Effect of Forensic Investigation Techniques in Detecting Occupational Fraud In The Public Sector: A Study Of Ministry Of Finance, Anambra State

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ABSTRACT
There has been a worrisome upsurge in the loss of high profile corruption cases in Nigeria occasioned by the inability of the prosecutors to evidently prove their cases beyond reasonable doubts. The study seeks to examine the effect of Forensic investigation techniques in detecting Occupational fraud in the Public sector. Purposive sampling technique and cross sectional survey design was employed. The sample size for the study was 250 consisting of investigators, prosecutors, staff of Finance, Accounts and Audit units. Population was drawn from five anti-corruption agencies in Nigeria: Economic and Financial crimes commission (EFCC), Independent Corrupt Practices Commission (ICPC), Code of Conduct Bureau (CCB), Federal Bureau of Investigation (FBI), Police Special Fraud Unit (PSFU) of the criminal Investigation Department of the Nigerian Police Force and Ministry of Finance, Anambra State. Data generated for the study was on five point likert scale .The hypotheses of the study were statistically tested with Kruskal Wallis test (one way ANOVA for ordinal data) on Statistical Package for Social Sciences (SPSS) version 23. Findings indicate that there are no generally acceptable forensic investigation techniques in place for detecting fraud in the public sector. Again, there is a significant positive relationship between Forensic investigation Techniques and fraud detection in the Public sector. To this end, it was recommended that data mining should be inculcated fully and adopted in the operations and system of the public sector. Anti-corruption agencies in Nigeria should always adopt forensic accounting investigation techniques in all their investigations so as to be able to come up with evidences that will be supportive in prosecution of corruption cases in courts.

Keywords: Occupational fraud, Forensic investigation techniques, public sector, Data Mining

INTRODUCTION
Public Sector refers to all organizations that are owned, operated and financed by the government. Officials and employees who manage public sector activities are by virtue of their duty, required to render adequate accounts of their activities to the public. However, the incidence of occupational fraud is on the increase across public sector organizations and across nations. Fraud is a universal problem and in particular, occupational fraud — is a pervasive threat that exists in any nation and economic system. Occupational fraud may be defined as “the use of one’s occupation for personal enrichment through the deliberate misuse or misapplication of the employing organization’s resources or assets” (Association of Certified Fraud Examiners, 2002). This can mean any fraud perpetrated by an employee, manager, executive or owner of an organization of which the victim is the organization itself. This includes but not limited to outright cash theft, kickbacks to customers, procurement fraud, billing for work not done, padding overhead expenses, payment of ghost employees, overstating hours worked.
Although fraud affects the whole world, the magnitude of fraud in Nigeria and the extent to which the economy is affected is a call for alarm (Abiola, 2009). The failure of internal auditing system of organizations in identifying and management of Occupational and accounting fraud has led to the use of specialized procedures collectively known as forensic accounting (Sorunke, 2018). Forensic accounting is a new branch of accounting practice which involves the application of specialized skills in accounting, finance, quantitative method, law and research in the collection, analysis, interpretation and evaluation of financial evidence to support criminal proceedings. The adoption of forensic investigation techniques in fraud investigation and prosecution has become imperative.

While considerable literatures has been developed on the definition of forensic accounting as well as the skill requirements for forensic accountants for fraud investigation, little has been written on the application of forensic accounting investigation techniques in successful detection and prosecution of occupational fraud. Occupational fraud represented by payroll and personnel fraud is of interest in this study.

**Statement of Problem**

There has been continuous increase in financial crime, mismanagement and misappropriation of funds in the government agencies (Ojaide 2000, Okoye and Akamobi 2009, Owojori and Asaolu 2009), Izedomin and Mgbame 2011, Kasum 2009). Many arrests have been made. However, the number of prosecution cannot be viewed in the same manner. Corruption among public officials has remained the bane of Nigeria for many years (Abiola, 2009, Gbegi and Adebisi2014). It is so worrisome that most meaningful efforts put in place by anti-corruption agencies in Nigeria to check the menace seem to be proving abortive as many of the corrupt officials often get away with their loots even in the law courts.

Adegbie and Fakile (2012) posit that non-availability of appropriate litigation support services in the court has led to misjudgment or incorrect submission by lawyers and judges. Hence offenders are not given appropriate punishment commensurate to their offences. Sorunke (2018) posited that lack of successful prosecution of high profile corruption cases is giving a serious cause of concern both for Nigerians and international community.

The onus therefore lies on how to effectively detect, prevent and manage fraud in the public sector and successfully prosecute the perpetrators with the application of forensic accounting investigation Techniques. It is in the light of the above, that this study seeks to examine the effect of forensic investigation techniques in detection of occupational fraud in Nigerian Public sector.

**Objectives of the study**

The broad objective of this study is to examine the effect of Forensic investigation techniques in detecting Occupational fraud in the public sector. The specific objectives are as follows:

1. To discover if there are generally acceptable forensic investigation techniques in place for detecting fraud in the public sector
2. To examine the extent of the relationship between Data Mining technique (DM) and detection of payroll fraud in the public sector.
3. To investigate the extent of the relationship between Data Mining technique (DM) and detection of personnel fraud in the public sector.

**Research Hypotheses**

To effectively achieve the stated objectives, the following research hypotheses formulated were stated in their null form:

1. $H_{01}$: There are no generally acceptable forensic investigation techniques in place for detecting fraud in the public sector.
2. $H_{02}$: There is no significant positive relationship between Data Mining technique (DM) and detection of payroll fraud in the public sector.
3. $H_{03}$: There is no significant positive relationship between Data Mining technique (DM) and detection of personnel fraud in the public sector.

**Scope of the Study**

In other to achieve the objectives of the study, the researcher focused on the application of forensic investigation techniques in detecting occupation fraud in the public sector. Occupational fraud among
other categories of fraud is of interest to the researcher and in particular Payroll and Personnel fraud. This study did not cover all of public sector organizations. Rather, it was limited to Ministry of Finance, Anambra state.

**CONCEPTUAL FRAMEWORK**

**Forensic Accounting**
Forensic accounting is a science that deals with the application of accounting facts and concepts gathered through auditing methods, techniques and procedures to resolve legal and related problems which requires the integration of investigative, accounting, and auditing skills. According to Oyedokun (2016), and Zysman (2004), forensic accounting has existed for many years and with the growing complexity of the business environment and the growing number of business related investigations, forensic accounting professionals are increasingly asked to assist in the investigation of financial and business related issues. Oyedokun (2013) describes Forensic accounting as a scientific Accounting method of uncovering, resolving, analyzing and presenting fraud matters in a manner that is acceptable in the court of law. (Shanikat and Khan 2013 as cited in oyedokun 2016) opines that forensic accounting, given its peculiar investigative stance, requires a specific skills set on the part of the forensic accountant, that integrates accounting, auditing and investigative skills. Akintoye (2008), in Owolabi, Dada, and Olaoye (2013), explains that forensic accounting is accounting that is suitable for legal review, offering the highest level of assurance, and including the new generally accepted connotation of having been arrived at in a scientific fashion and providing the needed findings in settling disputes. Forensic accounting according to Zysman (2004) is an "accounting analysis that can uncover possible fraud that is suitable for presentation in court. Such analysis will form the basis for discussion, debate, and dispute resolution."

**Forensic Investigation**
Forensic investigation is often referred to as forensic science, which is the application of science to criminal or civil law. It is the practice of lawfully establishing evidence and facts that are to be presented in a court of law. Forensic investigation can also be explained as the application of investigative and analytical skills for the purpose of resolving financial issues in a manner that meets standards required by courts of law. Forensic investigation is the act of utilizing science to establish facts or evidence which is to be used for crime based trials or proceedings. Investigation is a search or inquiry for ascertaining facts; detailed or careful examination. It is a vital part of forensic accounting and auditing process but only applied when the event or transaction is beclouded. It is carried out when lapse has been established to ascertain who is responsible, the reason for the action including the extent of damage if any. It could be referred to as a detailed verification and clarification of doubt about a transaction or event (Oyedokun, 2013).

**Forensic Investigation Techniques**
Because of the unique legal aspects of forensic accounting investigations, there are special auditing protocols that must be followed since the audit’s conclusions and findings may be subject to challenge in an adjudication proceeding, or in more formal court proceedings. Oyedokun, 2013 opined that Forensic Accounting Techniques such as interviewing, computer assisted reviews such as data mining, and document review techniques are useful in detecting fraud.

**Data mining**
Data mining is about looking out for anomalies, trends, patterns and correlations within large data sets relating to the business and its finances to predict outcomes. It is a new technology with great potential to help business entities focus on the most important information in their operations. Data mining tool predicts future trends and behaviors allowing businesses to make proactive knowledge driven decisions. The automated prospective analyses offered by data mining goes beyond analysing past events provided by retrospective tools typical of decision support systems.

Data mining can be used by Companies to turn raw data into useful information. By using software to look for patterns in large batches of data, firms can learn more about their customers, get better view of market risks, detect fraud faster, manage regulatory compliance obligations, get optimal returns on their
marketing investments and develop more effective marketing strategies as well as increase sales and decrease costs.

THEORETICAL FRAMEWORK
White Collar Crime Theory
The study is anchored on White collar crime theory propounded by Sutherland in 1939. White-collar criminals are opportunists, who over time take advantage of their circumstances and position to accumulate financial gain. He was the first to coin the term and hypothesis ‘white-collar criminals’ He defined his idea as “crime committed by a person respectability and high social status in the course of his occupation (Sutherland 1949, cited in Okoye & Gbegi 2013). They are educated, intelligent, affluent, individuals who are qualified enough to get a job which allows them the unmonitored access to often large sum of money. Fredrichs (2007) stated that the only way one crime differs from another is in the backgrounds and characteristics of its perpetrators. Most, if not all white-collar offenders are distinguished by lives of privilege, much of it with origins in class inequality. It is estimated that a great deal of white-collar crimes is undetected or if detected, it is not reported. Because of the high status of the perpetrators of these crimes, a highly trained and experienced examiner or investigator like the Professional Forensic Accountant is needed to forestall the occurrence of such high profile fraud.

EMPIRICAL FRAMEWORK
Okoye and Gbegi(2013) examined forensic accounting as a tool for fraud detection and prevention in the public sector organizations and found out among other things that there is a significance difference between Professional Forensic Accountants and Traditional External Auditors and therefore the use of Forensic Accountants can help better in detecting and preventing fraud cases in the public sector organizations. Ocansey, (2017) investigated the relevance of forensic accounting technique application in combating of economic and financial crimes in Ghana and found out that the application of forensic accounting technique has significant impact in combating of economic and financial crimes. In the work of Modugu and Anyaduba (2013) titled “Forensic Accounting and Financial Fraud in Nigeria: An Empirical Approach” the study examined if there is significant agreement amongst stakeholders on the effectiveness of forensic accounting in financial fraud control, financial reporting and internal control quality. The findings of the study indicate that there is significant agreement amongst stakeholders on the effectiveness of forensic accounting in fraud control, financial reporting and internal control quality. Ogundana, Okere, Ogunleye and Oladapo(2018) studied “Forensic Accounting and Fraud Prevention and Detection in Nigerian Banking Industry”. This study examined the role of the forensic accountant in the prevention and detection of fraud in the Nigeria banking sector. Findings revealed that forensic accounting has a significant impact on fraud prevention and detection. Gbegi and Adebisi(2014) carried out a study titled “Forensic Accounting Skills and Techniques in fraud investigation in the Nigerian public sector” to determine whether or not the forensic accounting skills and techniques can help in fraud investigation in the Nigerian public sector. Findings from the study showed that forensic accounting skill and techniques have significant effect in uncovering and reducing fraud in the Nigerian public sector. In his work titled “Forensic Accounting Investigation Techniques and Successful Prosecution of Corruption Cases in Nigeria” Sorunke. (2018) examine the potency of forensic accounting investigation techniques in corruption investigation and prosecution in Nigeria. The findings from the study indicate that there is a significant and positive relationship between the adoption of forensic accounting investigation techniques in corruption investigation and successful prosecution of corruption cases in Nigeria.

METHODOLOGY
Research Design
The study employed a cross-sectional descriptive Survey design of collecting and analyzing data. Cross sectional survey design was adopted in the study because it allows data to be collected from across different interrelated groups a sample with the aim of discovering the relationship or interactions among variables (Izedonmi, 2005). The study adopted the primary source of data while the questionnaire was the
research instrument engaged. The questionnaire was well structured and designed using the five point likert scale. 250 copies of questionnaire were distributed but 220 were dully completed and returned. The stated hypotheses were statistically tested with Kruskal Wallis test (one way ANOVA for ordinal data) with the aid of Statistical Packages for Social Sciences (SPSS) version 23.

**Population of Study**
The target Population for the study consists of investigators and prosecutors drawn from legal and prosecution unit, general investigative unit, financial intelligence unit and forensic unit the five anti-corruption agencies in Nigeria. The study considered all the staff that falls within the above categories in these agencies qualified as members of the population because of their good knowledge and understanding of the application of forensic services in the agencies.

**Sample and Sampling Technique**
The purposive sampling technique was used for the study and the sample size for the study is 250.

**Measurement of Variables**
In this study, the independent variable is Forensic Investigation Technique represented by Data Mining, while the dependent Variable is Occupational Fraud represented by the commonest Accounting Cycle Fraud: Payroll and Personnel Fraud and respectively.

**Reliability Test**

<table>
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<tr>
<th>Table 1: Reliability Statistic</th>
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<tbody>
<tr>
<td>Cronbach's Alpha</td>
</tr>
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<td>.738</td>
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*Source: SPSS Version 23*

The Cronbach Alpha coefficient, 0.738 (α>0.5) showed that the questionnaire can generate consistent responses thus satisfying the criterion of reliability.

**Test Of Hypotheses**

**Hypothesis 1:**

\( H_{10} \): There are no generally acceptable forensic investigation techniques in place for detecting fraud in the public sector.

<table>
<thead>
<tr>
<th>Table 2: Generally Acceptable Forensic Investigation Techniques in the Public Sector</th>
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<tbody>
<tr>
<td>K-W Statistic</td>
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<tr>
<td>Df</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
</tr>
<tr>
<td>Exact Sig.</td>
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<tr>
<td>Point Probability</td>
</tr>
</tbody>
</table>

*a. Kruskal Wallis Test*

*b. Grouping Variable: Likert Responses*

*Source: SPSS Version 23*

The table above shows a Kruskal Wallis value of 2.421 with a p value of 0.14 (p>.05). Thus, there are no generally acceptable forensic investigation techniques in place for detecting fraud in the public sector. It implies that there is no mandatory investigation technique used in fraud detection in the public sector. We do not also find data mining and Computer Assisted Audit techniques as statutory investigation techniques used in fraud detection in the public sector. There are thus no modern measures in place for detecting fraud which makes the public sector susceptible to occupational fraud.
H₀₃: There is no significant positive relationship between Data Mining technique (DM) and detection of payroll fraud in the public sector

Table 3  Data Mining Technique and Detection of Payroll Fraud

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<thead>
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<tbody>
<tr>
<td>K-W Statistic</td>
<td>219.000</td>
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<tr>
<td>Df</td>
<td>4</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
<td>.000</td>
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<tr>
<td>Exact Sig.</td>
<td>.000</td>
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<tr>
<td>Point Probability</td>
<td>.000</td>
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</tbody>
</table>

a. Kruskal Wallis Test
b. Grouping Variable: Likert Responses

Source: SPSS Version 23

The table above shows a t value of 219.00 with a p value of 0.00 (p<05). Thus, there is a significant positive relationship between Data Mining technique (DM) and detection of payroll fraud in the public sector. Data Mining guarantees detection of payroll and personnel fraud in the public sector. Application of Data Mining investigation technique facilitates fraud detection in the public sector. In other words, the absence or minimal adoption of data mining techniques reduces the detection of payroll fraud in the public sector and vice versa.

H₀₃: There is no significant positive relationship between Data Mining technique (DM) and detection of Personnel fraud in the public sector

Table 4  Data Mining Technique and Detection of Personnel Fraud

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<tbody>
<tr>
<td>K-W Statistic</td>
<td>143.000</td>
</tr>
<tr>
<td>Df</td>
<td>4</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
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</tr>
<tr>
<td>Exact Sig.</td>
<td>.011</td>
</tr>
<tr>
<td>Point Probability</td>
<td>.001</td>
</tr>
</tbody>
</table>

a. Kruskal Wallis Test
b. Grouping Variable: Likert Responses

Source: SPSS Version 23

The table above shows a Kruskal Wallis value of 143.00 with a p value of 0.02 (p<.05). Thus, there is a significant positive relationship between Data Mining technique (DM) and detection of personnel fraud in the public sector. The results show that when organizations in the public sector adopt data mining investigation techniques, it would be easier to detect personnel fraud and vice versa. Application of Data Mining investigation technique is effective in detecting personnel fraud in the public sector. Application of Data Mining investigation technique is solely enough as a tool to detect suspicious or fraudulent transactions during payments. Data mining investigation technique is also effective in monitoring and detecting padded overhead expenses.

Summary of Findings
Having carried out an empirical analysis in this study, it was discovered that:

1. There are no generally acceptable forensic investigation techniques in place for detecting fraud in the public sector.
2. There is a significant Positive relationship between Forensic investigation Techniques and fraud detection in the Public sector.
CONCLUSION
1. The study concludes that forensic investigation techniques are effective in detecting and monitoring occupational fraud in the public sector. However, the public sector was not found to have embraced forensic investigation technique. This is hinged on the mechanical patterns still employed by the public sector.
2. The findings reveal that forensic investigation techniques which include data mining and Computer Assisted Audit techniques will drastically reduce the incidences of fraud perpetrated in the public sector.

RECOMMENDATIONS
1. Data mining should be inculcated fully adopted in the operations and system of the public sector for the detection of personnel and payroll fraud and to act as a check on the activities of civil and public servants
2. Anti-corruption agencies in Nigeria should always adopt forensic accounting investigation techniques in all their corruption investigations so as to be able to come up with evidences that will be supportive in prosecution of corruption cases in courts.

REFERENCES
Association of Certified Fraud Examiners,( 2002).Detecting Occupational Fraud in Canada: A Study of its Victims and Perpetrators

