THE EFFECTS OF REGULATORY FRAMEWORK ON COMBATING FRAUD OF MOBILE MONEY IN KENYA

BY

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D61/61070/2011

A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT OF THE AWARD OF THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION SCHOOL OF BUSINESS UNIVERSITY OF NAIROBI

OCTOBER, 2014

DECLARATION

This research project is my original work and has not been presented in part of in whole in any other university for an award of a degree.

Signed……………………………………………………………Date……………………

Mwanyale Prisca Pato D61/61070/2011

This research project has been submitted for examination with my approval as University Supervisor.

Signed…………………………………………………………….Date………………………

Dr. Lisiolo Lishenga

DEDICATION

I dedicate this research paper to my loving parents, Mr. Anthony Mwanyale and Mrs. Beatrice Mwanyale for their unending love, sacrifice and efforts for making me what iam today.

To my sister Claris Mwanyale for her encouragement, patience and continued prayers during the study period.

To all who supported me into the completion of this project writing, thank you and God bless you abundantly.

ACKNOWLEDGEMENT

Am indebted to a number of people without whom this research project would not have been accomplished.

I would like to extend my gratitude to my supervisor Dr. Lisiolo Lishenga who took time to read, comment and offer useful guidance that ensured I completed this project on time.

I appreciate my friends and colleagues for their cooperation and assistance during the course of my studies.

Finally to the almighty God for his amazing Grace and blessings in my life.

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LIST OF ABBREVIATIONS

GSMA-Groupe Specialle Mobile Association

GSM-Global System Network

MNO-Mobile Network Operator

NFC-Near Field Communication

SMS-Short Message Service

USSD-Unstructured Supplementary Service Data

UMTS-Universal Mobile Telecommunication System

ABSTRACT

Managing risk in mobile money is a challenging task, especially when it comes to the risk of fraud among mobile money companies. While the structure of managing fraud may differ, there is a common framework that is widely agreed to be the foundation to any fraud strategy in mobile money. Therefore, this study sought to examine the effects of regulatory framework on combating fraud of mobile money in Kenya with special focus on mobile money companies in Nairobi. The findings from this study are expected to help policy maker develop frameworks that will combat fraud in the mobile money sector. The study utilized public interest economic regulatory theory and private interest theory in examining the selected study area. Descriptive research design was adopted and this combines both quantitative and qualitative research while questionnaire was the key study instrument. The study further used the Pearson product-moment correlation as the analytical model. With 16 respondents forming the study participants, results indicate the oldest mobile Money Company was started 5 years ago. Results shows that non-compliance remains a challenge as respondents indicated there were no penalties for any non-complying individuals.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The past decade has witnessed a boom in mobile money services globally, with the number of live mobile money services growing from just two deployments in 2003 to 216 live deployment and 113 planned deployments worldwide. (GSMA annual report). The use of mobile money has become widesoread with astonishing speed all over the world and particulary among the unbanked population. For millions of the underserved populations the mobile phone presents more than a tool for communication but has also become a payment terminal in the pocket.There is no disputing the fact that mobile money services have become the frontier for battle for financial services and telecom companies. While the mobile money industry in Kenya has been a preserve of a few companies mainly Mobile Network Operators, an explosion is in the making as more firms including commercial banks battling for a slice of this lucrative industy.The competition is taking a different structure with some new independent entrants coming in with the Virtual Network Operator License.

While it is undisputed fact that mobile money is the frontier for financial transactions, concerns have been raised about the potential integrity issues that are stemming out from the use of mobile money especially those related to fraud. To achieve the full benefits of this promising industry policy makers and regulators need to put in place measures and effective regulatory frameworks that are not only enabling but contribute to the financial integrity of this industry.

The purpose of this research proposal is therefore to contribute to the ongoing debate on mobile money and especially to determine the effects of the current regulatory framework in combating mobile money related frauds in Kenya being the global leader in this frontier.

1.1.1 The Mobile money Ecosystem

Mobile money payment system can be defined as a platform where consumers can be able to perform a range of transactions such has transferring money from one person to the next, pay bills, receive payments using a mobile phone. (Munyange, 2012). The mobile money service has indeed been a frontier for financial transactions and it is believed to be the channel for financial inclusion if its popularity among unbanked populations is anything to go by. In Kenya, active bank accounts increased from 2.5 million in 2007 to more than 12 million today. Transactions through mobile money service M-PESA exceed US$ 375 million each month (Deloitte, 2011).

The rapid growth in the use of mobile phones and the lack of access to formal bank services in most African countries are contributing factors to the rapid growth and the use of mobile money services in most parts of the continent. More than one billion customers in developing markets have access to a mobile phone but do not have a formal bank account (GSMA,2012).Mobile money is sometimes the only viable financial alternative for a large segment of the population (Crowe, 2010).

In Kenya, mobile provider Vodafone developed the M-PESA mobile payment system in partnership with the local network provider Safaricom. M-PESA allows customers to borrow money, check accounts and transfer money using their mobile phone. Kenya is seen as the global pioneer on the mobile payment arena. A lot of research work has been done on the subject especially to determine the impact of mobile money on financial inclusion.

The Mobile money industry due to its nature attracts a vast number of players from the Mobile phone operators, financial institutions, regulators, agents and final consumers. Each of these player has a vast role to play in the mobile money ecosystem. The Mobile Network Operators provide the key infrastructure of the communication service, they are involved in agent recruitment and management, and they are involved in issuance of the electronic money and manage customer relations. The Financial institutions on the other hand offer banking services via mobile, hold trust account balance, some offer agency services on their branch network. Lead agents are involved in the recruitment and management of sun agents, and assist in agent network management. Subagent on their part avail their business premises to offer cash in and cash out services to the consumers.

The industry regulators role is to provide enabling environment for mobile money protect stability of financial system by combating frauds and Anti Money laundering crimes, demonstrate leadership to encourage and protect behavior change among stakeholder.(Jenkins,2008).To achieve the tremendous benefits of this sector there must be proper coordination mechanisms among the key players. The approach to adopting mobile financial services differs throughout the world due to a variety of factors, including the regulatory and legal environments.

1.1.2 Mobile Money Fraud

Despite the potential of the mobile money industry, mobile money is seen by critics as an ongoing threat to the financial integrity of a country due to its ease of exploitation by money launders, criminals and fraudsters. Fraud in the context of mobile money can be said to be the intentional and deliberate actions undertaken by players in the mobile financial services ecosystem, aimed at deriving financial gains, denying other players revenue or damaging the reputation of other stakeholders. (Mudiri, 2012)

The approaches to fraud executed by the con-men demonstrate their thorough understanding of the mobile money system and the lacuna in the processes in place. While the regulators and MNOs were busy fixing the leaks in the systems and processes, the fraudsters also learnt and evolved their *modus operandi* to find new ways to cheat mobile money agents and customers. Their fraud mechanisms have become more sophisticated over the years.

1.1.3 Mobile Money Regulatory Framework

At its most basic level, regulation is treated as synonymous with law. Regulations are rules or norms adopted by government and backed up by some threat of consequences, usually negative ones in the form of penalties. A regulatory framework on the other hand refers a system of regulations and the means used to enforce them. They are usually established by industry regulators to regulate the specific activities.

In the context of mobile money regulations the role of the industry regulators is therefore to provide enabling environment for mobile money, protect stability of financial system by combating frauds and Anti Money laundering crimes, demonstrate leadership to encourage and protect behavior change among stakeholder (Jenkins, 2008). In Kenya the mobile money industry is supervised by Communication Authority of Kenya for the transmission of content through mobile phones and by Central Bank Of Kenya for the remittance of money, this is mainly because the mobile money industry has features of both banking and telecommunication industry.

1.1.4 Effects of Fraud on financial system integrity of a country

Fraud is not unique to mobile financial services, it occurs in all financial services. Nevertheless, since mobile financial services are one of the high potential methods to increase financial inclusion and extend financial services to the mass market, fraud in this domain has wider implications. According to Mudiri (2011) the credibility of the service will be severely reduced if fraud is rampant and persistent. When employees steal cash from the system, or agents have to pay to access opportunities, the regulator may be forced to intervene in the interests of consumer protection. Individual subscribers will be discouraged from using the services for fear of losing funds through fraudulent activities.

Subscribers want to transact with a financial services platform that is secure, and that they can trust to deliver services promptly and efficiently. In many countries, the fear of fraud and loss of money means that mobile money adoption takes time. In the same way, the adoption of debit and credit cards in developing markets has been negatively affected by fear of fraud. Agents provide critical float and cash to the mobile financial system. This is the key that drives liquidity and therefore the provision of mobile financial services. A high level of fraud in the system will discourage agents from investing in float and cash for fear of loss. Secondly, the agents would be unwilling to commit funds if fraudsters steal funds from their accounts and they are unable to reconcile any commissions earned against what the system shows.

Another negative impact that fraud has is on innovation. Innovation includes opening up the platform to other systems and networks to increase the range of services. Providers will be less willing to take risks and innovate around mobile payments because the entire ecosystem is apprehensive about the frauds that may come with innovation. In order to promote innovation, organizations may be forced to try and limit fraud within the current systems and only subsequently look towards introducing additional services.

Fraud and fraud management is a cost that increases overall transaction costs. With high rates of fraud, the transaction charges may have to be raised in order to generate adequate revenue for all stakeholders to sustain the business. If an organization loses money through theft, or fraudulent activities by third parties, it will be forced to increase charges to sustain the business, making services unaffordable to the broader public. If an agent loses money through fraud, the business may be forced to shut down services.

1.1.5 Regulatory framework and fraud. Insights from the Global Financial Crisis

Effective regulatory framework and oversight is paramount in ensuring the integrity of a financial system. Ineffective regulatory framework and policies have the ability of halting an entire financial system as in the case of the global financial crisis. Managers of the 'too big to fail' financial institutions were driven by hubris and greed and they led the charge off the cliff. But where were the regulators? Why did they not see it coming? Why did they not prevent it? Why did they trust bankers to know what was best for banking? The theology of the time maintained that markets were efficient and would provide the necessary discipline to participants, the financial sector could be left largely to police itself, global banking and their host centers were engaged in fierce global competition, regulation should facilitate that competition and not get in its way, and therefore, when it came to regulation, less was more. This set of beliefs permeated the body politic, shaped the regulatory approach of "light touch" and, believe it or not, established a mindset amongst some supervisors that the regulated banks were to be seen as "clients."

1.2 Research Problem

Mobile money services are almost always provided through collaboration between a mobile network operator (MNO) and financial institutions. These two belong to different institutions and their traditional roles and services roles differ .In Kenya the Mobile money industry is regulated by two regulators namely Central Bank of Kenya and Communication Authority of Kenya due to the inherent characteristics of this industry being common to both banking and telecommunication industry.

This overlap substantially raises the risk of coordination failure, where regulatory approaches are inconsistent or contradictory. This is creating considerable uncertainty about the appropriate regulatory response that must be established and also what supervisory regime applies to the various activities involving banks and non-banks. There is a need to address issues relating to telecommunications and financial regulation to ensure that mobile money services bring the desired broad benefits, especially to the underserved population. Mobile money transactions have presented regulatory challenges that could potentially hinder maximum development benefits. This is because firstly, mobile money blurs the traditionally distinct and independent sectors of regulation. There is an extensive overlap between telecommunication and Banking industry thus adding to the complexity of oversight needed.

The mobile money industry has indeed sparked debate among scholars and researchers. Internationally there has been ongoing debates by research organization, governments and Non-governmental organizations discussing the role of mobile money service on financial deepening, GSMA (2011) and which are the best models to implore on the subject. In Kenya Kigen, (2011) in his study examined the impact of the mobile banking to Micro finance companies in Kenya. Munyange, 2012 on her study examined the influence of mobile of the provision of mobile money transfer service to the socio-economic status of the service providers.

In spite all these profound studies on mobile money, review of empirical studies revealed that no research has been done to determine the effects of regulatory framework on combating fraud of mobile money in Kenya. This is the Gap this study intends to fill. This study seeks to answer the following question

1. What are the effects of regulatory framework on combating fraud of mobile money in Kenya?

1.3 Research Objectives

To establish the effects of regulatory framework in combating fraud of mobile money in Kenya.

1.4 Value of the Study

It is without doubt that there is limited legislative and regulatory experience in other countries and regions to draw lessons from when drafting relevant legislation and regulations on mobile money oversight. There is also limited academic research available on mobile money regulations. Apart from Kenya success story on mobile money other developing regions, national regulations have not kept pace with developments in the field. This study will be valuable to a number of stakeholders as listed below.

1. To Mobile money regulators and stakeholders while drafting reforms to the regulatory framework in order to safeguard the integrity of the entire financial system.
2. The study will help stakeholders understand the kind of interventions that are necessary to address mobile money related frauds.
3. The academic community and scholars will benefit from this study as a source of literature on the study, facilitate further research and to provide comparison with other school of thoughts on the subject under study

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter has reviewed literature that is relevant to the study with a purpose of exploring research work and other secondary data useful to the study. This chapter examines what other researchers and sclolars have said about the regulatory gaps of mobile money.The aim is to provide an understanding of the current literature on mobile money payments systems in order to answer the proposed research quetsions.

2.2 Theoretical Foundation of the Study

In the evaluating the effects of regulatory frameworks on combating mobile money fraud in Kenya this study reviews the economic theories of regulations. There are two broad theories with respect to the economic theories of regulation. The first theory is the public interest theory and assumes that regulators have sufficient information and enforcement powers to effectively promote the public interest. This theory assumes that regulators are benevolent and aim to pursue the public interest.

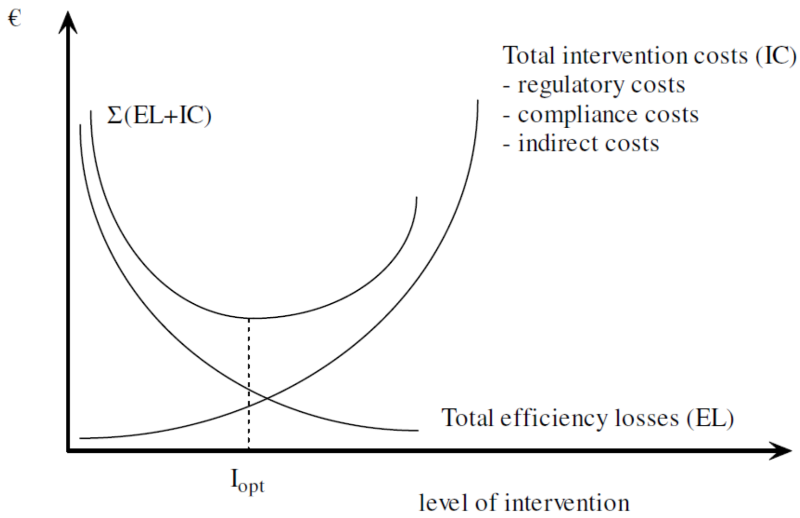
The other theory in the economic studies of regulation proceeds from different assumptions. Regulators do not have sufficient information with respect to cost, demand, quality and other dimensions of firm behavior. They can therefore only imperfectly, if at all, promote the public interest when controlling firms or societal activities. Within this tradition, these information, monitoring and enforcement cost also apply to other economic agents and more importantly, it is generally assumed that all economic agents pursue their own interest, which may or may not include elements of the public interest. Under these assumptions there is no reason to conclude that regulation will promote the public interest. This later theories is known as the private interest theories. These theories are fundamental to this study as they will lay the basis on evaluating the subject of the study

2.2.1 Public Interest Economic Regulatory Theory

The public interest regulation theory proceeds from the assumptions of full information, perfect enforcement and benevolent regulators. According to this theory, there is complete market failure and hence regulatory authorities are required to develop a constant and close interaction with the market participants they regulate in order to stay abreast of rapidly changing financial markets, to monitor the build-up of risks, and to understand the impact of their regulatory policies for the safe guarding of the public interest. In the earlier development of the public interest theories of regulation, it was assumed that a market failure was a sufficient condition to explain government regulation (Baumol, 1952). But soon the theory was criticized for its *Nirwana approach*, implying that it assumed that theoretically efficient institutions could be seen to efficiently replace or correct inefficient real world institutions (Demsetz, 1968). This criticism led to the development of a more serious public interest theory of regulation by what has been variously referred to as the “New Haven” or “Progressive School” of Law and Economics (Ogus in Jordan and Levi-Faur, 2004,Rose-Ackerman, 1988, 1992; Noll, 1983, 1989a). In the original theory, the transaction costs and information costs of regulation were assumed to be zero. By taking account of these costs, more comprehensive public interest theories developed. It could be argued that government regulation is *comparatively* the more efficient institution to deal with a number of market failures (Whynes and Bowles, 1981).

Regulators would not be plagued by failures in the information market and they could more easily bundle information to determine the point where the marginal cost of intervention equalizes the marginal social benefits (Leland, 1979; Asch, 1988). These more serious versions of the public interest theories do not assume that regulation is perfect. They do assume the presence of a market failure that regulation is comparatively the more efficient institution and that for example deregulation takes place when more efficient institutions develop.

Figure 1 Optimal Level of welfare loss



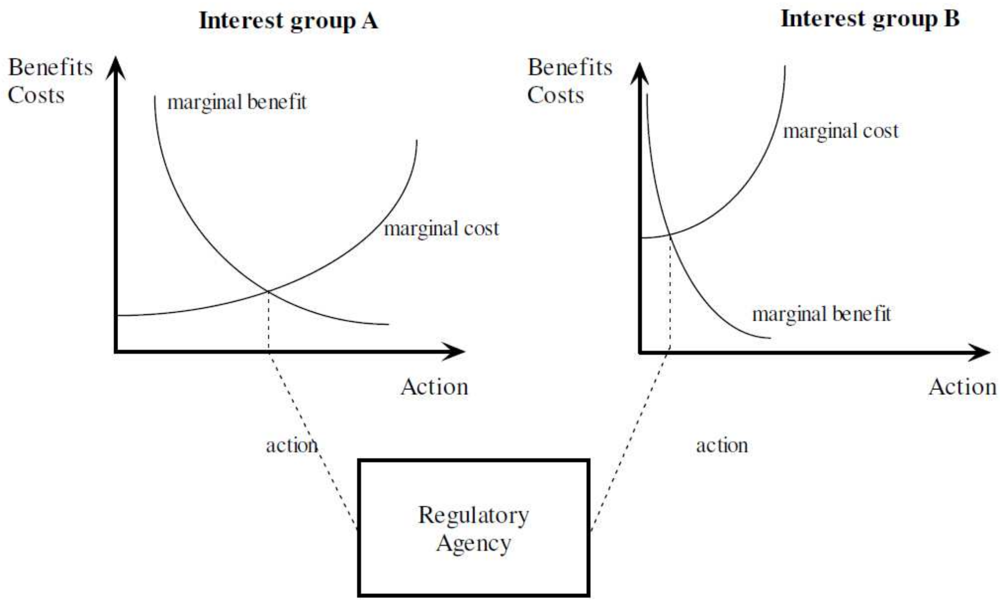
Source: Jonan den hertog, review of economic theories of regulation

In the figure above the stronger the level of intervention the lower the welfare loss. The public interest theories have been critised from different angles. First the core of public interest theory that of market failure has been an object of critism. The hypothesis that government regulation is effective or efficient has also been invalidated by empirical research.

2.2.2 Private Interest Theory

This theory assumes that in the course of time, regulation will come to serve the interests of the industry involved. Legislators subject an industry to regulation by an agency if abuse of a dominant position is detected. In the course of time, other political priorities arrive on the agenda and the monitoring of the regulatory agency by legislators is relaxed. The agency will tend to avoid conflicts with the regulated company because it is dependent on this company for its information. It often also does not have unlimited resources hence this theory suggest minimal regulation which makes it aware of the costly effects of litigation of its decisions. Furthermore, there are career opportunities for the regulators in the regulated companies. This leads in time to the regulatory agency coming to represent the interests of the branch involved.

Figure 2 Optimal Level of welfare loss under private interest theories



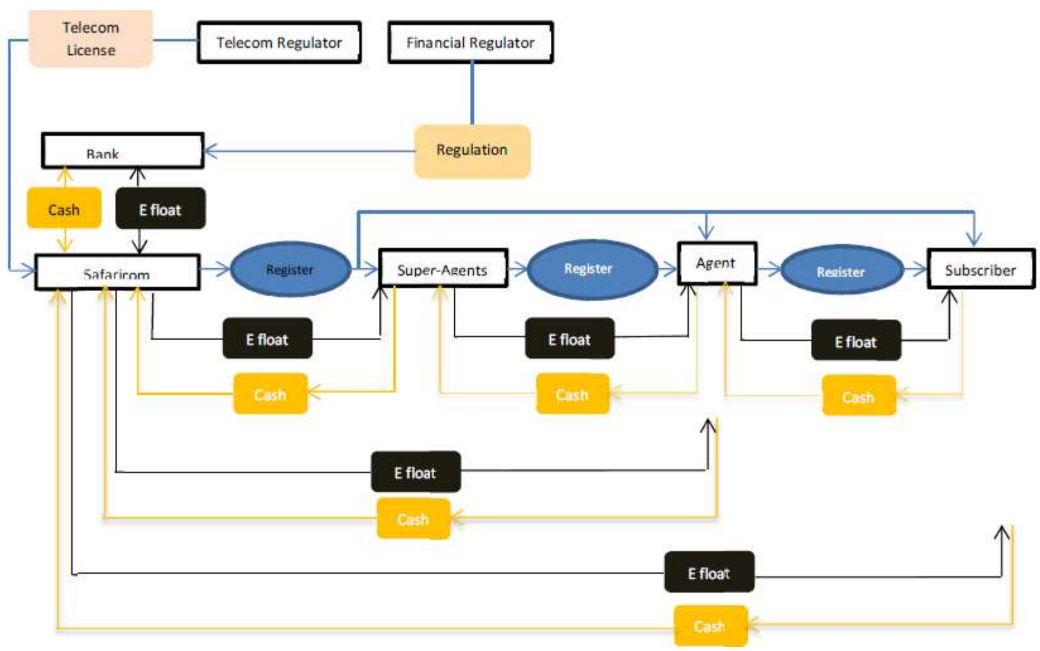
Source: Jonan den hertog, review of economic theories of regulation

The figure illustrates how the amount of interest group action depends on the distribution of costs and benefits for the interest groups. Interest group A both has lower costs of organization and mobilization of its members, for example because it is a comparatively small group, and higher benefits. Interest group B has comparatively lower benefits, for example because they have to be shared among more members. Stigler argued that concentrated producer groups are able to systematically exercise a disproportionate influence over the conduct of their regulators to the point of shaping regulation to suit their interests rather than their mandate to maximize social welfare. In Stigler's and Peltzman's view, competitive industries have much to gain from regulation and are in a better position than consumers to bring favorable regulation about. In practice, such regulation of competitive sectors is rarely seen

2.2.3 Existing mobile money regulatory frameworks across Africa

In Kenya the mobile money industry is MNO led, and is closely regulated Communication Authority of Kenya as well as Central Bank of Kenya. The Kenyan Communications Authority only regulates content services, it doesn't regualate either electronic or mobile commerce (Omwansa, 2009). The operation of the Mobile money has some similarities to a banking system, although MNO has been quick to rebut that fact (Jack & Suri, 2010). However the Central Bank of Kenya and the Kenyan Ministry of finance in 2007 and 2008 respectively did agree that MPESA was not a banking business (Alliance for Financial Inclusion, 2010). This is largely because the money amassed from the operation was stored in a physical bank account at the Commercial bank of Kenya and not by Safaricom (Omwansa, 2009). Hence Mobile money isn't public regulated.

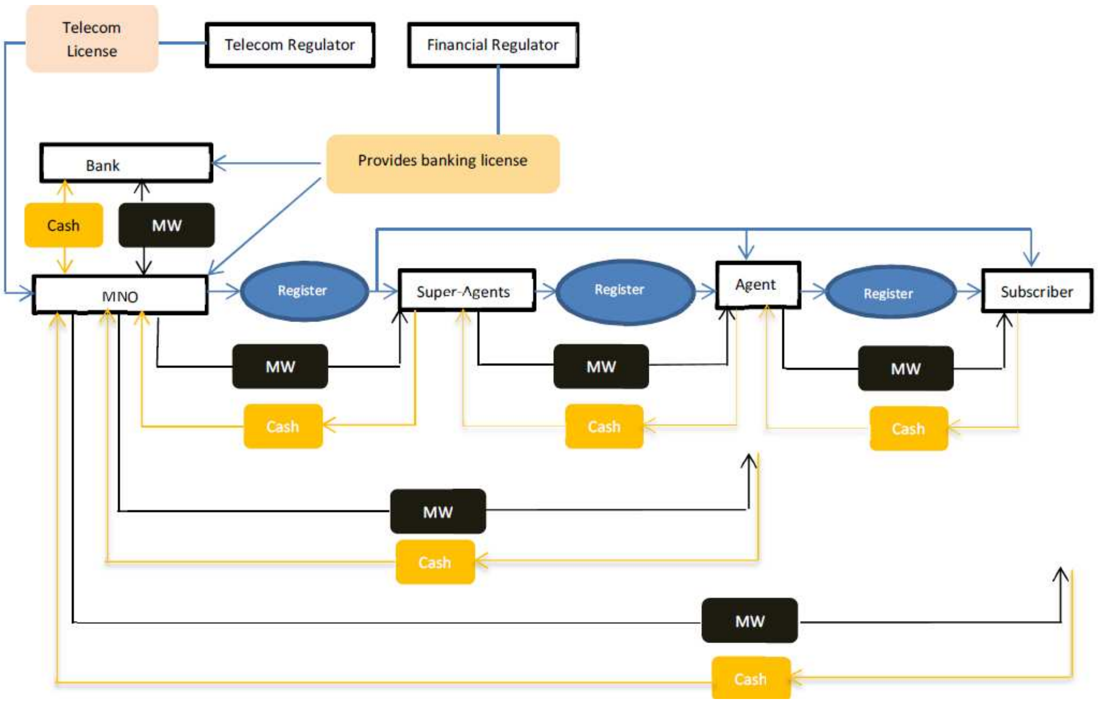
Figure 3 Regulatory frameworks and implementation



Source: www.researchgate.net

The stakeholders involved in the Ghanaian Money market ecosystem are similar to that in Kenya. The operational structure of mobile money in Ghana is also similar to that of Kenya, however the structure of the coalition varies slightly as seen in figure 4 below. The telecom companies are licensed as agents of financial institution. They can also be licensed as financial service providers to offer what the Bank of Ghana calls 'Branchless Banking'. The network operators don't wholly own the product; rather they provide a technology platform for the receipt and transfer of cash. Since the network operators are partners to the financial institution, they are able to brand the mobile money product. In Ghana, MTN operates the mobile wallet for the partner banks. To enable the diffusion of mobile money, MTN, Tigo and Airtel in Ghana have adopted the agency network similar to that of Kenya

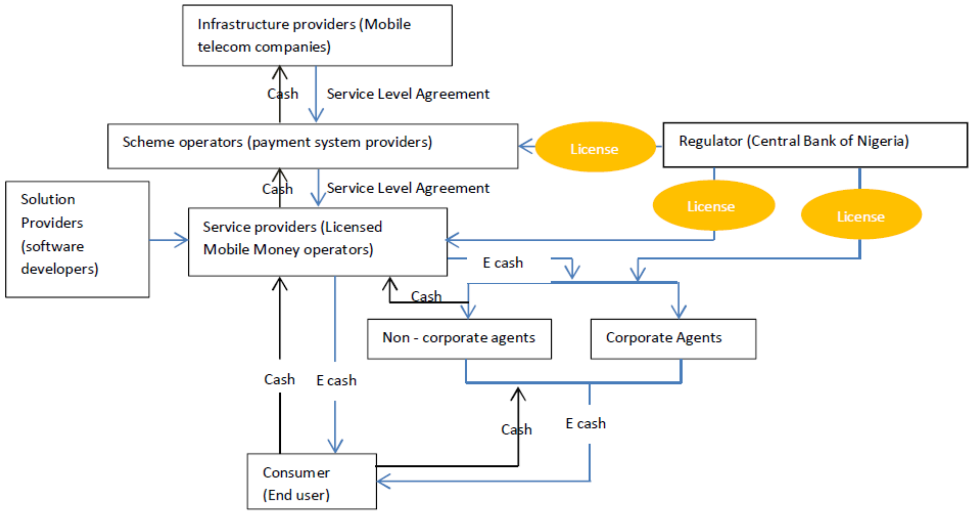
Figure 4 Regulatory frameworks and implementation



Source: www.researchgate.net

The mobile money framework in Nigeria differs from that of Ghana and Kenya. Data gathered from the Central Bank of Nigeria Mobile money regulatory framework identifies the following stakeholders indicated in figure 5. Mobile money services in Nigeria are provided by licensed Mobile money service providers. Telecom network operators are not permitted to operate mobile money (Amrik &Mas, 2009). Banking license regulation doesn't permit such. The license is for the banks and the non-banks, excluding telecom network operators

Figure 5 Regulatory frameworks and implementation



Source: www.researchgate.net

2.2.4 Determinants of Mobile Fraud

The key enablers of mobile money fraud include maturity of the mobile money services, weak or nonstandard processes, cultural issues, lack of compliance monitoring (Mudiri, 2012) and any new value added services not thought through properly, for example, the postpaid scheme in which the transaction is applied to the user's phone bill to be paid later (Merritt, 2010).

Every payment system has some vulnerability that could facilitate fraud. One of the major determinants of fraud is Rapidity. Over a distance the electronic character of mobile technology can make transactions much more rapid and effortless than cash. Rapidity is therefore a bigger risk factor for mobile money services than for cash. In the case where there are no automated internal controls, this can provide efficient means for criminals to commit fraud.

Another key determinant of mobile money is anomity in the sence that multiple accounts can be created by fraudsters to rapidly transfer fraud money.Criminals can smurf proceeds of criminal activity into multiple accounts.

Mobile money technology is fast evolving the rapidity of its evolution, creates technological lapses that make it a fertile ground for fraudsters. Technological advancement in mobile technology, security is still an important issue with mobile payment. For example, near field communication (NFC) has been identified to have the vulnerability of a man-in- the middle attack; in which an attacker could intercept exposed information during the communication with the reader, which is usually within 10cm radius (Lee 2013). Basic phones with mobile money capability could be described as GSM (Global System for Mobile) compatible phones with embedded services such as SMS and USSD (World Bank, 2012). There is however, no end to end security for SMS, protection ends in the GSM or UMTS (Universal Mobile Telecommunications System) network. Furthermore, unstructured supplementary service data (USSD), has no separate security properties; instead it relies on the GSM/UMTS signaling plane security mechanism (just like SMS). It is further argued that the security mechanisms of authentication, message integrity, replay detection and sequence integrity, proof of receipt and proof of execution, message confidentiality and indication of security mechanisms exists; however, it depends on the applications whether these security mechanisms are implemented and whether their cryptographic strength is sufficient (Schwiderski-Grosche & Knospe, 2002)

2.2.5 Review of Empirical Studies

There has been numerous studies to the literature of mobile money but emprical studies focusing exclusively on the evaluation of mobile money industry regulatory framework in combating fraud in kenya has been scanty.

Globally the debate on mobile money is on going , with a lot of organisations such as GSMA, world bank, Action Aid having conducted several research on mobile money. Review of empirical evidence has shown that a lot of emphasis have been placed in determing the impacts of the mobile money service on financial inclusion.

Claire alexendre and lyn chang (2013) on their study on mobile money as an engine of financial inclusion and lynch pin of financial integrity argued that indeed mobile money is the ultimate channel for financial inclusion as seen by the rapid increase of mobile money usage in underserved populations.They also aurgued that despite the broad benefits of the service effective oversights needs to be enforced by the regulators to maintain financial integrity.

In Kenya karu (2011) in her study to analyse responses by commercial banks in kenya to mobilise money transfer analysed the uptake of uptake of most commercial bank in embracing the mobile money service. The study established that indeed many commercial banks were in the beginning risk averse in embracing the concept by as the customer demand became more they eventually embraced the concept and even some have developed their own mobile money systems.

Mutuku (2010) seeked to establish the effects of Mpesa technology on the performance of Kenya Commercial bank limited. She established that there was a positive correlation between the use of the mobile money servive and the banks performance. Emprical studies focusing exclusively on the evaluation of mobile money industry regulatory framework in combating fraud in kenya has been scanty and this the Gap this study intends to fill.

2.2.6 Summary of literature Review

Various theoretical frameworks have attempted to explain the concept of regulation.The public interest theories and the private interest theories which are sometimes known as the theory of capture. A lot of studies have also been conducted to both locally and internationally on the topic of mobile. A review of literature shows that no studies have been conducted to determine the effects of regulatory framework on combating fraud of mobile money in Kenya. Previous empirical studies on mobile money have concentrated on its impact on financial inclusion; no studies have been conducted to determine the effects of the regulatory framework on combating mobile money fraud in Kenya. The purpose of this study is therefore to fill this gap.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter discussed the research design, the population, the sampling techniques that is used in the study, the data collection instruments, and the data collection methods and procedures. Data analysis and presentation methods are also discussed.

3.2 Research Design

The study employed descriptive research designed aimed at evaluating the Impact of the mobile money regulation framework in combating fraud in Kenya. Descriptive design was preferred because it involves it is an efficient method for systematically collecting data from a broad spectrum of individuals. Surveys are efficient in that many variables can be measured without substantially increasing the time or cost. Survey data can be at relatively low cost and, relatively quickly. Surveys allows one to collect quantitative data which will be analyzed using descriptive and inferential statistics (Saunders et al 2007) Therefore descriptive research was deemed as the approach for this study. Descriptive research was also preferred as it enabled the researcher to generalize the findings to a larger population.

3.3 Population of study

According to Ngechu (2004) a population is a well defined set of people, services, elements, and events, group of things or households that are being investigated. The population under study was of similar characteristics and consists of 6 Mobile money companies in Kenya

3.4 Sample Design

For the purpose of this study all the 6 mobile companies constituted survey participants.

3.5 Data Collection

Two types of data were used. Primary data was collected through questionnaires while secondary data was obtained from Central bank of Kenya website, Communication

Authority of Kenya website as well as Safaricom Website. Questionnaire was used because the feedback needed from respondents will be confidential. Questionnaires were easy to administer and are free from bias of the researcher. Various types of closed structured questions were used for they complement each other and provide a more complete picture of the respondent feeling and attitude and are easy to analyse. The questionnaire were admistered on four department heads of the sample company namely, Risk and Compliance department, Finance department, Customer experience and legal departments. The aim was to obtain responses from the perspective of different functional heads of each sample company in relation to study.

3.6 Data Analysis

Statistical package for social science version 20.0 was used to analyze the data. Data were analyzed using both descriptive and inferential statistics. The Pearson product-moment correlation was employed in order to establish whether a set of independent variable (Regulatory framework on one hand) explain a proportion of the variance in the dependent variable (mobile fraud variables on the other hand) and also establish the predictive importance of the independent variables (by comparing beta weights). The Pearson product-moment correlation does not take into consideration whether a variable has been classified as a dependent or independent variable. It treats all variables equally.

3.7 Analytical Model

Pearson correlation analysis was used in this study. Pearson correlation directs and magnitude of relationship (Diamantopous and Schlegelmilch, 1997). Pearson coefficient represents the relationship between two variables that are measured on the same interval or ratio scale.

$$r = \frac{n\sum xy - \left(\sum x\right)\left(\sum y\right)}{\sqrt{n\left(\sum x^2\right) - \left(\sum x\right)^2}\sqrt{n\left(\sum y^2\right) - \left(\sum y\right)^2}}$$

The value of r is such that $-1 \leq r \leq +1$. The + and – signs are used for positive linear correlations and negative linear correlations, respectively.

Correlation coefficient, r, can take a range of values from +1 to -1. A value of 0 indicates that there is no association between the two variables. A value greater than 0 indicates a positive association; that is, as the value of one variable increases, so does the value of the other variable.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION

4.1 Introduction

The study sought to carry out an investigation into effects of regulatory framework in combating fraud of mobile money in Kenya with special emphasis on companies' head offices in Nairobi. The data was collected through structured questionnaire with both closed and open ended questions from the surveyed respondents. Data editing and reconciliation were undertaken before data analysis was done. This was essential to avoid incoherent which could lead to reaching or making wrong conclusions and drawing wrong inferences. This analysis adopted a quantitative and qualitative method. Data was entered using excel sheets to get the required data for presentation and finally analyzed using SPSS version 20.0. Further the Pearson Product Moment Correlation coefficient (r) were used to see if a relationship existed between the roles and mandate of regulator, image and reputation and information and communication and fraud of mobile money. The significance level was set at .05 ($p < .05$).

4.2 Data Analysis and Presentation

Data from this study came from four Kenyan mobile companies – Safaricom, Airtel money MobiKash and finally Orange Money. Results from the study indicate that Mpesa (Safaricom) was the first Mobile financial 1997, Orange Money in 1999, Airtel Money in 2000 and lately MobiKash in 2009. Depending on the date of incorporation, these companies according to some respondents employs as low as 35 employees and as high as 6,500. Although a vast majority, about 80% agrees that they report suspicious activities, surprisingly, 12.5% of the respondents were not aware of any suspicious activity. According to Sultana & Point (2009) managing risk in mobile money is a challenging task, especially when it comes to the risk of fraud. Fraud not only results in financial loss to customers or a mobile money provider, but it also damages the reputation of the service to the customer and risks the reputation of the industry as a whole.

And perhaps surprisingly, majority of the respondents indicated there were not penalties that the companies have for non-compliance. Indeed only a quarter agrees there were penalty to enforce on those who violate the existing laws. In addition the findings suggest 18.8% were not aware of any penalties. The findings reveal the regulator conducts annual system audit exercise. All the respondents interviewed were in agreement that all the mobile companies have anti-money laundering policy in place.

To measure the strength of a linear association between two variables and is denoted by r, Pearson correlation coefficient was run. As shown in table 1 below, the Pearson correlation coefficient, r, can take a range of values from +1 to -1. A value of 0 indicates that there is no association between the two variables. A value greater than 0 indicates a positive association; that is, as the value of one variable increases, so does the value of the other variable. There were strong positive correlations between regulatory framework and combating fraud in mobile money. The correlation matrix also revealed that protection of customer funds are highly positively correlated with regulator's position and extraversion is highly negatively correlated with depression, with these variables contributing about 75%.

Table 1 Roles and mandate of the regulator

		B1_EnfoCompliance	B2_ProtConsumFunds	B3_SecReview	B4_VetProcess
B1_EnfoCompliance	Pearson Correlation	1	.549*	.515*	.449
	Sig. (2-tailed)		.028	.041	.081
	N	16	16	16	16
B2_ProtConsumFunds	Pearson Correlation	.549*	1	.750**	.200
	Sig. (2-tailed)	.028		.001	.458
	N	16	16	16	16
B3_SecReview	Pearson Correlation	.515*	.750**	1	.188
	Sig. (2-tailed)	.041	.001		.486
	N	16	16	16	16
B4_VetProcess	Pearson Correlation	.449	.200	.188	1
	Sig. (2-tailed)	.081	.458	.486	
	N	16	16	16	16

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

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

Asked to state their average annual turnover, the study found that their annual turnover ranges from 1.5 and 4.5 billion. The results show that a vast majority of the respondents think that the regulator performs well in enforcing compliance with regard to license terms (see table 4.2). 43.8% of the respondents rates regulators performance on the protection of consumer finds very good,31% excellent and 12.5% good. However 12.5% thinks the regulator fairly does well in the protection of consumer funds. A significant population of the respondents believes that the companies review the sectors on a continuous basis. While only 18.87 thinks it performs fairly Moreover, the findings indicate that the regular does well in vetting and its process is often transparency.

Table 2 Combating fraud

		C1_CustDefraudCus	C2_CustDefraudAg	C3_FakeCurrency	C4_AgentAssistants	C5_PyramidScheme
C1_CustDefraudCus	Pearson Correlation	1	.916**	.591*	.872**	.274
	Sig. (2-tailed)		.000	.016	.000	.304
	N	16	16	16	16	16
C2_CustDefraudAg	Pearson Correlation	.916**	1	.591*	.909**	.336
	Sig. (2-tailed)	.000		.016	.000	.203
	N	16	16	16	16	16
C3_FakeCurrency	Pearson Correlation	.591*	.591*	1	.448	.554*
	Sig. (2-tailed)	.016	.016		.082	.026
	N	16	16	16	16	16
C4_AgentAssistants	Pearson Correlation	.872**	.909**	.448	1	.149
	Sig. (2-tailed)	.000	.000	.082		.581
	N	16	16	16	16	16
C5_PyramidScheme	Pearson Correlation	.274	.336	.554*	.149	1
	Sig. (2-tailed)	.304	.203	.026	.581	
	N	16	16	16	16	16

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

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

Addressing security is critical to the growth of mobile money industry in Kenya. Based on anecdotal evidence and local experience with online banking, security is at the top of customer's concerns regarding Mobile banking. Although the majority of the respondents believe the regulator is positively doing well in combating frauds and money laundering activities, 6.3% indicates that the regulator is performing poorly in preventing customers defrauding another customer.

Moreover, 18.8% observes that the regulator is doing fairly well in combating customer – customer frauds. On the other hand some respondents were negative in regulator combating customer defrauding agents despite a vast majority (about75%) being positive on regulators efforts in preventing customers defrauding agents.

Further the study sought to establish how effective the regulators in preventing frauds involving fake currently. Respondents interviewed believe the regulator is doing well in combating circulation of fake currency. However few of the respondents indicate regulators still have to do more to combat circulation of fake currency.

Also, as respondents explain, agent's assistances have defrauded employees and 18.8% believe the regular is performing poorly in this section. Similarly, the study reveals the regulator is positively combating frauds and money laundering involving pyramid scheme in Kenya. On the other land, few respondents indicated that the regulator is performing poor but as Olubusola, el al 2013 observes that the high returns over relatively short period complicate prevention of the activity completely

Table 3 Image and reputation

		D1_ReguInnovat	D2_OrgTrust	D3_ReguGoodRep	D4_ReguProfMand
D1_ReguInnovat	Pearson Correlation	1	-.043	-.062	-.085
	Sig. (2-tailed)		.876	.821	.753
	N	16	16	16	16
D2_OrgTrust	Pearson Correlation	-.043	1	.690**	.732**
	Sig. (2-tailed)	.876		.003	.001
	N	16	16	16	16
D3_ReguGoodRep	Pearson Correlation	-.062	.690**	1	.882**
	Sig. (2-tailed)	.821	.003		.000
	N	16	16	16	16
D4_ReguProfMand	Pearson Correlation	-.085	.732**	.882**	1
	Sig. (2-tailed)	.753	.001	.000	
	N	16	16	16	16

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

This study sought to establish innovativeness among the regulator considering the last two decades where IT and internet technologies have reached each corner of the world. Despite majority 62.6% of the respondents being positive arguing that the organization is innovative and that they trust, 25% remained neutral and 12.5% were negative. Furthermost, respondents trusted the organization in which they work because they believe it has a good reputation.

At the same time, those interviewed think the regulator discharges its mandate in a more professionally. The study sought to establish the flow of information between the regulator and its stakeholders. Results from the study indicates that 37.6% respondents think there is no flow of information between regulator and stakeholders despite 56.3% agreeing that there is flow of information. Indeed the key focus in this case is the identification of a link between the regulator and the stakeholders. The study revealed that respondents were not in agreement. As shown in table below. 37.6% were positive on the information flow which is clear and easy to understand. And perhaps surprisingly 37.6% were negative because according to this group the information is not clear and presents challenges in understand. The study found the information constituent and dependable some respondents disagreeing.

Table 4 Information is clear and easy to understand

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	6.3	6.3	6.3
	Disagree	5	31.3	31.3	37.5
	Neutral	4	25.0	25.0	62.5
	Agree	3	18.8	18.8	81.3
	Strongly Agree	3	18.8	18.8	100.0
	Total	16	100.0	100.0	

Table 5 Information is consistent and dependable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	6.3	6.3	6.3
	Disagree	4	25.0	25.0	31.3
	Neutral	2	12.5	12.5	43.8
	Agree	6	37.5	37.5	81.3
	Strongly Agree	3	18.8	18.8	100.0
	Total	16	100.0	100.0	

Additionally, in ensuring fraud is fought by all stakeholders, the regulator provides timely feedback to its stakeholders. This is largely because regulators staff being more accessible to its stakeholder

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 Introduction

As shown in the previous chapter this study sought to examine the effects of regulatory framework on fraud and money laundering among four mobile money companies. Indeed this chapter presents the summary of the findings, conclusions finally recommendations.

5.2 Summary of Finding

Results from this study reveals Kenyan mobile money growth from one company 1997 to four or more in 2009. The companies employ as high as 6,500 persons and these companies have mechanism of reporting any suspicious activities such as money laundering. However there were employees who were not aware of suspicious activity and require an intention from management. If these results is something to go by, then mobile money companies faces a challenge ahead as majority of respondents indicated that there were no penalty especially for non compliance

Similarly, a quarter of respondent agree penalties are present. One interesting results to note is that all respondents interviewed were in agreement that the companies have anti-money laundering policy to enhance financial security in the company.

Generally, an average annual turnover ranges from 1.5b – 4.5b. Regarding license, the study found that the regulator performs well in enforcing compliance. The study further found that the regulator takes a lead in protecting consumer funds. These mobile money companies reviews the sector in a continuous basis. Those interviewed reveals the regulator performs vetting well and its process has often been transparency. Majority of the respondents were positive on the organization’s approach in combating fraud and money laundering in Kenya. However 6.3% of the respondents said that defrauding another customer. Furthermore the study Established that some respondent were negative in regulator combating customer defrauding agents.

On whether the regulator was effective, the finding reveals that it is doing well. There have been cases of agent's assistance defrauding employees with slightly higher that one-eight believing it is poorly. The study also reveals that frauds and money laundering involving pyramid scheme has been prevented. One area of discussion and concern amongst regulators and bank managers is whether the success of mobile money has led to it displacing bank accounts or otherwise hurting the banking sector.

Despite IT and internet technologies changing day by day, respondents believe that the organization is innovative and they trust. In fact, according to the World Bank, ICT (including mobile money) has been the main driver of Kenya's economic growth over the last decade (World Bank, 2010). Also less one-eighth was negative and believes that the organization still requires much to be done to done to experience their innovation. Respondents believe that the regulator discharge its mandate in a more professional. With 37.6% of the respondents saying there is no flow of information it can be stated that information in combating fraud becomes critical. The regulator has made clear that it intends to retain its liberal approach to regulating mobile money, as it feels that this position is what has enabled Kenya to take the lead in this space.

5.3 Conclusion

Regulators protect customer information through privacy laws. This makes unauthorized access to customer data a criminal offense. Employees may be motivated by financial gain in accessing customer data even though it could lead to criminal prosecution. Some mobile payment platforms are very flexible. They allow the mobile financial service provider to set risk management structures on the platform based on need. This may be counterproductive since the operator may intentionally set weak processes that result in fraud. In the event of fraud, the platform provider's image will also be dented. It is important for platform providers to set a minimum risk management structure on the platform to guide operators. For example all platforms must have an initiator, verifier relationship for all web facing transactions.

5.4 Recommendations

- There is need to explain to employees, agents and anybody who comes into contact with mobile money on how to identify suspicious activities.
- There is need to set up a mobile payment system management body to provide an effective oversight to operations of mobile money industry especially concerning fraud mitigation.
- Future research should be conducted to identify fraud channels that allow agents to transact on both mobile and web channels.

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APPENDICES

APPENDIX 1: LICENSEE QUESTIONAIRE

Research questionnaire guide

Thank you for participating in this survey. The aim of this survey is to determine your level of satisfaction on the role of this regulator in its service delivery and especially on combating crimes against fraud and money laundering. We encourage you to provide your honest opinion. The questionnaire is designed to obtain responses from the perspective of different functional areas of your organization. The information provided will remain confidential and will go a long way in providing answers to the questions being researched.

SECTION A: Background information

1. Name of the firm………………………………………………………………
2. When was your firm incorporated……………………………………………..
3. What is your position in the company**………………………………………….**
4. What is the name of your mobile money service…………………………………...
5. How long(in years) has your firms mobile money service been operation?..............
6. How many Employess does your firm currently have……………………………...
7. How often do you report suspicious activities…………………………………..
8. Is there a penalty in place for non compliance……………………………………
9. How often does the regulator conduct a system audit exercise…………………….
10. Does your organisation have an Anti Money laundering policy in place………..
11. What is the average annual turnover (In Billion of Kenya shillings) of the money service function of your firm(Tick applicable choice)

a) Below 1.5 bn b) above 1.5 bn-3bn c) above 3bn-4.5bn d) above 4.5 bn

SECTION B : ROLES AND MANDATES OF THE REGULATOR

Using a 5 point scale where 1 means POOR,2 means FAIR,3 means GOOD, 4 means VERY GOOD and 5 Means EXCELLENT, please rate how well you think the regulator performs on the following service

	POOR	FAIR	GOOD	VERY GOOD	EXCELLENT
Enforcing compliance with license terms	1	2	3	4	5
Protection of consumer funds	1	2	3	4	5
Reviewing the sectors on a continuous basis	1	2	3	4	5
Vetting process is transparent	1	2	3	4	5

SECTION C: COMBATING FRAUD

Using a scale of 1 to 5, evaluate how effective the regulators is in combating frauds and money laundering activities related to the following indicators

Customers defrauding customers	1	2	3	4	5
Customers defrauding agents	1	2	3	4	5
Fake currency	1	2	3	4	5
Agents assistants defrauding employers	1	2	3	4	5
Pyramid schemes	1	2	3	4	5

SECTION D IMAGE AND REPUTATION

Using a 5 point where 1 means strongly disagree, 2 means you disagree,3 means you neither agree nor disagree,4 means you agree and 5 means you strongly agree. State the extent to which you agree with the following statements about the regulator.

	Strongly agree	Agree	Neither agree nor Disagree	Disagree	Strongly disagree
The regulator is an innovative organization	05	04	03	02	01
The regulator is an organization I can trust	05	04	03	02	01
The regulator has a good reputation in Kenya	05	04	03	02	01
The regulator professionally discharges its	05	04	03	02	01

mandate					

SECTION E: INFORMATION AND COMMUNICATION

Please indicate the extent to which the following statements are true. Use a 5 point scale where 5 means strongly agree and 1 menas strongly disagree

The is efficient flow of information between regulators and its stake holders	1	2	3	4	5
The information provided is clear and easy to understand	1	2	3	4	5
The information provided is consistent and dependable	1	2	2	4	5
The regulators provides timely feedback to its state holders	1	2	3	4	5

EMPLOYEES

The regulators staff are easily accessible	1	2	3	4	5
The regulators staff are very helpful	1	2	3	4	5
The regulators staff demonstrate high levels of intergrity	1	2	3	4	5
The regulators staff are well trained on their roles/knowlegeble about what they do	1	2	3	4	5

F.Cyber crimes can include many different types of criminal activities. How often have you been a victim of the following situations. Multiple responses allowed

a) Identity theft

b) Online fraud while purchasing goods

c) Not able to access online services including banking because of cyber attact

d) Sent money to a wrong person

e) Other, please specify…………………………………………………………….

How well informed are you on mobile money related risks

a) Very well informed

b) Fairly well informed

c) Not very well informed

d) Note informed at all

What can the regulator do inorder to combact fraud and mobile money related frauds?..

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APPENDIX 2: LIST OF MOBILE MONEY COMPANIES IN KENYA

MOBILE NETWORK OPERATORS

Name of the Company	Name of the Mobile Money Service
Safaricom limited	M-PESA
Airtel Networks Kenya Limited	Airtel Money
Telcom Orange Kenya Limited	Orange Money
Essar Telecommunications Limited	YU cash

NON –MOBILE NETWORK OPERATORS

MobiKash Afrika Limited	Mobikash
Mobile Pay limited	Tangaza