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EFFECT OF FRAUD PENTAGON MODEL ON FRAUD ASSESSMENT IN DEPOSIT MONEY BANKS IN NIGERIA

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ABSTRACT

This study examined the effect of the fraud pentagon model in fraud assessment in Deposit Money Banks in Nigeria from 2005-2014. The study adopted the ex-post facto research design. The population of the study was centred on the performance indices of the fifteen (15) banks that are currently listed on the Nigerian Stock Exchange from 2005 to 2014. Data were obtained from the published financial statements of the fifteen (15) banks for a ten (10) year period spanning from 2005-2014. The multiple regression technique was the main statistical tool used in the study. In order to verify the quality of the data used, Variance Inflation Factor (VIF) was employed to test for multicollinearity among the variables. The result showed that the Behavioural Trait (BET) factor has a positive significant effect on fraud risk. The study concluded that fraud pentagon model offers an effective means in assessing fraud risk in the financial statement by incorporating the fifth element–'the behavioural trait' as one of the fraud risk factors. This would effectively enhance auditors' detection of material misstatement in the financial statement of DMBs in Nigeria.

Keywords: Fraud, Fraud Pentagon, Fraud Assessment, Fraud Risk.

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1. Introduction

Fraud poses a massive challenge for many organisations, impacting greatly on bottom-line profits, causing negative publicity and eroding customers, stakeholders and shareholders confidence around the world (Owojori & Asaolu, 2009). The global audit and financial advisory firm, KPMG, has rated Nigeria as the most fraudulent country in Africa, with the cost of fraud during the first half of 2012 estimated at N225 billion ($1.5 billion) (Adeyemi, Dabor, & Okpala, 2012). Auditors are responsible for providing reasonable assurance that companies' financial statements are free of material fraud and errors. Audit quality is all about audit risk assessment (Peecher, 2006) and may be improved by enhancing auditors' ability to detect fraud. On the other hand, audit quality enhances corporate governance. Assessing fraud risk is indeed a challenging task for auditors. Macroeconomic forces, excessive risk taking and inadequate regulations of economic and professional practices brought about the worst global recession since the great depression of the 1930's (Moghalu, 2010).

Nigeria has witnessed her fair share of financial reporting problems in the past. Several scandals which involved Chief Executive Officers (CEOs) of five banks were a glaring pointer (Egbunike, 2014). The Central Bank of Nigeria, in a swift move reminiscent of the Asian tsunami, on August 14th 2009, accused the CEOs of the banks of irregular financial reporting and corporate governance dysfunction. The banks were also accused of being over loaded with non-performing loans and with their balance sheets prepared by their auditors to paint a picture of prosperity and buoyancy. The banks include Intercontinental Bank, Union Bank, Oceanic Bank, Afribank and Finbank; by 2012, these banks collapsed and were either merged or acquired by other banks. These were expressed by Obinor (2009) when he quoted Sanusi (2009) that these banks had been living on bubble capital all along, giving false impression about their actual states and coupled with high debt portfolio that were not disclosed in their financial statements.

To assist in assessing fraud risk, the Public Company Accounting Oversight Board (PCAOB) has emphasised that detection of fraud is an important objective of an audit and an important focus of the Board. In an effort to address perceived deficiencies of SAS No. 82, the ASB issued SAS No. 99: "*Consideration of Fraud in a Financial Statement Audit*," in 2002

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(AICPA, 2002a). One of the requirements of SAS No. 99 is that the auditors' consideration of fraud must involve the "exchange of ideas or brainstorming among the audit team members, including the auditor with final responsibility for the audit, about how and where they believe the entity's financial statements might be susceptible to material misstatement due to fraud, how management could perpetrate and conceal fraudulent financial reporting, and how assets of the entity could be misappropriated" (ASA 240; ASA 315; ISA 240; ISA 315; SAS No. 99; AICPA, 2002b). In a report issued by PCAOB, the Board reminds auditors to be diligently focused on their responsibility to detect fraud and urges auditors to comply with the requirements of Statement on Auditing Standards (SAS) No. 99, thereby improving the likelihood that auditors will detect material misstatements due to fraud in a financial audit.

SAS No. 99 also stipulated that auditors need effective model(s), ratios or statistical techniques to augment the various audit analytical procedures usually performed in the cause of their audit assignment. They need tested ratios that possess the capability of pointing to areas in the financial statement prone to manipulation, thus strengthening the substantive tests usually performed on the figures and balances of the financial statements (Nwoye, Okoye, & Oraka, 2013). The report of the Association of Certified Fraud Examiners (ACFE), USA in 2004, also attested to the above belief. These provide auditors with a better understanding of what fraud entails, exposing them skilfully to those model indicators and fraud risk factors that constitute and contribute to fraud perpetration in the Financial Statements of DMBs in Nigeria. Thus, emphasis is now shifting towards auditors actively searching for frauds.

The importance of Deposit Money Banks (DMBs) as engine of growth for development cannot be over emphasised, but the alarming rate at which fraudulent and criminal act has permeated DMBs in recent times has made this study timely. The banking business has become more complex with the development in the field of Information and Communication Technology (ICT) which has changed the nature of bank fraud and fraudulent practices. Berney (2008) observes that customers rely heavily on the web for their banking business which leads to an increase in the number of online transactions. Gates and Jacob (2009) and Malphrus (2009) assert that the internet provides fraudsters with more opportunities to attack customers who are not physically present on the web to authenticate transactions.

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The Nigeria Deposit Insurance Commission Report (2008) reveals that the outcome of the examinations and special investigations showed that some banks were still bedevilled with problems of fraud, weak board and management oversight; fraudulent financial reporting; poor book-keeping practices; non-performing loan with its attendant large provisioning requirements; related party transactions; poor management, declining asset quality; inadequate debt recovery; liquidity problems; leverage problems; non-compliance with banking laws, rules and regulations.

The fraud triangle theory emerged as an important concept introduced at the level of financial statement audits with the global fraud prevalence. Although, Cressey's fraud triangle was supported and used by regulators-American Standard Board (ASB) and American Institute of Certified Public Accountant (AICPA), critics have argued that fraud triangle was found to be incomprehensive in dealing with issues of fraud (Kazeem & Higson, 2012, cited in Sorunke, 2016). Subsequently, the fraud diamond model was developed by Wolfe and Hermanson (2004). However, limited number of studies has used the fraud diamond model both in and outside Nigeria (Onodi, 2014; Omar & Mohamad, 2010). These studies suggested variables as proxy measures for pressure and opportunity, rationalization and capability and tested these variables using information from the financial statement of banks.

However, recent happening in the corporate world with regard to fraud has shown that the aforementioned theories are inadequate to explain the behaviour of a fraudster. Fraud still persists in the banks and also, fraud is a dynamic issue and many of today's largest frauds are committed by intelligent, experienced, creative people, with a solid grasp of company controls and vulnerabilities. In 2011 the Crowe's Fraud Pentagon model was developed by Jonathan Marks which incorporated a fifth element "Arrogance" to be included in the three-factor theory of Cressey's fraud triangle. Having known that these fraud models have been developed in Western countries, there has been concern that these fraud models may not fit the peculiar political and corporate governance needs of developing countries, such as Nigeria. The authors are of the opinion that an important factor such as the 'behavioural trait' of a fraud perpetrator has to be incorporated in Crowes's fraud pentagon model.

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Hence, the fraud pentagon model in no doubt offers a more comprehensive result in fraud risk assessment when compared with other previous models-the fraud triangle model and fraud diamond model in assessing fraud risk in DMBs in Nigeria and equal contributes to the existing literature by bridging the gap in fraud prevention, detection and deterrence in the deposit money banks in Nigeria. To address this gap, this research seeks insight into ways of improving identification of potential material misstatements due to fraud, at the audit planning stage. The study formulates the following hypotheses in the null form as follows:

Ho_1: Fraud triangle variables, financial pressure, opportunity and rationalisation, do not have significant effect on fraud risk factor in Nigerian DMBs.

Ho_2: Fraud diamond variable, capability has no significant effect on fraud in Nigerian DMBs.

Ho_3: Fraud pentagon variable, behavioural trait has no significant effect on fraud in Nigerian DMBs.

2. Review of Related Literature

2.1 Conceptual Review

2.1.1 Fraud and Fraud Risk Factors

The American Heritage Dictionary of the English Language (2011) defines fraud as "a deception deliberately practiced in order to secure unfair or unlawful gain, a piece of trickery; a swindle, one who defrauds; a cheat." According to West's Encyclopaedia of American Law (2008), fraud can be defined as a false representation of a matter of fact-whether by words or by conduct, by false or misleading allegations, or by concealment of what should have been disclosed-that deceives and is intended to deceive another so that the individual will act upon it to her or his legal injury. Fraud risk factors can be defined as events or conditions that indicate *incentives* to perpetrate fraud, *opportunities* to carry out fraud, *rationalizations* to justify a fraudulent action, the *capability* and *behavioural* aspect to use positional authority to pull off a crime (Wilks & Zimbelman, 2004a, b).

SAS No. 82 requires the auditor to specifically assess the risk of material misstatement of the financial statements due to fraud in every audit. It describes two types of fraud – fraudulent financial reporting and misappropriation of assets. SAS No.99 provides more guidance on how the auditor should plan and perform the audit to obtain reasonable assurance about whether or not the financial statements contain material misstatements due to errors or fraud.

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SAS No. 99 identifies red flags as risk factors and categorizes those risk factors in three conditions for fraud arising from fraudulent financial reporting and misappropriations of assets. These conditions are referred to as the fraud triangle and they are: incentives/pressures, opportunities, and rationalization/attitudes. However Wolfe and Hermanson (2004) proffered the theory of the fraud diamond in place of the fraud triangle by adding the fourth element or variable, the capability. They argued that the fraud diamond offers a better view to factors leading to fraud. Though, auditors are cautioned not to think that these fraud risk factors are all-inclusive before the incidence of fraud. Meanwhile, research has found that auditors who used different ideas techniques that encouraged them to develop their own fraud risk factors outperformed those who relied on a checklist based on looking only for the illustrated fraud risk factors.

Moreover, Apostolou and Crumbley (2008) mentioned that, International Standards on Auditing No. 240 provides similar directions to auditors under SAS No.99 with respect to fraud. Both present specific requirements for auditors to follow like; considering a company's internal controls and procedures, and how these are actually implemented when planning the audit, designing and conducting audit procedures to respond to the risk, that management could override internal controls and procedures. Again, identifying specific risks where fraud may occur and considering whether any misstatement uncovered during the audit, may be indicative of fraud. The above standards show that the efforts of standards' setters were directed toward narrowing the expectation gap through increasing auditors' responsibility for detecting fraud. However, regardless of these efforts, an expectation gap still exists. This is supported by what Chemuturi (2008) opined in his study where he believes that current professional standards and authoritative guidance require auditors to provide reasonable assurance that financial statements are free from material misstatements, whether caused by errors or fraud. Nevertheless, the lack of a commonly accepted definition of reasonable assurance along with limitations of audit methods in identifying fraud, cost constraints of audits, and high expectations by investors have widened the expectation gap regarding auditor responsibility for detecting fraud.

However, Crowe's fraud pentagon model offered a more reasonable assurance that auditors can effectively detect fraud using the fifth element, the behavioural trait of individual when

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assessing fraud risk in the financial statement of DMBs in Nigeria. Also, Albrecht, Albrecht, and Albrecht (2008) stated that the new model has helped auditors better detect fraud as they became more proactive in brainstorming possible frauds, working with audit committees and management to assess fraud risks. Nonetheless, auditors need to be trained in determining when people are telling the truth or are being deceptive, when documents are real or forged, whether collusion is taking place, or whether fictitious documents have been created.

Therefore, the researcher is of the opinion that important factor like 'behavioural trait' of the fraud perpetrator be incorporated to Crowes's Fraud Pentagon Model. In addition to all fraud model elements linked together, operant conditioning within behaviourism applies. From the work on learning theory by Edward Thorndike (1898) as cited in McLeod (2007), operant conditioning involves learning from the consequences of our behaviour. According to *Law of Effect* by Edward Thorndike and the Skinner's Theory of Behaviourism, any behaviour that is followed by pleasant consequences is likely to be repeated, and any behaviour followed by unpleasant consequences is likely to be stopped. An illustration could be seen in Anambra State governance. When our present Governor, Chief Willie Obiano assumed office in 2014, he mounted security law that anybody caught in the act of kidnapping or armed robbery will be killed and the properties taken over by the government. The law took effect and one multi-millionaire at Onitsha who uses his hotel as a hide out for all crimes was used as an experiment into implementation of the law. Since then, the issue of kidnapping in Anambra State has reduced drastically.

From the forgoing, the researcher therefore, considers a fifth element, 'the behavioural trait' as the master key in a 'Fraud Behavioural Pentagon Model'. It is our opinion that if the outcome of a fraudster's behaviour is favourable and pleasant to him, there is the tendency of repetition of the act since the fraudster lack conscience and believes that internal controls do not personally apply (Mohamed, Ahmed, & Jon, 2015). According to Sorunke (2016), individual behavioural trait consists of lack of self-control, ineffective communication, greed, ignorance and determination which can be emphasised as separate fraud risk factors from attitude if these factors can cause huge influences to commit fraudulent financial reporting among Nigeria DMBs banks.

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2.2 Empirical Review

Shabnam, Takiah, and Zakiah (2014) research on the usefulness of Cressey's fraud risk factor framework adopted from SAS No. 99 to prevent fraud from occurring. In accordance with Cressey's theory, pressure, opportunity and rationalization are existence when fraud occurs. The study suggested variables as proxy measures for pressure and opportunity, and test these variables using publicly available information relating to a set of fraud firms and a sample of no-fraud firms. Two pressure proxies and two opportunity proxies are identified and suggested to be significantly related to financial statement fraud. The study found that leverage and sale to account receivable are positively related to the likelihood of fraud.

Onodi (2014) examined the application of fraud diamond model in the determination of fraud risk factors in the banking industry. The fraud diamond risk factors- pressure opportunity, rationalization, capability and corporate governance were proxied by these variables: cash flow trend, working capital, non-performing loan, provision for non-performing loan, non-performing loan and advance to shareholders fund, total loan and advance to shareholders fund, non-performing loan and advance to total current assets, interest coverage ration dividend coverage ratio, return on equity ratio, net margin ratio, debt to equity, debt to total assets and capital gearing ratio. Both primary and secondary data were used for the study. The findings revealed that elements of the fraud diamond model were critical factors in the determination of fraud risk in Nigeria banks.

Etale, Ayunku, and Etale (2016) investigated the relationship between non-performing loan and bank performance in Nigeria for the period 1994- 2014. The study employed ADF Unit Root test, descriptive statistics and multiple regression techniques were used to analysed data collected for the period of the study from the CBN, NDIC and annual reports of listed banks. The results of the study show that BAL and DOL had statistically negative significant influence on ROCE, while SUL had statistically negative insignificant impact on ROCE. These results show that high level of non-performing loans would reduce the performance of banks in the long run in Nigeria. The study therefore, recommended that credit reporting agencies and supporting authorities should be strengthened in order to reduce the high level of non-performing loan in the banking sector in Nigeria.

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3. Design and Methodology

The study adopts the ex post facto research design. An ex post facto research design involves a systematic empirical inquiry, in which an observer has no direct control of independent variables because their manifestations have already occurred or because they are inherently not manipulated. The population of the study comprised of fifteen (15) DMBs listed on the Nigerian Stock Exchange from 2005 to 2014. The study relied on longitudinal data obtained from the published financial statements of the fifteen (15) banks for a ten (10) year period spanning from 2005-2014. The data were analyzed using multiple regression technique with the aid of *E-views 9.*

3.1 Model Specification

a. Financial Pressure Risk Factors

The model for the financial pressure risk factors is shown below as follows:

$FRD_{it} = \beta_0+\beta_1 FP_{it}\ (CCF_{it} + WC_{it} + NPL_{it} + PNPL_{it}) + \mu$.....1

b. Opportunity Risk Factors

The model for the opportunity risk factors is shown below as follows:

$FRD_{it} = \beta_0+\beta_1 OPR_{it}\ (NPLSF_{it} + TLSF_{it} + NPLCA_{it}) + \mu$.....2

c. Rationalisation Risk Factors

The model for the rationalisation risk factors is shown below as follows:

$FRD_{it} = \beta_0+\beta_1 RA_{it}\ (PATDI_{it} + EBITIC_{it}) + \mu$ 3

d. Capability Risk Factors

The model for the capability risk factors is shown below as follows:

$FRD_{it} = \beta_0+\beta_1 CAP_{it}\ (PATSF_{it} + PATNA_{it}) + \mu$ 4

e. Corporate Governance Risk Factors

The model for the corporate governance risk factors is shown below as follows:

$FRD_{it} = \beta_0+\beta_1 CORG_{it}\ (TDTA_{it} + TLEC_{it} + EQNL_{it}) + \mu$.....5

f. Behavioural Trait Risk Factors

The model for the behavioural trait risk factors is shown below as follows:

$FRD_{it} = \beta_0+\beta_1 BET_{it}\ (C/CA_{it} + CM/CL_{it}) + \mu$ 6

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Table 1: Description of variables

Variable	Notation	Description
Financial Pressure	FP	This variable is proxy by: (i) Cash Flow Trend; (ii) Working Capital Ratio; (iii) Non-performing Loan Ratio; and (iv) Non-performing Loan Provision Ratio.
Opportunity	OPR	Opportunity risk factor is measured by: (i) Related Party Transaction; (ii) Weak Internal Control; and (iii) Rapid Growth.
Rationalisation	RAT	This is proxy by: (i) Interest Coverage Ratio; and (ii) Dividend Coverage.
Capability	CA	The proxy variables were: (i) Return on Equity; and (ii) Net Profit Margin.
Corporate Governance	COPG	The proxy variables used were: (i) Debt to Equity; (ii) Debt to Assets; and (iii) Capital Gearing Ratio. These variables measure management efficiency.
Behavioural Trait	BET	The proxy variables were: (i) Cash to Current assets; and (ii) Cash to Current Liability

Source: Author's Compilation (2016)

4. Data Presentation and Results

4.1 Descriptive Statistics

The table below shows the computed statistics of the operational fraud risk factors (as contained in the fraud Pentagon model) data for DMBs in Nigeria during the study period are presented in below.

Table 2: Descriptive statistics of operational fraud risk factors

	FRAUD	FP	OPR	RAT	CAP	CORG	BET
Mean	2.933333	0.701667	0.860000	1.258667	0.332667	1.957333	0.492000
Median	3.000000	0.700000	0.870000	1.100000	0.300000	1.930000	0.500000
Maximum	4.000000	1.000000	1.430000	4.350000	0.900000	3.030000	1.100000
Minimum	2.000000	0.500000	0.480000	0.300000	0.080000	1.070000	0.100000
Std. Dev.	0.457738	0.157703	0.304889	0.997131	0.196549	0.510147	0.242375
Skewness	-0.315216	0.388681	0.305582	2.069957	1.610108	0.441622	0.873395
Kurtosis	4.902893	1.935461	1.912535	7.260907	5.713194	2.799540	3.892450
Jarque-Bera	2.511529	11.08599	0.972563	22.05889	11.08201	0.512690	12.40480
Probability	0.284858	0.081014	0.014909	0.000016	0.003923	0.073875	0.008466
Sum	44.00000	10.52500	12.90000	18.88000	4.990000	29.36000	7.380000
Sum Sq. Dev.	2.933333	0.348183	1.301400	13.91977	0.540843	3.643493	0.822440
Observations	15	15	15	15	15	15	15

Source: E-Views 9.0

From Table 2, the mean serves as a tool for setting benchmark. The median re-ranks and takes the central tendency. While the maximum and minimum values help in detecting

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problem in a data. The standard deviation is the most robust and widely used measure of dispersion/ variation from the mean. It is a measure of risk. The higher the standard deviation, the higher is the risk of the data. According to, the standard deviation is a measure that summarises the amount by which every value within a data set varies from the mean.

In many data sets, the values deviate from the mean due to chance and such data sets are said to display a normal distribution. In a data set with a normal distribution, most of the values are clustered around the mean, while relatively few values tend to be extremely high or extremely low. Many natural phenomena display a normal distribution. The standard deviation in the DMBs for the period 2005-2014 is 0.457738, 0.157703, 0.304889, 0.997131, 0.1965549, 0.510147 and 0.242375 for fraud, financial pressure, opportunity, rationalization, capability corporate governance and behavioural trait respectively. For such distribution, it is the case that 0.45%, 0.15%, 0.30%, 0.99%, 0.19%, 0.51% and 0.24% of values are less than one standard deviation away from the mean value of FR, FP, OPR, RAT, CAP, CORG and BET respectively.

4.2 Test of Hypotheses

Table 3: Multiple regression analysis between Fraud and FP, OPR, RAT, CAP, CORP, BET in the DMBs

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.168522	0.543795	9.504533	0.0000
FP	7.936986	0.631537	11.48659	0.0762
OPR	0.729682	0.271132	6.691241	0.0274
RAT	-0.001285	0.083934	-0.015305	0.9882
CAP	2.756188	0.499480	9.513950	0.0685
COPG	0.287336	0.169872	1.691485	0.0292
BET	2.273622	0.444262	7.615903	0.0551

R-squared	0.732064	Mean dependent var	2.933333
Adjusted R-squared	0.701112	S.D. dependent var	0.457738
S.E. of regression	0.289096	Akaike info criterion	0.660608
Sum squared resid	0.668611	Schwarz criterion	0.991031
Log likelihood	2.045440	Hannan-Quinn criter.	0.657088
F-statistic	74.51629	Durbin-Watson stat	1.898037
Prob (F-statistic)	0.027125		

Source: E-Views 9.0

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Interpretation of Regression Result

The prob. (F-statistic) which is used to test the overall significance of a model reveals that the tested variables have a collective, statistically significant relationship at 5% level of significance. It was observed from the result of the analysis in Table 3 that the coefficients of determination (R-Squared adjusted) obtained was 70.33, meaning that 70% of the systematic variations on the dependent variables could be jointly predicted by all the independent variables. The Durbin-Watson Statistics is 1.898037 which is approximately 2 (based on the rule of thumb). This indicates the fitness of model used in the study and the absence of the problem of auto correlation in the regressed result, which is a problem, associated with time series data.

Model Specification Fraud Pentagon model for the Nigerian Deposit Money Banks is given as:

$$FRD_{it} = 5.168522 + 7.936986FP_{it} + 0.729682OPR_{it} - 0.001285RAT_{it} + 2.756188CAP_{it} + 0.287336COPG_{it} + 2.273622BET_{it} + \mu$$

Interpretation of Model Coefficients

The result in Table 3 shows that Fraud (FR) has a positive relationship with Financial Pressure (FP) at 7.936986 and statistically significant at 0.0762. The Opportunity (OPR) Risk factor has a positive relationship with FR at 0.729682 and statistically significant at 0.0274. Rationalization (RAT) has a negative relationship with FR at -0.001285 and statistically insignificant at 0.9882. FR has a positive relationship with Capability (CAP) at 2.756188 and statistically significant at 0.0685. Corporate governance (COPG) has a positive relationship with FR at 0.287336 and statistically significant at 0.0292. Also, there exists a positive relationship between FR and Behavioural Trait (BET) at 2.273622 and statistically significant at 0.0551.

4.2.1 Hypothesis One

Ho: Fraud triangle variables, financial pressure, opportunity and rationalisation, do not have significant effect on fraud risk factor in Nigerian DMBs.

Decision Rule:

Accept the alternate hypothesis, if the p-value of the test is less than 0.01, 0.05 and 0.10, otherwise reject. In Table 3, the result of the analysis of the effect of financial pressure on fraud risk in the Nigerian DMBs indicated a coefficient value 7.9370 and p-value of 0.0762. These show that financial pressure has a positive effect on fraud risk; the higher the financial

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pressure, the higher the fraud risk in the bank. The table also revealed a probability value of 0.0762, which is less than the alpha value of 0.10 (10%). This means that financial pressure has positive effect on fraud risk and the influence is statistically significant at 10%. Based on this result, the study rejects the null hypothesis and accepts the alternate; and concludes that financial pressure has positive influence on bank fraud in Nigeria.

The result of the analysis of the effect of opportunity on fraud risk factor presented on Table 3 showed coefficient value of 0.7297 and probability value of 0.0274. The coefficient value is positive. The coefficient value of 0.7297 means that opportunity risk factor has a weak positive effect on the level of fraud committed in banks. Frauds are likely to be committed when the opportunity to do so offers itself. The p-value of 0.0274 is less than the alpha value of 0.05 (5%). This showed that opportunity has a positive effect on bank fraud and the effect is statistically significant at 5%. Consequently, we reject the null hypothesis and accept the alternate hypothesis and conclude that opportunity has a positive effect on fraud in Nigerian DMBs.

The effect of rationalization on fraud risk showed a coefficient value of -0.0013 and p-value of 0.9882. The negative coefficient value means that rationalization has negative influence on fraud risk. However, the coefficient value of (-0.0013) indicates a weak negative effect and shows that the more a fraudulent staff tries to rationalize his action, the less the risk of fraud in the banks. The effect of rationalization on fraud risk shows a p-value of 0.9882 which is greater than 0.1 (10%). This means that rationalization does not have statistically significant effect on fraud risk in the deposit money banks in Nigeria. Based on this result, the study accepted the null hypothesis and concluded that even though rationalization has very weakly effect on fraud risk in deposit money banks in Nigeria, the influence is not statistically significant even at a high significance level of 10%.

4.2.2 Hypothesis Two

Ho: Fraud diamond variable, capability has no significant effect on fraud in Nigerian DMBs.

Decision Rule:
Accept the alternate hypothesis, if the p-value of the test is less than 0.01, 0.05 and 0.10, otherwise reject. In Table 3, the result of the analysis of the influence of capability on fraud

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risk as presented in Table 3 shows a coefficient value of 2.7562 and p-value of 0.0685. The positive coefficient value of 2.7562 connotes that management capability has positive impact on fraud risk and with a p-value of 0.0685 which is higher than 5% level of significance but less than 10% significant level. Based on this result of analysis, the study rejected the null hypothesis which states that management capabilities has no significance effect on fraud risks and accept the alternate hypothesis. We, therefore, conclude that management capability has a significant effect on fraud risk factors in the DMBs in Nigeria.

4.2.3 Hypothesis Three

Ho: Fraud pentagon variable, behavioural trait has no significant effect on fraud in Nigerian DMBs.

Decision Rule:
Accept the alternate hypothesis, if the p-value of the test is less than 0.01, 0.05 and 0.10, otherwise reject. In Table 3, the result of the analysis on fraud risk showed a coefficient value of 2.2736 and p-value of 0.0551. The positive coefficient value means behavioural trait has a positive effect on fraud risk in banks and the effect was statistically significant at five percent 10%. Hence individual life style and inherited trait of employee have influence on the level of fraud risk in Nigerian DMBs. Based on the analysis finding, the study rejects the null hypothesis and accepts the alternative hypothesis. The study concludes that behavioural trait has a positive effect on fraud risk in Nigerian DMBs and the effect is statistically significant at 5% level.

The summary of the regression analysis result is presented in the Table below.

Table 4: Summary of regression analysis output

	FP	OPR	RAT	CAP	COPG	BET
Coefficient	7.9370	0.7297	-0.0013	2.7562	0.2873	2.2736
T-test	11.4866	6.6912	-0.0153	9.5140	1.6915	7.6159
P-value	0.0762**	0.0274*	0.9882	0.0685**	0.0292*	0.0551**

Source: E-Views 9.0

4.3 Post Regression Analysis

The post regression analysis was conducted to test for multi-co-linearity in the variables used for this study. The general rule for interpretation is: a mean variance inflation factor less than ten (that is mean VIF < 10) shows no multi-co-linearity; while a value greater than ten (mean

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VIF > 10) shows evidence of multi-co-linearity. The result of the post regression analysis of the variables used in the model is presented in Table 5.

Table 5: Variance Inflation Factors

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	326.3164	1875.039	NA
CCF+WC+NPL+PNPL	0.208766	9.272583	1.876584
NPLSF+NPLTA+NPLCA	0.043857	1564.245	1.517659
PATDI+EBITIC	0.053629	1.325456	2.297317
PATSF+PATNA	2.423419	1.366012	1.163717
TDTA+TLEC+EQNL	0.004718	1.215367	1.131499
CCA+CMCL	1.019511	1.435136	1.161661

Source: E-Views 9.0

The Table above shows the analysis of each independent variable regressed on the remaining variables. This was done to test for significance of the relationship among the independent variables. The results from the regressions were similar to those identified in the correlation test and did not reveal any significant relationships other than those identified in the correlation analysis. The mean variance inflation factor in each test is less than 10 and thus indicates evidence of non- existence of multi-co-linearity among the variables used in this study.

4.4 Discussion of Findings

The analysis revealed that all the banks have cash flow of over 40% the expected minimum level of liquidity by the regulatory authorities. The multiple regression result output in Table 3 shows that Financial Pressure (FP) indices (CCF, WC, NPL and PNPL) have a positive effect on fraud risk; i.e., the higher the FP, the higher the fraud risk in the DMBs. The Table also reveal a probability value of 0.0762, which is less than the alpha value of 0.10 (10%), thus, FP has a positive statistically significant effect on fraud risk at 10%.

The multiple regression result output in Table 3 shows that Opportunity (OPR) indices (NPLSF, TLSF, and NPLCA) have a weak positive effect on fraud risk; i.e., the higher the OPR, the higher the fraud risk in the DMBs. The Table shows that frauds are likely to be committed when the opportunity to do so offers itself. The p-value of 0.0274 is less than the

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alpha value of 0.05 (5%). This showed that opportunity has a positive effect on bank fraud and the effect is statistically significant at 5%.

The multiple regression result output in Table 3 shows that Rationalisation (RAT) indices (PATDI and EBITIC) have a negative effect on fraud risk. The coefficient value of (-0.0013) indicates a weak negative effect and shows that the more a fraudulent staff tries to rationalize his action, the less the risk of fraud in the banks. The effect of RAT on fraud risk had a p-value of 0.9882, which is greater than 0.1 (10%). This means that rationalization has a negative non-significant effect on fraud risk in the DMBs in Nigeria.

The multiple regression result output in Table 3 shows that Capability (CAP) indices (PATSF and PATNA) have a positive effect on fraud risk; i.e., the higher the CAP, the higher the fraud risk in the DMBs. The Table also reveal a probability value of 0.0685, which is higher than an alpha value of 0.05 (5%), but less than 10% significant level. This means that management capability has a positive significant effect on fraud risks in DMBs in Nigeria.

The multiple regression result output in Table 3 shows that the Behavioural Trait (BET) indices (C/CA and CM/CL) have a positive effect on fraud risk. The positive coefficient value means behavioural trait has a positive effect on fraud risk in banks and the effect was statistically significant at 10%. Hence, an individual's life style and inherited trait of employee have influence on the level of fraud risk in Nigerian DMBs. The probability value was of 0.0551, which is higher than an alpha value of 0.05 (5%), but less than 10% significant level. Therefore behavioural trait has a positive effect on fraud risk in Nigerian DMBs and the effect is statistically significant at 10% level.

The results are in consonance with Shabnam, Takiah, and Zakiah (2014); Onodi (2014); Skousen and Wright (2006); though using different proxies for financial pressure. The findings suggest that all the pressure proxy variables (Sales to Accounts receivables and leverage) are positively correlated to the level of financial statement fraud occurrence. Lee and Yeh (2004) concluded that deviation in control away from cash flow rights was related to risk for financial distress. This study also confirms the findings by Etale, Ayunku, and Etale (2016) that non-performing loans influence fraud in the financial statement of DMBs in

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Nigeria. They underline that the uncertain economic prospects, the high default risk and the difficulty of assessing the soundness of each debtor, generate adverse selection and aversion to rising risk among banks. This therefore calls for adoption of policies of lending restrictions.

5. Conclusion and Recommendations

The study concluded that fraud pentagon model offers an effective means in assessing fraud risk in the financial statement by incorporating the fifth element–'the behavioural trait' as one of the fraud risk factors. The regression results showed a significant positive effect of the behavioural trait on fraud risk in DMBs banks and the influence was statistically significant at five percent 5%. Hence, an individual's life style and inherited trait of employee have an influence on the level of fraud risk in Nigerian DMBs. Based on these, the study makes the following recommendation:

1. Auditors incorporate the fraud pentagon model with great emphasis on the behavioural trait in addition to the SAS No. 99 is of great significance as a viable tool to help in prevention and detection of fraud in an organisation's financial statement. The fraud pentagon model offers an effective means in assessing fraud risk in the financial statement by incorporating the fifth element - the behavioural trait in the fraud risk factor. This would effectively enhance auditors' detection of material misstatement in the financial statement of DMBs in Nigeria.
2. Auditors should effectively apply both international and local auditing standards. According to Albrecht, Albrecht, and Albrecht (2008) the new standards (SAS No.99) have helped auditors better detect fraud as they became more proactive in brainstorming possible frauds, working with audit committees, forensic accountants and management to assess fraud risks. This can be achieved through continuous brainstorming at initial stage as prescribe by SAS No.99, about the possible fraud risk before substantive work begun.

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REFERENCES

Adeyemi, S. B., Dabor, E. L., & Okpala, O. (2012). Factors affecting audit quality in Nigeria. *International Journal of Business and Social Science, 3*(20), 198-209.

Albrecht, W. S., Albrecht, C., & Albrecht, C. C. (2008). Current trends in fraud and its detection. *Information Security Journal: A global perspective, 17*, 2-12. Available at www.econlit.com

American Institute of Certified Public Accountants, (2002). Consideration of fraud in a financial audit. *Statement on Auditing Standards No. 99*. New York, NY: AICPA.

Apostolou, N., & Crumbley, D. L. (2008). Auditors' responsibility with respect to fraud: A possible shift? *CPA Journal*.

Berney, L. (2008). For online merchants, fraud prevention can be a balancing act. *Cards & Payments, 21*(2), 22-27.

Chemuturi, V. (2008). Are you prepared to assess fraud risk factors? *Pennsylvania CPA Journal*, Winter.

Egbunike, P. A. (2014). Transition to 21st century audit: An imperative for fraud detection in Nigeria. *Research in Applied Economics 6*(1), 1948-5433. URL: http://dx.doi.org/10.5296/rae.v6i1.5188.

Etale, L. M., Ayunku, P. E., & Etale, E. L. M. (2016). The impact of non-performing loans and bank performance in Nigeria. *International Journal of Humanities and Social Science Invention, 5*(4), 1-5.

Gates, T., & Jacob, K. (2009). Payments fraud: Perception versus reality – a conference summary. *Economic Perspectives, 33*(1), 7-15.

Lee, T. S., & Yeh, Y. H. (2004). Corporate governance and financial distress: Evidence from Taiwan. *An International Review, 12*(3), 378-388.

McLeod, S. A. (2007). Edward Thorndike. Available at http://www.simplypsychology.org/edward-thorndike.html

Moghalu, K. (2010). Impact of global financial crisis on banking sector. *The Nation Newspaper*, August, 11.

Mohamed, Y. K., Ahmed, K., & Jon, S. (2015). Fraudulent financial reporting: An application of fraud models to Malaysian public listed companies. *A Multidisciplinary Journal of Macro Trends, 4*(3).

Nwoye, U. J., Okoye, E. I., & Oraka, A. O. (2013). Beneish model as effective complement to application of SAS No.99 in the conduct of audit in Nigeria. *Academy of Business & Scientific Research, 2*(6), 640-655.

Obinor, F. (2009). Mission to save banks. *Guardian*, Tuesday, 18th August.

Onodi, B. E. (2014). *Application of Fraud Diamond Model in the Determination of Fraud Risk Factors in Bank in Nigeria* (Unpublished Dissertation). Department of Accountancy, Nnamdi Azikiwe University, Awka.

Owojori, A. A. & Asaolu, T. O. (2009). The role of forensic accounting in solving the vexed problem of corporate world. *European Journal of Scientific Research, 29*(2), 183-187.

Peecher, M. (2006). Behavioural research opportunities regarding audit quality. *International symposium of audit research presentation.*

Sanusi, L. S. (2009). Address by the governor of the central bank of Nigeria on development in the

COPYRIGHT © 2019 JOGA



banking system in Nigeria, August 14.

Shabnam, F. A., Takiah, M. I., & Zakiah, M. M. (2014). Fraud risk factors of fraud triangle and likelihood of fraud occurrence: Evidence from Malaysia. *Information Management and Business Review*, *6*(1), 1-7.

Sorunke, O. A. (2016). Personal ethics and fraudster motivation: The missing link in fraud triangle and fraud diamond theories. *International Journal of Academic Research in Business and Social Sciences*, *6*(2), 159-165.

Wilks, T. J., & Zimbelman, M. F. (2004a). Decomposition of fraud-risk assessments and auditors' sensitivity to fraud cues. *Contemporary Accounting Research*, *21*(3), 719-745.

Wilks, T. J. & Zimbelman, M. F. (2004b). Using game theory and strategic reasoning concept to prevent and detect fraud. *Accounting Horizons*, *18*(3), 173-184.

Wolfe, D, T., & Hermanson, D. R. (2004). The fraud diamond: Considering the fourth elements of fraud. *The CPA Journal*, December.

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