

BANK SIZE AND OCCUPATIONAL FRAUD RISK: EMPIRICAL EVIDENCE FROM COMMERCIAL BANKS IN KENYA

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CITATION: Kiragu, N. D., Gikiri. W. L. & Iminza, N.W (2015). Bank size and occupational fraud risk: empirical evidence from commercial banks in Kenya. *European Journal of Business Management*, 2 (1), 189-404.

ABSTRACT

Association of Certified Fraud Examiners report that a typical organization loses at least 5% its annual revenue loss through occupational fraud. Further statistics indicate In a list of 22 industry categories, occupational fraud risk is highest in commercial banks than any other industry globally. Occupational fraud risk is therefore a global problem. The problem is that Kenya has the highest incidences of fraud in East Africa and that this vice continues to erode investors and the overall financial intermediation role of commercial banks. In Kenya, fraud contributes to 31.5% of the deterrents of global competitiveness. The study set to determine the effect of bank size 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. Bivariate linear regression was used to test the null hypothesis; there is no relationship between bank size and occupational fraud risk in commercial banks in Kenya. The findings from this study are, a Cronbach's alpha of 0.97 for the stimulus variable, a positive correlation of $r=0.518$ between bank size and occupational fraud risk. In addition the study reports a significant 26.8% influence of bank size on occupational fraud risk in commercial banks in Kenya. These results provide insights into the deterrent and management of occupational frauds in Kenya and similar developing countries.

Key Words: Bank size, bivariate linear regression, occupational fraud risk.

INTRODUCTION

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; ACEF, 2010; 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).

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). Other statistics point that Kenya has the highest fraud incidence in the world (PWC, 2011). The incidence of fraud is 66 per cent, nearly double the global average of 34 per cent and above the average fraud incidence in Africa of 57% (PWC, 2011). Kenya was ranked number 26 out of 142 countries in financial development in Global Competitive Index (WEF, 2010), ahead of Uganda number 66 and Tanzania 85. Despite the banking sector in Kenya ranking ahead of other East Africa Countries, economic crime survey indicate that incidences of fraud have soared sharply compared to previous years with more than 90% of the commercial banks in Kenya being affected within the year 2010 (PWC, 2011). Globally, Kenya is ranked 102 out of 142 countries in the Global Competitive Index (WEF, 2010). The sole major factor contributing to the bottom 40 ranking is fraud incidences accounting for 31.5% of the deterrents of Global Competitiveness, higher than Uganda at 21.5% and Tanzania at 16.8%. Economic crime is the single most problematic factor for doing business in Kenya hindering her competitiveness in the global market (WEF, 2011). Locally, Government of Kenya statistics report an alarming 45% annual average increase in number of economic crimes (RoK, 2012). 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). In fact, the banking sector maintain over 16 million deposits accounts with gross Kshs 1.5 trillion and over 2 million loan accounts worth over Kshs 950 billion (CBK, 2011).

Statement of the Problem

Occupational fraud risk is a global phenomenon. Statistics indicates that the same is on the rise. Kenya is not isolated from the growing wave of frauds. Globally, commercial banks are the most vulnerable to fraud, ranking number 1 in a list of 22 industries (ACFE, 2010). Fraud risks continue to pose a great threat to commercial banks role of financial intermediation and supporting economic growth in Kenya as postulated in the Vision 2030. The rising rate of the vice continues to erode investor and consumer confidence and pose a great threat to potential investors in Kenya (PWC, 2011). Many empirical studies existing on this global phenomena are largely disjointed and have not looked at organizational characteristics like size. For example, Duffield & Grabosky (2001), Zahra, Priem & Rasheed (2005), Mustafa & Youssef, (2010) have focussed on the causes and motivations to defrauding by staff. Similarly, 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. On the other hand, some fraud risk studies have focussed on technology and its role in fraud risk management and 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 organisational size on occupational fraud in Kenya. The study aim was therefore to find out the effect of bank size on occupational fraud risk in commercial banks in Kenya.

LITERATURE REVIEW

Occupational fraud

Occupational fraud is 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).

Theoretical Literature Review

Various factors contribute to the likelihood of fraud occurrence and the form of the occurrence (ACFE, 2012, Langenderfer & Shimp, 2001, Zahra, 2005, Bakre 2007). Theories of fraud point that occupational frauds constitute a crime and those crimes are not random occurrences (Bagnoli & Watts, 2010, Gillett and Uddin, 2005, Carpenter and Reimers, 2005). On the other hand physiological theories of fraud explains that criminality is inborn and not radon. Clarke (1993) in what is known as the sociological theory of fraud explains that if it can be ascertained

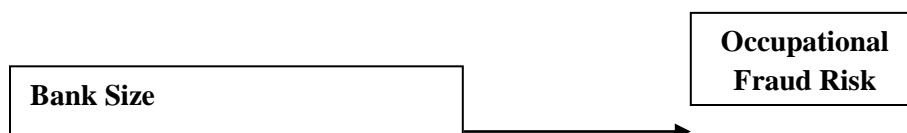
that certain groups or certain individuals are more likely than others to commit fraud, then they may be the likelihood to reduce the amount of frauds by removing the factors which predisposed these individuals towards perpetrating frauds. Cressey's fraud triangle theory describes a triangular relationship between opportunity, pressure, and rationalization (Cressey, 1971; 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 an empirical question among scholars but research point that the same is not random.

Based on these theories, there are then reasonable reasons why fraud may occur in a proportionate manner among organizations of different sizes. In fact it is expected that one common reason for the breakdown or failure of fraud management controls is organizational change, whether it is due to growth in size, driven by technological or environmental development or increase in number of fraud opportunities as well as number of perpetrators. It is an interesting question, therefore, which may be answered empirically, whether differences between an organization's size could be the principal reason for their relative effectiveness (or ineffectiveness) in countering occupational fraud in commercial banks in Kenya. The following hypothesis is therefore proposed:

H0₁: There is no relationship between bank size and occupational fraud risk in commercial banks in Kenya.

Conceptual Framework for the study

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



Stimulus Variables (SV)

Response Variable (RV)

Figure 1: Conceptual framework for the effect of bank size on occupational fraud risk in commercial banks in Kenya.

Empirical Literature Review

The characteristics of the organization itself may affect both its susceptibility to occupational fraud and the monetary sizes of a typical fraud (Clinard&Yaegar, 1980; Owusu-Ansah, Moyes, Oyelere& Hay, 2002). There are various reasons why organizational size may affect the likelihood of occupational fraud. First personal and structural controls likely to change over size for example, the opportunities and necessity for formalized managerial controls may increase with size. Secondly, investment in antifraud controls is likely to be more as organization increases in size. Further to this, communication processes may be different in large and small organizations) but also the opportunities for occupational fraud and the motivations of employees may change. The relationship between organizational size and the susceptibility to occupational fraud could therefore be dependent upon both how the incidence of fraud and the size of average dollar losses change with organizational size. Based on this premise, it is expected that fraud incidence could be expected to increase with size as organizations with a greater number of employees and a greater number of transactions present more opportunities for fraudsters. On the other hand, larger organizations are likely to implement a greater level of control than their smaller counterparts. This is for two reasons. First, economies of scale make implementation of controls relatively cheap. For instance, there will be separation of duties (or if not, there will be scope for it). This may be much more difficult (or even impossible) for smaller organizations, without the employment of additional staff (Owusu-Ansah et al, 2002). Second, if the average fraud is greater for large organizations, the marginal benefit (in terms of size of fraud prevented) of implementing the nth control is likely to be greater. The actual relationship between organizational size and the incidence of occupational fraud is an empirical question but is likely to be dependent on which of these competing forces is the stronger.

Research gap

From reviewed empirical literature, it is evident that research on the influence of bank size on occupational fraud risk in commercial banks in Kenya has not been done in the recent past in a comprehensive approach. Literature reviewed indicate that many scholars have concentrated on antecedents of fraud, Albrecht, Albrecht and Dunn (2001), Erickson, Hanlon &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), Vasiu and Vasiu (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 assess the influence of commercial bank size on occupational fraud risk in Kenya and provide pertinent insight into the significance of organizational size in occupational fraud risk deterrence, based on this research the findings.

METHODOLOGY OF THE RESEARCH PAPER

The study assessed the bivariate relationship between commercial bank size 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 on the other hand secondary data collection sheet was used to collect 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. Using Cronbach Alpha coefficient to assess the reliability of the measures of the response variable, reliability of 0.970 was achieved. Size was measured using each bank’s average net asset base (ANAB) for ten years between years 2002 and 2011 (ANAB₍₂₀₀₂₋₂₀₁₁₎). Each year’s bank net asset was obtained from the annual bank supervision report of Central bank of Kenya for each of the ten years. The average of the net assets was computed for each bank. Log of Average Net Asset Base, that is, **Log (ANAB₂₀₁₂₋₂₀₀₂)** was used as the final measure of bank size for the ten years. The results of reliability test for the regressand 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.

The amount, number and frequency of occupational frauds were assessed using a 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 Occupational Fraud Risk Measures

Scale Item	Number of Items	Cronbach's alpha	Number of Items	Cronbach's alpha
	Before Factor Analysis		After Factor Analysis	
Number, amount and frequency of occupational frauds	3	0.970	3	0.970

DISCUSSIONS AND RESULTS

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.

Test of Assumptions

Durbin –Watson d statistic test of univariate independence for bank size resulted a coefficient of $d=2.0840$, well within the range of 1.5 and 2.5 for independent observations (Argyrous, 2011; Tabachnick&Fidell, 2014, Garson, 2012; Montgomery, Peck & Vining; 2001. 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 3**. 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 3: 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.

Statistical Model

The measures of bank size, Log ANAB,(2012-2002)) were regressed against the weighted scores of occupational fraud risk. Results of curve estimation using SPSS Version 20.0 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 “ $OFR = \alpha + B_{Size}$ ” where OFR is occupational fraud risk (regressand) and B_{Size} is bank size (regressor).

Regression Model Fitness

The bivariate linear regression model for the relationship between bank size and occupational fraud risk in commercial banks in Kenya is presented in **TABLE 4**. The linear regression analysis shows that there is a relationship, $R = .518$ and $R^2 = .268$ which means that approximately 26.8% of the corresponding variations in occupational fraud risk are explained by a unit change in bank size measure.

Table 4: Model Summary of OFR/ Bank Size

Model	R	R Square	Std. Error of the Estimate	Durbin-Watson
1	.518 ^a	.268	.2253685	2.084

a. Predictors: (Constant), Bank Size

b. Dependent Variable: Occupational Fraud Risk

Significance of the Regression Model

The bivariate linear model significance was assessed using ANOVA. The results are presented in Table 5. The regression statistics in **TABLE 5** show that the linear relationship between occupational fraud risk and bank size has an F value $F=10.275$ which is significant with p value $p=.003 < p=.05$ meaning that the overall model is significant in the prediction of occupational fraud risk in commercial banks in Kenya. We therefore reject the null hypothesis and confirm that indeed, there is a significant influence of bank size on occupational fraud risk in commercial banks in Kenya.

Table 5: ANOVA for Bank Size and Occupational Fraud Risk

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.522	1	0.522	10.275	.003 ^a
	Residual	1.422	28	0.051		
	Total	1.944	29			

a. Predictors: (Constant), Bank Size

b. Dependent Variable: Occupational Fraud Risk

Assessment of regression Coefficients

The regression coefficients for the model are presented in **TABLE 6**. **TABLE 6** shows; test on the beta coefficient of the resulting model, the constant $\alpha = 1.397$ is significant with p value $p = 0.000 < p = 0.05$. The coefficient $\beta = -.268$, has a p value, $p = .003$ which is less than $p = 0.05$. This means it is significant in the regression model.

Table 6: Regression Coefficients of Bank size and Occupational Fraud Risk

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.397	0.102		13.71	.000
	Bank Size	-0.268	0.084	-.518	-3.206	.003

a. Predictors: (Constant), Bank Size

b. **Dependent Variable: Occupational Fraud Risk**

These findings agree to (Lou & Wang, 2009; Beasley, 1999; Booner, Palmrose and Young, 1998) who also found that there that there was a negative relationship between organizational size and risk of fraud. These findings differ with those of Akerlof and Romer (1993) who found that indeed there is a positive relationship between organizational size and fraud loss. These findings are not unique in that there is no reason why the susceptibility to occupational fraud should remain constant when the organizational size changes. In fact, Akerlof and Romer posit that exposure to fraud should increase disproportionately to increase in organizational size. However, findings of this study indicate that different results; that occupational fraud less proportionately with bank size. The findings above also corroborate those of Owusu-Ansah, Moyes, Oyerere and Hay (2002) who argued that characteristics of the organization itself may affect both its susceptibility to occupational fraud as well as the monetary sizes of a typical fraud. The relationship between bank size and occupational fraud is dependent upon how the incidence of fraud and the size of the average losses change with bank size. It is expected that fraud incidence would increase with size as bank with a greater number of employees and greater number of transactions present more opportunities for fraudsters. Large commercial banks are likely to implement a greater level of controls, and enjoy greater control than smaller commercial banks. For example, there will be greater scope separation of duties in large banks than would be in small banks due to limitation of number of staff. In the contrary, the loss per unit of asset may be smaller in large bank compared to medium to small banks and this may also mean that the marginal loss due to occupational fraud may reduce with increase with bank size, which is similar to the findings of this study.

Assessment of Homoscedasticity

In order to assess the distribution of the model residuals p-p plot was used and the results are presented in **Figure 2**. **Figure 2** shows that the standardized residuals, plot along 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 bank size.

Figure 2: Normal P-P Plot of Regression Standardized Residual of occupational fraud risk and bank size

CONCLUSION AND RECOMMENDATIONS

There is a negative and significant relationship between bank size and occupational fraud risk in commercial banks in Kenya. This implies that the intensity of occupational frauds per unit of asset is higher in smaller banks than it is in medium to large commercial banks. This could be explained by a number of factors. First, large commercial banks have an anti- fraud controls advantage. These banks are endowed with more assets and can therefore put in place relatively more and stronger antifraud controls compared to small banks. Secondly, large banks as an operational tool are likely to invest more in modern technology. Apart from improving

operational efficiency, technology is useful in fraud prevention and fraud detection. Thirdly, large commercial banks are likely to engage the very experienced and recruitment professionals or agencies and could therefore employ safer staff hiring practices, which are considered more effective for occupational fraud preventive. 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 organizational size. From this study, it appears that fraud controls could overall be assessed as stronger in larger banks compared to small banks. The inherent fraud risk exposure was found to be statistically significant as explained by the p values of 0.003.

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 trends and intensity of occupational fraud in commercial banks. Further, the study is limited to commercial banks in Kenya and concentrated on one player in the financial sector. This study excludes other financial intermediaries in the economy. 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.

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