



CONTRIBUTING FACTORS TO MOBILE FINANCIAL FRAUD WITHIN KENYA

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ABSTRACT

The expansion of mobile banking services has created various challenges to financial sectors i.e. SIM swapping, hacking identity theft, social engineering, denial of service attack and account take over. The perceived criminal actions are due to continuous growth of mobile banking and computer networks. The identified challenges of rise in mobile financial fraud are due to lack of a proper strategies to curb mobile fraud. This study investigated factors contributing to mobile financial fraud within Kenya. The study used both qualitative and quantitative method of data collection. The developed framework was informed by Fraud Triangle Theory (FTT). The findings confirmed that the fraud triangle is very helpful when applied to factors contributing to mobile financial fraud. Finally, the result of findings will have significant implications to financial institution policymakers, academic researchers, anti-fraud organizations and Central Bank of Kenya.

KEY WORDS: *Contributing factors, Financial fraud, Mobile, Within Kenya, Fraud triangle, Factors, Determine.*

1. INTRODUCTION

Mobile financial services (MFS) or Mobile banking is often referred to as M-banking or SMS banking. In 1999, a European firm named PayBox, which was financially sponsored by Deutsche Bank, launched mobile banking. The SMS was the first mobile banking service available. It was a new field in the banking industry. Older phones, on the other hand, had limited capability. Mobile phones, palm PCs, and personal digital assistants lacked physical and logical support. The greater cost of data plans, as well as the slower network speed, were additional issues impeding the expansion of mobile banking. This has been enhanced as technology, hardware, and software have advanced. Mobile device prices have dropped dramatically and continue to fall. The network speed is substantially faster than previously, and data plans are less expensive. All of these developments have supplied the raw ingredients for the expansion of mobile banking, and the number of individuals utilizing mobile banking is growing by the day. Users who formerly used PCs or laptop computers for online banking are shifting to mobile banking due to the convenience of use and quick availability (Price Waterhouse Coopers, 2011).

Innovation in technology has opened new channels that now expose commercial banks in Kenya to cases of financial fraud. Financial fraud has grown immensely with the increasing widespread use of the internet. Furthermore, bank employees have sufficient knowledge on the information systems which in conjunction with technical growth, may provide individuals with the potential to perpetrate fraud. All they require is pressure and rationalization with which they become part of fraud cartels which are fleecing millions of shillings from financial institutions (Cressey, 1973). Kenyan financial institutions were victims of over half of the Kes. 4.1 billion scams that rocked East African banks in 2012, as technology made the fraud easier. The incidences of crime that have troubled



banks have continued to rise as the fraudsters keep on inventing new ways of keeping a head of the security measures and agencies (Deloitte F. S., 2013).

In Kenya more than three million five hundred thousand people use mobile banking services in the country every month. Out of this, Safaricom receives over 200 cases of illegal SIM swaps, which cost a loss of about 1 million in a month. Due to high losses, the Telco Company decided to come up with anti-fraud intelligence tool to notify financial sector participants of illegal mobile banking transactions including SIM card swaps and recently registered lines. Despite all these attempts, mobile fraud continues to increase. Hence there is need to holistically manage mobile fraud (Safaricom, 2019).

1.1 Research Problem

Mobile financial fraud is overwhelmingly becoming a challenge to the users and financial service providers. Several incidents of mobile banking crime have been reported where customers lose money on a daily basis through mobile fraud. This has raised concerns within the financial organizations. Therefore, rise in mobile financial fraud is due to lack of proper strategies to curb factors contributing to mobile financial fraud. This study is therefore aimed at determine factors contributing to mobile financial fraud within Kenya (CBK, 2018).

1.2 Objectives of the study

- To determine factors contributing to mobile financial fraud within Kenya.

1.3 Research questions

- What are the factors contributing to mobile financial fraud within Kenya?

1.4 Scope of the study

The scope was set to establish the limits of what should and should not be discussed. The research is limited to factors contributing to mobile financial fraud within Kenya.

2. LITERATURE REVIEW

2.1 Global state of mobile banking industry

There is little question that mobile banking described as the delivery of banking services and monetary transactions via a mobile gadget like a phone or tablet, has achieved amazing adoption rates since the very first SMS and WAP offers. However, between 2000 and 2005, these services remained limited and severely constrained in terms of the extent of functionality provided i.e. typically just balance confirmations and mini-statements. Nowadays, almost all banks now have some sort of mobile banking solution, either created in-house or via the use of third-party specialized suppliers. In the industrialized world, the fast spread of smart phones and more recently, tablets have raised demand for mobile banking to the point that total global mobile financial consumers stood at 0.8 billion in 2014. A stunning discovery is that this already excellent level of acceptance is expected to continue significantly expanding in the future years with an estimate of a worldwide mobile banking user base of about 2.0 billion users by 2021. In terms of transaction quantity, mobile is currently the most important banking platform for the vast majority of financial organizations (KPMG, 2019).

2.2 Financial industry in Kenya

The CBK is an autonomous Central Bank that oversees the Kenyan banking industry as well as monetary and fiscal policies for the Kenyan government. Apart from designing and putting monetary policy into action, the CBK fosters liquidity, solvency, stability and correct operation of Kenya's financial and banking infrastructure (CBK, 2018). As of December 31, 2018, the Kenyan banking industry included the following: Central Bank of Kenya (CBK) as the regulatory authority, 43 banking institutions (42 commercial banks and 1 mortgage finance company), 8 representative offices of foreign banks, 13 Microfinance Banks (MFBs), 3 Credit Reference Bureaus (CRBs), 19 Money Remittance Providers (MRPs), 8 non-operating bank holding companies, and 73 foreign exchange (forex) bureaus. Out of the 43 financial institutions, 40 were owned privately, while the Kenyan government held a majority stake in three out of the 40 individually owned banks, 25 were domestically owned (the dominant shareholders were Kenyans) while 15 were internationally owned. The twenty-five (25) locally owned financial institutions included 24 commercial banks and 1 mortgage financing firm. The 15 foreign-owned institutions are all commercial banks, with 12 being local subsidiaries of foreign banks and three being branches of foreign banks. All regulated currency bureaus, microfinance banks, credit reference bureaus, money remittance providers, non-operating bank holding companies, and are privately held (CBK, 2018)



2.3 Factors contributing to mobile fraud

Fraud studies include information technology, forensics, psychology, accounting, auditing, and management. The emergence and increase of fraud may be explained by a model that includes three primary factors: personal pressure, availability of opportunity, and justification of the act or attitude (Wells, 2005). Factors contributing to mobile fraud entails the following: non standardized processes i.e. failure to abide to CBK, poor compliance monitoring, interbank competition leading to reduced compliance check, information sharing hence reduced confidentiality, organization culture i.e. some societies are generally lenient to fraudsters, high cost of transactions hence system abuse, poor remuneration hence staffs handling cash will be tempted to steal, weak pricing policy, maturity of the mobile money services, poor awareness i.e. lack of training and frequent communication, seasonality- fraud is high during festive, certainty, celerity, severity, pressure, unemployment and lack of centralized database for fraudsters (Clark & Hollinger, 2007).

2.4 Theoretical foundation of the study

Fraud Triangle Theory (FTT), was adopted as theoretical framework supporting this research. The triangle's legs reflect an individual's pressure, opportunity, and explanation for committing fraud. The first leg is employee pressure, which develops as a result of non-shareable financial concerns. There are six types of non-shareable challenges namely too much alcohol drinking, investment failure, business recession, family demand, living beyond means and lack of trust between employer and employee. The second leg is opportunity, the non-shareable challenge would not result to a worker committing crime on his or her own; the worker must therefore believe that he or she has the chance to execute fraud without being found. Trust, insufficient internal controls, permissive discipline procedures, or a lack of corporate ethics may create opportunities. The third leg is rationalization. Rationalization is not an afterthought that justifies the fraud; rather, it is the true reason that the individual has for committing fraud, i.e. it is culture here. Rationalization is therefore part of the inspiration to commit fraud (Cressey, 1973).

2.5 Enhanced framework for fraud in Kenya's financial industry

The framework takes into account a number of the requirements and identifies potential areas of influence on the practice of fraud i.e. it separates the theoretical, qualitative, internal and external industry factors. The internal factors represent bank specific and inter-bank factors while the external factors represent factors from without the banking industry that impact on fraud management. The framework begins with the core of the fraud – the perpetrator, or individual committing the fraud, and his or her motivation. Thus, the first component of the framework is represented by Cressey's fraud triangle formed by the three elements of pressure, opportunity, and rationalization (Cressey, 1973).

The second component is the internal industry factors, including factors that both encourage and discourage fraud, such as information sharing, inter-bank competition, organisational characteristics, insider involvement, internal controls, and information technology. The third component is the external industry factors (Wells, 2005). These include legal factors like regulation and law and enforcement as well as general governance environment. Sociocultural factors such as corruption and acceptable business practices also considered. The use of information technology in society generally is also considered at this level (Wilhelm, 2004). Further factors considered include political, economic, and customer factors. The third components are theoretical and qualitative factors which entails celerity, certainty, severity, unemployment and lack of centralized database (Serah, 2012). Figure 2.0 below shows enhanced framework for fraud in Kenya's financial industry.

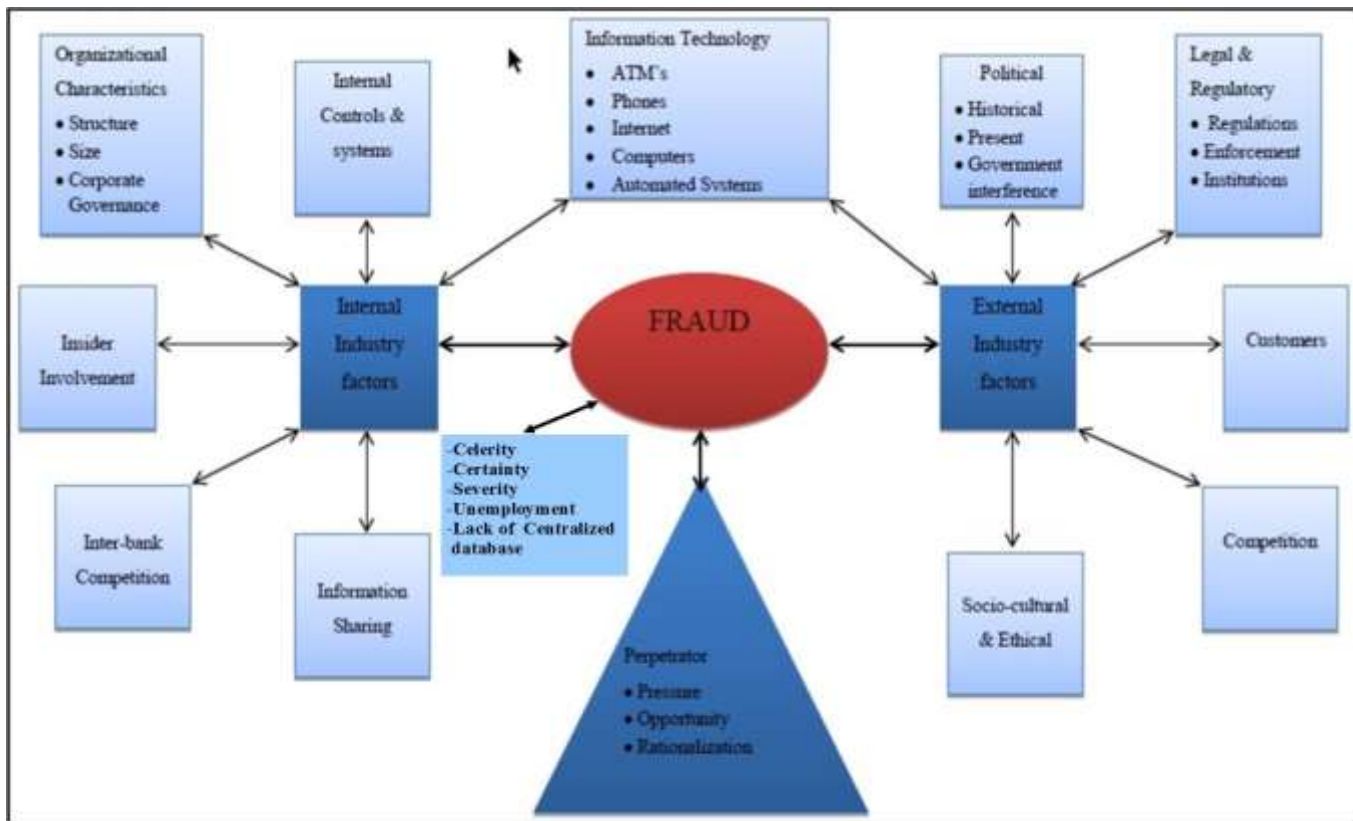


Figure 2.0 - Enhanced framework for fraud in Kenya's financial industry

3 RESEARCH DESIGN AND METHODOLOGY

Research methodology provides further information on the research design method used in determining the area under study. It also highlights on the population under review, sampling technique, data collection method, and research procedure and data analysis method. This research adopted both qualitative and quantitative perspective hence integrating findings from both approaches in order to arrive at a highly robust approach. The research methods are intended to provide a robust research process that mitigates the weaknesses of qualitative and quantitative research individually (Clark & Hollinger, 2007).

3.1 Research design

This is blue print of the study that provides the outline and direction of a research. This study used a descriptive research design. A descriptive research design involves the investigation of a topic with the aim and purpose of describing the problem or identifying problems. A descriptive research design was justified for use in this study as it sought to determine factors contributing to mobile financial fraud within Kenya (Kothari C, 2019).

3.2 Target population

The Kenyan banking industry is made-up of 43 banks with an average of 15 IT and forensic staffs per bank hence making a total of 645 staffs (CBK, 2018). Therefore, the population for this study was mainly IT and forensic staffs of the commercial banks in Kenya which are mainly based at their head offices in Nairobi. The choice of the commercial banks was based on their highest number of branches and customers all over the country (CBK, 2018). They also hold 95% of the total capital that are available in Kenya. Though, Omotayo and Kulatunga observed that, in most cases, interviewing the entire population is very difficult, due to inadequate time, limited accessibility, lack of enough funds and other inconveniences. Thus, in this situation, for economic reasons, it was very easy to interview a subgroup of the population, which means a "sample" (Omotayo & Kulatunga, 2015).



3.3 Sample size and sampling strategy

It is obvious and popularly accepted that the selection of any sampling method is determined by the research objectives or questions of the study. It is better for researchers to employ a probability sampling technique where there is the opportunity to do so as it is considered to produce confirmable correct outcomes compared with the non-probability sampling technique. However, there are aspects of research studies which may make it impossible to employ a probability sampling technique. The non-probability sampling is considered as presence, progressive and emergent. This begins from the types or kinds of the research, development and method, which describes a procedure of finding as contrary to the testing of hypothesis (Guba & Lincoln, 1994).

Therefore, the choice of non-probability sampling requires solid assumptions on the nature and proportion of the sample for its validity (Barratt, Ferris, & Lenton, 2015). The sample size for the study was calculated based on Yamane's formula because it is accurate and suitable for random sampling (Yamane, 1967). By using Yamane's formula of calculating sample size with an error of 0.05 and with a confidence coefficient of 95% (Yamane, 1967), the calculation from a population of 43 commercial banks ($43 \times 15 = 645$ IT and Forensic staffs) came up with 247 as sample size. The sample size was obtained from 17 commercial banks which are in tier one and two, given anonymous titles: Bank A, Bank B, Bank C, Bank D, Bank E, Bank F, Bank G, Bank H, Bank I, Bank J, Bank K, Bank L, Bank M, Bank N, Bank O, Bank P and Bank Q. The rationale of obtaining the sample from 17 banks was that, the selected banks are in tier one and two (they command 80% of total banking income), have the highest number of branches and have their head office in the capital city of Nairobi, while the other banks had few branches, making up 20% of the total banking income. The selected banks were appropriate because of their heavy transactions due to many branches and high involvement in mobile banking commerce.

3.4 Data analysis method

Once the data was received, the researcher used the data by checking for missing data or unfilled sections of the questionnaire. Only sections properly filled were used. After cleaning and editing of data, coding was done. The data collected was then analyzed by determining mean and standard deviation of factors contributing to mobile fraud. Final data analyzed was presented using tables.

4 RESEARCH FINDINGS AND ANALYSIS

Two hundred and forty-seven (247) questionnaires were issued and positive feedback were received from two hundred and thirty-seven (237). The questionnaires were spread across 17 commercial banks which are in tier 1 and 2. The banks which were also anonymous as bank A-Q.

Mean and standard deviation of factors contributing to mobile fraud

Using five likert scale, respondents gave feedback on factors contributing to mobile financial fraud. Out of 15 factors contributing to mobile fraud, poor remuneration was rated highly at first position with a mean of 5.00 and standard deviation of 0.065, Pressure was second with a mean of 4.69 and standard deviation of 0.463, Celerity was third with a mean of 4.66 and standard deviation of 0.484, severity was fourth with a mean of 4.65 and standard deviation of 0.516, weak policy was fifth with a mean of 4.63 and standard deviation of 0.550, certainty was sixth with a mean of 4.61 and standard deviation of 0.506, poor awareness was seventh with a mean of 4.43 and standard deviation of 0.671, seasonality was eighth with a mean of 4.41 and standard deviation of 0.746, information sharing was ninth with a mean of 4.07 and standard deviation of 0.617, high cost of transaction was tenth with a mean of 4.04 and standard deviation of 0.685, non-standardized processes was eleventh with a mean of 3.98 and standard deviation of 0.520, compliance monitoring was twelfth with a mean of 3.96 and standard deviation of 0.643, organization culture was thirteenth with a mean of 3.93 and standard deviation of 0.500, maturity of mobile money services was fourteenth with a mean of 3.84 and standard deviation of 0.788, interbank competition was rated least at the fifteenth position with a mean of 3.80 and standard deviation of 0.643.

The average mean and standard deviation for the 15 factors contributing mobile fraud are 4.31 and 0.560 respectively, this indicates the respondents agreed strongly that these factors truly contribute to mobile fraud. Summary of mean and standard deviation of factors contributing to mobile fraud are as shown in Table 1.0 below.

**Table 1.0 – Mean and standard deviation of factors contributing to mobile fraud in Kenya**

Factors contributing to mobile fraud	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
Poor remuneration	237	4	5	5.00	.004	.065
Pressure	237	4	5	4.69	.030	.463
Celerity	237	3	5	4.66	.031	.484
Severity	237	2	5	4.65	.033	.513
Weak policy	237	1	5	4.63	.036	.550
Certainty	237	3	5	4.61	.033	.506
Poor awareness	237	3	5	4.43	.044	.671
Seasonality	237	1	5	4.41	.048	.746
Information sharing	237	1	5	4.07	.040	.617
High cost of transaction	237	1	5	4.04	.044	.685
Non `standardized processes	237	1	5	3.98	.034	.520
Compliance monitoring	237	1	5	3.96	.042	.643
Organization culture	237	1	5	3.93	.032	.500
Maturity of mobile money services	237	1	5	3.84	.051	.788
Interbank competition	237	1	5	3.80	.042	.643
Valid N (listwise)	237			4.31		.560

Reliability Analysis

Dependability of the survey was checked through Cronbach alpha which is a factual instrument used to decide interior consistency of factors contributing to mobile fraud. The Cronbach's alpha value for fifteen factors/ constructs are all greater 0.5, which indicates strong/good level of internal consistency. Table 2.0 below shows the Cronbach's alpha value for each fifteen factors/constructs.

Table 2.0 - Reliability of Constructs

Factors contributing to mobile fraud	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Non standardized processes	60.71	20.428	.700	.822
Compliance monitoring	60.73	20.094	.605	.826
Interbank competition	60.89	20.124	.599	.826
Information sharing	60.62	21.169	.431	.837
Organization culture	60.76	20.361	.750	.820
High cost of transaction	60.65	20.346	.515	.832
Poor remuneration	59.70	23.907	.129	.847
Weak policy	60.06	21.873	.354	.841
Maturity of mobile money services	60.86	22.547	.110	.863
Poor awareness	60.26	20.167	.560	.829
Seasonality	60.28	19.060	.672	.820
Certainty	60.08	21.789	.412	.838
Celerity	60.03	21.846	.423	.837
Severity	60.05	21.824	.397	.838
Pressure	60.00	21.483	.535	.832



5 CONCLUSION AND RECOMMENDATIONS

Determining factors contributing to mobile financial fraud within Kenya is considered a success because it leads to effective fraud management i.e. ability to detect, report fraud and ability to perform dedicated fraud control. During the study, researcher also noted that there exist other fraud management frameworks i.e. GAO framework and fraud detection framework. The existing frameworks have gaps like inability to manage fraud. All the mentioned gaps have been fully addressed by the developed enhanced framework for fraud in Kenya's financial industry hence the framework is considered a success. There is a need to do further research on how to achieve watertight privacy and confidentiality of fraudsters information shared since it will make the performance of the framework even much better.

6. REFERENCES

1. Barratt, M., Ferris, J., & Lenton, S. (2015). *Hidden Populations, Online Purposive Sampling, and External Validity*. Sage journals.
2. CBK. (2018). *Centrak Bank of Kenya - Financial Institutions in Kenya*.
3. Clark, J., & Hollinger, R. (2007). *Theft by employees*. Lexington Books.
4. Cressey, D. (1973). *Others Peoples Money: A study in the Social Psychology of Embezzlement*. Montclair Smith.
5. Deloitte, F. S. (2013). *The Deloitte East Africa banking fraud survey. (Report Edition III)*. Press Trust of East Africa Report.
6. Guba, E. G., & Lincoln, Y. S. (1994). *Handbook of qualitative research*. Newbury Park: Sage Publications.
7. Hoffman, D. (2002). *Managing operational risk: 20 firmwide best practice strategies*. John Wiley and Sons.
8. Kothari C, R. (2019). *Research Methodology: Methods And Techniques, 4th Edition*. New Delhi, India : New Age International Publishers.
9. KPMG. (2019). *Mobile banking penetration globally* . KPMG International.
10. Kranacher, M., & Wells, J. (2010). *Forensic Accounting and Fraud Examination*.
11. Kutz, G. D. (2006). *United States Government Accountability Office framewoek - Fraud prevention, detection*. Committee on Homeland Security, U.S.
12. Okonjo, J. (2013). *Convergence between Mobile telecommunications and financial services: implications for regulation of mobile telecommunications in Kenya*.
13. Omotayo, T., & Kulatunga, U. (2015). *The research methodology for the development of a kaizen costing framework suitable for indigenous construction firms*. ARCOM publishers.
14. Price Waterhouse Coopers, P. (2011). *Fighting fraud in financial services. 6th PwC Global Economic Crime Survey*.
15. Safaricom. (2019). *Annual Report*.
16. Serah, A. (2012). *Fraud in the banking industry: case study of Kenya*. Nottingham Trent University.
17. Silverstone, S., & Pedneault, R. (2012). *Forensic accounting and fraud investigation for non- experts*. John Wiley and Sons.
18. Wells, J. (2005). *Principles of fraud examination*. John Wiley and Sons.
19. Wilhelm, W. (2004). *The fraud management lifecycle theory: A holistic approach to fraud management*. *Journal of Economic Crime Management*.
20. Yamane, T. (1967). *Elementary sampling theory*. Prentice Hall USA.
21. Zagaris, B. (2010). *International white collar crime*. Cambridge University Press.

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