Risk Assessment and Fraud Prevention in Banking Sector

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Abstract
The objective of the study was to assess the effect of risk assessment on fraud prevention in banking industry in Kenya. The study involved all banks in Kenya. Descriptive and correlational research designs were used in this study. Factor analysis was undertaken to reduce the factors and remain with factors that had higher loading which was determined through the use of Eigen values. Correlation analysis was applied to determine the strength and direction of relationship between variables and regression analysis based on structural equation modelling (SEM) was used to test the hypothesis. The descriptive analysis showed that the respondents strongly agreed that the parameters put in place are capable of preventing fraud in banks. The hypothesis testing showed that risk assessment has significant effect on fraud prevention in banking industry in Kenya. From the results of tests, it was concluded that the risk assessment mechanisms put in place to assess the risks have significant effect in fraud prevention and as such they should be enhanced to completely prevent fraud in banking sector.
Keywords: Risk assessment; Banking sector; Fraud prevention; Kenya.
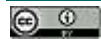
1. Introduction
Fraud has been described as any deliberate action meant to deceive an organization or a person in order to benefit the deceiver financially. The illegal act of fraud can be broadly categorised into internal fraud which fraud committed by the management of firm otherwise referred to as management fraud. The other category is the external or customer fraud which is the fraud perpetrated by the customers themselves (Bathala *et al.*, 2017). Fraudulent activities are on the rise and it is feared that this trend will continue (Mamo and Shehu, 2017). Financial institutions including banks are more vulnerable to fraudulent activities due to their operations that require them to deal in liquid cash and other instruments that are readily convertible into cash. Frauds cause financial, operational or psychological losses to the banks and customers as well (Adetiloye *et al.*, 2016). Banks failure due to fraudulent activities causes sufferings. Most banks fail due to frauds that are committed at large scale frauds (Odi, 2013). Banking fraud has become more complex and the perpetration is mainly due to insufficient controls or non-adherence to these controls (Pradhan and Bai, 2018). Banking fraud growth has been facilitated by technological advancement. Fraudulent employees will always have opportunities to commit fraud due to ability to accesses confidential information and better understanding of the organizations systems. The banking fraud includes, cheque kiting, forgery and falsification of loan and financial documents (Mpaata *et al.*, 2017).

Banking fraud complexity and frequency in India has increased significantly and it is treated as part of operating cost (Bathala *et al.*, 2017). The second largest public sector bank in India has lost almost a third of the value of Punjab National Bank (approximately 12,700 crores) in February 2018, this is considered the biggest bank fraud in history of the country involving a single bank (Gayathri and Mangaiyarkarasi, 2018). Major problems encountered in banking industry is due to weak internal control system (ICS). Bank failures can be attributed to the weak ICS Internal controls that are not sufficient or weak are mostly part of factors that promote or create opportunities for committing fraud (Pradhan and Bai, 2018). Bank failures are mostly attributed to fraud and these could have been avoided if the banks initiated and maintained strong internal control system (Karagiorgos *et al.*, 2013).

Although there are strong regulations for financial sector in India, banks are still vulnerable to frauds. Fraud activities levels have increased India which have led to reduced money in circulation that affect economic development negatively. Banks in India though treats fraud as cost of doing business (Bhasin, 2015). In Canada weak ICS related to lack of proper supervision and failure of the management to investigate and discover some internal malpractices lead to a loss of €4.9-billion through fraudulent activities in investment bank (Peltier-Rivest and Lanoue, 2015). Financial frauds in Nigeria have increased despite the strong controls put in place. The strong controls affect the efficiency of banks operations and have not been able to reduce the amounts lost through frauds (Adetiloye *et al.*, 2016). In Uganda customers took advantage of weaknesses in controls and governance to commit fraud while in the process of undertaking a genuine and legitimate transaction with a firm (Price water House Coopers, 2018). Three Kenyan banks have failed in the recent past (Imperial, Chase and Charter House banks),

Chase bank had reported a profit of Sh. 2.3 billion in 2015 and later in 2015 a loss of Sh.742 million which clearly indicated manipulation of financial accounts due to fraud (Amadala, 2019).

The internal control system is capable of safeguarding the assets of the organization and can ensure that the policies laid down by the management are followed (Sharma and Senan, 2019). Banks' ICS is meant to ensure the revenue is maximized, the costs are minimized besides ensuring the safety of the assets (Postolache and Curac, 2017). The ICS is said to be effective and working properly if all the five components of Control Environment, Risk Assessment, Communication and Monitoring are present and working (Commission of Sponsoring Organization, 2013).

Every entity is exposed to a variety of risks from external and internal sources. The management should ensure that each risk is handled and assessed properly in order to achieve the organization's objectives (Gamage *et al.*, 2014). Risk is defined as the possibility that an event will occur and adversely affect the achievement of objectives of the organization. Therefore, risk assessment forms the basis for determining how risks will be managed (Commission of Sponsoring Organization, 2013). Risk assessment refers to identification of conditions or factors that may hinder the achievement of the organization's goals and objectives. It entails identification and analysis of potential errors and also implementation of controls, policies and procedures in order to reveal those errors and try to prevent their commission (Okonkwo and Linda, 2016). Risk assessment is meant to determine the exact kind of risk the organization face, the kind of controls that should be put in place to address the risks identified and also to manage the risks that have been identified (Kumuthinidevi, 2016).

1.1. Statement of the Problem

Incidences of economic crimes in the word have increased from 36% in 2016 to 49% in 2018. In Africa the economic crime crimes increased by 5% between 2016 and 2018 and in East Africa the economic crimes prevalence was 64% in 2018 (Price water House Coopers, 2018). These rates of economic crimes have gained a lot of attention and therefore, many studies have been untaken to address them. Akelola (2012), studied the prevalence of fraud in commercial banks in Kenya and concluded that the banking fraud is rife and increased, however she did not look at the mechanisms that can be applied to prevent fraud. Sharma and Senan (2019) studied the effectiveness of internal control system in selected banks in Saudi Arabia and found mixed results for different components of ICS, the study did not address the fraud in banks. Mpaata *et al.* (2017), looked at the effect of administrative controls on fraud detection and prevention in Barclays bank Uganda. It was concluded that administrative controls have significant effect in detection and prevention of fraud. The study focused on a single bank in Uganda. The reviewed studies focused on various aspects of ICS and fraud, however there is rarely a study that focused on effect of risk assessment on fraud prevention in banking sector. This study therefore would fill the gaps by focusing on the risk assessment and fraud prevention in banking sector in Kenya.

1.2. Objective of the Study

Assess the effect of risk assessment on fraud prevention in banking industry in Kenya.

2. Review of Literature

The fraud diamond theory indicates that for fraud to occur there must be pressure, rationalization, opportunity and capability (Wolfe and Hermanson, 2004). Perceived pressure, opportunity and rationalization may coexist in fraud situation; however, the perpetration of the fraud can only occur if the perpetrator(s) have an opportunity (Abdullahi *et al.*, 2015). The theory explains that before the fraudster can commit a crime, he must first have the incentive or motive that pushes him to commit a fraud, this motive may be lack of something, or pressure from the prevailing circumstances. Secondly the theory states an opportunity may arise that may push the perpetrator to commit fraud. Lastly the rationalization is used by the perpetrator to commit fraud. The fraudster may convince himself that he has a good reason to commit fraud, for example he may argue that he works so hard and is paid less or the cost of being caught will be less than the benefits he will derive from the fraud (Akelola, 2012). Wolfe and Hermanson (2004), the proponents of fraud diamond theory explained the concept of capability where they introduced the element of capability which include; the position or function of a person within the organization may present chance to create or exploit an opportunity to commit fraud. Secondly, the right person to commit fraud must be smart or intelligent. The person must understand the weaknesses of the internal controls and has capability to exploit these weaknesses (Abdullahi *et al.*, 2015). Thirdly the right person must have great confidence that he will not be caught or detected and egocentric. The person believes that he can talk himself out of trouble easily. The fourth element of capability has been present as ability coerce others to commit or conceal fraud. Such a person has persuasive personality to enable him to convince others to commit fraud or to ignore the committed fraud (Wolfe and Hermanson, 2004). This theory is relevant in the study as it indicates those factors that may push an employee to perpetrate fraud and it may be helpful to the management to introduce mechanisms that may counter those factors.

Risk is defined as the possibility that an event will occur and adversely affect the achievement of objectives of the organization. Therefore, risk assessment forms the basis for determining how risks will be managed (Commission of Sponsoring Organization, 2013). Risk entails identification and analysis of potential errors and also implementation of controls, policies and procedures in order to reveal those errors and try to prevent their commission Okonkwo and Linda (2016). Risk assessment refers to identification of conditions or factors that may hinder the achievement of the organization's goals and objectives. It entails identification and analysis of potential errors and also implementation of controls, policies and procedures in order to reveal those errors and try to prevent

their commission (Okonkwo and Linda, 2016). Risk assessment is meant to determine the exact kind of risk the organization face, the kind of controls that should be put in place to address the risks identified and also to manage the risks that have been identified (Kumuthinidevi, 2016).

The economic, industrial, operating environment and conditions of operations are changing constantly, this means that potential risks are also changing. Therefore, it is prudent that the management put in place mechanisms that will be able identify, assess and quantify changing risky environment (Rafindadi and Olanrewaju, 2019). Risks do not remain constant and they keep on changing over time, therefore it is important to establish mechanisms that are capable to deal with factors that give rise to changes in risks which include; change in accounting standards or practices, engagement of new staff, mergers of businesses or firms, change in the operating environment of the business, changes in the information system for capturing and dissemination of information, growth rate of the organization and increased or expanded product range (Kumuthinidevi, 2016).

Risk appraisal is an effective procedure that can be used for judging the environment and occasions to understand whether the environment and occasions are friendly or otherwise to risk and also the chances of the risk occurring (Agbenyo *et al.*, 2018). Gesare *et al.* (2016), indicated that risks are both internal and external. The risks organizations face are not always avoidable, therefore organizations must make decisions whether to reduce risk to manageable levels or to accept the risk. The management must ensure that the risks that have been detected are handled professionally to ensure that they do not derail the organization's goals or objectives. The expertise and the experience of governing board and management of banks, the ability of the management to identify, monitor and eventual measurement and evaluation of risks and be vital in mitigating chances of risk occurrence (Akwaa-Sekyi and Gené, 2016).

The study findings by Thao (2018) showed that risk assessment has moderate positive effect on ICS in private joint –stock commercial banks. Agbenyo *et al.* (2018), in a study concluded that risk assessment had a significant and positive influence on the quality of financial reporting. Gesare *et al.* (2016), also concluded that there is significant positive relationship between risk assessment and fraud risk management. This meant that the quality of risk assessment directly affects the quality of fraud risk management. Amudo and Inanga (2009), in their study they indicated that the risk assessments put in place by African Development Bank (AfDB) were not efficient to address the problems in projects initiated. The conclusion derived by these studies showed clearly there are disagreements in conclusions, therefore this study will try to clearly establish the correct position.

Figure-1. Conceptual Framework
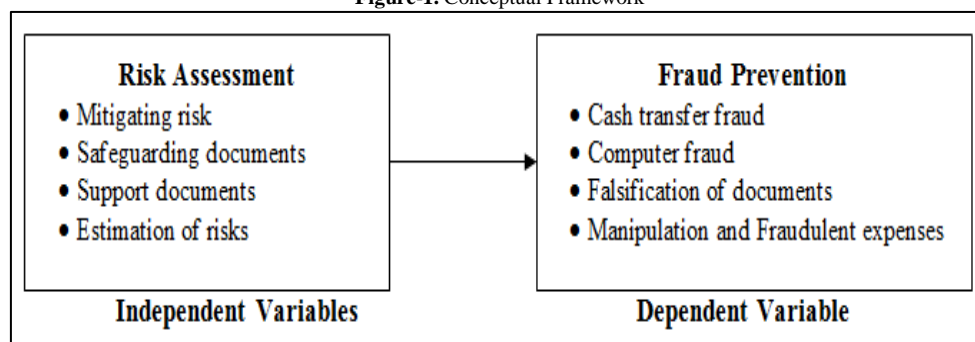
3. Methodology

Research design is required as it facilitates proper flow of various research operations, thereby making research as efficient as possible yielding a lot of information with very little effort, time and money (Kothari, 2004). The study used descriptive research design and correlation research design. Descriptive research studies are those studies which are concerned with describing the characteristics of a particular individual or of a group. Descriptive research ensures factual reporting although the conclusions should be connected to the theories or prior researches (Lunenburg and Irby, 2008). Descriptive studies are adapted in most management discipline and are more preferred by the policy analysts and administrators for planning, evaluating, and monitoring (Cooper and Schindler, 2014).

Correlational research design was used to determine whether the variables are related (Kimani, 2015). Correlational research design is grounded on the relationship between variables. In this design the direction and degree of relationship between variables is of paramount importance. The aim of correlational research design is to predict as well as check the consistency. Correlational studies do not necessary imply causality but it is meant to show relationship between variables which is indicated by presence of correlation (Lunenburg and Irby, 2008). A combination of descriptive research design and correlational research design was appropriate as the objective was to establish the effect of risk assessment on fraud prevention in banking industry in Kenya. The study regression model. The model used was as follows;

$Y = \beta_0 + \beta_1 X_1 + \varepsilon i$

Where: Y is Fraud Prevention

   X_1 is Risk Assessment

   β_0 is constant or coefficient of intercept;

   β_1 is corresponding coefficients for the independent variable

3.1. Population

The study used census thus all the banks registered to operate in Kenya were included in research study. The study was carried out in all banks headquarters or offices of banks registered and operating in Kenya. Kenya has 42 registered banks but the study will be conducted on 39 banks. Three banks which include Charter house bank, Chase bank and Imperial banks were not included in the study as they are either under statutory management or have collapsed. Response was received from 117 respondents from all the banks. Branch managers, operations managers and cash managers\supervisors were involved in the study as they have greater responsibility of ensuring that the controls put in place are adhered to strictly.

3.2. Research Instrument

Research instrument refers to the tool that the researcher uses for collecting information for his research work (Kothari, 2004). Questionnaires were used as a tool of collecting primary data. In utilising the questionnaire as a tool of data collection it is assumed that the respondents are aware of the importance of the study as well as comprehend the items contained in the questionnaire (Nganga, 2014). The questionnaires used five-point Likert scale for the respondents to rank their answers and one question in each section that required the respondent to give an opinion on the variable. Nganga (2014) suggested that in analysing Likert scale data an equidistance of 0.8 should be used, the range based on this analysis is; Strongly Disagree (SD) $1 < SD < 1.8$; Disagree (D) $1.8 < D < 2.6$; Indifferent (I) $2.6 < N < 3.4$; Agree (A) $3.4 < A < 4.2$; and Strongly Agree (SA) $4.2 < SA < 5.0$. Therefore, the research adopted this ranking. The Likert scale was used to give the respondents easy time in answering the questions and for easy analysis. The questionnaires were used as they are easy to administer and saved time.

The instrument's reliability was tested using Cronbach Alpha. The reliability can be tested using between 20 and 30 questionnaires. These questionnaires are given to respondents who are not part of the sample (Bolarinwa, 2015). The acceptable coefficient to claim reliability is between 0.7 and 0.9 (Tavakol and Dennick, 2011). The reliability tests results show that the questionnaire was reliable as the coefficients were 0.856 for risk assessment and 0.786 for fraud prevention. The reliability of instruments determines the validity of instruments thus an instrument cannot be valid if they are not reliable (Oresi, 2013). The validity of instrument was assessed through the help of expert.

4. Data Analysis and Findings

This section presents the test findings of the data analysed from research questionnaires. The data was coded and composite average from various institutions was obtained for each variable for easy analysis. The responses were received from officers from 33 banks translating to a response rate of 89.4%.

4.1. Descriptive Statistics Analysis on Risk Assessment

The objective of the study was to assess the effect of risk assessment on prevention of fraud in banking industry in Kenya. Under this section the study focused on; mechanisms of risk mitigation, proper security for financial documents, mechanisms of identifying potential risks, mechanisms for estimating potential risks, reports for missing supporting documents, response to potential risks, policies for monitoring operations and transactions, financial reporting controls, periodic reconciliations for transactions and review of procedures and policies. The results of descriptive statistics are shown in table 2.

Table-1. Means and Standard Deviations for Risk Assessment

	N	Mean	Std. Deviation
Mechanisms for Mitigation of risks	33	4.6869	.33788
Proper security for financial documents	33	4.6061	.40998
Mechanisms of identifying potential risks	33	4.5354	.48189
Mechanisms for estimating potential risks	33	4.1869	.85163
Reports for missing supporting documents	33	4.6263	.52545
Response to potential risks	33	4.4848	.58684
Policies for monitoring operations and transactions	33	4.4848	.58239
Financial reporting controls	33	4.7475	.39774
Periodic reconciliations for transactions	33	4.4646	.57548
Review of procedures and policies	33	4.4343	.58473
Valid N (listwise)	33		
Composite Mean and Standard deviation		4.5258	0.53340

Descriptive statistics results in table 1 shows that the respondents strongly agree with risk assessments provided in mitigation prevention of fraud in banking industry (composite mean = 4.5258, standard deviation = 4.20.53340). The composite mean computed and small standard deviation obtained implies that respondents strongly agree that the parameters used to measure risk assessment are effective in fraud prevention. These results are similar to the findings by Mwichigi and Atheru (2019) which indicated that the banks listed at Nairobi Securities Exchange (NSE) have very strong internal mechanisms for assessing credit risks on the borrower before they give out credit. This high rating of the risk assessment parameters could be due to proper and strong mechanisms that have been put in place to identify potential risk, analysis, estimation and mitigation of risks. This could also be attributed to the fact

that the respondents, who bear the burden to safeguard the shareholders' resources at branch level, would like to assure customers, potential and current investors that their savings and investment are protected against risk in order increase their confidence and attract more customers and investors.

4.2. Factor Analysis

Factor analysis was first undertaken to reduce number variables. Factor analysis is used to provide evidence on construct validity on self-reporting scales (Williams et al., 2010). The KMO test on adequacy of sample and Bartlett's test of sphericity were carried out. The KMO index ranges from 0 to 1 and a value of 0.5 or more is considered appropriate in testing the adequacy of sample (Williams et al., 2010). Bartlett's test of sphericity tests the hypothesis that the correlational matrix is an identity matrix (Watkins, 2018). The Bartlett's test statistics must be significant (p<.05) for factor analysis to be suitable (Williams et al., 2010). Table 3 shows the KMO test on adequacy of sample and Bartlett's test of sphericity tests.

Table-2. KMO and Bartlett's Test Results on Risk Assessment

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.606
Bartlett's Test of sphericity	Approx. Chi-Square	341.713
	df	171
	Sig.	.000

The results shown on table 2 shows that the sample is adequate as the KMO index of 0.606 is above the minimum threshold of 0.5 and Bartlett's test of sphericity is significant as p value is 0.0001 which is less than 0.05 as suggested by Williams et al. (2010). The results obtained implies that the data collected is suitable for factorability.

Factor analysis on risk assessment and fraud prevention indicated that seven factors had eigen values of more than one and therefore were suitable to be used for analysis. Eigen value was used to determine the factors to be retained. Samuels (2010), indicated that factors with Eigen values of more than one should be retained. The number of factors to be retained should be at least 3 (Kimani, 2015).

Table-3. Factor Loading Matrix

	1	2
R3	.866	
R6	.807	
R9	.805	
R1	.738	
F2		.820
F1		.754

4.3. Hypothesis Testing on Effect of Risk Assessment on Fraud Prevention

The objective of the study was to examine the effect of risk assessment in fraud prevention in banking industry in Kenya. A composite scale on parameters used to measure risk assessment and fraud prevention was computed based on factor loading and then used for hypotheses testing. The regression results in figure 2 show a coefficient of variation value of 0.43 (R^2 = 0.43). This means that the risk assessment and control variables explain 43% of variability in fraud prevention in banking sector in Kenya.

Figure-2. Structural Equation Model (SEM)
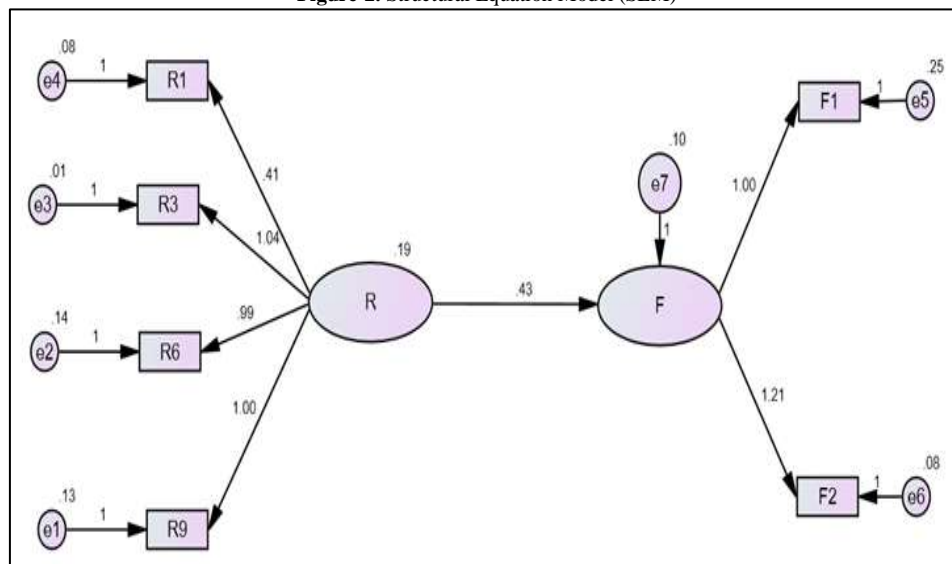
In order to carry this analysis, the following hypotheses were used:

H_0: Risk assessment has no significant effect on fraud prevention in banking industry in Kenya.

H_a: Risk assessment has significant effect on fraud prevention in banking industry in Kenya.

Regression model used for this hypothesis

Fraud prevention = f (risk assessment)

$$Y = \beta_0 + \beta_2 X_2 + \varepsilon i$$

The ANOVA test results shown on table 4 indicate that the model fits significantly. Results in table 5 show a t value (critical ratio) of 2.136 and p value of 0.041 which is less than the critical p value of 0.05. The p value from the test was significant, therefore the null hypothesis is rejected and it is concluded that risk assessment has significant effect on fraud prevention. The regression model variables for null hypothesis are replaced by the coefficient values obtained from the tests as follows:

4.4. Fraud Prevention = 2.997 + 0.328 Risk Assessment

The results indicate that for every unit percentage increase in risk assessment there is 32.8% increase in fraud prevention.

Table-4. ANOVA Test Results

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	.426	1	.426	4.563	.041
	Residual	2.895	31	.093		
	Total	3.321	32			
a. Dependent Variable: Fraud Prevention						
b. Predictors: (Constant), Risk Assessment						

Table-5. Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	2.997	.654		4.579	.000
	Risk Assessment	.328	.154	.358	2.136	.041
a. Dependent Variable: Fraud Prevention						

The study findings represented in table 5 shows that risk assessment has statistically significant effect on fraud prevention (ß=0.328, t= 2.136, p = 0.0.041 < 0.05). Therefore, the null hypothesis was rejected and it was concluded that risk assessment has significant effect on fraud prevention. Gan and Ahmad (2011), stated the strength of relationship between 0.01 and .30 shows very weak relationship. Therefore, the results indicate weak positive relationship between the risk assessment and fraud prevention.

The study findings indicated in table 5 shows that risk assessment has weak (B=0.328) significant positive relationship with fraud prevention. Akwaa-Sekyi and Gené (2017), in their findings also found that there was weak significant effect of risk assessment on credit risk. These findings are contrary to the findings by Thao (2018) who found that there is moderate significant effect of risk assessment on ICS. Gesare *et al.* (2016), concluded that there is significant positive relationship between risk assessment and fraud risk management. This meant that the quality of risk assessment directly affects the quality of fraud risk management. Amudo and Inanga (2009), in their study indicated that the risk assessments put in place by African Development Bank (AfDB) were not efficient in addressing problems in projects initiated.

The study findings show although the respondents strongly agree on risk assessment mechanisms put in place, the mechanisms do not necessarily close all the loopholes that are manipulated by fraudsters to commit fraud; thus, much has to be done to prevent fraud from happening. Risk assessment as a component of ICS is very important; this is because it ensures that risk is detected early enough before it occurs. When the management is aware of any risk potential it puts in place mechanisms to thwart such fraudulent activities. The study findings that the risk assessment contributes little in fraud prevention and therefore mechanisms put in place to identify, analyse, estimate and mitigate risks should be tightened and enhanced so that they can completely seal off loopholes both in laws and organization policies.

5. Conclusion

The objective of the study was to assess the effect of risk assessment in prevention of fraud in banking sector in Kenya. The indicators of risk assessment were mechanisms of risk mitigation, proper security for financial documents, mechanisms of identifying potential risks, mechanisms for estimating potential risks, reports for missing supporting documents, response to potential risks, policies for monitoring operations and transactions, financial reporting controls, periodic reconciliations for transactions and review of procedures and policies. The descriptive statistics indicated strong agreement among the respondents that the mechanisms put in place were working well in assessing the risks. This high rating of the risk assessment parameters could be due to proper and strong mechanisms that have been put in place to identify potential risk, analysis, estimation and mitigation of risks. This could also be attributed to the fact that the respondents, who bear the burden to safeguard the shareholders' resources at branch

level, would like to assure customers, potential and current investors that their savings and investment are protected against risk in order increase their confidence and attract more customers and investors. The hypothesis test results showed that risk assessment has significant effect on fraud prevention. Based on these findings it was concluded that, as the respondents agreed strongly that the mechanisms put in place are effective in fraud prevention, mechanism put in place to assess the risks have significant effect in fraud prevention and as such they should be enhanced to completely prevent fraud in banking sector.

Risk assessment has been found to have significant effect on fraud prevention, therefore mechanisms put in place to identify, analyse, estimate and mitigate risks should be tightened and enhanced so that they can completely seal off loopholes both in laws and organization policies. It is recommended that the organizations should engage risk analysts on regular bases. The analysts will pinpoint any sign of fraud early enough for it to be stopped before the actual fraud takes place. The organizations should regularly train employees on the ways that can improve their capabilities in detecting and handling any risk. The training of employees on risk assessment will act as the first line of defence against fraudsters as it will deter them before they commit fraud.

5.1. Contribution to Knowledge

The objective of the study was to assess the effect of risk assessment in prevention of fraud in banking sector in Kenya. The hypothesis test results showed that risk assessment has statistically significant effect on fraud prevention in banking sector in Kenya. It was concluded the risk assessment parameters put in place do have significant effect in fraud prevention. The findings of the study have shown that, banks have strong risk assessment mechanisms to that are put in place to safeguard investors' deposits and assets, these mechanisms are can be effective to prevent fraud if not to completely eliminate fraud.

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