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BIG DATA TECHNOLOGIES, FORENSIC AUDITING AND THE EXTENT OF FRAUD AND CYBERCRIMES MITIGATION IN NORTH-WESTERN NIGERIAN STATE AUDIT OFFICES

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ABSTRACT

This study examines big data technologies, forensic auditing and the extent of fraud and cybercrimes mitigation: a case of selected northwestern state audit offices in Nigeria, with a view to suggest empirical and technological-based policy recommendations. Being a survey research design, the study used quantitative data collection and analyses using structured questionnaires distributed to a sample of sixty (60) forensic auditors from the office of auditor general of three Northwestern states. The states are; Kano, Kaduna and Sokoto. Data obtained from survey were analyzed using descriptive statistics, correlation analysis and simple regression techniques. The findings revealed that Big Data analytics positively and significantly influences forensic auditing practices of selected Northwestern States in Nigerian. Similarly, the result reveals positive and significant impact of Big Data analytics on the fraud and cybercrime mitigations in the Northwestern Nigerian Public Sector. The study has social, economic and technological implication as follows: Social benefit includes bringing awareness, to both public and private organizations of the impact of big data technology on forensic accounting. Economically will contribute to realizing the potentials of science and technology in mitigating the most pressing challenges of sustainable economic growth and development through early detection of fraud and cybercrimes practices by forensic accountants in the state audits. Moreover, technological benefits comprise bridging the gap between traditional methods of detecting fraud/cybercrimes by proposing improved ways of its detection using contemporary technology (i.e. big data analytics). It is recommended that Government in its subsequent policies formulations shall consider application of forensic auditing and big data technology as mandatory in the state audits due to its impact on fraud/cybercrimes mitigation and its implications on the national growth.

INTRODUCTION

Fraudulent activities have appeared as some major challenge bedeviling 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).

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 dataset 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 seeks 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

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 the ICPC and the CCB NAFIU amongst others. 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 fourth 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 USD 6.6 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 (Adedipe, 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 addressed. 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, (2025) 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 (Abdul Rahman, Al-Mawali, Zaidan, Said, 2023).

1.2 Research Questions

The following questions were develop from the problem statement:

1. What is the extent of fraud and cybercrime mitigation in the State Audits of Northwestern Region?
2. What is the Role of Big Data Technologies on Conduct of Forensic Auditing in the State Audits of Northwestern Region
3. Does Big Data analytics influence the extent of fraud and cybercrimes mitigation in the State Audits of Northwestern Region?

1.3 Objective (s) of the Study

The overall objective is to examine how Big Data analytics can be applied in forensic Auditing to mitigation the extent of fraud and cybercrimes in the Nigerian public sector: Evidence from State Audits of Northwestern Region. The specific objectives are:

1. To determine the extent of fraud and cybercrime mitigation in the State Audits of Northwestern Region.
2. To evaluate the Role of Big Data Technologies on Conduct of Forensic Auditing in the State Audits of Northwestern Region.
3. To determine whether Big Data Technologies has any impact on the extent of fraud and cybercrimes mitigation in the State Audits of Northwestern Region.

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 V's: 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. Big Data technologies have 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) conducted their studies on the effect of forensic accounting on fraud detection in Nigeria. Franca, Ofurum and Solomon (2023) conducted a study, which examined the effect of forensic accounting, and fraud detection in Nigerian public sector, which was motivated due to 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. The findings revealed that all three indicators of forensic accounting has a negative and significant correlation 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 Banks (DMBs) 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 by public institutions at regional level.

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

More recently, some studies had been conducted on the impact of big data, in forensic auditing, prevention and detection of fraud and cybercrimes, mostly in the foreign countries. For instance, 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, and 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.

Moreover, 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 proved that Big Data Analysis mediates the relationship between Awareness of Forensic Accounting on Intentions of Forensic Accounting. In addition, 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.

Similarly, 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 self-efficacy, 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 self-efficacy and fraud detection.

2.4 Theoretical Framework

The theories that underpin this research are Technology-Organization-Environment (TOE) framework theory, white-collar crime theory, fraud triangle theory and fraud diamond theory 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 organizations like State audit 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. Moreover, from the perspective of Environmental framework (external factors like competition and government policies) the establishment of anti-graft agencies by both federal (e.g. EFCC, ICPC) and some state governments like Kano (Kano State Public Complaints and Anti-Corruption Commission) this singular government policy has influence their decision to adopt new technologies like big data technologies in making their activities easier. This institutions saddle with responsibility of investigation, prosecution and prevent corruption, and financial crimes.

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 this 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. Hence, these theories became very relevant as it explained even the fraudster must possess certain skills and competencies like knowledge of big data technologies to commit their evil deed; therefore, it portrays the importance of investigating how big data technologies influences the conduct of forensic auditing at both state and federal anti-graft institutions levels.

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

Research Hypotheses:

HO_1 There is no significant positive relationship between Big Data Technologies and Conduct of Forensic Auditing in the State Audits of Northwestern Region

HO_2 There is no significant positive relationship between Big Data Technologies and the extent of fraud and cybercrimes mitigation in the State Audits of Northwestern Region

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, studying 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 Nigerian economy (using technological tools i.e. big data 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 States auditor general offices. They were selected from three (3) State Audits offices (Sokoto, Kano, Kaduna) in the Northwestern Nigeria, which is the scope of this study; hence, they were chosen based on purposive sampling. Meanwhile, 20 forensic accountants were selected to filled the questionnaires from each sample. Luckily, enough, the entire questionnaire distributed were filled and returned. Meanwhile, the study adopts a more scientific measure of data and measurement reliability and validity tests. Cronbach's Alpha was applied to measure the internal consistency and reliability in which the details explanation was made in subsequent section.

3.2 Techniques for Data Analyses

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 estimate the ordinary linear regression analysis technique. As this study comprises a direct relationship between variables, hence, it utilizes ordinary linear regression analysis to determine the positive and significant association between Big-data Analytics (BDA) and Forensic Auditing (FA) and to examines if has influence on the extent of financial fraud and cybercrime in the Nigerian public sector. More specifically, the study runs two separate one-way ANOVA Tests (one for each hypothesis). This is justified as each hypotheses has different dependent variable though they share single independent variable. The linear regression is expressed as:

$$Y1 = \beta0 + \beta1X1 + \varepsilon$$

Were.

$Y1$ = FA (dependent/response variable)

$X1$ = BDA (independent variable)

$\beta0$ = Intercept

$\beta1$ = Coefficient

ε = error term or random disturbance term assumed to be normally distributed with mean zero.

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 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 section was structured to include descriptive and regression analyses results, all aligned with the research objectives and hypotheses testing, discussion on major findings and policy implication of each finding. The results in Table 1. Below show the Cronbach's Alpha reliability test statistics based on 60 items of 0.99. In social science research, a Cronbach's Alpha greater than 0.70 is considered acceptable (Gujarati, 2009). Thus, an Alpha of 0.99 is preferred and considered good reliability of the questionnaire measurement.

Diagnostics Tests

Table 1
Reliability and Validity Test of data

Table	Statistics
No of Items	43
Cronbach's Alpha	0.99
N	60

Source: SPSS OUTPUT (Appendix)

The results in Table 1. Below show the Cronbach's Alpha reliability test statistics based on 43 items (i.e. number of questions in the questionnaire) of 0.99. In social science research, a Cronbach's Alpha greater than 0.70 is considered acceptable (Gujarati, 2004). Thus, an Alpha of 0.99 is preferred and considered good reliability of the questionnaire measurement.

4.1 Validity Result

This study passed through rigorous scale development and validation processes. The items were adapted from various past literature on forensic Auditing and the extent of fraud and cybercrimes mitigation and focused to the need of this study. Meanwhile, the current study seeks feedback on the validity of items from two academicians and two experts from government institutions, representing diverse backgrounds in universities, government institutions. As such, they all participated, providing feedback that led to appropriate corrections for item validation (Drost, 2011).

Table 2
Correlation Matrix

			Extent_of_financial_fraud_and_cybercrimes	Big_Data_Technologies_in_the_Conduct_of_Forensic_Auditing	BigData_Techno_extent_of_Fraud_n_Cybercrim
Spearman's rho	Extent_of_financial_fraud_and_cybercrimes	Correlation Coefficient	1.000	.805**	.641**
		Sig. (2-tailed)	.	.000	.000
		N	60	60	60
	Big_Data_Technologies_in_the_Conduct_of_Forensic_Auditing	Correlation Coefficient	.805**	1.000	.911**
		Sig. (2-tailed)	.000	.	.000
		N	60	60	60
	BigData_Techno_Forensic_Acctg_Prev_n_Detec_ofFraud_n_Cybercrim	Correlation Coefficient	.641**	.911**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	60	60	60

**. Correlation is significant at the 0.01 level (2-tailed).

Table 2 above revealed that, the correlation coefficient of 0.80 shows a strong relationship between big data analytics and forensic auditing. However, the correlation existed between the big data analytics and the extent of fraud and cybercrime in the Nigerian public sector is average as the coefficient stands at 0.64. However, the result confirms no presence of multi-collinearity between the variables used, as the coefficient of all the variables are within threshold of 80% as stated by Gujarati (2009).

4.2 Descriptive Statistics

Table 3
Respondents Opinion on the Extent of financial fraud and cybercrimes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very High	27	45.0	45.0	45.0
	High	21	35.0	35.0	80.0
	Moderate	5	8.3	8.3	88.3
	Low	6	10.0	10.0	98.3
	Very Low	1	1.7	1.7	100.0
	Total	60	100.0	100.0	

Source: Research Fieldwork, 2025

Table 4.3 present the result of respondents' opinion on the extent of financial fraud and cybercrimes in their respective institutions.

The analysis revealed that, 80% of the respondents have opinion that, the extent of financial fraud and cybercrimes in the Nigerian public sector is high, whereas, 10% have contrary view. Meanwhile, 8.3% believed it is Moderate.

4.2.3 Hypothesis Testing

The two research hypotheses formulated were tested using OLS.

HO_1 There is no significant positive relationship between Big Data Technologies and Conduct of Forensic Auditing in the State Audits of Northwestern Region

Table 4

Big Data Technologies and Conduct of Forensic Auditing

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	0.460	0.186		2.468	.017
	BDT& FA	.683	.078	.753	8.715	.000

Source: Research Fieldwork, 2025

a. Dependent Variable: Forensic Auditing

R = 0.75, R-Square = 0.57, Adjusted = 0.56, F = 75.95, P-value = 0.000

Table 4. present the result of analysis on the effect of Big Data Technologies and Conduct of Forensic Auditing in the Nigerian public sector The Unstandardized Coefficients (B) for Constant = 0.460. This value represents the expected effect of Big Data Technologies in conducting Forensic Auditing is zero. It provides a baseline level for the conduct of forensic auditing practices that is not influenced by big data. For Big Data Technologies, B = 0.683, this coefficient shows that for each additional unit increase in application of big data, forensic auditing practices are predicted to increase by 0.753 units. The positive value suggests that Big Data Technologies positively influences forensic auditing practices. In addition, Beta value of 0.753, this indicates the relative strength of big data in explaining changes in forensic auditing practices. It suggests a high positive effect of big data technologies on forensic auditing practices. T-value of 8.71, while Sig. = 0.000, T-value measures the ratio of the coefficient to its standard error, indicating how strongly big-data predicts forensic auditing practices. The p-value = 0.000 is less than 0.05, showing that this effect is statistically significant at 1% level of significance, meaning big data is a significant predictor of forensic auditing practices. The correlation coefficient (R) of 0.75 shows a strong to positive relationship between big-data and forensic auditing practices. The R-Square value of 0.57 means that 57% of the variation in forensic auditing practices is explained by big data. Since p-value (0.000) is less than 0.05, the null hypothesis is rejected. That mean big data technology has a statistically significant impact on forensic auditing practices. Meanwhile the relationship is very strong, there is enough evidence to support that big data contributes positively to the quality of forensic auditing practices in the auditor general offices of Northwestern state.

HO_2 There is no significant positive relationship between Big Data Technologies and the extent of fraud and cybercrimes mitigation in the State Audits of Northwestern Region

Table 4.7

Big Data Technologies and the extent of fraud and cybercrimes

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	0.904	0.226		4.000	0.000
	BDT & FCC	0.439	0.088	0.549	5.007	0.000

Source: Research Fieldwork, 2025

a. Dependent Variable: Extent_of_financial_fraud_and_cybercrimes

R = 0.55, R-Square = 0.30, Adjusted = 0.29, F = 25.074, P-value = 0.000

Table 4.6 presents the result of analysis on the impact of the Big data technologies on the extent of fraud and cybercrimes mitigation in the Nigerian public sector. The Unstandardized Coefficients (B) for Constant = 0.904. This value represents the expected effect of Big Data Technologies on of fraud and cybercrime mitigations is zero. It provides a baseline level for fraud and cybercrime mitigations that is not influenced by big data. For Big Data Technologies, B = 0.439, this coefficient shows that for each additional unit increase in application of big data, cybercrime mitigations are predicted to increase by 0.439 units. The positive value suggests that Big Data Technologies positively influences fraud and cybercrime mitigations.

The T-value of 5.007, with a significance level (p-value) of 0.000. Since this p-value is less than 0.05, it indicates that the impact of Big Data Technologies on fraud and cybercrime mitigations is statistically significant. The R-Square of 0.30 suggests that 30% of the variance in fraud and cybercrimes mitigations is influenced by the use of big data, indicating a modest relationship. The Adjusted R-Square stood at 0.29; this value confirms that big data has almost modest explanatory power of big data and mitigation of fraud and cybercrime. However, since the p-value = 0.000 is less than 0.05, the null hypothesis is rejected, concluding that big data technologies does significantly influence the mitigation of fraud and cybercrime. This suggests that other factors, rather than big data, may be influencing the mitigation of fraud and cybercrime. This finding is consistent with the findings of Sembiring & Widur (2023) and Shalhoob, Halawani, Alharbi and Babiker (2024) who found similar results in their domain.

Summary of Major Findings

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

i. The Majority view of respondent's equivalent to 80% believed that, the extent of financial fraud and cybercrimes in the State Audits of Northwestern Region.
ii. The regression result revealed that using big-data technique has a positive significant influence in forensic auditing in the State Audits of Northwestern Region.
iii. The regression analysis of hypotheses II showed that employing big-data techniques has a positive significant effect on Fraud and Cybercrimes mitigations in the State Audits of Northwestern Region.

5.1 CONCLUSION

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 a significant impact in the conduct of Forensic auditing.

Similarly, the study played significant role in fraud and cybercrimes mitigations in the State Audits of Northwestern Region. The study concludes that, big data is a significant enabler and could be considered as a key to enhance practice of forensic accounting in detecting fraud and cybercrimes in the Nigerian public sector.

5.2 RECOMMENDATIONS

Based on the above findings and conclusion, it is recommended that Government in its subsequent policy formulation shall consider application of forensic auditing and big data technology as mandatory in the state audits due to its impact on fraud/cybercrimes mitigation and its implications on the national growth.

Government should continue to strengthen the auditor's capacity through modern information systems and technological infrastructure, like audit software and AI tools that support forensic auditing and enhances fraud mitigations and cyber security challenges.

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