M-Pesa. Through a case study in Western Kenya, data was gathered for analyzing the factors that impacted the success. Highlighting Kenya's financial and telecommunication industry results that the environment was ready for a new, innovative money transfer system working on mobile phones. Impact of culture and lifestyle differs per region. Is it therefore not the culture and lifestyle of Kenyans that turned M-Pesa from an ordinary application into a success story?

### **6.1 Limitations**

The research and results have some limitations which should be taken into account while interpreting the results and conclusions. The first limitation is that the results concerning the different players of the market are subjective. While conducting research and interpreting the results, I tried to be as objective as possible. Different methods of research, together with counterchecking unclear answers increased the reliability of the results. In addition to that, questions with biased answers are deleted. A second limitation concerns the sample; it only includes one region and one super dealer, including agents operating under this super dealer. Generalization is therefore difficult, especially if it concerns tribe specific or regional topics. Besides that, results can be one sided since there are no agents included that work for other super dealers. A third limitation is the availability of statistical data. Statistics were difficult to find, and if available, it was either outdated or contradicting other statistical sources. The final limitation is the difference in culture between the researcher and sample and hence differences in interpretation and values. The interpretation of time, distance and income caused some problems, because of differences in importance and perceivment. Not all data is used because of unreliability. In the cases that data on income, time or distance is used, is was done with caution to reliability.

### **6.2 Recommendations for further research**

This research could be a start for further research in the field of mobile payment systems. This paper had the focus on the impact of the direct environment, namely the financial and telecommunication sector and culture. Besides that, the optimal position of the players is identified. Culture and lifestyle are expected to be the main drivers for success. More research is needed to confirm this relationship. A first gap for further research is therefore the influence of tribe-specific behaviour on the usage of M-Pesa in Kenya. Further investigation should give insights on extent of which behaviour impacts the usage of M-Pesa, which behaviour can be generalized, and which behaviour is tribe specific. A second gap is a comparison of the same subjects with other countries like Brazil, Tanzania

or South Africa to explore global patterns for success. In this way, it becomes clear which factors have the largest contribution to make a mobile payment into a success or not. Besides that, the role of culture and lifestyle is examined once more.

A last investigation opportunity concerns the impact of M-Pesa on long term. M-Pesa is the first successful mobile payment system on national level. Therefore it is interesting to investigate the effect of M-Pesa on longer term on the development of Kenya. In this research, the focus should be on the social capital of Kenya and the increase in development.

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