The Impact of Big Data Analytics in Forensic Auditing and Prevention and Detection of Fraud and Cyber Crimes in the Nigerian Public Sector

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ABSTRACT

This study examines, how big data technique can be applied in forensic accounting to improve fraud and cybercrime detection in Nigeria with the view to suggest empirical and technological-based contemporary techniques in order to effectively detect and prevent frauds and corruption, as well as to proffer policy recommendations for confronting the scourge of fraud and corruption. Being a survey research design, the study adopt quantitative data collection and analyses using structured questionnaires distributed to a sample purposively selected forensic auditors from EFCC office Kano Command. Data obtained from the survey was analyzed using descriptive statistics, regression analysis and other relevant econometrics. The findings, revealed that Big Data Technologies has a positive and significant impact in conduct of forensic auditing in the Nigerian public sector. Similarly, it has positive and significant impact on Forensic Accounting and Prevention and Detection of Fraud and Cybercrimes in the Nigerian Public Sector. The study has social, economic and technological implication as follows: Social benefit include bringing awareness, to both public and private organizations of the impact of big data technology in forensic accounting. Economically will contribute to realizing the potentials of science and technology to meet the most pressing challenges of sustainable economic growth and development through early detection of fraud and corrupt practices by forensic accountant in EFCC. Moreover, technological benefits comprises bridging the gap between traditional methods of detecting fraud/cybercrimes by proposing improved ways of its detection using contemporary technology (i.e. Big data). It is recommended that Government shall consider these findings of empirical based knowledge of causes, nature and the extent of fraud/cybercrimes and its implications on the national growth during its subsequent policies formulations.

Keywords: Forensic accounting, Big data Analytics, Cyber Crimes, Prevention and Detection of Fraud

INTRODUCTION

Fraudulent activities have appeared as some major challenge bedevilling both public and private sectors the world over (Nigeria inclusive). Fraudsters, mostly commit cybercrimes, launders money, evade tax, forged bank cheques, commit identity theft, and finance terrorist. The consequences lead to business loss, financial fraud, or damage in public and government properties, privacy breach, and security violation. The number of cybercrimes has rapidly increased as none of the traditional cybercrime detection systems implemented by forensics accountants can completely stop or mitigate them, because cybercriminals improve their methods. Forensic accounting is a scientific accounting method of uncovering, analyzing, resolving and presenting fraud and white collar crime matters in a phenomena that produces admissible evidence which is capable of providing or disproving facts in issue suitable in the court of law (Anthony & Gavine, 2022; Oyedokun, 2018).

On the other hand, big data analytics describes the process of uncovering trends, patterns, and correlations in large amount of raw data to help make data-informed decisions. These processes use familiar statistical analysis techniques like clustering and regression that can be applied to a big datasets with the help of newer tool. Data mining as a tool predicts future trends and behaviors allowing businesses to make proactive knowledge driven decisions by turning raw data into useful information. Both public and private sector can use data mining software to look for patterns in big data; they can learn more about their customers, detect fraud faster, get better view of market risks and manage regulatory compliance obligations,

Based on the above, this study proposes to examine how big data technique can be applied in forensic accounting to improve fraud and cybercrime detection in Nigeria with the view to suggest empirical and technological-based contemporary techniques. This is to effectively detect and prevent frauds and corruption, as well as to proffer policy recommendations for confronting the scourge of fraud and corruption. This study aims to add valuable insights into the future of forensic accounting in the age of digital transformation.

1.1 Problem Statement/Justification

For the past two decades, the escalating list of fraud and corrupt practices in Nigeria have stimulated the attention of the government to establish agencies such as the Economic and Financial Crimes Commission (EFCC) as well as constitutional provisions such us the ICPC and the CCB FIU etc. Despite these efforts, financial frauds continue to escalate. According to the Ernst and Young (EY) global fraud survey (2016), Nigeria was identified as victims of fraud in corporate investments and ranked the 4th most fraudulent country in business practice. Moreover, World Bank report (2011) revealed that cases of fraud has resulted in the Nigerian banking failures and cost the government to lose around 1.5 to 2 trillion Naira (USD4.9 billion to USD6.6 billion) respectively (Okoye, et al., 2020). To emphasize the severity of financial crimes and public policy to combat them, the Nigerian President recently charged auditor general in the country to develop innovative strategies that can help the government win the war against corruption/fraud practices (Punch News December 7, 2021). More recently, the former executive chair of the EFCC revealed, in the commission's latest edition Magazine (EFCC Alert), "I can tell you for free that the new Department of Intelligence that we have created is working wonders. They come up with a lot of intelligence. In one of them, a governor within the last six years (one individual) has withdrawn over N60 billion in cash. I assure you that, at the end of our investigations, Nigerians are going to be briefed of what we are doing behind the scene on cybercrime (Vanguard News December 12, 2021)."

Notwithstanding the deleterious consequences on Nigerian's economic growth, the situation has not given sufficient and necessary research attention. The few existing studies Anthony & Gavine, 2022; Oranefo, & Egbunike, 2022; Okoye, et al. (2020), Tapang, and Ihendinihu (2020) and Enofe, et al. (2015) have concentrated on studying the effect of forensic accounting in detecting fraud/cybercrime. However, the few studies have not undertaken a comprehensive study on the phenomena and failed to incorporate the role of big data technologies in private as well as public institutions. Thus, leaving a Technological skill gap, which this study intends to address by exploring the role of Big Data in modern forensic accounting, focusing on their applications, benefits, and challenges. It aims to provide a comprehensive understanding of how these technologies can enhance the effectiveness of forensic accounting practices especially in the public sector. This is also emphasized by a comprehensive study by Daraojimba, Farayola, Olatoye, Mhlongo, & Oke, (2023) using a systematic literature review methodology, analyzing peer-reviewed articles and case studies from 2015 to 2022. Key findings revealed the transformation of financial fraud in the digital era, marked by increasing complexity and the adoption of advanced technologies. The role of forensic accounting has evolved in response, integrating new tools and techniques for effective fraud detection and prevention.

1.2 Objective (s) of the Study

The overall objective is to examine how big data techniques can be applied in forensic accounting to improve fraud and cybercrime detection in Nigeria. The specific objectives are:

1. To identify the causes, nature and the extent of financial fraud and cybercrimes in Nigerian public sector.

2. To evaluate the level of awareness of using big data techniques in forensic accounting in Nigerian public sectors.

3. To determine whether big data technologies has any influence on forensic accounting

4. To investigate whether employing big data technologies in forensic accounting can influence the prevention and detection of fraud and cybercrimes in the Nigerian public sector.

LITERATURE REVIEW

2.1 Concept of Big data and forensic accounting

Big data refers to structured or unstructured data sets that are commonly described according to the four Vs: Volume, Variety, Velocity, and Veracity. Volume refers to data sets that are so large that traditional tools are inadequate. Variety reflects different data formats, such as quantitative, text-based, and mixed forms, as well as images, video, and other formats (Geppa, Martina, Linnenlueckeb and O'Neilla, (2018). Big Data technologies has the potentials for reshaping the landscape of forensic accounting by revolutionizing fraud detection, anomaly identification, and evidence gathering, enhancing the speed and accuracy of forensic investigations. Real-time fraud monitoring, automated data processing, and predictive analytics are just a few examples.

On the other hand, Association of Certified Forensic Examiners (ACFE, 2011) from United States, define forensic accounting as the use of professional accounting skills in matters involving potential or actual civil or criminal litigation. The role of forensic accounting has become a vital area in the discipline of accounting, which takes care of examining the fraud, controlling corruption and bribery, extends legal support, looks after expert witnessing and cybersecurity (Hassink et al., 2010; Rezaee and Wang, 2019).

2.2 Empirical Review and Hypotheses Development

A critical review of literature revealed that, there is lack of literature on the impact of big data technique on forensic accounting for detection fraud and cybercrime in Nigeria. The few existing studies like Anthony & Gavine, 2022; Oranefo, & Egbunike, 2022; Okoye, et al. (2020); Tapang, and Ihendinihu (2020) and Enofe, et al. (2015) have concentrated on the effect of forensic accounting in detecting fraud/cybercrime mostly in the private sector. For instance, Okoye, et al. (2019) investigated the effect of forensic auditing on the financial performance of quoted food & beverage firms in Nigeria. Similarly, Okoye, et al. (2020) examined the effect of forensic accounting investigation on financial fraud in Nigerian Deposit Money Bank, and to determine whether forensic accounting investigation report can enhance court adjudication on financial fraud in Nigeria. This study adopted the cross-sectional survey design with purposive sampling technique as the only people knowledgeable and experienced in the area under the study were selected. Hence, a sample of one hundred and thirty-five (135), the staff and management team of the banks and Chartered Accountant firms were purposively selected. The review of this paper shows that forensic accounting investigation has a significant effect in detecting financial fraud in Nigerian Deposit Money Banks. Therefore, the results strongly support the use and application of forensic accounting investigation towards detecting financial fraud in Nigeria.

Recently, Franca, Ofurum and Solomon (2023); Ndubuisi, Beatrice and Chinyere (2017) and Temitope (2014) Franca, Ofurum and Solomon (2023) conducted a study which examined the effect of forensic accounting and fraud detection in Nigerian public sector was fuelled by rising incidence of fraud now common in the public sector. Data were gotten from the 357 respondents using structured questionnaire and analysed using Spearman rank correlation method. With the response analysed, it was discovered that all three indicators of forensic accounting are negatively and significantly correlated with payroll and procurement fraud. The take home is fraud can be detected through forensic accounting. In addition, Ndubuisi, Beatrice and Chinyere (2017) investigates the effect of forensic accounting application on the detection of financial crime in deposit money deposit banks in Anambra State. Using survey research design and a sample size of 35 respondents from 11 commercial banks, the study findings revealed that, forensic accounting is effective in reducing financial crimes. In a similar incidence, as fraudulent activities in a commercial bank setting may have a negative effect on the viability, performance, sustainability and reputation of commercials banks; Temitope (2014) carried out a study on the effects of forensic accounting on the performance of commercial bank in Nigeria. The study was conducted through explanatory research design and a sample of 61 respondents. The findings indicated that forensic investigation and forensic litigation was statistically significant in explaining changes in financial performance of commercial banks.

Thus, the few studies have not undertaken a comprehensive study on the phenomena and failed to integrate the role of big data technologies at both private and public institutions.

Impact of Big Data, in Forensic Auditing, Prevention and Detection of Fraud and Cyber Crimes

More recently, some studies have been conducted on the impact of big data, in forensic auditing, prevention and detection of fraud and cybercrimes, mostly in the foreign countries like, Gabrielli, Magri, Medioli and Marchini (2025); Al-Sultani (2025); Mardjono, Suhartono and Hariyadi (2024); Sembiring & Widur (2023); Shalhoob, Halawani, Alharbi and Babiker (2024); Akinbowale, Mashigo & Zerihun (2023); Al Natour, Al-Mawali, Zaidan, and Said, (2023).

Gabrielli, Magri, Medioli and Marchini (2025). This paper examines how the integration of big data in forensic accounting practices is reshaping fraud detection processes for internal fraud mitigation in the banking industry. The research adopts a qualitative approach based on seventeen semi-structured interviews with forensic accountants. This qualitative approach allows us to identify dispositional and relational affordances. Findings show that big data enables some significant affordances. As dispositional affordances, big data and big data analytics tools ensure a greater depth of the analysis. The power of visual analytics in fraud detection is highlighted in both dispositional and relational affordances.

Al-Sultani (2025) delves detail into the investigation of notable positive impact of big data on the practices of forensic accounting in Iraq. Using a descriptive methodology and statistical analysis, the results reveals that the big data in forensic accountant can make it easier for forensic accountants to analyze complex datasets, triangulate, analyze using software, improve risk management to detect fraud, financial irregularities effectively. Overall, the study highlights that big data can be fully utilized in forensic accounting if sufficient investment is made on infrastructure, training, and technology adoption in the respective industry.

Shalhoob, Halawani, Alharbi and Babiker (2024) investigate the role of big data analytics (BDA) in promoting error detection and preventing fraud in accounting operations. Using a secondary method of data collection, the results of their analysis reveals that the BDA enhances fraud detection by integrating data from multiple sources, using sophisticated algorithms to identify anomalies. Reduces false positives and improves accuracy.

In a similar vein, Mardjono, Suhartono and Hariyadi (2024) conducted a study to determine the relationship between awareness of the use of forensic accounting and the role of the internal control system (COSO) mediated by Big Data Analysis (BDA) towards interest in using forensic accounting in detecting fraud. The research design is a case study with a quantitative approach. The sample for this study was 331 auditor respondents spread across KAP, BPK and BPKP in Indonesia. The results of this study prove that Big Data Analysis mediates the relationship between Awareness of Forensic Accounting on Intentions of Forensic Accounting. Also, Big Data Analysis mediates the relationship between COSO on Intentions of Forensic Accounting.

Sembiring & Widur (2023) examined the influence of auditor experience, Big Data, and forensic auditing as mediating variables on fraud detection. It used a quantitative approach with a survey method by distributing questionnaires through a google form. Respondents comprised 128 internal, external, and government auditors. Furthermore, the data were analyzed using structural equation modeling (SEM) with the help of SmartPLS tools. The results showed that the auditor's experience, forensic audit, and Big Data positively and significantly affect fraud detection. Auditor experience and Big Data variables positively and significantly affect Forensic Audits.

In a similar vein, Akinbowale, Mashigo & Zerihun (2023) conducted a study on integration of forensic accounting and big data technology frameworks in relation to the mitigation of internal fraud risk in the banking industry. This study employed an explanatory research design involving the use of simulated data to mirror the situation in the banking industry. This study provides an understanding into the attributes of internal fraud and a practical guided approach to implement an integrated forensic accounting and big data technology framework for internal fraud mitigation.

Mittal, Kaur and Gupta (2021) using structural equation modeling. Results indicate that awareness of forensic accounting has a positive influence on practitioners' intentions to its use for fraud detection. Big data technologies mediate the relationship between awareness and intentions to use for fraud detection.

In contrast, Al Natour, Al-Mawali, Zaidan, and Said, (2023) studied the role of forensic accounting skills in enhancing auditor's self-efficacy towards fraud detection in Egypt using computer assisted audit techniques and tools (CAATTs) application on the relationship between accounting and auditing skills and auditor's selfefficacy, as well as its role in enhancing fraud detection as the moderating variable. Using partial least square structural equation modelling the results show a significant direct relationship between auditor's self-efficacy and fraud detection. It is revealed that CAATTs application moderate the relationship between auditor's selfefficacy and fraud detection.

2.3 Context of the Study

The Economic and financial crime commission (EFCC) is an arrow head in the fighting against corruption in Nigeria and it was established as far back as 2003. The EFCC is an inter-agency commission consisting board drawn from all Nigerian Law Enforcement Agency (LEA) and the regulations. The commission has the authority to investigate, to avert and prosecute offenders who engage in money Laundering, embezzlement, bribery, looting and any form of corrupt practices, illegal arms dealing, smuggling, human trafficking and child labour, illegal oil bunkering, illegal mining tax evasion, foreign exchange malpractices including counterfeiting of currency, theft of intellectual property and piracy, open market abuse, dumping of toxic wastes and prohibited goods.(EFCC ACT, 2004.)

2.4 Theoretical Framework

The theories that underpins this research are Technology-Organization-Environment (TOE) framework theory, white-collar crime theory, fraud triangle theory and fraud diamond theory as all the four capture the essence of this research.

The proponents of the Technology-Organization-Environment (TOE) framework are Louis G. Tornatzky and Mitchell Fleischer, who first described it in their 1990 book, The Processes of Technological Innovation. The framework posits that three contexts—technological, organizational, and environmental—influence an organization's decision to adopt new technologies. The Technology-Organization-Environment (TOE) framework is a theory that explains technology adoption by analyzing three contextual factors: Technology (characteristics of the innovation), Organization (internal firm characteristics like resources and size), and Environment (external factors like competition and government policies). This framework is widely used at the firm level to predict and understand why and how organizations adopt new technologies. For instance, audit firms and anti-corruptions organizations like EFCC have it even mandatory to adapt Computer Assisted Audit Techniques (CAAT) due to the complexity of new fraud and cybercrimes techniques perpetrated by the fraudsters which include adoption of big data technology. The TOE model has been tested in European, American, and Asian contexts, as well as in both developed as well as developing countries (Zhu and Kraemer 2005; Zhu et al. 2006b). In each study, the three elements of technology, organization, and environment have been shown to influence the way a firm identifies the need for, searches for, and adopts new technology.

Furthermore, due to the capability of the fraudsters, the service of a forensic accountant is required to forestall the occurrence of such fraud. Sutherland propounded white-collar crime theory in 1939. According to the proponent the white-collar criminals are opportunists, who over time take advantage of their circumstances and position to accumulate financial gain. Similarly, Cassey (1919 – 1987) developed fraud triangle theory. The theory explains that individuals who are trusted could violate the trust once they believe that having a financial problem that is non-shareable can be solved by violation of a position of financial trust. In the same vein, Wolfe and Hermanson (2004) propounded fraud diamond theory. They added a fourth variable called capabilities to the three-factor theory of fraud triangle of pressure, opportunity and rationalization. According to Adebisi and Gbegi (2015) that capabilities explain how the fraudster must possess certain skills and competencies to pull off his crime.

Based on the findings of the previous literature and the above underpinning theories, thus, our study hypothesizes that:

Ho1: Big Data Technologies has no significant impact in the Conduct of Forensic Auditing in the Nigerian public sector

Ho2: Big Data Technologies, has no significant impact on Forensic Accounting and Prevention and Detection of Fraud and Cybercrimes in the Nigerian Public Sector

METHODOLOGY

This study adopts Post-positivism research paradigm that is often related with quantitative approaches. According to Collis and Hussey (2014) research paradigm is a framework that just guides how research is conducted, based on specific philosophies, attitudes, views and expectations regarding the nature of knowledge and the world. Researchers make claims for knowledge based on cause-and-effect thinking focusing on selected variables to interconnect measures of variables and theories testing. Hence, epistemology underpins objective approach. This study, decided to use the deductive approach study of cause and effect with fix design, which results are accurately and reliably that leads to generalizations after passing reliability and validity test. However, research focuses on Technological skills gaps analysis in the public sector of the economy (using technological tools to combat financial crimes).

3.1 Research Design

Being a survey research design the study adopted quantitative data collection and analyses using structured questionnaires. Questionnaires were distributed to a target population which are forensic auditors working with Economic and Financial Crimes Commission (EFCC). As the EFCC has only three (3) Zonal Command offices (Sokoto, Kano, Kaduna) in the North-western Nigeria which is the scope of this study; hence, Kano Zonal Command was chosen based on convenient sampling. Meanwhile, 30 forensic accountants were randomly selected to fill the questionnaires. Luckily enough, all the questionnaire distributed were appropriately filled and returned. Meanwhile, the study adopts a more scientific measure of data and measurement reliability and validity tests. Cronbach's Alpha is applied to measure the internal consistency and reliability in which the details explanation was made in subsequent section.

3.2 Data analytical technique

To evaluate each of the conceptual framework's hypotheses for the current study, The Statistical Package for Social Sciences (SPSS) version 26 is used to apply the basic linear regression analysis technique. As this study comprises a direct relationship between variables, hence, it utilizes basic linear regression analysis to determine the positive and significant association between Big-data Analytics (BDA) and Forensic Auditing (FA); and whether this this relationship help in combat of financial and cybercrime in the Nigerian public sector. The linear regression is expressed as:

$Y1 = \beta 0 + \beta 1X1 + Ɛ$

Were.

Y1 = FA (dependent/response variable)

X1 = BDA (independent/regressor variable)
$\beta 0$ = Intercept $\beta 1$ = Coefficient
Ɛ = error term or random disturbance term assumed to be normally distributed with mean zero.

RESULTS AND DISCUSSIONS

This section presents the results from the data analysis and discusses the implications of these findings in the context of the study. The analysis aims to examine whether big data technique can be applied in forensic accounting to improve fraud and cybercrime detection in Nigeria. This chapter is structured to include descriptive and regression analyses, all aligned with the research objectives and hypotheses testing, discussion on major findings and policy implication of the finding.

The study adopts a more scientific measure of data and measurement reliability and validity tests. Cronbach's Alpha is applied to measure the internal consistency and reliability, that is, do all the items in the scale tap into

one construct? The results in Table 1. below show the Cronbach's Alpha reliability test statistics based on 43 items of 0.98. In social science research, a Cronbach's Alpha greater than 0.70 is considered acceptable (Gujarati, 2004). Thus, an Alpha of 0.98 is preferred and considered good reliability of the questionnaire measurement.

Table 1: Reliability and Validity Test of data

Variables	Statistics
Number of Items	43
Cronbach's Alpha	0.989
N	30

Source: SPSS OUTPUT (Appendix)

4.1 Validity result

This study passed through rigorous scale development and validation processes. The items were adapted from various past literature on green governance and firm performance and channelled to the need of this study. Meanwhile, the current study seeks feedback on the validity of items from two academicians, two policymakers, and two industry experts, representing diverse backgrounds in universities, government institutions, and industries. As such, they all participated, providing feedback that led to appropriate corrections for item validation (Drost, 2011).

4.2 Descriptive Sstatistics

RO 1: **Causes of Financial Fraud and Cybercrimes Practices in the Nigerian Public Sector** Below are individual outcomes of the respondents regarding the causes of financial fraud and cybercrimes practices in the Nigerian public sector in terms of economics, social, cultural, environmental and legal determinants.

Table 2: Economic_Factor					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	12	30.0	40.0	40.0
	1.17	2	5.0	6.7	46.7
	1.33	7	17.5	23.3	70.0
	1.50	1	2.5	3.3	73.3
	1.83	4	10.0	13.3	86.7
	2.00	2	5.0	6.7	93.3
	3.00	1	2.5	3.3	96.7
	3.67	1	2.5	3.3	100.0
	Total	30	75.0	100.0	

Source: **Field Survey (2024)**

The results in the above table 2—indicates that cumulatively 93.3% of the respondents accepted that High cost of living, High rate of inflation, Low Income, Poor remuneration, Poor infrastructure and Poverty are the major causes of financial fraud and cybercrimes practices in the Nigerian public sector. Whereas, only 6.7% has a contrary opinion.

Table 3: Social_Factors					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	13	32.5	43.3	43.3
	1.50	1	2.5	3.3	46.7
	1.75	5	12.5	16.7	63.3
	2.00	9	22.5	30.0	93.3
	4.00	1	2.5	3.3	96.7
	4.25	1	2.5	3.3	100.0
	Total	30	75.0	100.0	

Source: **Field Survey (2024)**

From table 3 above, it shows that majority of the respondent (93.3%) believed that Social determinant like social recognition, friends influence, family influence and exposure to crime are the main causes of financial fraud and cybercrimes practices in the Nigerian public sector**.** Only 6.7% has contrary opinion.

Table 4: Cultural_Factors					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	11	27.5	36.7	36.7
	1.20	2	5.0	6.7	43.3
	1.40	2	5.0	6.7	50.0
	1.60	10	25.0	33.3	83.3
	1.80	1	2.5	3.3	86.7
	2.00	1	2.5	3.3	90.0
	2.20	1	2.5	3.3	93.3
	2.80	2	5.0	6.7	100.0
	Total	30	75.0	100.0	

Source: **Field Survey (2024)**

The outcomes of almost all the respondents in table 4 above revealed that major **Causes of Financial Fraud and Cybercrimes Practices in the Nigerian Public Sector** is cultural determinant Which include different political ideology, social grouping and Relationship, Ethnicity and race, acculturation and socio-economic class.

Table 5: Environmental_Factors					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	7	17.5	23.3	23.3

	1.25	10	25.0	33.3	56.7
	1.50	4	10.0	13.3	70.0
	1.75	4	10.0	13.3	83.3
	2.25	2	5.0	6.7	90.0
	2.50	3	7.5	10.0	100.0
	Total	30	75.0	100.0	

Source: **Field Survey (2024*)***

Table 5 above Disclosed that, 90% of the respondents indicate their opinion that environmental Determinant of financial fraud and cybercrimes practices in the Nigerian public sector Poor working condition, Higher levels of market and political monopolization, Weak civil participation and community orientations among others. Meanwhile, only 10% has a contrary opinion.

Table 6: Legal_Factors					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	13	32.5	43.3	43.3
	1.20	2	5.0	6.7	50.0
	1.40	1	2.5	3.3	53.3
	1.80	2	5.0	6.7	60.0
	2.00	3	7.5	10.0	70.0
	2.40	2	5.0	6.7	76.7
	2.60	3	7.5	10.0	86.7
	3.00	2	5.0	6.7	93.3
	3.40	1	2.5	3.3	96.7
	4.40	1	2.5	3.3	100.0
	Total	**30**	**75.0**	**100.0**	

Source: **Field Survey (2024)**

The results in the above table 6—indicates that cumulatively 86.7 % of the respondents believed that Lack of instructions to security officer, No strict punishment for corrupt people, gap in legal framework, Political instability as a result of ineffective policy and regulations and lastly intimidation of the anti-corruption agencies are the main causes of financial fraud and cybercrimes practices in the Nigerian public sector.

Nature of Financial Fraud and Cyber Crime in the Nigerian Public Sector

Below are individual outcomes of the respondents regarding the Nature of Fin Fraud and Cyber Crime in the Nigerian Public sector.

Table 7: Nature_of_Financial Fraud in the Public Sector					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	1	2.5	3.3	3.3

	1.33	10	25.0	33.3	36.7
	1.67	1	2.5	3.3	40.0
	2.00	5	12.5	16.7	56.7
	2.33	2	5.0	6.7	63.3
	2.67	4	10.0	13.3	76.7
	3.00	1	2.5	3.3	80.0
	3.67	3	7.5	10.0	90.0
	4.33	3	7.5	10.0	100.0
	Total	**30**	**75.0**	**100.0**	

Source: **Field Survey (2024)**

The results in the above table 7.—indicates that cumulatively 76.7 % of the respondents disclosed that Nature of financial fraudulent practice in the public sector are mainly, kickbacks, bribery and corruption, and financial statement fraud. However, 23.3% contradict opinions. This findings was inconsistence with the Franca, Ofurum and Solomon (2023)) Who reveals payroll fraud as the most financial fraudulent practice in the public sector.

Table 8: Nature_of_Financial Fraud_Via_CyberCrime					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	5	12.5	16.7	16.7
	1.50	5	12.5	16.7	33.3
	1.75	5	12.5	16.7	50.0
	2.25	1	2.5	3.3	53.3
	2.50	3	7.5	10.0	63.3
	2.75	2	5.0	6.7	70.0
	3.75	2	5.0	6.7	76.7
	4.00	3	7.5	10.0	86.7
	4.50	4	10.0	13.3	100.0
	Total	30	75.0	100.0	

Source: **Field Survey (2024)**

The results in the above table 8 indicates that cumulatively 70.0 % of the respondents believed cracking, scavenging, piggybacking, terminal Spoofing are major types of cyber-crimes committed in the Nigerian public sector.

Extent of Financial Fraud and Cyber Crime in the Nigerian Public Sector

Objective 3:

Table 9: Extent of financial fraud and cybercrimes in Nigerian public sector					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very High	9	22.5	30.0	30.0
	High	10	25.0	33.3	63.3
	Medium	4	10.0	13.3	76.7
	Low	7	17.5	23.3	100.0
	Total	**30**	**75.0**	**100.0**	

Source: **Field Survey (2024*)***

The result in table 9 above indicate that 19 out of 30 respondents equivalent to 63% believed that, the extent of financial fraud and cybercrimes in Nigerian public sector is high; whereas, 17.5% has contrary view. Meanwhile, 13.3% believed it is Medium.

RQ 2 Level of Awareness of Using Big Data in Forensic Auditing

Table 10: Level_of_Awareness_Bigdata_in_Forensic_Audit					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.14	1	2.5	3.3	3.3
	1.43	1	2.5	3.3	6.7
	1.71	1	2.5	3.3	10.0
	1.86	2	5.0	6.7	16.7
	2.00	1	2.5	3.3	20.0
	2.14	2	5.0	6.7	26.7
	2.43	3	7.5	10.0	36.7
	2.57	1	2.5	3.3	40.0
	2.71	3	7.5	10.0	50.0
	2.86	2	5.0	6.7	56.7
	3.00	1	2.5	3.3	60.0
	3.14	1	2.5	3.3	63.3
	3.29	1	2.5	3.3	66.7
	3.86	1	2.5	3.3	70.0
	4.00	2	5.0	6.7	76.7
	4.14	1	2.5	3.3	80.0
	4.43	6	15.0	20.0	100.0
	Total	**30**	**75.0**	**100.0**	

Source: **Field Survey (2024)**

The outcomes of almost 57% of the responses in table 10 above indicated that auditors and forensic accountants in the Nigerian public sectors are aware of aware of the use data mining software to look for trends, patterns & correlations in large amount of raw data (big data) to detect fraud & cyber-crime faster. Similarly, they agreed that data mining technique is requisite in detection the payroll and personnel fraud in their organization. In the same vein, they have opinion that training on big data analytics and fraud awareness reduces or eradicates fraud and cybercrimes. On the other hand, 30% claimed unawareness; meanwhile, 13% are indifference.

This result is similar to that of Mittal, Kaur and Gupta (2021) who's after using structural equation modeling their results indicate that big data technologies mediate the relationship between awareness and intentions to use big data for fraud detection.

4.3 Test of Hypothesis

The hypothesis of this study is tested in this section using responses from Table 4.7;

Statement of Hypothesis

Ho1: **Big Data Technologies has no significant impact in the Conduct of Forensic Auditing in the Nigerian public sector**.

Table 11: Test Statistics Results

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
BigData in_Forensic_Audit_	30	3.1500	1.09976	.20079

Source: **Field Survey (2024)**

The mean scores for big data in forensic auditing indicate that respondents majorly disclose moderate levels of using big-data information in the conduct of their audit assignment. Standard deviations for each component suggest reasonable variability among firms.

Table 12: One-Sample Test

	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2tailed)	Mean Difference	Lower	Upper
BigData_ForensicAudit_	15.688	29	.000	3.15000	2.7393	3.5607

Source: **Field Survey (2024)**

The results of **One-Sample Test** regression analysis of hypotheses 1 showed that incorporating big-data techniques has a positive and significant effect on the conduct of forensic accounting ($t = 15.68$, $p = 0.000 < 0.05$) at 1% level of significance; hence, Ho1 is rejected. This showed that using big-data technique has a positive significant influence in forensic auditing in the public sector. This is consistent with findings of Gabrielli, Magri,

Medioli and Marchini (2025) whose investigation revealed the notable positive impact of big data on the practices of forensic accounting in Iraq.

Ho2: **Big Data Technologies, has no significant impact on Forensic Accounting and Prevention and Detection of Fraud and Cybercrimes in the Nigerian Public Sector**

Table 13: Test Statistics Results

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
BigData_in_FAudit_Prev_Detec_Fraud_CyberCrime	30	3.1500	1.09976	.20079

Source: **Field Survey (2024)**

The mean scores for overall big data in forensic auditing from the above table indicate that respondents majorly disclose moderate levels of using big-data information in the conduct of their audit assignment (Mean scores 3.150). However, they give more emphasis on data mining software which help them to look for patterns in big data to detect cyber-crime faster and help in the provision of litigation support services for fraud and cybercrimes investigations for early detection of fraud and cybercrime (Mean scores 3.966 and 3.833 respectively, see appendix). Meanwhile, the standard deviations for each component suggest reasonable variability among firms.

Table 14: One-Sample Test

	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2tailed)	Mean Difference	Lower	Upper
BigData_in_FAudit_Prev_Detec_Fraud_CyberCrime	15.688	29	0.000	3.15000	2.7393	3.5607

Source: **Field Survey (2024*)***

The results from table 14 above of **One-Sample Test** regression analysis of hypotheses II showed that employing big-data techniques has a positive significantly effect on the relationship between forensic accounting and Prevention and Detection of Fraud and Cybercrimes in all the constructs in the table above ($t = 15.68$, $p = 0.000 < 0.05$) at 1% level of significance; hence, Ho2 is accepted. This showed that using big-data technique has a positive and significant in influencing a relationship between forensic auditing in the Prevention and Detection of Fraud and Cybercrimes in public sector. This findings is consistent with Mardjono, Suhartono and Hariyadi (2024) and Sembiring & Widur (2023) who's the results of their study prove that Big Data Analysis mediates the relationship between Awareness of Forensic Accounting on Intentions of Forensic Accounting.

The results indicate that, forensic auditors admitted using various skills that help forensic auditor to comprehend financial Patterns in a big data to detect fraud and cyber-crime using data mining software to look for patterns in big data to detect cyber-crime faster. Data mining software also help in the provision of litigation support services for fraud and cybercrimes investigations forensic accounting techniques aided our institutions to combat

financial crimes using uncovering trends, patterns, and correlations in large amount of raw data. This is vindicated in the recent EFCC report that Nigeria's anti-graft agency, the Economic and Financial Crimes Commission recovered at least N231.6 billion and sent no fewer than 3175 criminals to prison in 2024. Giving a breaking down the recoveries, the agency said the amount was made up of 70,260, 544.18, £29, 264.50, €208,297.10, ₹51,360.00, C$3,950.00, A$740.00, ¥74,754.00, R35,000.00, 42,390.00 UAE Dirhams and 247.00 Riyals (Vanguard, August 7, 2024). The top EFCC official noted that the involvement of youths in the crime had continued to pose serious concerns to every stakeholder in the anti-graft war and asked them to repent and steer clear of crimes. He noted, "In spite of this commendable performance, the commission is deeply worried about the increasing involvement of young people, including students, in cybercrime, popularly called yahoo yahoo." (Vanguard, August 7, 2024).

As confirm by the above revelation, most of the fraudulent activities occurred in form of cybercrime which can only be combated using big data analytics which always describes the process of uncovering trends, patterns, and correlations in large amount of raw data to help make data-informed decisions that help in uncovering fraud and cybercrime activities.

4.4 Summary of Major Findings

Based on the analysis of the data collected, the following findings were summarized:

1. The causes of financial fraud and cybercrimes practices in the Nigerian public sector were found to be based on economics, social, cultural, environmental and legal reasons. While, Nature of financial fraudulent practice in the public sector are found to be mainly, kickbacks, bribery and corruption, and financial statement fraud.
2. Majority view of respondent's equivalent to 63% believed that, the extent of financial fraud and cybercrimes in Nigerian public sector is high.
3. The outcomes of almost 57% of the responses indicated that auditors and forensic accountants in the Nigerian public sectors are aware of the use data mining software to look for trends, patterns & correlations in large amount of raw data (big data) to detect fraud & cyber-crime faster.
4. The regression result revealed that using big-data technique has a positive significant influence in forensic auditing in the public sector.
5. The regression analysis of hypotheses II showed that employing big-data techniques has a positive significant effect on the relationship between forensic accounting and Prevention and Detection of Fraud and Cybercrimes.

CONCLUSION AND RECOMMENDATIONS

In conclusion, the study examined the impact of big data in forensic auditing and prevention and detection of fraud and cybercrimes in the Nigerian public sector. Big data has significant impact in the conduct of Forensic auditing. In the same vein, it play significant role in the relationship between Forensic auditing and the detection and prevention of fraud in the Nigerian Public sector. This study concludes that big data is a significant enabler and could be considered as a key to enhance practice and use of forensic accounting.

5.1 Contribution and Policy Implications of the Study

The findings of this research contributes to the body of existing literature empirical based evidence on the role of big data on forensic accounting and the detection and prevention of fraud. The policy implication of the above findings can be categorised as follows:

5.2 Research Implication of the study*:*

Social Benefits: Findings of the study brought awareness by highlighting the impact big data technology in forensic accounting service towards financial fraud/cybercrime prevention and detection in both public and private organization.

Economic Benefits*:* The findings contributed to realizing the potentials of science and technology to meet the most pressing challenges of sustainable economic growth and development by early detection of fraud and corrupt practices.

Technological benefits*:* The research contributions is an attempt to bridge the gap between traditional method of detecting fraud/cybercrimes by proposing an improved effective ways of detecting fraud and cybercrime using contemporary technology.

5.3 Limitations of the Study and Suggestions for Further Studies

In this study, only 30 forensic auditors were used to represent the population of forensic auditors in 3 EFCC zonal officers of North-western Nigeria. In line with the limitation of this study, future research should focused on increasing the sample size. Also focused on increasing the number of variables such as Auditors expertise in forensic auditing among others.

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