INTERNAL CONTROL SYSTEM AND FRAUD DETECTION AND PREVENTION IN NIGERIA: EVIDENCE FROM ONDO STATE

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Abstract
This paper aims to empirically examine the effects of internal controls on fraud detection and prevention in Nigeria. In specific terms, the study investigates the relationship between segregation of duty, system authorization and fraud detection and prevention. Ordinary least square model estimation technique was employed to analyze the relationship between the explanatory variables and the dependent variable. Primary data derived from structured questionnaire was used for the study. Findings from the study show that system authorization exhibit a joint significant relationship with fraud detection and prevention given coefficient of determination (R^2) being 0.281. The study recommends that adequate system authorisaton should be allowed as a procedure for internal control system so as to prevent or detect the element of fraud.

Keywords: Detection, Fraud, Internal control, Nigeria, Prevention, System.

1.0   Introduction

Fraud itself is a polemic syndrome which is capable of crumbling economic growth. This is because, as the saying goes that "prevention is better than cure", management of every organization must do everything humanly possible to prevent fraud from occurring. Lin and Koo (2011) opined that companies have to adjust their technologies and methods of internal control in accordance with computerization in order to exercise effective controls. Yang et al (2011) argued that internal control techniques used in an Information Technology (IT) environment are quite different from those used in a manual environment. Yang et al (2011) submitted that transactions are automatically triggered or executed in an IT environment, and the internal controls are supported with information technology, pointing out that the adaptation of internal control techniques are a critical management issue in order to ensure the efficacy of internal controls and the achievement of operational objectives. Prevention of fraud is more economical than the spill – over effect of allowing fraud to occur. The performance of organizations may depend on the ability of such organizations to deal with fraud. The performance of an organization indicates how effective a firm is able to use its asset to generate returns vis-a-vis the ability to control and avert the occurrence of fraud and safeguard the organization assets through necessary internal control mechanisms. Shanmugan, Haat and Ali (2011) argue that fraud prevention, embezzlement, detection and accurate financials are all reasons to justify for good internal control practices. Over the years, management of different organizations has continually put in place several control mechanism to safeguard the organizations' resources. Despite these efforts, fraud is still prevalent in most organizations. It is on record that where there is collusion and management override of controls, no internal controls procedures will work.

Statement of the problem

The focus of this paper is to empirically determine the effect of internal controls on fraud detection and prevention. This issue has scarcely been examined in Nigeria, particularly on the relationship between the elements of internal controls (segregation of duty, and system authorization) and fraud detection and prevention. However, it is important for organizations to understand the implications and impact of the different internal controls on fraud detection and prevention, as this will possibly assist the organizations in cost minimization in terms of internal controls and know which of the internal control tools should be given priority in the course of the design of internal controls into the accounting systems. Several and related research carried out in the area of internal controls and fraud detection and prevention have not put into consideration the individuals relationship of the elements of internal control (segregation of duty and system of authorization) with fraud detection and prevention. This culminating in a research questions as follows:

1. How does segregation of duty affect fraud detection and prevention?
2. What is the effect of system authorization on fraud detection and prevention?

Objectives of the study

The broad objectives of this study are to empirically examine the effects of internal controls on fraud detection and prevention in Nigeria: evidence from Ondo State. The specific objectives are to:

1. examine how segregation of duty affects fraud detection and prevention
2. determine the effects of system authorization on fraud detection and prevention

2.0   Conceptual frame work

Concept of Internal Control (IC)

Internal control elements includes: segregation of duty and system authorization. Internal controls attempt to deter or prevent undesirable events from occurring. They are proactive controls that help to prevent a loss. According to Victorian Auditor General (2012), good fraud preventive controls are the basis of a workable framework of fraud control, even though they cannot mitigate fraud risk, coordinated and proactive implemented strategies can reduce the probability of its occurrence. Yang Lin and Koo (2011) stressed that companies have to implement various control means to achieve targets. They noted that on the basis of the timing of control events, internal controls can be divided into preventive controls, detective controls and corrective controls. They defined preventive controls as extant in nature, such as the control accounts and passwords for the prevention of illegal users from logging into the system. They are also of the view that detective controls are the controls over the happening of events, for example, the inspection of product codes to confirm the existence of products, while corrective controls are ex -post in nature. Association of Certified Fraud Examiners (ACFE) (2012) submitted that internal controls are the most effective fraud — fighting measure. The ACES opined that the design and implementation of internals activities should be a coordinated effort orchestrated by management of organizations with different categories of employees.

Segregation of Duties (SoD)

Segregation of duty is an operational technique which provides for separate people to be responsible for performing the steps in processing accounting transactions. Deloitte (2007) assented that segregation of duties is the separation of incompatible duties that could allow one person to commit and conceal fraud that may result in financial loss or misstatement to the company. According to Gramling Hermanson, and Ye (2010), segregation of duties is one of the fundamental elements of effective internal control, which presupposes that a process is divided among several people. As such, no single individual can take advantage of the situation for personal benefit or other impropriety. Ernst and young (2010) stressed that SoD is a basic internal control that attempts to ensure no single individual has the authority to execute two or more conflicting sensitive transaction with the potential to impact financial statements. Ernst and Young (2010) submitted that SoD dictates problem such as fraud, material misstatement and financial statements manipulation have the potential to occur when the same individual is allowed to execute two or more conflicting sensitive transactions.

System Authorization (SyA).

Australian Institute of Criminology (AIC) (1998) noted that one key preventive strategy for debit and credit card fraud has been system authorization, in other word, the value limit at which authorization is required from financial institutions before the card can be accepted. AIC argued that in Britain, the percentage of plastic card transactions which required authorization increased from approximately 10 percent in 1992 to close to 50 percent in 1998. The order/mandate which must be given for a transaction to be effected within a given framework is known as system authorization. Management authorizes employees to perform certain activities and to execute certain transactions within limited parameters. In addition, management specifies those activities or transactions that need supervisory approval before they are performed or executed by employees. A supervisor's approval (manual or electronic) implies that he or she has verified and validated that the activities or transaction conforms to established policies and procedures. Authorization and approval are the most important elements of this control activity.

Fraud Detection and Prevention (FD&P)

According to the Australian Prudential Regulation Authority (APRA) (1998), the opportunity for fraud is substantially reduced if internal controls are put in place. Australian Prudential Regulation Authority (APRA) highlighted the different types of controls to include accountability, safeguards, recording and system authorizations. However, based on recommendation of the Committee of Sponsoring Organizations of the Tread way Commission (COSO) to study the causes of fraudulent reporting and make recommendations to reduce fraud, COSO developed an internal control framework in line with the issued 11992 and entitled internal control integrated framework. Gupta and Gill (2012) posited that a continuous evaluation of an organization anti-fraud programs and red flags is a perquisite for successful prevention, suggesting that fraud red flags are the clues that may prompt management critical observation of specific transaction. Implementation of internal controls mechanism will amount to honest work environment and anti-fraud program. The position of Gupta and Gill (2012) implies that for there to be a fraud deterrence measure, organizations must take frill responsibility in terms of design and total implementation of internal controls/anti- fraud programs in its accounting system.

3.0   Methodology

Research Design

The study adopted cross-sectional survey design because it requires the use of primary data. This was achieved through the use of simple-stratified-random sampling technique. The study adopted the use of qualitative data which include coded (scale) data from copies of questionnaire administered, while ordinary least square regression and descriptive statistics were used to test the hypotheses.

Target Population

The population for this study consisted of all staff in Audit and Bursary Departments in all tertiary Institutions in Ondo State.

Sampling Size and Sampling Procedures

Simple-stratified-random sampling technique was adopted to select sample respondents from Internal Audit and Bursary Departments of Adekunle Ajasin University, Akungba Akoko, University of Medical Science, Ondo and Rufus Giwa Polytechnic, Owo, all in Ondo State, as representative of the entire population. Hence, the sampling of the study include twenty five (25) members from each of the following two (2) categories of Internal Audit Staff and Bursary Department staff of the three (3) Institutions (i.e 25 times 3:75) copies of Likert scale format questionnaire are distributed for the study.

Research Instruments

Data was collected through questionnaires, which were administered to Internal Audit and Bursary Departments staff of Adekunle Ajasin University, Akungba Akoko, University of Medical Science, Ondo and Rufus Giwa Polytechnic, Owo all in Ondo State. Seventy five (75) questionnaire items were distributed for the study.

Data Analyses Techniques

The analyses of data in this study were done with the aid of undated ordinary least square regression (OLS) technique, while the data extracted from the copies of questionnaire was coded to suit the OLS.

Model Specification

The following econometric model is formulated for the research study:

$FD\&P = f(SoD, SyA)$

$FD\&P = \beta_0 + \beta_1 SoD + \beta_2 SyA + \Sigma$

Where:

$FD\&P$ = Fraud Detection and Prevention

SoD = Segregation of Duty

SyA = System Authorization

Σ = Stochastic Error Term

β_0 = Intercept

$\beta_1, \beta_2, \beta_3 > 0$, the presumption signs of the parameters in the specifications.

4.0   Results and Discussion

The presentation starts with **descriptive statistic** with the description of the respondent's base on the variables of interest. The variables used in the model include Fraud Detection and Prevention **(FDP)**, Segregation of Duty **(SD)**, System Authorization **(SA)**. The sample used for the analysis was based on the questionnaire assigned to the respondents (i.e. Internal Audit and Bursary Departments Staff of those Institutions).

Table 1: Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Std. Deviation
FDP	73	2	5	4.16	.687
SoD	73	2	5	3.90	.785
SyD	73	1	5	3.89	.966

Source: SPSS Version 20.0

Interpretation of Results

The test is aimed at determining whether the **signs** and **sizes** of the results are in line with what theoretical postulation of the study. Thus, theoretical postulation tells us that the coefficients are positively related to the dependent variable, if an increase in any of the explanatory variables leads to an increase in the dependent variable, vice visa.

Table 2; Computation of Ordinary Least Square (OLS) Result.

Dependent Variable: Fraud Detection and Prevention (FD&P)				
Method: Ordinary Least Square				
Included Observation: 73				
Variable	**Coefficient**	**Standard Err**	**T-statistic**	**Probabilities**
Intercept	3.154	0.412	7.649	0.000
SoD	-0.021	0.109	-0.193	0.847
SyA	0.281	0.089	3.168	0.002
$R^2 = 0.147$, R^2 bar $=0.123$, F-Stats(2.70) = 6.047, D.W – stats., 1.381				

Source: SPSS Version 20.0

A-priori Expectation Criteria

The test is aimed at determining whether the signs and sizes of the results are in line with what theory postulates. Thus, theory tells us that the coefficients are positively related to the dependent variable, if an increase in any of the explanatory variables leads to an increase in the dependent variable.

Therefore, the variable under consideration and their parameter exhibition of a-priori signs have been summarized in the table below. This table will be guarded by these criteria.

When **β** > 0, Positive relationship.

When **β** < 0, Negative relationship.

Table 3: A-priori Expectation Table

Variable(s)	Expected Sign	Estimate	Remarks
SoD	(+)	$\beta_1 > 0$	Conform
SyA	(+)	$B_2 < 0$	Not Conform

Source: Author's Computation

FDP   = 3.154 -0.021SoD+ 0.281SyA+Ɛt
S.e   (0.412)   (0.109) (0.089)
T-Stat   {7.649}   {-0.193}   {3.168}

The intercept value shown was **3.154** which means, Fraud Detection and Prevention **(FDƋP)** have **3.154** units when other variables are held constant, this showed that fraud detection and prevention can be practiced without system authorization and segregation of duty, fraud detection will continue to be positive despite all the independent variables influence. Segregation of Duty **(SoD)** shows that **1 unit** increases in Segregation of Duty brought **0.021 unit** decrease in Fraud Detection and Prevention **(FDƋP)** and it was not substantial enough to justify the impact of segregation of duties on Fraud Detection and Prevention **FDƋP)** at both private and public sector in Nigeria because **t-critical** value is greater than **t-calculated 1.667>0.193**, thus, it cannot be used for policy making by way of segregation of duty in order to boost fraud prevention and detection. System Authorization **(SyA)** shows that **1 unit** increases in system authorization brought **0.281** unit increase in Fraud Detection and Prevention**(FDƋP)** and it is statistically significant using rule of thumb and T-test statistic respectively, thus, System Authorization **(SyA)** prevents fraud and improves way of records dealing in government parastatals in Nigeria.

Statistical Criteria {first order test}

Coefficient of Multiple Determinants {R^2}

The **R^2** shows the **explanatory power** of the model which can be seen as **0.147** (**14.7%**), means, **14.7%** of changes in Fraud Detection and Prevention **(FDƋP)** can be explained by all explanatory/exogenous variables or are due to exogenous variables changed, while the **R^2** adjusted is the **predictive power** to show the predictive ability of the model and this can be seen as **0.123 (12.3%),** means, **12.3%** of change in Fraud Detection and Prevention **(FDƋP)** can be predicted by explanatory variables in the model.

Lastly, the F-statistic shows the robustness of the model for goodness of fit by comparing **F-calculated** to **F-critical** in the table, in order to explain the impact of whole explanatory variables on dependent/explained variable, and this was shown by looking at it from the angle of **0.01** and **0.05** levels of significance which are **4.79** and **3.07** and is less than **6.047, (4.79 and 3.07<6.047)** calculated respectively.

Econometrics Criteria {second order test}

Test for Autocorrelation

One of the underlying assumptions of the Ordinary Least Square (OLS) Regression Technique is that, the succession values of the random variables are temporarily independent. In the context of the series analysis, this means that an error term $\{U_t\}$ is not correlated with one or more of previous errors {Ut-1}. The problem is usually dictated with Durbin-Watson **{DW}** statistics.

The Durbin-Watson's test compares the **empirical d*** and du in d-u tables to their transforms {4-dL} and {4-dU}.

Decision Rule;

1. If d* < DL, then we reject the null hypothesis of no correlation and accept that there is positive autocorrelation of first order.
2. If d* > {4-dL}, we reject the null hypothesis and accept that there is negative autocorrelation of the first order.
3. If dU< d* < {4-dU}, we accept the null hypothesis of no autocorrelation.
4. If dL< d* <dU or if {4-dU} < {4-dL}, that test is inconclusive.

Where: dL = Lower limit, DU = Upper limit, D* = Durbin Watson.

From our regression result, we have; D* = **1.381**, dL = 1.338, dU = 1.659, 4-dL = 2.662, 4-dU = 2.341.

Since If dL< d* <dU or if {4-dU} < {4-dL}={1.338}<**1.381**<{1.659}, then, our test is inconclusive.

Research question verification

Research question one: How does segregation of duty affect fraud detection and prevention?

From the research question result above, it is cleared that segregation of duty did not affect fraud detection and prevention and had no positive relationship with prevention of fraud in both the public and private sector in Nigeria. Based on the analysis done above, segregation of duty in the offices has not yielded much effect for the prevention of fraud in Nigeria as a result of non-significance of the variable used to capture the analysis.

Research question two: Effect of system authorization on fraud detection and prevention?

From the hypothesis above, it is cleared that there is significant relationship between effective system authorization on fraud detection and prevention. Based on the result of analysis done above, system authorization has significant effect on fraud prevention and detection in any parastatal in Nigeria as a result of the analysis done above.

5.0 Conclusion

The study empirically examined the relationship between internal control system and fraud detection and prevention as well as other related factors including segregation of duties and system authorization. Using data from the three (3) Internal Audit and Bursary Departments of Adekunle Ajasin University, Akungba Akoko, Ondo State University of Medical Science and Rufus Giwa Polytechnic, Owo in Ondo State, the results revealed that such a relationship does exist. Fraud detection and prevention was found to be significantly related to system authorization with a positive relationship. The positive relationship indicates that fraud detection and prevention is dependent on system authorization, the higher the system authorization, the more qualitative and reliable the audit work will be. To this end, this study concludes that fraud detection and prevention is positively and significantly related. Fraud will be difficult to eradicate completely. This gives rise to the following recommendations: Adequate system authorization should be allowed as a procedure for internal control systems so as to prevent or reduce the element of fraud.

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