The effect of internal control environment on operational risk of quoted banks in Nigeria

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Abstract
Banks are more likely to fail from operational risk than from credit risk, and internal control at banks create operational risk losses. Internal control system is the backbone of every company and the successful attainment of the goals of most companies depend upon the effectiveness of their policies and internal control system. The objective of this study is to investigate the effect of internal control environment on operational risk of quoted banks in Nigeria. 16 selected quoted banks in the Nigerian stock exchange from2013-2017 were studied based on the 2012 banking reform on corporate governance by the then CBN governor Sanusi Lamido Sanusi's "Project Alpha Initiative" (PAI). Data were collected from banks published annual reports, CBN statistical bulletin, NDIC report, CBN fact book, company website and banks' Pillar III disclosure report for the relevant years sampled for analysis. The analysis carried out included pooled OLS regression, fixed and random effect and Hausman tests to determine the most suitable model for result interpretation. This was conducted with the aid of E-View 7 software. The findings shows that internal control environment (BS, ID, LD, and ES) has positive significant effect on Operational risk(OPR). It was recommended that a well-established internal environmental control system should be mandatory for all companies, in the banking industry.

Keyword: internal control, internal environment, income diversification, employee size, liquidity, operational risk.

Introduction
An internal control system is designed as being the whole system of controls financial and otherwise established by the management in order to carry on the business of the enterprise in an orderly and efficient manner, ensure adherence to management policies, safeguard the assets and secure as far as possible the completeness and accuracy of the records (COSO, 1992).

The internal control system of an organization is shouldered with the responsibility of improving effectiveness and efficiency of activities. They ensure that laid down rules, laws, policies and guidelines are adhered. Financial reporting quality and reliability of the internal control system of an organization is important if organizational goals must be achieved. Internal control system assists banks in the prevention and detection of fraud and errors as well as the causes of such financial losses that may arise. Most research findings on the causes of financial loss and the mitigation of fraud and fraud cases shows and recommends that internal control can detect and prevent financial losses in organisations (Ozuomba, Anichebe and Okoye 2016). The internal control system of an organization has a huge role to play in the management of risk. This emphasizes the need for constant reforms in the financial sector and in the economy at large.

One of the main reasons for banking failures which results in major financial loss and even bankruptcy is high risks taken by bank management on an excessive scale and inability of controlling them. The lack of an internal control system which duty is to keep the risks or major breakdowns within an existing internal

control system under control pose a threat against the success of the banking sector. These operational risk has risen drastically in recent times. Corporate governance in many banks failed because their boards ignored best practices for various reasons, ranging from being misled by executive management and participating in obtaining unsecured loans at the expense of depositors, to lack of capacity to enforce good governance on bank management. There were also the problems of the overbearing influence on the boards by the Chairmen/CEOs, lack of independence of some boards, failure to make meaningful contributions to safeguard the growth and development of the banks, weak ethical standards, inadequate training for employees, failure to adhere to well established policies and procedures and ineffective board committees. These Internal control weaknesses are revealed in operational losses in banks. Consequently, a lot of scholars, accounting institutes, investors, standard setters and other stakeholders clamor for disclosure of corporate risk in financial reports across the globe as inherited risk from contemporary business environment is on the increase. This risk has claimed the lives and property of stakeholders especially shareholders and creditors just like the case of savannah bank in Nigeria during the 25 billion naira capital base for banks automaton by the Central Bank of Nigeria in 2005. This obstacle has also tempered with investors' confidence in the business world. Cabedo and Tirado (2004) are of the view that current practice of companies' external reporting is considered insufficient because it is lacking an adequate disclosure on corporate risk and uncertainties. The main objective of this study is to investigate the effect of internal control environment in curbing operational risk of quoted banks in Nigeria. This research work is anchored on Contingency theory.

Empirical Review

King'oo (2015) in his work the effect of selected internal factors on the financial performance of commercial banks listed in the nairobi securities exchange. The study used descriptive statistics, Pearson correlation, regression analysis and ANOVA to analyze the data that was collected. Return on Assets (ROA) was used as a measure of financial performance. The findings revealed that Capital Adequacy, Liquidity, Operational cost efficiency and Size of the bank do significantly affect the financial performance of commercial banks listed at the Nairobi Stock Exchange (NSE).

Sadiq (2013) studied the impact of corporate governance on performance in the Nigerian banking industry. The Ordinary Least Squares (OLS) technique was applied on data gathered from 5 Commercial Banks firms over the period 2008 to 2012. The findings of this study indicate that elements of corporate governance such as board size and board independence have negative effects on the performance of firms, as measured by the return on assets and return on equity.

Goodwin (2009) believes that the control environment establishes the tendency of the company by impacting the control awareness of the individuals. They furthermore declare that control environment is known as the basic groundwork for all the other elements of internal control. Control environment factors are comprises of: honesty and moral values of workers responsible for manufacturing, managing and observing the controls, dedication and capability of persons practicing duties that one is assigned to, directors or inspection groups particularly the degree of their autonomy from administration, importance and experience, management idea and style of working in terms of their fierceness which might detect the degree of threat they face and industrial structure, which could be a well-established structure that offers for right plotting, managing and monitoring functions or an incompetent structure that might only supply in order to create confusion among the main players by making vague parts.

 Almazari (2014) investigated the internal factors that affect profitability of banks. The main objective was to compare the profitability of Saudi and Jordanian banks by using the internal factors for estimation. A sample of 23 Saudi and Jordanian banks were considered with 161 observations for the period 2005 – 2011. Financial ratios were calculated and statistical tools including Pearson's correlation, descriptive analysis of variance and regression analysis were utilized in testing the hypotheses and to measure the differences and similarities between the sample banks according to their different characteristics. The factors influencing the profitability were tested empirically. However, the results indicated that there is a significant positive correlation between ROA of Saudi banks with TEA, TIA and LQR variables, as well as a negative correlation with NCA, CDR, CIR and SZE variables. Meanwhile, there is a significant positive correlation

between ROA of Jordanian banks with LQR, NCA, TEA and CDR variables, also there is a negative correlation of return on assets with CIR,TIA and SZE. The study recommended that empirical studies should be undertaken in the same field to find out what more internal factors could affect profitability of banks.

Methodology
The ex-post factor design type was used in this research work because it deals with historical facts and is designed to test an event that has already taken place. (Asika 2006; Agbadudu, 2002 cited in Ordu, Enekwe and Anyanwaokoro, 2014; Onwumere 2009). Secondary data was used in this work. The data machinery adopted for secondary data was Panel data set from banks published annual reports, NDIC report, CBN statistical bulletin, CBN fact books and banks' Pillar III disclosure report was utilized for this study. The panel covers a time frame of 5 years from 2013-2017 and a cross section of 16 banks from the population of 23 commercial Banks quoted in the Nigerian Stock Exchange as at 28 September 2018. However, Heritage bank, Savannah bank, Sky bank, keystone bank, Enterprise bank, Rand bank and Jaiz bank were eliminated based on availability of data, commencement of operation and Islamic bank with different characteristics from commercial banks. The sample size is justified based on the theory of Mugenda and Mugenda, (2003), that a good sample covers at least 10%-30% of the representative population. Thus, at 67% coverage the sample is a fair representation of the population and sufficient for this study. Multiple regression analysis technique was used in this study. Panel data regression model was adopted in order to control for individual unobserved heterogeneity, obtain more accurate results because it provides more observations and information to work with, it allows a follow up on individual dynamics and before and after effect can be easily estimated (Temple, 1999; Woodridge, 2002; and Hsiao, 2003 as cited in Alajekwu, 2018). Cross-sectional and time series data are pooled in the regression to overcome the problem of insufficient degree of freedom. The Fixed Effects model (FEM) can be used to control the unobserved characteristics. Random effects model (REM) assumes that firm specific characteristics are not constant and the time effects are absent. The Hausman's specification test in Panel data models was conducted for fixed and random effects test of individual characteristics or time effect. The core difference between fixed and random effect models lies in the role of dummy variables.

Table 1: Operational definition of variables

		Variables	Proxy variables
Dependent	Operational Risk:	3 years Gross income @ 15% divided by 3	**OPR**
Independent	Control Environment:	Internal and External	
	Internal Environment:	Bank strength Income diversification Liquidity Employee size	**BS** **ID** **LD** **ES**
Control Variables	Bank Size Leverage	Total no of bank in the year Debt to total assets	BKS LEV

Source: Author's conception, 2019

We indicate that there are bank-specific and other variables which could affect the dependent variable in one way or the other and must be controlled. These variables are bank size and Leverage.

Model 1: $opr = (bs, id, ld, es, bks, lev)$ --1

$opr_{!t} = ao_{!t} + b_1 + bs_{!t}, b_2 + id_{!t}, + b_3 + ld_{!t}, + b_4 + es_{!t}, + b_5 + bks_{!t}, + b_6 + lev_{!t}, + \varepsilon r_{!t}$ --------------------2

$opr!t = ao_{!t} + bs_{!t} *id_{!t} *ld_{!t} *es_{!t} *bks_{!t} *lev_{!t} + \varepsilon r_{!t}$ --3

β0, β1, β2, β3, β4, β5, β6= coefficients
εi = error terms.

Data Presentation and Analysis

Table 2: Descriptive Analysis for Internal Control variables and Operational Risk variable from 2013-2017

VARIABLES		COMMERCIAL BANKS			
		Mean	Max	Min	Std. Dev.
Dependent Variable	Operational Risk	5.38	6.87	4.30	30.09
Control Environment:	Internal and External				
Internal Environment:	Bank strength (BS) (Ratio)	23.58	223.00	12.50	4252.00
	Income diversification (ID)(ratio)	2.21	92.00	0.84	8175.40
	Liquidity (LD) (ratio)	19.48	86.29	1.65	2842.7
	Employee size (ES)	3.48	4.97	2.74	13.74

Source: generated Eviews 7

Output using

Internal environment with proxy variables- (i) bank strength measured with capital adequacy ratio which demonstrates the internal strength of the bank to support losses during crisis periods. High of this ratio shows high profitability and lower ratio indicates the decrease of the profitability. Capital adequacy is computed as a ratio of total equity to total asset. It showed a maximum value of 223.00, minimum of 12.50 and standard deviation of 4252.00. (ii) Income diversification derived from non-interest income as a ratio of operating income (measured as earnings before interest and tax- EBIT) with an average value of 2.21, maximum value of 92.00, minimum of 0.84 and standard deviation of 8175.40. (iii) Liquidity measured as cash to asset ratio showed an average value of 19.48, maximum value of 86.29, minimum value of 1.65 and standard deviation of 2842.7 and (iv) Employee size measured as the total number of banking staff showing a mean value of 3.48, maximum value of 4.97, minimum of 2.74 and a standard deviation of 13.74.

Normality Test

Table 3: Result of Jargue- Bera Satistics for the test of normality

VARIABLES		COMMERCIAL BANKS	
		Jarque-Bera	Prob.
Dependent Variable	Operational Risk	1.59	0.35
Control Environment:	Internal and External		
Internal Environment:	Bank strength (BS) (Ratio)	15828.36	0.00
	Income diversification(ID)(Tobin's Q)	19681.30	0.00
	Liquidity (LD) (ratio)	215.47	0.00
	Employee size (ES)	29.47	0.00

Source: Output generated using Eviews 7

Jargue-Bera test of normality was used to identify the normality of error term. It is tested at 0.05 level of significance. The decision rule is to reject the null hypothesis, when P. value is less than 0.05 level of significance, otherwise, do not reject. The null hypothesis that error terms are normally distributed is rejected at 5% level of significance for all the variables. Thus, error term is not normally distributed. The variable used in the study lacks normality for selected commercial banks quoted in the Nigerian Stock Exchange.

Test for Multicollinearity

Table 4: Correlation Matrix for test for multicollinearity in Operational Risk (OPR) and Control Variables (BKS and LEV) of the study.

	OPR	BKS	LEV
OPR	0.729393		
BKS	0.065918	0.798290	
LEV	-0.218296	-0.345518	0.747946

Source: Output generated using Eviews 7

The test is conducted to check for suitability of the of the control variables in each of the model. Model 1 to 6 are the theoretical model of the relationship between operational risk and internal controls. Bank size and Leverage being control variables were tested for the existence of multicollinearity between variable using correlation matrix as shown on table 8.the existence of collinearity shows that the regression cannot precisely intercept the influence of independent variable towards dependent variable (Gujarati and Porter, 2009). High pair wise correlation between two variables means there is a serious multicollinearity problem in the regression model. The level of high multicollinearity exist when the correlation between two variables exceed 0.8 (Gujarati and Porter, 2009). The result on table 8 showed correlation matrix for quoted banks. The highest pair wise correlation is 0.79 and the lowest is -0.21. Since it is not more than 0.8, the researcher conclude that the two variables do not suffer from serious multicollinearity and that the six model in which the five objectives are anchored are suitable for regression analyses.

H0: Internal control environment system does not have significant effect on operational risk.
Table 5: Result of the effect of internal control environment on operational risk of quoted banks in Nigeria

Independent Variables	Pooled OLS	**Fixed Effect** *(Preferred Model)*	Random Effect
Constant (C)	3.599612* (4.695850)	**3.545422*** **(4.380025)**	4.763952* (5.480358)
Bank Strength (BS)	0.002450* (0.848119)	**0.002862*** **(0.936542)**	0.001704* (1.232416)
Income Diversification (ID)	0.130211* (0.695367)	**0.150099*** **(0.748953)**	0.045398* (0.448589)
Liquidity (LD)	0.009810* (2.670924)	**0.009888*** **(2.619871)**	-0.005624* (-1.282022)
Employee Size (ES)	0.403149* (2.421923)	**0.403026*** **(2.307828)**	0.072616* (0.515052)
Bank Size (BKS)	-0.060530* (-1.115413)	**-0.058434*** **(-1.032348)**	-0.055025* (-1.280855)
Leverage (LEV)	0.008291* (3.455690)	**0.008335*** **(3.371851)**	0.013468* (1.508671)
R-Squared	0.201216*	**0.206182***	0.901387*
F-Statistics (Prob.)	0.010817	**1.766192(0.083838)**	24.81041(0.000000)
Durbin Watson (DW)	0.285333	**0.278861**	1.636648
Hausman Test (Prob.)		**166.954077(0.000000)****	4.125385 (0.6597)**

Legend: Dependent variable: operational risk (OPR), significant at *1%, **5%
Source: Extract from result presented on Appendix 8, Table 19a

Four variables representing the model on the effect of internal control environment on operational risk were employed to test the hypotheses of this study. From the regression analysis result as shown on table 5 above, it is observed that r^2 for pooled OLS, fixed effect and random effect are 0.20 and 0.21 respectively and that of random effect is 0.90 that is, for each model used 20%, 21% and 90% of the dependent variable (OPR) is explained by the Independent variables: BS, ID, LD and ES and control variable BKS and LEV. The coefficient value of the independent proxy variables: BS, ID, LD, and ES are positively correlated with the dependent variable OPR. This implies that any decrease in the independent variables will result in a decrease

in the dependent variable. From the further test conducted, the fixed effect model showed a value of 166.954077 with a probability of 0.0000 and the random effect model showed a value of 4.125385 and a probability of 0.6597. The fixed effect is preferred because the probability of the Chi. Square is less than 0.05% level of significance. From the result obtained, we accept the alternate Hypotheses which states that internal control environment has a significantly positive effect on operational risk of quoted banks in Nigeria and reject the null hypothesis. The variables employed showed positive value that is, any increase/decrease in any of the independent variables will lead to an increase in the dependent value except for bank size that does not have a positively significant effect on operational risk. Durbin Watson is close to 2.0 as such the variables are highly significant. Probability values of the coefficient at 0.1 – 0.7 implies that the regression parameters are significantly different from zero and the probability for the variables reveal a normal curve. The F-statistics is 1.766192 to show that the coefficient of explanatory variables has a significant effect on operational risk in the annual financial reports of quoted companies in Nigeria. From the result obtained, we accept the alternate Hypothesis which states that internal control environment has a significantly positive effect on operational risk of quoted banks in Nigeria and reject the null hypothesis.

The internal control environment variables on table 5 shows a significantly positive coefficient value. This shows that an increase or decrease in any of the independent variable: bank strength, income diversification, liquidity and employee size will lead to an increase or decrease in operational risk. That is to say that a positive relationship between the internal control environmental system and operational risk is found. This implies that, a high adequacy ratio and increased income diversification will increase risk from operation in the Nigerian banking sector. Also, total loans to customers deposit and increase in the no of employee transcends to an increased risk from operations. We therefore, reject the null hypothesis and accept the alternate hypothesis which states that internal control environment has an effect on operational risk. This further collaborates the works of King'oo (2015) whose findings revealed that Capital Adequacy, Liquidity, Operational cost efficiency and Size of the bank do significantly affect the financial performance of commercial banks listed at the Nairobi Stock Exchange (NSE). This further collaborates the works of Almazari (2014) who found bank size to be negatively correlated to profitability. Contrary to Linsley and Shrives (2006) who found that there is a positive association between the company size and the volume of risk disclosure.

Findings
The main objective of this study was to examine the effect of internal control systems on operational risk of quoted banks in Nigeria. Secondary data was sourced from annual reports, banks websites, CBN statistical bulletin, CBN fact book, NDIC report and banks pillar III disclosures. Using a sample of 16 quoted firms in the period 2013 to 2017; the study first provided both empirical and statistical evidence on the aggregate impact of the seven proxy variables on internal control system and operational risk of quoted banks in Nigeria. Secondly, the study also provides evidence that internal control environment have a significant positive impact on operational risk of quoted banks in Nigeria. While Bank size and leverage have a significantly negative effect on operational risk of quoted banks in Nigeria. The results further corroborate the works of Afia 2015, King'oo 2015, Sadiq 2013 and Alamazari 2014. The results of this study have provided insight into the predictor variables that have important impact in explaining internal control system and operational risk. It was concluded that internal control system has a significantly positive effect on operational risk and can help in curbing operational risk loses in the banking sector.

A well-established internal control system should be mandatory for all companies, in the banking industry. Banks should ensure that internal control unit personnel are qualified and adequately trained especially IT staff. The head of unit should be a qualified accountant with many years of cognate experience, the board should be independent with expertise in finance.

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