

**EFFECT OF MANAGEMENT CONTROL SYSTEMS ON OCCUPATIONAL FRAUD
RISK IN COMMERCIAL BANKS IN KENYA**

David Ndung'u Kiragu

Dedan Kimathi University of Technology

P.O. Box 657-10100, Nyeri, Kenya.

Email: drkiragu@gmail.com

Tel: +254738150720/+254701573477

*Corresponding author

Kenneth Lawrence Wanjau

Karatina University

P.O. Box 1957-10101, Karatina, Kenya.

Email: k_wanjau@yahoo.com.

Tel: +254722386353

Mouni J. Gekera

The East African University, Kenya

Tel: +254702228131

Email: jeoffrey8@yahoo.co.in

Christopher Kanali

Jomo Kenyatta University of Agriculture and Technology

P.O. Box 62000-00200, Nairobi, Kenya.

Tel: +254721351700

Email: c_kanali@yahoo.com

Lucy Waigumo Gikiri

P.O. Box 51755-00100, Nairobi, Kenya

Tel: +254722297450

Email: waigumondungu@gmail.com

CITATION: Kiragu, N.D., & Wanjau, L.K. & Gekera, J. M. & Kanali, C. (2015). Effect Of Management Control Systems On Occupational Fraud Risk In Commercial Banks In Kenya. *European Journal of Business Management*. 2 (3), 68-86.

ABSTRACT

Globally, a typical organization loses at least 5% its annual revenue loss through occupational fraud. Further statistics indicate that occupational fraud risk is highest in commercial banks than any other industry globally. Occupational fraud risk is therefore a global problem. When the percentage annual loss statistics is applied to the consolidated commercial banks revenue for the

year 2012, the loss translates to approximately Kshs 15 Billion. The problem is that Kenya has the highest incidences of fraud in East Africa. The study set to determine the effect of management control systems on occupational fraud risk in commercial banks in Kenya. A representative sample of 30 banks out of the 43 commercial banks licensed by Central Bank of Kenya by June 30, 2012 was used in this study. Multiple linear regression was used to test the null hypothesis; There is no relationship between management control systems and occupational fraud risk in commercial banks in Kenya. The findings from this study are, a Cronbach's alpha of 0.830 for the drivers of management control systems, a moderate positive correlation between management control systems and moderate influence on occupational fraud risk in commercial banks in Kenya. These results provide insights into the occupational fraud risk management and the regulatory authorities in the design of deterrents of fraud in Kenya and developing countries.

Key Words: Occupational Fraud Risk, Management Control systems, Factor analysis, Multiple Linear Regression.

1.0 Introduction

1.1 Background of the Study

Fraud is an international phenomenon affecting all countries in the world. Specifically, occupational fraud risk is a global problem and its frequency is highest in banks than any other industry globally (Kroll, 2011, ACFE, 2012, Waterhouse Coopers, 2007). Global fraud study report to the Nations, a publication of the Association of Certified Fraud Examiners (ACFE, 2012) on occupational fraud and abuse indicate that a typical organisation losses over 5% of its annual revenue to fraud. Applied to the consolidated Commercial Banks revenue for the year 2012, (CBK, 2011) the loss translates to over KShs 15 Billion loss to fraud. Occupational Fraud loss is not unique to Kenya and is in the rise globally (Kroll, 2011). Occupational fraud prevalence remains high with the estimated prevalence levels as; North America (23%), Canada (16%), Europe (16%), Mexico (23%), Latin America (18%), Middle East (19%), India (23%), China (20%), South East Asia (24%) and Africa 33%. Further statistics show that Africa has not only the highest fraud prevalence (33%), but also the fastest growing exposure levels of 84% (2011) up from 70% (2010). Globally, occupational fraud is highest in Africa compared to other regions globally. The vice continue to threaten the expansion of businesses globally. In another global fraud survey, PricewaterhouseCoopers indicate that Kenya has the highest incidences of fraud in the world, based on a global ranking of 78 countries surveyed way ahead of other more

developed economies like South Africa, UK, New Zealand, Spain and Australia PricewaterhouseCoopers (PwC, 2011).

1.2 Occupational Fraud in Kenya

Fraud is unique to East Africa in that it ranks number 2 out of 25 risks when ranked in order of severity (PWC 2011) while the global ranking of fraud in commercial banks is number 15 out of 25 risks in order of perceived severity. Kenyan banking sector is the most affected by the vice compared to Uganda, Tanzania, Rwanda and Zambia (PWC, 2011, World Economic Forum, 2010). Government of Kenya statistics report an alarming 45% annual average increase in number of economic crimes (RoK, 2012). Kenya has the highest incidences of fraud in the world, based on a global ranking of 78 Countries surveyed (PwC, 2011. Fraud statistics are nearly double the global average of 34 per cent and significantly higher than the fraud incidence average in Africa of 57 per cent. The vice threatens a unique sector which occupies a unique position within the Kenyan economy because of the special role in financial intermediation (CBK, 2011). The banking sector maintain over 16 million deposits accounts with gross Kshs 1.5 trillion and over 2 million loan accounts worth over Khs 950 billion (CBK, 2011).

1.2 Statement of the Problem

Fraud is a global phenomenon and it is on the rise. Kenya is not isolated from the growing wave of frauds. Financial Services survey report that commercial banks in Kenya are more susceptible to fraud risk than banks in her neighbouring countries in Eastern Africa (PWC, 2011). Despite the significant 84% (36) of commercial banks in Kenya complying with risk management guidelines issued by Central bank of Kenya for over half a decade (2005- 2010), an alarming proportion 95% (41) commercial banks are concerned with fraud risk (CBK, 2010). The concern is principally due to the rising losses from fraud to their employees and customers. Rising rate of the vice can erode investor and consumer confidence and pose a great threat to potential investors in Kenya (PWC, 2011). Empirical studies; Duffield & Grabosky (2001), Zahra, Priem & Rasheed (2005), Mustafa & Youssef, (2010) have concentrated on the causes and motivations to defrauding by staff. Other scholars, Alleyne and Howard (2005), Bakre (2007), Brazel, Carpentre & Jenkins (2007), Hamersley, Bamber & Carpenter (2007), Lange (2008), Owusu &

Ansah (2002), studied the role of external auditors in fraud, detection and prevention and they produced conflicting findings. Some of the fraud risk studies that incorporated technology and its role in fraud risk management include; Baker (2003), Graziolo & Jarvempaa (2003), Haugen & Selin (1999), MacInnes, Musgrave & Laska (2005) and Nikitkor & Bay, (2008). From empirical literature, it is evident that there is hardly any empirical study on effect of management control systems on occupational fraud in Kenya. The study aim was therefore to find out the effect of management control systems on occupational fraud risk in commercial banks in Kenya.

2.0 Literature Review

2.1 Concept of fraud

Occupational fraud has generally been viewed as the use of one's occupation for personal enrichment through the deliberate misuse of or misapplication of the employing organizations resources or assets (ACFE, 2012; Duffield and Grabosky, 2001; Levi ,2008).

2.2 Theoretical Literature Review

Theories of fraud point that occupational frauds constitute a crime and those frauds are not random occurrences (Bagnoli & Watts, 2010, Gillett and Uddin, 2005, Carpenter and Reimers, 2005). Various factors contribute to the likelihood of their occurrence, and the form of the occurrence (ACFE, 2012, Langenderfer & Shimp, 2001, Zahra, 2005, Bakre 2007). Many theories have been put forward in an attempt to explain the concept of fraud. On the other hand physiological theories of fraud explains that criminality is inborn and not radon (Oluwadare, 1993; Laombrose ,1876; Rosenthal ,1972). Clarke (1990) in what is known as the sociological theory of fraud explains that if it can be ascertained that certain groups or certain individuals are more likely than others to commit fraud, then they may be the likelihood to reduce the amount of frauds by removing the factors which predisposed these individuals towards perpetrating frauds. Cressey's fraud triangle theory describes a triangular relationship between opportunity, pressure, and rationalization (Wells, 2001; Wilson, 2004). Wilson (2004) describes "opportunity" as the ability to bypass or override controls meant to prevent manipulation, "pressure" the motivation to commit the fraudulent act, and "rationalization" as referring to the moral and ethical argument

used to justify the act. What constitutes the key driver of frauds has been is an empirical question among scholars but research point that the same is not random.

2.3.4 Management Control Systems

Fraud triangle theory suggests that in circumstances where fraud opportunity is low, fraud occurrence is lower than otherwise. Research indicates that one of the means of reducing fraud opportunity is by institution of strong and effective management controls (ACFE, 2010; Lange, 2008; Nikitkov & Bay, 2008; Alleyne & Howard, 2005). The necessary level of control (in the sense of severity versus laxity) depends on the circumstances and attitude of the organization as to how much occupational fraud it is prepared to accept. In selected studies of occupational fraud, Albretch (2001), Leatherwood & Spector (1991), Alleyne and Howard (2005), Lange (2008) and Mustafa (2010) also found that the rigorous enforcement of management controls reduced not only employee misconduct, but also occupational fraud.

It has also been found that lax management attitudes (Holmes & Holmes, 2002) and ineffective written policies may contribute to its incidence (Turner & Stephenson, 1993; Hooks, Kaplan, Schultz & Ponemon, 1994; Bell, Knechel, Payne & Willingham, 1998; ACFE, 2010). The ACFE Fraud Examiners' Manual in the USA (ACFE, 2008; ACFE, 2010; ACFE, 2012) goes the nearest to providing a list of the main forms of management controls to combat occupational fraud. Alternatively, it may not be particular management controls which are of importance but rather the combination of various policies and procedures which make up those controls which are critical.

A common reason for the breakdown or failure of management controls is organizational change, whether it is due to growth or technological or environmental developments. This is documented in a number of the Wells (2001) cases where it is not the failure of a single control that is to blame for the fraud incidences but rather the failure of a number of the controls which have not adapted to organizational changes. It is an interesting question, therefore, which may be answered empirically, whether differences between an organization's control system (and its constituent components) and those employed in commercial banks in Kenya are the principal reason for their relative effectiveness (or ineffectiveness) in countering occupational fraud in Kenya. The following hypothesis is therefore proposed:

H₀₂: There is no relationship between management control systems and occupational fraud risk in commercial banks in Kenya.

2.3 Conceptual Framework

The conceptual framework is based on (management control systems) as the stimulus variable and occupational fraud risk (amount of fraud, number of frauds and frequency of frauds) as the response variable.

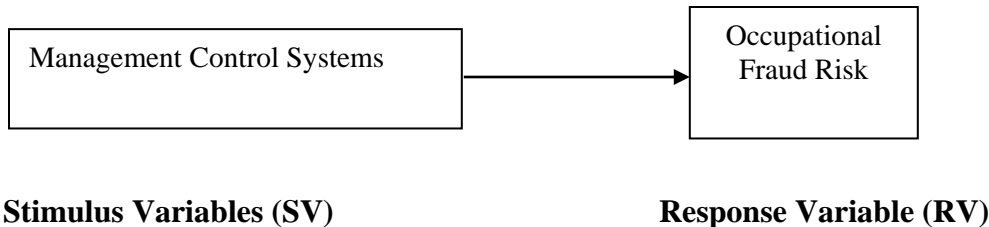


Figure 1: Conceptual Framework for the effect of management control systems on occupational fraud risk in commercial banks in Kenya.

2.4 Empirical Literature Review

2.5 Research gaps

From reviewed empirical literature, it is evident that research on the effect of management control systems on occupational fraud risk in commercial banks in Kenya not been done in a comprehensive approach. Literature reviewed indicate that many scholars have concentrated on antecedents of fraud, Dunn & Albrecht (2001), Erickson & Maydew (2006), Ball (2009), Hochberg, Sapienza & Jorgensen (2009), Miller (2006). Other researchers, Knapp and Knapp (2001), Cullinan and Sutton (2002), Ramos (2003) Alleyne and Howard (2005), Bakre (2007) Lange (2008), Hoffman and Zimbelman (2009), Mustafa and Youssef (2010) have studied the role of internal audit in fraud risk management. Baker (2002), Chua and Wareham (2004), Vasii and Vasii (2004), Gregg and Scott (2006) studied the role on Information technology in fraud risk management. Idowu (2010) concentrated on fraud assessment in commercial banks. This aim of the study was to provide insight “if management control systems influence occupational fraud risk in commercial banks in Kenya” and provide pertinent recommendations based on the findings.

3.0 Methodology of the Research Paper

The study assessed the bivariate relationship between management control systems and occupational fraud in commercial banks in Kenya. The target population was all the 43 commercial banks operating in Kenya 30th June 2013. These banks are classified by the Central Bank of Kenya using Market Share Index (MSI) as; 6 large banks operating in 546 branches, 15 medium banks operating in 310 branches and 22 small banks with 199 branches. The study used multi -stage sampling process in the selection of a stratified sample of 30 commercial banks and 258 respondents in total; 68 “management”, 54 “section heads” and 136 “clerks”. This sampling method is strongly supported in some social research studies (Oladipo & Adenkule, 2009). The sample size determination is presented in **Table 1**.

Table 1: Sample size determination per “Bank category” from Bank’s Head Office Staff

Bank category	Total	Management	Section heads	Clerks
Large Banks (4)	44	12	8	24
Medium Banks(10)	150	40	30	80
Small Banks (16)	64	16	16	32
Total	258	68	54	136

Self-administered questionnaire was used to collect primary data and a secondary data collection sheet was on the other hand used to obtain secondary data from Central bank of Kenya reports, banking anti-fraud unit reports for the years 2008-2012. Approximately 80% of the commercial banks in Kenya have centralized risk management model (CBK, 2012) and each is head quartered in Nairobi (the capital city). This study focused on the head offices of each bank because branches will generally reflect technologies by the head office. Questionnaires’ reliability of 0.809 was achieved using Cronbach Alpha prior to validity tests using Confirmatory Factor Analysis (CFA). The results of reliability test are presented in **Table 2**. This measure was considered adequate for the study (Cooper & Schindler, 2011). The questionnaire was also subjected to thorough examination by two independent resource persons, from the Certified Fraud Examiners, Kenya Chapter to enhance content validity and final questionnaire was refined before subjecting it to the final data collection exercise. Management control systems as a

variable was measured using three constructs “ antifraud control measures”, “fraud detection measures” and “fraud detection measures” using 10 items each, for the first two constructs and 8 in the case of fraud detection measures. Management controls systems items used to construct the questionnaire were Likert-type scale that ranged from 1 to 5 with the following equivalences, “1”: “strongly disagree”; “2”: “disagree”; “3”: “neutral”; “4”: “agree”; and “5”: “strongly agree”. Likert scale is useful in measuring attitudes and perception (Chimi & Russel, 2009; Charandrakandan, Venkatapirabu, Sekar, Anandakumar, 2011).

Table 2: Reliability of Drivers of Management Control Systems

Scale Item	Number	Cronbach's	Number	Cronbach's
	of Items	alpha	of Items	alpha
	Before Factor Analysis		After Factor Analysis	
Anti- fraud environment methods	10	0.778	8	0.786
Fraud detection methods	10	0.679		
Fraud reporting Methods	8	0.787	14	0.886
Management Control Systems	28	0.809	22	0.830

Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was used to assess the item constructs suitability for factor analysis. The results of sampling adequacy test are presented in **Table 3**. The results show that KMO test had a score of 0.794, which was well above 0.50 levels, indicating an acceptable degrees of sampling adequacy for the variable (Malhotra, 2004; Tabachnick & Fidell, 2007; Brett, Ted & Andrys, 2010). The results also showed that the Bartlett's test of Sphericity had a Chi-Square value of 2276.004 with a significant value of $0.000 < 0.001$, again supporting use of Confirmatory Factor Analysis as a data reduction technique and a measure of construct validity for management control systems constructs.

Table 3: Test of Sampling Adequacy- Management Control systems

KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.794
Bartlett's Test of Sphericity	Approx. Chi-Square 2276.004
	Degrees of freedom 153

4.0 Discussions and Results

4.1 Response Rate

Response rate was approximately 92% with 78%, 95% and 100% among the small banks, medium size banks and large banks respectively. Overall the response rate in this study was higher compared to other similar previous studies. For example, Voon and Pua (2009) reported a response rate of 70% in their study on the determinants of corporate crime in Nigeria. The high response rate was attributed to anonymity among respondents. Auta (2010) used anonymity in his study on development of e-banking in Nigeria. Response distribution of the 236 respondents in terms of age was categorized between the age of 21 – 30 (28%), 31- 40 years (40%), 41-50 years (32%), over 50 years (2%). This is a pointer that the respondents had reasonably sufficient knowledge on the subject of the study within the banking sector in Kenya. Among the sampled banks, 11% were from local public commercial banks, 75% from locally private banks and 14% from foreign commercial banks. The findings imply that the sample used in this study included all categories of commercial banks in Kenya in terms of ownership structure and therefore representative of all banks in Kenya. A significant 206 (87%) of the respondents had banking sector experience between 1 and 10 years and therefore likely to have had reasonable exposure to the subject of this study; occupational frauds in commercial banks.

4.2 Drivers of management controls systems

When the 28 statements on management control systems were subjected to factor analysis, 22 items loaded between 0.416 and 0.958 and were thus retained for analysis. This study used statements with factor loadings above 0.4 which is recommended (Tabachnick & Fidell, 2007; Montgomery, Peck and Vining, 2001). Principle Component Analysis is an important tool for data reduction (Bhattacharyya, 2011). The reliability of the composite measure for the 22 items was re-assessed and a Cronbach alpha coefficient of 0.830 was achieved.

4.3 Test of Assumptions

Durbin –Watson d statistic test of univariate independence for management control systems resulted a coefficient of $d=2.160$, well within the range of 1.5 and 2.5 for independent observations (Garson, 2012; Porter & Gujarat, 2009). Effiok, Ojong and Usang (2012) used Durbin Watson’s d Statistic to test autocorrelation of predictor variables in their study which examined the implication of occupational fraud and financial abuse on the performance of Nigerian companies. The Gaussian test results are presented in **Table 4**. The table shows that normality test statistics computed for occupational fraud risk using both Kolmogorov-Smirnov (K-S) and Shapiro-Wilk tests are insignificant with p-value of .200* and .423 respectively, both greater than 0.05 in both measures, an indication of held normality assumption based on both numerical methods (Shapiro & Wilk 1965; Park, 2008),

Table 4: Normality Test for Study Variables

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Occupational Fraud Risk	0.088	30	.200*	0.965	30	0.423

a. Lilliefors Significance Correction
*. This is a lower bound of the true significance.

4.4 Statistical Model

Aggregate weighted scores of management control systems were regressed against the weighted scores of occupational fraud risk. Results of curve estimation using SPSS Version 17.0 indicated that a linear mathematical model was adequate for the testing of hypothesis. Linear relationship between determinants of fraud and fraud risk is expected based on the results of above tests of assumptions (Shevlin & Miles, 2010). The mathematical relationship between the variables was hypothesized as “ $OFR = \alpha + MCS$ ” where OFR is occupational fraud risk (regressand) and MCS is management controls systems (regressor). The model summary is presented in **Table 5**.

Table 5: Model Summary of OFR/ Management Control Systems

Model	R	R Square	Std. Error of the Estimate	Durbin-Watson
-------	---	----------	----------------------------	---------------

1	.425 ^a	.181	.2384872	2.160
----------	-------------------	------	----------	-------

a. Predictors: (Constant), Management Controls Systems
b. Dependent Variable: Occupational Fraud Risk

The linear regression analysis shows that there is a relationship, $R = .425$ and $R^2 = .181$ which means that approximately 18.1% of the corresponding variations in occupational fraud risk are explained by a unit change in management control systems measure. **Table 6** shows significance of the model predictor in the hypothesized model.

Table 6: Regression Model Significance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.352	1	0.352	6.180	.019 ^a
	Residual	1.593	28	0.057		
	Total	1.944	29			

a. Predictors: (Constant), Management Control Systems
b. Dependent Variable: Occupational Fraud Risk

Regression analysis is Table 6; shows that the linear relationship between occupational fraud risk and MCS has an F value $F=6.180$ which is significant with p value $p=.019 < p=.05$ meaning that the overall model is significant in the prediction of occupational fraud risk in commercial banks in Kenya. We therefore fail to reject the null hypothesis and confirm that indeed, there is a positive and significant effect of management control systems on occupational fraud risk in commercial banks in Kenya. These study results corroborate findings by (ACFE, 2012; ACFE, 2010; Lange, 2008; Nikitov & Bay, 2008; Alleyne & Howard, 2005) who found that one of the means of reducing fraud opportunity by an institution was by institution of strong and effective management controls. Similarly, Mustafa & Youssef (2010) found that rigorous enforcement of management of management controls reduced employee misconduct and occupational fraud. Idolor (2010) found that that failure of management controls contributed significantly to the occurrence of fraud in Nigeria commercial banks. While there may be nothing as absolute control, there is a necessary level of control (Mustafa & Youssef, 2010). The acceptable level of

control is determined by consideration of “that level of control which would keep occupational fraud to tolerance level” if not absolute deterrence of the same.

Table 7: Regression Coefficients of Management Control Systems and Occupational Fraud Risk

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-0.007	.447		-.016	.987
	Technology Adoption	.975	.392	.425	2.486	.019

a. Dependent Variable: Occupational Fraud Risk

Table 7 shows; test on the beta coefficient of the resulting model, the constant $\alpha = -0.007$ is insignificant with p value $p = 0.987 > p = 0.05$. The coefficient $\beta = 0.975$, has a p value, $p = .019$ which is less than $p = 0.05$. This means it is significant in the regression model.

The model residuals normal P-P plot presented in Figure 2 shows that the standardized residuals plot a lot the 45 degree straight line from origin, an indication that the residuals are normally distributed. Normality of the residuals indicates the linear regression was adequate for the analysis of the relationship between occupational fraud risk and management control systems.

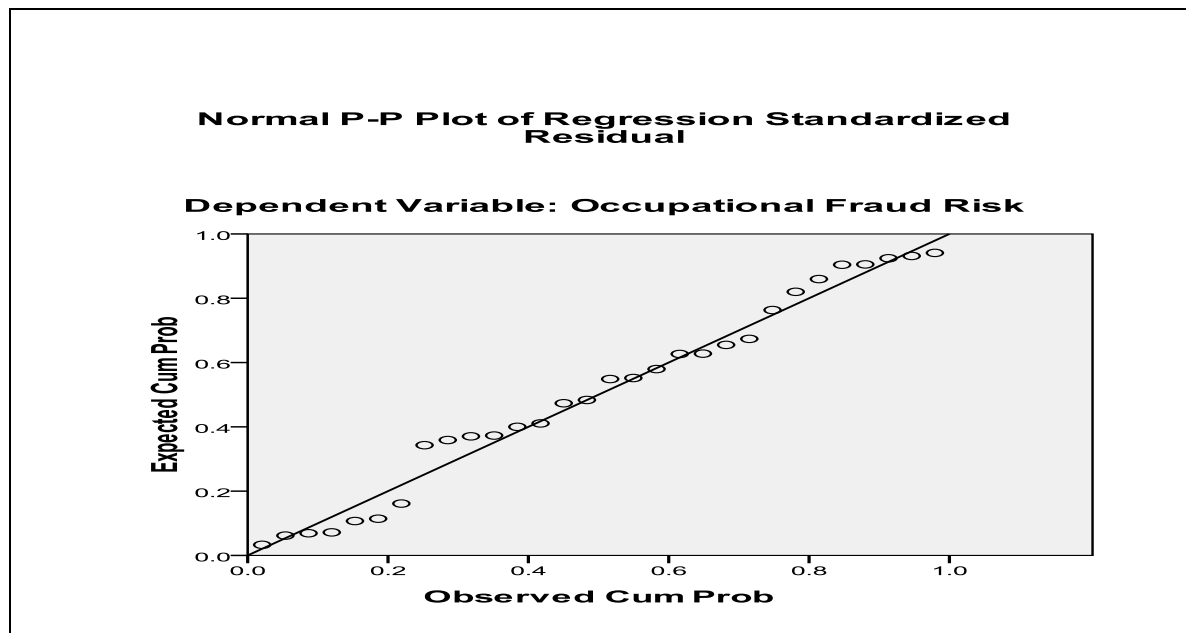


Figure 2: Normal P-P Plot of Regression Standardized Residual of occupational fraud risk and management controls systems

5.0 Conclusion and Recommendations

There is a positive and significant relationship between management control systems and occupational fraud risk in commercial banks in Kenya. Weak fraud management controls appear to create opportunities for occupational fraudsters as indicated by the statistically significant beta values. Fraud triangle theory appear quite important in explaining effect of weak fraud management controls and occupational frauds in that staffs who are potential perpetrators of fraud find opportunity in the weak controls systems. Conclusively, this study confirms that the number of frauds, frequency and amount of fraud loss experienced in commercial banks in Kenya are influenced partly by weak if not failing fraud controls. The inherent fraud risk exposure was found to be statistically insignificant as explained by the p values of 0.987. Commercial banks should employ effective fraud controls to deter fraud incidences. The controls should cut across anti fraud controls, fraud detection controls and fraud reporting controls. Weak management controls are associated with more opportunities and incidences of fraud. Important too is the fact when controls are weak, trusted staff automatically become trusted violators and therefore banks should also practice and maintain high ethical standards in performance of the duties as well as ensure tight tone on the top for occupational frauds.

6.0 Limitations and Future Work

The major drawback to this study is that it used likert scaled measures of perception of the bank staff on the effect of management controls systems on occupational fraud in commercial banks. Further, the study is limited to commercial banks in Kenya and excludes other financial market players such as the forex bureaus, mortgage banks, micro finance institutions, savings and credit cooperatives (SACCO's) and pension funds. An improved and more informative study could be achieved in future by using secondary data on a multi-sector study in order to generalize the fraud situation in the Kenyan context.

REFERENCES

- Albrecht, C., Albrecht, W., & Dunn, J. (2001). Conducting a pro-active fraud audit: a case study. *Journal of Forensic Accounting*, (2), 203-218.
- Alleyne, P., & Howard, M. (2005). An exploratory study of auditors responsibility for fraud detection in Barbado. *Managerial Auditing Journal*, 20(3), 284-303.
- Argyrous, G. (2011). *Statistics for Research: With guide to SPSS*. New Delhi: Sage Publications.
- Association of Certified Fraud Examiners (2010). 2010 Report to the Nation on Occupational Fraud, Retrieved November 26, 2011, from <https://acfe.com/documents/2010RttN.pdf>
- Association of Certified Fraud Examiners (2012). Report to the Nations on Occupational Fraud, Retrieved May 26, 2012, from <https://acfe.com/uploadedFiles/ACFE.../rttn2012-report-to-nations.pdf>
- Association of Certified Fraud Examiners ACFE. (2008). ACFE report to the nation on occupational fraud and abuse. *Association of Certified Fraud Examiners: Technical report; 2008*.
- Auta, E. (2010). Impact of E-banking in developing economy: Empirical evidence from Nigeria. *Journal of applied quantitative Methods (JAQM)*, 5(2).
- Bagnoli, M., & Watts, S. (2010). Oligopoly, disclosure, and earnings management. *The Accounting Review*, 85(4).
- Baker, C. (2003). Investigating Enron as a public private partnership. *Accounting, Auditing & Accountability Journal*, 16(3), 446-466.

- Bakre, O. (2007). The unethical practices of accountants and auditors and the compromising stance of professional bodies in the corporate world: evidence from corporate Nigeria. *Accounting Forum*, 31, 277-303.
- Ball, R. (2009). Market and political/regulatory perspectives on the recent accounting scandals. *Journal of Accounting Research*, 47(2), 277-323.
- Bell, T., Knechel, W., Payne, J., & Willingham, J. (1998). An Empirical investigation of the Relationship between the Computerization of Accounting Systems and the Incidence and Size of Audit Differences. *Auditing. Journal of Practice and Theory*.
- Bhattacharyya, D. K. (2011). *Human Resource Research Methods*. New Delhi, India: Oxford University Press.
- Brazel, J., Carpenter, T., & Jenkins, J. (2007). Auditors' use of brainstorming in the consideration of fraud: reports from the field. *The Accounting Review*, 85(4), 1273-1301.
- Brett, W., Ted, B., & Andrys, O. (2010). Exploratory Factor analysis: A five step guide for novices. *Journal of Emergency Primary Health Care*, 8 (3).
- Carpenter, T., & Reimers, J. (2005). Unethical and fraudulent financial reporting: Applying the theory of planned behavior. *Journal of Business Ethics*, 60 (2).
- Central Bank of Kenya. (2011). Central Bank of Kenya, Quarterly report on Development in the Kenyan banking Sector for the period ended 30th June 2011. Retrieved on 8th August 2011 from <http://www.centrabank.go.ke-downloads>.
- Central Bank of Kenya. (2010). Bank Supervision report; Kenyan banking Sector for the period ended December 2010. Retrieved on 8th August 2011, from <http://www.centrabank.go.ke/downloads>.
- Central Bank of Kenya. (2010). Directory of Commercial banks and Mortgage Finance Companies, Kenya. Retrieved on 26th August 2011, from <http://www.centralbank.go.ke/downloads/bsd/Commercial%20Banks%20Directory%20-%2031%20December%202010.pdf>
- Charandrakandan, K., Venkatapirabu, J., Sekar, V., & Anandakumar, V. (2011). *Tests and Measurements in Social Research*. New-Delhi: S. B. Nangia. A. P. H, Darya Ganj.
- Chimi, C. J., & Russel, D. L. (2009). The Likert Scale. A proposal for Improvement Using Quasi- Continuous Variables. *Proc INSECON*, 26, pp. 1-10.
- Chua, C., & Wareham, J. (2004). Fighting internet auction fraud: an assessment and proposal. *IEEE Computer*, 37(10), 31-37.

- Clarke, R., & Felson, M. (1993). *Introduction: Criminology, Routine Activity and Rational Choice*. In advances in criminology theory: Routine activity and rational choice. New Brunswick, N.J:
- Cooper, R. D., & Schindler, P. S. (2011). *Business Research Methods* (11th Edit.). New York, United States: McGraw-Hill Publications.
- Costello, A., & Osborne, J. (2005). Best practice in Exploratory Factor Analysis: Four Recommendations for Getting the Most from Your Analysis. *Practical Assessment Research and Evaluation, 10* (7).
- Cressey, D. (1971). *Other people's money*. Belmont, CA: Wadsworth Publishing Company.
- Cullinan, C., & Sutton, S. (2002). Defrauding the public interest: a critical examination of reengineered audit processes and the likelihood of detecting fraud. *Critical Perspectives on Accounting, 13*, 297-310.
- Duffield, G., & Grabosky, P. (2001). The psychology of fraud. Trends and issues in crime and criminal justice. Australian Institute of Criminology, Canberra.
- Effiok, S., Ojong, C., & Usang, O. (2012). The implications of occupational fraud and financial abuse on the performance of companies in Nigeria. *Interdisciplinary Journal of Contemporary Research in Business, 4* (7), 516 -533.
- Erickson, M., Hanlon, M., & Maydew, E. (2006). Is there a link between executive equity incentives and accounting fraud. *Journal of Accounting Research, 44*(1), 113-143.
- Garson, D. (2012). *Testing statistical assumptions* .Statistical Associates Publishing.
- Gillett, P., & Uddin, N. (2005). CFO Intentions of fraudulent financial reporting. Auditing: A *journal of Practice & Theory, 24* (1).
- Grazioli, S., & Jarvenpaa, S. (2003). Deceived! Under target on line. *Communications of the ACM, 46*(12), 196-205.
- Gregg, D., & Scott, J. (2006). The role of reputation systems in reducing on-line auction fraud. *International Journal of Electronic Commerce, 10*(3), 95-120.
- Hammersley, J., Bamber, E., & Carpenter, T. (2010). The influence of documentation specificity and priming on auditors' fraud risk assessments and evidence evaluation decisions. *The Accounting Review, 85*(2), 547-571.
- Haugen, S., & Selin, J. (1999). Identifying and controlling computer crime and employee fraud. *Industrial Management and Data Systems, 99*(8), 340-344.
- Hochberg, Y., Sapienza, P., & Jørgensen, A. (2009). A lobbying approach to evaluating the Sarbanes-Oxley Act of 2002. *Journal of Accounting Research, 47*(2), 519-583.

- Hoffman, V., & Zimbelman, M. (2009). Do strategic reasoning and brainstorming help auditors change their standard audit procedures in response to fraud risk. *The Accounting Review*, 84(3), 811-837.
- Holmes, R., & Holmes S. (2002). *Profiling violent crimes an investigative tool*. Sage Publications Limited. Retrieved on December 30, 2011 from www.tirant.com/derecho/detallearticulo=0761925945.
- Holtfreter, K. (2008). Determinants of fraud losses in non-profit organizations. *Non-profit management and Leadership*, 19(1).45-63
- Hooks, L. Kaplan, S., Schultz, J., & Ponemon, L. (1994). Enhancing communication to assist in fraud prevention and detection. *Auditing: Journal of practice & Theory*, 13 (2).
- IBM (2010). SPSS Regression 19 Retrieved on 25th August 2011, from <http://support.spss.com/productsext/statistics/documentation/19/client/User%20Manuals/English/IBM%20SPSS%20Regression%2019.pdf>
- Idolor, E. (2010). Bank Frauds in Nigeria: Underlying causes, effects and possible remedies; *African Journal of Accounting, Economics, Finance and Banking Research*, 6(6).
- Knapp, C., & Knapp, M. (2001). The effects of experience and explicit fraud risk assessment in detecting fraud with analytical procedures. *Accounting, Organizations and Society*, 26, 25-37.
- Kroll. (2011). *Global Fraud Report*. Economist Intelligence Unit Survey Results. Tom Hartley Publication.
- Lange, D. (2008). A Multidimensional Conceptualization of Organizational Corruption Control. *Academy of Management Review*, 33(3), 710-729.
- Langenderfer, J., & Shimp, T. (2001). Consumer vulnerability to scams, swindles and fraud: a new theory of visceral influences on persuasion. *Psychology & Marketing*, 763-769.
- Leatherwood, M., & Spector, L. (1991). Enforcements, inducements, expected utility and employee misconduct. *Journal of Management*, 17 (3).
- Levi, M. (2001). Prevention of Fraud. *Crime prevention Paper number 17*. London.
- Levi, M. (2008). Organized frauds and organizing frauds: unpacking the research on networks and organization. *Journal of Criminology and Criminal Justice*, (7), 389-419.
- MacInnes, I., Musgrave, D., & Laska, J. (2005). Electronic commerce fraud: towards an understanding of the phenomenon. *Proceedings from the Hawaii International Conference on System Sciences*.
- Maltotra, N. K. (2004). *Marketing Research. An applied Orientation*. (3rd Edit). India: Pearson Education.

- Miller, G. (2006). The press as a watchdog for accounting fraud. *Journal of Accounting Research*, 44(5), 1001-1033.
- Montgomery, D. C., Peck, E. A., & Vining, G. G. (2001). *Introduction to Linear Regression Analysis* (3rd edit.). New York: John Wiley and Sons.
- Mustafa, S., & Youssef, N. (2010). Audit committee financial expertise and misappropriation of assets. *Managerial Auditing Journal*, 25(3), 208-225.
- Nikitkov, A., & Bay, D. (2008). Online auction fraud: ethical perspective. *Journal of Business Ethics*, 79(3), 235-244.
- Oladipo, F. O., & Adenkule, O. A. (2009). Measurement of Socio-economic Status of Rural Male Farmers in Kwara State, Nigeria. *Research Journal of Agriculture and Biological Sciences*, 5(5): 762-774.
- Owusu-Ansah, S., Moyes, G., Oyelere, P., & Hay, D. (2002). An empirical analysis of the likelihood of detecting fraud in New Zealand. *Managerial Auditing Journal*, 17(4), 192-204.
- Park, H. M. (2008). *Univariate analysis and Normality test using SAS, STATA and SPSS*. Working Paper. The University Information Technology Services Centre for Statistical and Mathematical Computing, Indiana University Retrieved on December 15, 2011 from <http://www.indiana.statml>.
- Porter, C., & Gujarati, D. (2009). *Basic Econometrics* (5th Edit). New York, The McGraw- Hill Companies, Inc.
- PricewaterhouseCoopers. (2011). Global Economic Crime Survey. Retrieved 31st March 2012, from <http://pwc.com/crimesurvey>.
- PricewaterhouseCoopers. (2011). Spotlight on financial services 2011 Risk Survey www.pwc.com/ke/en/industries/banking.jhtml.
- Ramos, M. (2003). Auditor's responsibility for fraud detection. *Journal of Accountancy*, 195(1), 28-32.
- Republic of Kenya. (2012). *Kenya National Bureau of Statistics. Economic Survey*. Nairobi: Government of Kenya.
- Shapiro, S., & Wilk, M. (1965). *Analysis of variance test of normality*. *Biometrika*, (52 (3), 591-599.
- Shevlin, M., & Miles, J. (2010). *Applying Regression and Correlation. A Guide for Students and Researchers*. New Delhi: Sage Publication Inc.
- abachnick, B., & Fidell, L. (2007). *Using Multivariate Analysis*. Boston, Pearson Education Inc.

- Turner, D., & Stepenson, R. (1993). *The role of white-collar crime*. Security management, 37(2).
- Vasiu, L., & Vasiu, I. (2004). Dissecting computer fraud: from definitional issues to a taxonomy. *Proceedings of the Proceedings of the 37th Annual Hawaii International Conference on System Sciences*.
- Voon, M., Voon, S., & Puah, C. (2009). *An empirical Analysis of the determinants of Crime in Malaysia*. Munich Personal Repec Archive paper. Retrieved on November 20, 2010 from <http://mpra.ub.uni-muechen.de/37682>.
- WEF. (2010). *The Global Competitiveness Report 2010–2011*. Published by the World Economic Forum.
- Wells, J. T. (2001). Why employees commit fraud. *Journal of Accountancy*, 191(2), 89-91. Retrieved December 30, 2011 from EBSCO host database.
- Wilson, R. (2004). Employee dishonesty: National survey of risk managers on crime. *Journal of Economic Crime Management*, 2(1), 1-25. Retrieved December 9, 2011, from http://www.jecm.org/archives_home.html
- Zahra, S., Priem, R., & Rasheed, A. (2005). The antecedents and consequences of top