Forensic Accounting Techniques and White-Collar Crime in Nigeria Public Sector

Shodeinde, J. Bolaji[1*], Dada, O. Samuel[2], Adegbie, F. Folajimi[3], Akinola, M. Biodun[4]

[1]Dept of Management Sciences, Distance Learning Institute, Unilag

[2,3]Dept of Accounting, Babcock University. Ilisan Remo, Ogun State.

[4]Dept of Accounting, Lead City University, Ibadan

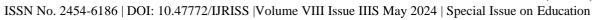**[*]Corresponding Author**

ABSTRACT

The government's inability to eradicate white-collar crimes in the public sector harms Nigeria's economy. Evidence from the literature indicates that investors are afraid of investing in the country because of this threat. Several studies have focused on fraud as the major proxy for corrupt practices neglecting the white-collar crimes that were considered in this study. The ineptitude of existing audit and investigation techniques to curb white-collar crimes has called for the introduction of forensic accounting. This study adopted a survey design. The study population consisted of 257,061 stakeholders from six selected universities and six polytechnics in southwest Nigeria, and a sample size of 500 was determined using the Taro Yamani formula. A stratified sampling technique was used to select respondents for the questionnaire. The findings revealed that forensic accounting techniques had a significant effect on fraud occurrence (Adj $R^2 = 0.369$, $F (2, 423)$ 40.772, $p < 0.000$) and, embezzlement (Adj $R^2 = 0.426$, $F (2, 423)$ 53.520, $p < 0.000$) in Nigeria's public sector. The study concluded that forensic accounting resolved white-collar crimes in Nigeria's public sector. The study recommends that the government establish forensic account units in all ministries, departments, and agencies to ensure accountability and transparency in their financial operations. The administration in the MDAs should institute legal action against any official caught in white-collar crime to deter others from engaging in such behavior.

Keywords: Benford's law, Data mining, Forensic accounting, Public sector, White-collar crime

INTRODUCTION

White-collar crimes are widespread in developing economies. This type of financial crime is so pervasive and prevalent in Nigeria that there is no point in denying that it is one of the major elements driving the country towards being a failed state. Sutherland (1939) described white-collar crime as a crime perpetrated by a person of great respectability and social rank during the course of his work. The Federal Bureau of Investigation (1989) defined white-collar crime as illegal conduct marked by deception, concealment, or breach of trust and does not depend on the application or threat of physical force or violence. White-collar criminals are typically people who use their positions to illegally collect financial benefits at the expense of society.

Osipian (2014) opined that the white-collar crimes that are common in the public sector are embezzlement,

fraud, nepotism, clientelism, patronage, cronyism, favoritism, kickbacks, cheating, plagiarism, research misconduct, ethics and sexual misconduct, and abuse of private property. In the public sector, government officials entrusted with public funds for the provision of public goods, security, and other social amenities, as well as those charged with ensuring public oversight, transparency, and accountability in governance, have been accused or charged with corruption and engaging in white-collar crime such as bribery, fraud, embezzlement, cronyism, nepotism, patronage, influence, peddling, extortion, self-dealing, graft, budget padding, and over-invoicing. Even the judiciary, which is supposed to be the average man's final resort, has been accused of corruption and fraud in many cases. Instead of being prosecuted, corrupt political officeholders went to court to seek an injunction to prevent them from being prosecuted, which resulted in a significant loss of trust in the judiciary (Sorunke, 2018).

According to Ogune (2021), a former Vice-Chancellor of Federal University, Gusau, was alleged to be detained by the Economic and Financial Crimes Commission (EFCC) for a corruption charge of two hundred and sixty million Naira (N260,000,000). Duru (2019) also reported that the Economic and Financial Crimes Commission (EFCC) arraigned another former vice-chancellor of the Federal University of Agriculture, Makurdi, in the Federal High Court for receiving a bribe of over seventy million Naira (N 70,000,000). Before Justice Mobolaji Olajuwon, the former vice-chancellor was charged with conspiracy, misuse of public money, abuse of power, and gratification. In Ondo State, a former vice-chancellor of the Federal University of Technology, Akure (FUTA), along with the University Bursar was charged with corruption, fraud, and misappropriation of funds totaling one hundred and fifty-six million naira (N 156,000,000). The EFCC prosecuted the accused, despite their denial of charges leveled against them (Onyeji, 2017; FGN Official Gazette 2018).
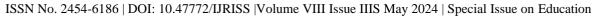
The public sector is the largest spender in Nigeria and corruption is badly rooted in this sector (Dada et al., 2013). The speed at which corrupt practices and financial crimes are growing in the country requires forensic accountants to combat the menace (Oseni 2017, Akani & Ogbeide 2017). Dada and Jimoh (2020) shared the same view that forensic accountants' expertise is critically required in combating white-collar crimes.

Forensic accounting has emerged as a new profession to investigate and prevent various types of fraud. It relates to the investigation of criminal matters on behalf of the police to present evidence professionally and concisely (Olasupo, 2017). Forensic accounting is best defined as the use of auditing, accounting, statistics, research, and economic concepts and techniques in an investigation with the sole goal of resolving legal problems or potential problems in the form of bribery, fraud, embezzlement, corruption, or forgery that may arise from an economic or financial transaction (Sorunke 2018). Forensic accounting is a scientific accounting method of uncovering, analyzing and resolving white-collar crime matters in a way that yields admissible evidence capable of proving or disproving facts in cases in a court of law. (Oyedokun 2017).

Effective forensic accounting techniques must be adopted to aid anti-corruption agencies in eradicating white-collar crimes successfully. Therefore, forensic accountants must employ various techniques for gathering data to conduct appropriate analyses to unravel corrupt practices. Some of the techniques that can be deployed include; Commercial Data Mining, Ratio Analysis, Trend Analyses, Computer-Assisted Audit Technique (CAAT), Piotroski F-Score model, Lev- Thiagarajans 12 Signal, Benford's Law, Sloan Accruals, Dechow-Dichev Accrual Quality, Jones Nondiscretionary Accruals, Beneish M-Score Model, Z-Score Analysis and Relative Size Factor (Hashem 2020)

Statement of the Problem

The educational system in Nigeria has been consistently low and is not unconnected to the diversion or mismanagement of funds meant for infrastructural development and academic research in the hands of people who use their positions to illegally collect financial benefits for themselves at the expense of society.

Some university administrators have alleged that they use their position to fraudulently or embezzle funds meant for infrastructural development in their institutions. Some of these cases are still in the court of law because the existing audit and investigation techniques are not adequately effective in conducting the investigation and some have been discharged acquitted because of a lack of concrete evidence. Owing to this lacuna in the traditional auditing and investigation system, the government needs to engage in forensic accounting to curb this menace. This study examines the relevance of forensic accounting techniques in curbing white-collar crimes in the public sector in Nigeria

Objective of the Study

The main objective of this study is to assess the relevance of forensic accounting techniques in curbing white-collar crimes in Nigeria's public sector. The other specific objectives were as follows;

1. examine the effect of forensic accounting techniques on fraud occurrence in the public sector

2. access the effect of forensic accounting techniques on embezzlement in the public sector

Research Questions

1. What is the effect of forensic accounting techniques on fraud occurrence in Nigeria's public sector?

2. What is the effect of forensic accounting techniques on embezzlement in Nigeria's public sector?

Research Hypotheses:

1. Forensic accounting techniques have no significant influence on fraud occurrence in the public sector

2. Forensic accounting techniques have no significant influence on embezzlement in the public sector

LITERATURE REVIEW/THEORETICAL FRAMEWORK

White-Collar Crime

White-collar crime is defined as a crime done in the course of one's employment by a respectable or highly placed individual. White-collar crimes are challenging to prosecute because they involve complex systems and involve several individuals (Paul, 2019). The most common types of fraud include extortion, fraud, embezzlement, and cyber-crime. White-collar crimes are typically not violent in nature; instead, they are distinguished by dishonesty, secrecy, or breach of trust. White-collar fraud can bankrupt a company, wipe out a family's savings, or cause investors to lose billions of dollars. Currently, scam schemes are more advanced than ever before. White-collar crimes are challenging to prosecute because they involve complex systems and involve several individuals (Abdulrahman, 2019; Chen, 2020).

The nature of white-collar crimes differs from that of other types of crimes. The characteristics of illicit behavior fluctuate depending on the context. According to Paul (2019), many white-collar crimes have no victims or the parties are ignorant of their victimization because the criminals do not immediately destroy or injure property or people. White-collar crime is also organized as corporate violence, which is defined as indirect violence perpetrated by company policies and activities. Unlike street crimes, many white-collar offenses are the result of positive laws rather than being wrongs.

According to Sutherland (2017), white-collar crime is a social construct rather than a legal categorization of specific offenses. In other words, rather than the crime itself, the offender's socioeconomic status qualifies a crime as "white-collar." This demonstrates that white-collar crime is more than just a type of behavior; it is

a social construct created on the innocence of citizens and the fragility of legal definitions by individuals of responsibility and high social position who collaborate to overturn justice (Henne & Ventresca 2020).

Fraud Occurrence

The Association of Certified Fraud Examiners (ACFE, 2017) defines fraud as a wrongful or intentional criminal act for financial or personal gain. For an act to be considered fraudulent, the perpetrator must know of the falsity of the act, the perpetrator must have had the intent to deceive, and the victim must have suffered damage or injury because of their reliance on the act. Ali et. Al. (2020) defined fraud as all multifarious means that human ingenuity can be devised and restored by one individual to gain an advantage over another by false suggestions or oppression of truth, which includes; all surprises, tricks, cunning or dissembling, and any unfair way in which another is cheated.

Abdulrahman (2019) defined fraud as the use of one's occupation for personal enrichment through the deliberate misuse or misapplication of the employing organization's resources or assets. Therefore, it is an act of misappropriation or theft of corporate assets in a particular economic environment. It has been considered an act of deception performed by somebody to cheat or deceive another person to his detriment or the detriment of any other, or to cause injury or loss to another person while the perpetrator has a clear knowledge of his intention to deceive, falsify or take advantage of the unsuspecting and innocent victim, resulting in suffering loss or damage (Bhasin, 2017).

Fraud is defined as a false representation of facts that causes the victim of fraud to suffer harm as a result of acting on misrepresented facts. Fraud requires a person to give up something of value or legal right. It is proven in court by demonstrating that a person committing fraud made a false statement of a material fact, knew the statement was false, intended to deceive the victim, by relying on the statement, and the victim's injury as a result of the preceding action. (Oporiopo & Tamarauebi 2021). Fraud is defined by Transparency International New Zealand (2019) as an intentional act involving the use of deception by one or more members of management, those responsible for governance, employees, or third parties to obtain an unfair or illegal advantage.

Embezzlement

Embezzlement is a premeditated act of misusing money. This is the redirection of money and other assets designated for a specific purpose for either personal or non-personal usage. Such an act constitutes an unauthorized expenditure of money or other assets for personal advantage. Embezzlement is regarded as the ultimate type of corruption in the public sector, as public officials purposefully siphon public funds for personal gain with impunity (Adedeji et al., 2018). Embezzlement involves taking business or government assets for personal use, paying salaries to ghost workers, paying for contracts that are not completed, inflating contract pricing, diverting government funds for private use, and converting office imprest to personal usage (Eze & Okoye, 2019).

According to Kurfi and Danrimi (2020), embezzlement is the act of stealing, misusing, or misappropriating monies or assets that have been entrusted with one's care or placed under one's control. Simeon (2018), opined that embezzlement is a crime that occurs when someone intentionally uses money or assets for a purpose for which they are not meant.

Forensic Accounting Techniques

Forensic accounting techniques have been claimed to be the most essential approaches for discovering and discouraging fraudulent activities and corruption. Forensic accounting should be detailed and comprehensive enough to produce findings on accounts, inventories, or their presentation in such a way that

they would stand up to scrutiny in a legal process or judicial or administrative review (Ajetunmob et. al., 2020). Okpala (2019) opined that forensic accounting, also known as investigative accounting or fraud auditing, is a combination of forensic science and accounting.

Sorunke (2018) opined that forensic accounting is the use of auditing, accounting, statistics, research, and economic concepts and techniques in an investigation with the sole goal of resolving legal or potential problem in the form of bribery, fraud, embezzlement, corruption, or forgery that may arise from an economic or financial transaction. According to Oyedokun (2017), forensic accounting is a scientific accounting method of uncovering, analyzing, resolving, and preventing fraud and white-collar crime matters in a way that produces admissible evidence capable of proving or disproving facts in an issue in a court of law. Some of the forensic accounting techniques used to investigate corrupt practices are as follows;

Benford's Law

This forensic accounting technique is also known as the first-digit law and is a mathematical tool that can be used to determine whether a variable under study is the result of unintentional errors or fraud. The variable under investigation was thoroughly examined when this phenomenon was detected. According to Mukah (2020), fabricated figures differ from random figures in their pattern. Benford's law steps are straightforward; once the variable of financial importance is determined, the leftmost digits of the variable under study are extracted and summarized for the entire population. Summarization was completed by identifying the first digit field and calculating the observed count percentage. There are many applications of Benford's law in underlying financial information generally representing large sets of data. Ewa, et al., (2020) suggested that the use of Benford's law in analyzing financial statements for large numbers is biased, even in smaller sets of data.
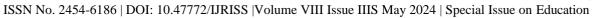
Data Mining Techniques

Data mining is the process of searching for previously unknown associations in data. Applying data mining to a data warehouse as a tool for controlling inappropriate payments enables an organization to rapidly query the system to uncover dubious behaviors, such as numerous payments for an individual invoice or to an individual receiver on a certain day. Personnel who are not computer professionals but may have relevant program or financial knowledge can utilize this approach to directly access data, target searches, and assess outcomes. Data-mining software, which includes preset queries that may be utilized in the system regularly, can also be used to make inquiries. (Ridhi & Sanket 2021).

Theoretical Framework

White-Collar Crime Theory

According to Okoye and Gbegi (2013), Sutherland was the first to coin this phrase in 1949; the term refers to the characteristics and goals of traditional street criminals. Sutherland first presented his theory in a speech to the American Sociological Society in an attempt to investigate two fields, crime, and high society, which had never been studied empirically. He described his idea as a "crime perpetrated by one's respectability and high social status in one's occupation" (Sutherland 1949). White-collar crime is based on the assumptions that white-collar crime is committed in the course of one's job, that the offender's occupational role plays a central role in the crime, and that the offender's occupation is viewed as legitimate by society. This study was anchored in white collar crime theory as it emphasized the attitude of employees and officeholders in the public sector, taking advantage of their position to accumulate financial gain and often escaping with the proceeds of corruption without being prosecuted.

Empirical Review

Forensic Accounting and Fraud Occurrence

Ogunode and Dada (2022) investigated the function of forensic accounting in assisting the effectiveness of fraudulent prevention methods at both corporate and national levels. This study used an exploratory research technique. To examine this link, the study relied on relevant materials such as journals and published academic papers from the domains of accounting, forensics, and finance. According to the report, fraud prevention is not a reactive but rather a proactive process that should be considered by every business, it is less expensive and more successful than fraud detection. The study revealed that, while the adoption and implementation of forensic accounting tools and methodologies have made significant progress in the developed world, its use in the developing world has lagged.

Oporiopo and Tamarauebi (2021) also researched the role of forensic accounting techniques in mitigating fraudulent practices in the public sector in Nigeria, the study revealed that globalization of the economy is not a threat to the application of forensic accounting in bringing to book corrupt public officials. Oporiopo, (2021) replicated the same study that examined the effectiveness of forensic accounting tools in the prevention and detection of fraud in the public sector in Nigeria. The researcher used descriptive statistics to analyze the data, while linear regression techniques were used to test the hypotheses. The study concludes that enhancing internal control procedures will significantly lower fraud in the public sector and that forensic accounting techniques help gather evidence. Fatoki (2021), focuses on the effect of forensic accounting on financial fraud management In Nigeria's public sector. A descriptive survey design was adopted, and the study concluded that forensic accounting techniques and fraud management had a beneficial link. Ugwu, (2021), critically reviewed the forensic Accounting and Fraud Control in Nigeria. This study found that forensic accounting has greatly aided in the prevention of fraud.

Forensic Accounting and Embezzlement

Taiya, Jugu, and Ojaide (2021) researched forensic accounting techniques: Tools for reducing income leakages at Nigerian Federal Universities. This research sought to determine the extent to which forensic accounting techniques serve as a panacea for reducing revenue leakages at Nigerian federal universities. Primary data were acquired via a research questionnaire, with a sample size of 238. Regression analysis was used in this study. According to these findings, forensic data analysis techniques have a favorable impact on income leakage at Nigerian federal institutions.

In an empirical study titled Forensic Accounting Technique: A Means of Successful Eradication of Corruption through Fraud Prevention, Bribery Prevention, and Embezzlement Prevention in Nigeria, Dada (2014) discovered that corruption prevention is significantly and positively related to fraud prevention, bribery prevention, and embezzlement prevention. According to research, there is no forensic accounting section at the EFCC, and competent businesses with forensic experience are not engaged in conducting proper investigations of corruption cases.

Owolabi, Dada, and Olaoye (2013) investigated the extent to which the use of forensic accounting techniques can assure efficient anti-corruption prevention as well as effective investigation and detection of embezzlement in Nigeria. They conclude that forensic accounting techniques can go a long way in the investigation and detection of corrupt practices.

METHODOLOGY

This study adopted a survey research design. This choice of survey research was premised on its usefulness

in observing the population of the study as well as the reaction of the population to a phenomenon. The study population for this study was 257,061 academic staff, non-teaching staff and students from six public universities; University of Lagos, University of Ibadan, University of Ife, Federal University of Agriculture, Abeokuta, Federal University of Technology, Akure, the Federal University, Oye Ekiti and six public polytechnics; Yaba College of Technology, Federal Polytechnic Ede, The Polytechnic Ibadan, Federal Polytechnic Ilaro, Federal Polytechnic Ile Oluji and Federal Polytechnic Ado Ekiti, all in the southwestern states of Nigeria (who are familiar with auditing, accounting and finance) being the major stakeholders in the tertiary institution. The sample size of 500 was determined using the Taro Yamani formula. Stratified, sampling techniques were adopted for this study. Stratified sampling was used to divide the population into smaller groups that represented the entire population. The data collection instrument is a questionnaire that is based on the research questions the study intends to answer. The study adopted descriptive and inferential statistics which involved the use of mean and standard deviation while multiple regression was adopted to test the stated hypothesis.

Model Specification

$Y = f(x)$

Where Y = Dependent Variable (White-Collar Crime)

y_1 = Fraud (FRD),

y_2 = Embezzlement (EBZ)

X = Independent Variable (Forensic Accounting Techniques)

x_1 = Benford's Law (BFL),

x_2 = Data Mining Techniques (DMT)

Hypothesis One

$FRD = \beta_0 + \beta_1 BFL_i + \beta_2 DMT_i + e_i$ ………equation 1

Hypothesis Two

$EBZ = \beta_0 + \beta_1 BFL_i + \beta_2 DMT_i + e_i$ ....equation 2

Where: β_0 = Constant of the equations

μ = Stochastic error term

$\beta1 - \beta3$ = unknown coefficients to be estimated

DATA ANALYSIS, RESULTS AND DISCUSSION OF FINDINGS

Summary of regression analyses for the testing of Hypothesis One

Variables	β0	β1	β2	F	R²	P-value	Comment
Fraud Occurrence	0.407	0.129	0.061	40.772	0.369	0.000	Sig

Source: Regression analysis from the researcher's field survey 2023

The predictive and prescriptive multiple regression models are thus expressed:

$$FRD = ß_0 + ß_1 BFL_i + ß_2 DMT_i \ldots\ldots\ldots\ldots \text{Model 1}$$

The regression estimate of the model above shows that the proxies for Forensic Accounting Techniques have a positive effect on fraud occurrence. This is indicated by the signs of the coefficients, which is $β > 0$.

The sign of the coefficient of the independent variables shows that BFL has a positive effect on fraud occurrence, with a coefficient of 0.129. DMT also has a positive effect on fraud occurrence, with a coefficient of 0.061. The Adjusted R-square of the model was 36%, which suggests that variations in white-collar crime measured by fraud occurrence of the sampled population can be attributed to the two independent variables put together, while the remaining 64% of variations in fraud occurrence are caused by other factors not included in this model. However, the F-test showed a probability value of 0.00 which indicates that the explanatory variable is statistically significant because the p-value is less than 5%, which is the level of significance adopted for this study. Therefore, the model was statistically significant. Thus, the null hypothesis that forensic accounting techniques do not significantly affect fraud occurrence in Nigeria's public sector is rejected.

Summary of regression analyses for the testing of Hypothesis Two

Variables	β0	β1	β2	F	R²	P-value	Comment
Embezzlement	- 0.342	0.197	0.073	53.520	0.426	0.000	Sig

Source: Regression analysis from the researcher's field survey 2023

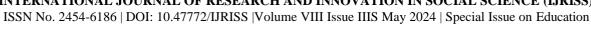The predictive and prescriptive multiple regression models are thus expressed:

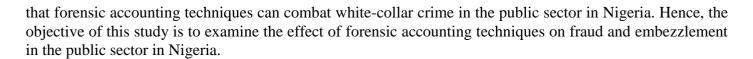$$EBZ = ß_0 + ß_1 BFL_i + ß_2 DMT_i \ldots\ldots\ldots \text{Model 2}$$

The regression estimate of the above model shows that the proxies of Forensic Accounting Techniques have a positive effect on embezzlement. This is indicated by the signs of the coefficients, $β > 0$.

The sign of the coefficient of the independent variables shows that BFL has a positive effect on embezzlement, with a coefficient of 0.197. DMT also has a positive effect on embezzlement, with a coefficient of 0.073. The Adjusted R-square of the model was 42%, which suggests that variations in white-collar crime measured by embezzlement of the sampled population can be attributed to the two independent variables put together, while the remaining 58% of variations in embezzlement are caused by other factors not included in this model. However, the F-test showed a probability value of 0.00 which indicates that the explanatory variable is statistically significant because the p-value is less than 5%, which is the level of significance adopted for this study. Therefore, the model was statistically significant. Thus, the null hypothesis that forensic accounting techniques do not significantly affect embezzlement in Nigeria's public sector is rejected.

CONCLUSION

The study concluded that forensic accounting techniques proxied by Benford's law and data mining techniques had positive effects on white-collar crime in the public sector in Nigeria. This study established

that forensic accounting techniques can combat white-collar crime in the public sector in Nigeria. Hence, the objective of this study is to examine the effect of forensic accounting techniques on fraud and embezzlement in the public sector in Nigeria.
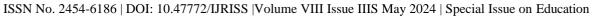
RECOMMENDATIONS

The study recommended that;

1. The government should include forensic accountants as members of the board and oversee the affairs of ministries, departments, and agencies. This allows the regulatory body to effectively perform its function of oversight with professionalism.
2. The government should mandate that all ministries, departments, and agencies set up a forensic accounting unit that will be reported to the chairman of the board of the respective ministries. This will provide room for checks and balances in the activities of the Ministries. Department and Agencies.
3. Anti-graft agencies should employ the services of forensic accountants in the fight against corruption and prosecution of court cases involving economic or financial crimes. The involvement of forensic accountants in anti-graft agencies with the right training and equipment will aid the agency in the area of investigation and in gathering evidence admissible in court.

CONTRIBUTION TO KNOWLEDGE

This research contributes to knowledge by filling the gap in the forensic accounting literature by identifying various forensic accounting techniques that can be used to combat white-collar crime. Several studies have examined the role of forensic accounting in the investigation and detection of fraud and corruption. However, few empirical studies have uncovered how forensic accounting might be useful in combating white-collar crime using various forensic accounting techniques outside of fraud and corruption. This study represents an initial investigation toward developing forensic accounting as a system capable of combating white-collar crimes.

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