

Determinants of Fraud Management Technique of Selected Federal Ministries, Departments and Agencies (MDAs) in Nigeria

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ABSTRACT

Background: Fraud management techniques have become vital not only for policymakers but also for all the users of information to ensure the trust of different stakeholder groups in the accountability and transparency of government resources. In order to solve this problem, the study seeks to evaluate the determinants of the fraud management techniques of selected federal ministries, departments, and agencies (MDAs) in Nigeria.

Methodology: computer-assisted auditing skills and data mining skills were proxies for independent variables, while fraud management technique was a dependent variable proxy for fraud prevention. The study adopted primary data, which were drawn from four specific federal ministries, departments, and agencies with the help of structured closed-ended questionnaires with five-point Likert scale options. The study underpinned the fraud pentagon theory because it is more connected than other theories. Descriptive statistics and multiple regression analysis were used to analyze the effect of the independent variables on the dependent variable. The SPSS version 25 software statistical package was used for the coding of the questionnaire and data analysis for the study.

Results: The regression results showed that computer-assisted auditing techniques (CAATs) have a positive and significant effect on fraud prevention, while data mining skills (DMS) have a negative and insignificant effect on fraud prevention in Federal Ministries, Departments, and Agencies (MDAs) in Nigeria. This implies that the ability of Nigeria's federal ministries, departments, and agencies to manage fraud is significantly influenced by computer-assisted auditing techniques while not significantly influenced by data mining skills.

Recommendations: The study recommended that federal ministries, departments, and agencies in Nigeria should create a regular training program for their employees in order to enlighten them on how fraud could be managed through computer-assisted auditing techniques and data mining skills.

Keywords: computer-assisted auditing technique, data mining skills, fraud prevention, multiple regressions, and SPSS.

INTRODUCTION

Fraud management techniques have become vital not only for policymakers but also for all the users of information to ensure the trust of different stakeholder groups in the accountability and transparency of government resources. Therefore, many corporate entities misadventures are typified by such practices as using doubtful and questionable accounting practices to conceal huge losses, concealing extensive borrowing by keeping them off the balance sheet, and consequently overall fraudulent reporting (Siddik, 2021). In Nigeria, the cases of Cadbury Nigeria Plc, Afribank Nigeria Plc, NAMPAK, Oceanic Bank Nigeria Plc, and African Petroleum Plc were relatively caused by massive fraud. Efiog (2012) expressed that there is a growing level of fraud in Nigeria, and this creates the need for the use of forensic accounting skills in fraud management. Financial fraud has spread across different levels of government ministries, departments, and agencies (MDAs) in Nigeria. Forensic accountants should be engaged by the management and users of financial statements to investigate and document financial fraud or misappropriation in view of the alarming rate of financial fraud. The importance of forensic accounting skills for fraud management is inevitable, especially in the Nigerian public sector, where most management of MDAs are involved in one form of financial scandal or another (Ahmed et al., 2020).

Forensic accounting is quite new in Nigeria, as companies have realized that the service of a forensic accountant is needed as fraud cases have substantially increased in number. These basic fundamental skills of forensic accounting are accounting and auditing skills, data mining skills, computer-assisted auditing techniques (CAATs), and forensic investigative skills. Furthermore, to find patterns, anomalies, and trends that can be used to answer organizational questions and predict future events, forensic auditors use a process called data mining (Ugbede et al., 2021). Finding anomalies, patterns, and correlations within sizable data sets in order to predict outcomes is referred to as data mining. Organizations can also use data mining to transform unstructured data into information that can be used to make management decisions.

Data mining is viewed as a potent new technology with a lot of potential for assisting organizations in concentrating on the most crucial data in their database. An organization can make proactive, knowledge-driven decisions by utilizing data mining tools that forecast upcoming trends and behaviors (Bassey, 2019). With the aid of predetermined techniques and algorithms, data mining automates the discovery of pertinent hidden patterns in databases that can be examined to identify current and historical trends. By scanning databases for uncovered patterns, data mining tools forecast future trends and behaviors, enabling forensic auditors to make proactive, knowledge-driven decisions and respond to queries that were previously time-consuming to address (Ewa, 2022).

Computer-aided accounting technique (CAAT) is another tool that a forensic accountant may use to gather first-hand evidence in fraud cases. CAAT is the paradigm within forensic auditing as a discipline. Generalized Audit Software (GAS) is used by auditors to analyze and audit either live or extracted data from a wide range of applications (Ahmad et al., 2020). CAATs are designed to help auditors perform audits on computerized accounting data. The definition of CAAT is the use of tools and processes for data retrieval and analysis while auditing computer applications. A tool and method called CAAT are used to test the internal workings of a computer program that processes data. CAAT is the practice of using a computer to gather audit evidence; an audit is conducted with the aid of a computer or software to support the conduct of the examination. Audit techniques are methods used by auditors to collect audit evidence (Azhar & Meiryani, 2018).

Fraud is a global issue to which no nation is immune; however, developing countries and their various states

bear the brunt of the pain. Money meant to improve their standard of living is being misappropriated by those in charge of finance (Okoye & Gbegi, 2013; Olaniyan et al., 2021). It is widely held in Nigeria that government ministries, departments, and agencies (MDAs) are among the most vulnerable sectors to fraudulent practices due to relaxed anti-corruption legislation and management (Ewa, 2022). According to the Association of Certified Fraud Examiners (ACFE) reports to the Nations on Occupational Fraud and Abuse, ministries, departments, and agencies of government (MDAs), among others, were the most represented sectors in occupational fraud cases (Okoye & Gbegi, 2013; Ewa, 2022). Financial statements provide a concise and comprehensive assessment of an entity's worth or health. It is the channel through which organizations are evaluated for investment and policy decisions. The growing trend of personnel manipulating financial statements to conceal their pathways in order to protect their infamous activities for personal or managerial gain is cause for concern, necessitating the implementation of necessary mechanisms or controls to stop this cancerous behavior in the system, as they will always try to compromise the accounting system. These motives are frequently carried out through a variety of methods or schemes, whether in revenue recognition or expense classification or recognition (Okafor et al., 2020; Olaniyan et al., 2021; and Ewa, 2022).

Studies in the banking sector include Amahalu & Ezechukwu (2017), Bassey (2019), Ewa (2022), Madu-Chimau et al. (2020), Tapang et al. (2020), Ugbede et al. (2021), and Okafor et al. (2020). Taiya et al. (2021) investigated the extent to which forensic accounting technologies can be used to prevent revenue leakages at Nigerian federal universities. Based on the above problems and gaps, which necessitated the study of the determinants of fraud management techniques of selected Federal Ministries, Departments, and Agencies (MDAs) in Nigeria.

LITERATURE REVIEW

Conceptual Framework

Computer-Assisted Auditing Techniques (CAATs)

The ability to use technology to help auditors perform audit tasks and produce results that are accurate and at a faster rate is known as computer-assisted auditing (Braun & Davis, 2003). CAATs give auditors the freedom to select the task they want to complete, meet predetermined criteria, learn more about the effectiveness of controls, and test all populations. Asaolu et al. (2020) claim that CAATs are software programs and computer tools used by auditors as a part of audit procedures to process data that is important to the audit as it is stored in the entity's information systems. According to Zhaol et al. (2014), computer-assisted audit tools increase audit efficiency by enabling the auditor to complete tasks and use the entire population rather than just a sample of it. Bassey (2019) explains that CAATs are computer programs and data that auditors use as part of the audit procedures to process data from a client computer information system (CIS) that is of audit significance. As a result, CAATS is a tool used by auditors. He adds that with the aid of this tool, the internal accounting department of any company will be able to produce more analytical results by assisting the auditors in their search for irregularities in the provided data.

Data Mining Skills

Rygielski et al. (2002) proposed the concept of data mining, a tool that can use statistical techniques to find patterns and correlations in data. This enables management to concentrate on crucial information that may have been concealed in the data. The analysis provided by data mining has shifted from being retrospective to being prospective. Given that data mining deals with relationships between subsets of data, the extraction pattern is crucial. Additionally, as an iterative process, data mining allows for progress to be determined by discoveries made manually or automatically. When there is no predetermined outcome in an exploratory analysis, it is helpful. The boarding family of computational techniques, which include statistical analysis,

decision trees, neural networks, rule induction and refinement, and graphic visualization, is used in data mining (Oyedokun, 2017). In order to predict outcomes, data mining is the process of identifying anomalies, patterns, and correlations within huge data sets. Businesses can also use data mining to transform unstructured data into insightful knowledge. Businesses can learn more about their customers, create more efficient marketing strategies, boost sales, and cut costs by using software to find patterns in large batches of data (Bassey, 2019). In addition, it is a potent new technology that allows companies to concentrate on the most crucial information in their data warehouses, which is the process of extracting hidden predictive information from sizable databases. Businesses can make pro-active, knowledge-driven decisions by using data mining tools that forecast future trends and behaviors.

Fraud Management Technique

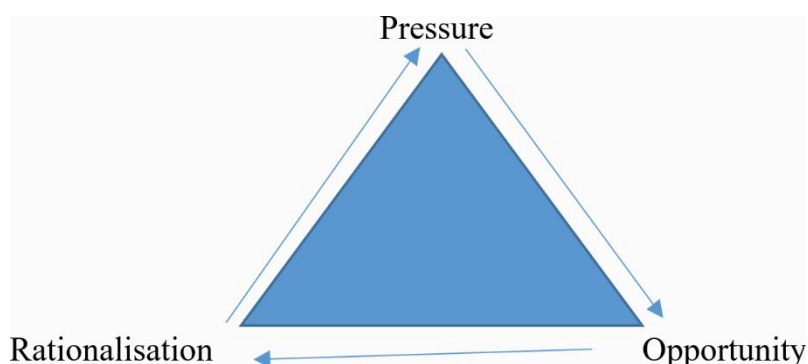
Fraud management is a framework of coordinated actions put in place by organizations to improve fraud prevention, detection, and the time it takes to respond appropriately to fraud cases (Adebayo et al., 2022). According to Lutui and Ahokoyi (2017), managing fraud is crucial because it involves recognizing the types of situations that present risks and developing effective plans to lessen them.

Fraud Prevention Technique, described as engaging strategies that could reduce motivation, limit opportunities, and limit a fraudster's potential ability to rationalize their actions, is a crucial method of combating fraud (Adebayo et al., 2022). According to Taufik (2019), fraud prevention methods act to prevent fraud from happening. Consequently, the goal of fraud prevention techniques is to reduce opportunities and remove temptations for potential offenders. Hussaini et al. (2019) contended that the best strategy for managing the risk of fraud is to prevent it. They also added that fraud prevention strategies were frequently based on organizational processes that could be greatly enhanced by the use of fraud prevention strategies. Preventing losses is better financially and is the preferred course. Therefore, fraud prevention strategies can guarantee an organization's continuity and stability.

Theoretical Framework

Fraud Triangle Theory

According to Abdulrahman (2019), Sutherland in 1949 was the first to use the phrase "white collar crime theory," and he hypothesized white-collar criminals, attributing distinct traits and motivations to deceptive corporate personnel rather than to conventional gang bangers. He continued by saying that Cressey in 1953 claimed that a criminologist who was also Sutherland's student improved on the original efforts of the pattern and developed the Fraud Triangle Theory between 1919 and 1987. Cressey (1953) focuses on the identification of the three stages of fraud triangle theory, such as:



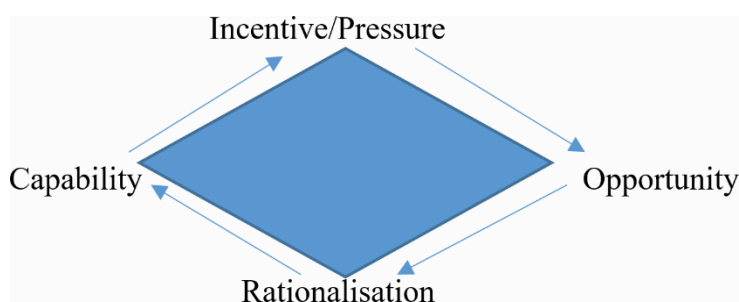
Source: Abdulrahman (2019) and Abdullahi & Mansor (2015)

The fraud triangle theory, according to Abdulrahman (2019), is inadequate since it only included one

psychological examination of the first fraud offender. He continued that the theory ignores other variables that lead to fraud acts because it lacks any actual scientific backing and also fails to take into account other variables that could assist perpetrators in committing fraudulent acts; in other words, the theory may contribute to perpetrators committing fraudulent acts.

Fraud Diamond Theory

Due to several weaknesses in the fraud triangle theory, Wolf and Hermanson presented the fraud diamond theory (FDT) as the new advanced fraud theory in 2004. This was noted by Ewa (2022), who contends that the fraud diamond theory (FDT) provides a more accurate picture of the causes of fraud. He expanded Cressey’s three-factor theory by including the fourth variable, capability.



Source: Ewa (2022)

Abdulrahman (2019) stated that the fraudster must have the necessary traits, abilities, or positional power in order to perpetrate fraud in the organization. The Fraud Diamond Theory (FDT) offers more information regarding the reasons why fraud occurs, and it believes that if the right person was not capable of carrying out the mechanics of the deception, many scams would not have occurred. He must be aware of, and be able to exploit, gaps in the accounting procedure and internal controls. The fraud diamond theory (FDT), which examines the concealing characteristics of fraudsters in great detail, serves as the theoretical foundation for this investigation.

Fraud Pentagon Theory

The current theory of fraud was propounded by Crowe Horwart in 2011 and is known as Crowe’s Fraud Pentagon Theory. But it was Jonathan T. Marks, a partner at Crowe Horwart, who argued there are two more elements of fraud, namely competence and arrogance. The competence element has the same meaning as capability, which was previously explained in the fraud diamond theory. It refers to the competence or capability to ignore internal control, develop a strategy to conceal fraudulent acts, and control the social situation for his or her benefit. Meanwhile, arrogance refers to the superiority attitude about having special rights and the thought that an organization’s internal control does not apply to them personally.



Source: Abdulrahman (2019)

The study was anchored on fraud Pentagon theory because it contributes to the development of fraud

management theory by trying to shed more light on the key factors that play a major role in whether fraud will actually occur and developing a model that will serve as a theoretical benchmark for all future reference.

Empirical Review

Computer-Assisted Auditing Techniques (CAATs) and Fraud Prevention

Okafor et al. (2020) evaluated the effects of forensic audits and financial statement fraud by deposit money banks in Nigeria between the years 2016 and 2020 with the adoption of panel least squares (PLS) for data analysis. The independent variable is forensic audit, while the dependent variable is financial statement fraud. The results demonstrated that the use of computer-assisted auditing techniques has a significant impact on financial statement fraud at Nigerian deposit money banks. The financial statement fraud of Nigerian deposit money banks is significantly reduced by computer-assisted audit techniques.

Taiya et al. (2021) assessed the relationships between forensic accounting technologies and revenue leakages using regression analysis. The independent variable is forensic accounting technologies, while the dependent variable is revenue leakages. The primary source was used for the collection of 238 questionnaires, which is the sample size for this study. This suggests that forensic data analysis methods can assist in identifying financial leaks at Nigerian federal universities. It was also discovered that forensic accounting technologies aid in stopping revenue leakages at Nigerian federal universities. The implication is that there would be a significant decrease in revenue leakages once these technologies were implemented.

Fadilah et al. (2019) examined the effect of forensic accounting skills, including auditing skills, investigative knowledge and skills, legal knowledge, communication skills, psychological, criminological, and victim-logical skills, accounting skills, and ICT-related skills of external auditors, on fraud detection using quantitative research methods. The questionnaires were also used to gather the necessary data for running multiple regression analyses. The result discovered that the external auditors' ICT knowledge and expertise have an impact on their ability to spot fraud. In this day and age, ICT usage and presence are inevitable.

Ogiriki & Appah (2018) determined the effect of computer-assisted techniques on public sector fraud detection and prevention in Nigeria using an ex-post factor design. The independent variable is computer-assisted techniques, while the dependent variable is fraud detection and prevention. The study also used regression analysis along with a restructured questionnaire for data collection. The study found a significant connection between computer-assisted tools and techniques and Nigeria's public sector fraud detection, investigation, and prevention.

Amahalu & Ezechukwu (2017) studied the influence of CAATs on rogue trading in deposit money banks in Anambra State, Nigeria, using a survey approach using the Taro Yamane formula to select a sample size of 35 from a population of 55 key officials from eleven (11) commercial banks. The study found that computer-assisted auditing techniques (CAATs) significantly reduce money laundering.

Ho₁: Computer-assisted Auditing Techniques (CAATs) have no significant effect on the fraud prevention of selected federal ministries, departments, and agencies (MDAs) in Nigeria.

Data Mining Skills (DMS) and Fraud Prevention

Ewa (2022) evaluated the impact of commercial data mining in preventing or detecting fraudulent practices in commercial banks in Nigeria using descriptive statistics and the Ordinary Least Squares (OLS) model for multiple regression analysis. The questionnaire was used for the gathering of data for the study. The study results demonstrated that data mining has significantly improved MDAs' ability to detect and/or prevent

fraud.

Ugbede et al. (2021) investigated the effectiveness of forensic accounting as a tool for fraud prevention using primary data. The independent variable for the study was forensic accounting, while the dependent variable was fraud prevention. The sample sizes were chosen using the stratified sampling technique, while five-point Likert scale questionnaires were adopted for the collection of data and subjected to descriptive statistics analysis. The result showed that forensic accounting is effective at stopping fraudulent activities in money deposit banks and that investigation approaches play a significant role in managing the financial resources allotted to these institutions.

Madu-Chimau et al. (2020) examined the relationship between fraud investigation and fraud detection using primary data. The independent variable for the study was fraud investigation, while the dependent variable was fraud detection. The data for the study were collected from the questionnaires using a five-point Likert scale in order to analyze both descriptive (mean and SD) and inferential (Lawley’s correlation) statistical tools with SPSS version 20. The findings show a connection between fraud detection in Nigerian banks and forensic accounting fraud investigations.

Ho₂: Data mining skills have no significant effect on the fraud prevention of selected federal ministries, departments, and agencies (MDAs) in Nigeria.

METHODOLOGY

The quantitative research design and the cross-sectional survey research design were adopted for the study. The sample for this study was chosen using a stratified sampling technique, with only MDAs that have implemented fraud management techniques in their systems constituting the sample size. The selected MDAs were the Ministry of Finance, the Office of the Accountant General of the Federation, the Office of the Auditor General of the Federation, and the Economic and Financial Crime Commission. They were selected based on the criteria that fraud management techniques were adopted in the various MDAs (Olaniyan et al., 2021; Taiya et al., 2021; Ewa, 2022). The population of 5,833 staff was gathered from four (4) selected MDAs, while Yaro Yamane’s formula was used to calculate the sample size of 374 staff from the total population of 5,833 staff, of which only 349 staff questionnaires were returned and used for the analysis of the study. The five-point Likert scale, structured as closed-ended questionnaires, was adopted for the study. The researchers adopted a coding system for the analysis of the data, while SPSS version 23 was used for the running of descriptive statistics, Pearson correlation analysis, and the multiple regression method.

The model for the study was adapted from Siddik (2021) and Kosgey & Solomon (2022) with some modifications in order to suit the current study.

$$FPV = f(CAAT + DMS) \dots\dots\dots(i)$$

$$FPV = \alpha + \beta_1 CAAT + \beta_2 DMS + \mu \dots\dots\dots(ii)$$

Where: FPV = Fraud Prevention; CAAT= Computer Assisted Auditing Techniques and DMT= Data mining techniques; f = functional dependency of the relationship; α = Intercept or constant; β_1 to β_2 = Coefficients of the explanatory variables and μ = Error term.

Table 1: Population and Sample distribution of the study for the MDAs

Ministries, Department and Agencies	Population	Sample size
Ministry of Finance	2,195/5,833 * 374	141

Office of the Accountant General of the Federation	987/5,833* 374	63
Office of the Auditor General for the Federation	1,154/5,833* 374	74
Economic and Financial Crime Commission	1,497/5,833* 374	96
Total	5,833	374

Source: Author’s computation (2024).

Table 2: Variables Measurement and Source of the Study

Variables	Proxies	Measurement	Source
Fraud Prevention (FPV)	The sum of responses for the seven (7) five items questionnaire testing the effect of forensic accounting skills on fraud management selected MDAs in Nigeria.	Four-Likert scale	Adebayo, et al (2022)
Computer Assisted Auditing Techniques (CAATs)	The sum of responses for the five (5) five items questionnaire testing the effect of Computer Assisted Auditing Techniques on Fraud management of selected MDAs in Nigeria.	Four-Likert scale	Braun & Davis, (2003) and Asaolu et al (2020)
Data Mining Skills (DMS)	The sum of responses for the five (5) five items questionnaire testing the effect of Data Mining Skills on Fraud management of selected MDAs in Nigeria.	Four-Likert scale	Rygielski, et al (2002)

Source: Field work, 2024.

ANALYSES AND RESULTS

Analysis

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistics	Statistics	Statistic	Std. Error	Statistics	Std. Error
CAATs	349	5.00	20.00	14.1490	3.88419	-.869	.131	-.108	.260
DMS	349	6.00	21.00	14.5072	2.82600	-.249	.131	-.216	.260
FPV	349	11.00	28.00	22.7450	2.97514	-.643	.131	.955	.260
Valid N (listwise)	349								

Source: Author’s Output 2024, SPSS Version 23

The CAAT (Computer Assisted Auditing Technique) has a mean of 14.1490 and a standard deviation of 3.88419, with minimum and maximum values of 5 and 20, respectively. This indicates that there is a large degree of dispersion. The lack of proper computer training for MDA staff may be the cause of the differences in Computer Assisted Auditing Technique (CAAT) used by different MDAs, while Data Mining Skills (DMS) had a mean and standard deviation of 14.5072 and 2.82600, with a minimum and maximum of

6 and 21, respectively. This suggests that the MDAs’ use of data mining skills varies greatly. Depending on the type of fraud, the size, and the complexity of the MDAs in the Nigerian public sector, data mining skills may be used in a variety of ways. The final statistic for forensic investigative skills is that it has a mean of 15.5530, a standard deviation of 2.90376, and a range of 7 to 20. As a result of the need for various skills in fraud management, there is a wide disparity in forensic investigative skills.

Table 2: Correlations

		FPV	CAAT	DMS
Pearson Rank Correlation	FMT	1.000		
	CAAT	0.741	1.000	
	DMS	0.605	0.471	1.000

Source: Author’s Output 2024, SPSS Version 23

Table 2 above shows that computer-assisted auditing techniques (CAATs) and data mining skills have a positive relationship with the fraud prevention of federal ministries, departments, and agencies in Nigeria. This implies that any unit increase in computer-assisted auditing techniques (CAATs) and data mining skills will result in an increase in fraud prevention at 0.741 and 0.605, respectively.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.959	.920	.919	0.845	.920	1.337	4	344	.000	2.255
a. Predictors: (Constant), CAATs, DMS										
b. Dependent Variable: FPV										

Source: Author’s Output 2024, SPSS Version 23

The model summary result in Table 3 above shows that R-Squared shows that 92% of the variations in fraud prevention (FPV) of federal ministries, departments, and agencies (MDAs) in Nigeria were caused by the level of computer-assisted auditing techniques (CAATs) and data mining skills (DMS), while 8% of the variation in fraud prevention (FPV) was affected by other factors outside our model. The adjusted R-squared, which indicates a figure greater than 50%, implies that computer-assisted auditing techniques (CAATs) and data mining skills (DMS) were the major determining factors of fraud prevention (FPV) in federal ministries, departments, and agencies (MDAs) in Nigeria. The Durbin-Watson statistic is 2.255, while the F-statistic change is 1.337 at a p-value of 0.000 at the 1% level of significance. This table of model summaries demonstrated how well the model fit the data of the study under consideration. As a result, it suggests that computer-assisted auditing techniques (CAATs) and data mining skills (DMS) were all jointly effective measures that had a positive effect on the fraud prevention of federal ministries, departments, and agencies (MDAs) in Nigeria.

Table 4: Multi-Collinearity

Variable	Tolerance	VIF
CAAT	0.714	1.401
DMS	0.468	2.135

Mean VIF		1.768
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Source: Author’s Output 2024, SPSS Version 23

Multi-collinearity does not exist between the explanatory variables considered in this study because all of the VIFs are less than 10 and tolerance values are greater than 0.10. It is important to remember that for multi-collinearity to exist, the regressors must generate a VIF value greater than 10 and a tolerance value less than 0.1. The findings of this study are consistent with the classical regression model’s assumption that there should be no multi-collinearity among the regressors included in the model, and thus the research findings can be interpreted confidently.

Result

Table 5: Regression Coefficients

Model	B	Std. Error	Beta	T	Sig.
CAAT	0.422	0.014	0.551	30.567	0.000
DMS	- 0.032	0.023	- 0.030	-1.367	0.173

Source: Author’s Output 2024, SPSS Version 23

Ho₁: *Computer-Assisted Auditing Techniques (CAATs) have no significant effect on the fraud prevention (FPV) of selected federal ministries, departments, and agencies (MDAs) in Nigeria.*

The Computer-Assisted Auditing Techniques (CAATs) t-calculated value is 30.567 greater than the critical value of 2.000 in the regression analysis table above, and the P-value indicates a value of 0.000 less than 5%, which is the threshold of significance. This implies that any increase in computer-assisted auditing techniques will also result in an increase in fraud prevention, and vice versa. This suggests that computer-assisted auditing techniques (CAATs) have a positive and significant effect on fraud prevention (FPV). Based on the result, the study rejects the null hypothesis (Ho) and accepts alternate hypothesis 1, which states that computer-assisted auditing techniques (CAATs) have a significant effect on the fraud prevention (FPV) of selected federal ministries, departments, and agencies (MDAs) in Nigeria. The findings of this study agreed with Okafor et al. (2020), Ogiriki & Appah (2018), Taiya et al. (2021), and Amahalu & Ezechukwu (2017).

Ho₂: *Data Mining Skills (DMS) has no significant effect on the fraud prevention of selected federal ministries, departments, and agencies (MDAs) in Nigeria.*

The Data Mining Skills (DMS) t-calculated value is -1.367 greater than the critical value of 2.000 in the regression analysis table above, and the P-value indicates a value of 0.173 greater than 5%, which is the threshold of significance. This suggests that data mining skills (DMS) have a negative and insignificant effect on fraud prevention (FPV). This implies that any increase in data mining skills will also result in a decrease in fraud prevention, and vice versa. The study accepts the null hypothesis (Ho) of hypothesis two, which states that data mining skills (DMS) have no significant effect on the fraud prevention (FPV) of selected federal ministries, departments, and agencies (MDAs) in Nigeria. The findings of this study agreed with Ewa (2022) while being in contrast with those studied by Okafor et al. (2020), Amahalu & Ezechukwu (2017), and Ogiriki & Appah (2018).

RECOMMENDATIONS

In view of the findings of this study and to ensure that all hands are on deck to reduce financial fraud in Nigeria, the researchers recommended, among others, that:

1. All levels of government, including local, state, and federal, should adopt the use of computer-assisted auditing techniques in order to promote the most efficient approach to fraud prevention techniques in the ministries, departments, and agencies in Nigeria. In addition, the Association of National Accountants of Nigeria (ANAN), the Institute of Chartered Accountants of Nigeria (ICAN), and other professional bodies in Nigeria should all include forensic computer-assisted auditing techniques in the curriculum of their professional examinations to increase the training of professionals in the use of computer-assisted auditing techniques.
2. Nigeria's legal, educational, and political frameworks are advised to keep up with the global trend in fraud management; the government at these levels should provide the favorable environment necessary for the forensic accounting profession to flourish in the nation. In addition, professional bodies such as the Institute of Chartered Accountants of Nigeria (ICAN), the Association of National Accountants of Nigeria (ANAN), the Chartered Institute of Bankers of Nigeria (CIBN), and the chartered institute of taxation of Nigeria (CITN) should prepare study packages that will help members and other individuals to update their knowledge in the area of data mining skills and embrace global best practices in the field of accounting. This will help in improving the capacities of practicing auditors in fraud management skills.

REFERENCES

1. Abdulrahman, S (2019). Forensic Accounting and Fraud Prevention in Nigerian Public Sector: A Conceptual Paper. *International Journal of Accounting and Finance Review*, 4(2), 13 – 21.
2. Adebayo, A. O., Olagunju, A., & Bankole, O. E. (2022). Fraud risk management and fraud reduction: Evidence from the Nigerian oil and gas sector. *Malaysian Management Journal*, 26(July), 145-168. <https://doi.org/10.32890/mmj2022.26.6>.
3. Ahmad M., Emer & Takiah B. M. I. (2020). The impact of Computer Assisted Auditing Techniques (CAATs) on development of audit process: an assessment of Performance Expectancy of by the auditors. *International Journal of Management and Commerce Innovations*, 7(2), 1199-1205.
4. Amahalu N. N. & Ezechukwu B. O. (2017). Effect of forensic accounting application on financial crime detection in deposit money banks in Anambra state. *International Journal of Advanced Engineering and Management Research*, 2(6), 2350-2379.
5. Asaolu T.O., Akinkoye E. Y., & Akinadewo I. S. (2020). Forensic accounting skills and tax evasion detection in Lagos State, Nigeria. *International Journal of Business and Economic Development*, 8(2), 90-99.
6. Azhar S. & Meiryani. (2018). The Role of Computer Assisted Audit Technique. *International Journal of Scientific & Technology Research*, 7(11), 1-11.
7. Basse E. B. (2019). Effect of Forensic Accounting on the Management of Fraud in Microfinance Institutions in Cross River State. *IOSR Journal of Economics and Finance (IOSR-JEF)*, 9(4), 79-89.
8. Braun, R. L., & Davis, H. E. (2003). Computer-assisted audit tools and techniques: Analysis and perspectives. *Managerial Auditing Journal*, 18(9), 725-731.
9. Effiong, J. E. (2012). Forensic accounting education: An exploration of the level of awareness in developing economies. Nigeria as a case study. *International Journal of Business and Management*, 7(4), 26-34.
10. Ewa U. E. (2022). Forensic Accounting and Fraud Management in Nigeria. *Journal of Accounting, Business and Finance Research*, 14(1), 19-29. <https://doi: 10.55217/102.v14i1.505>.
11. Fadilah S., Maemunah M., Nurrahmawati, Lim T.N., Sunday R.I. (2019). Forensic accounting: fraud

- detection skills for external auditors. *Polish journal of management studies*, 20(1), 168-180.[http://DOI: 10.17512/pjms.2019.20.1.15](http://doi.org/10.17512/pjms.2019.20.1.15).
12. Hussaini, U., Bakar, A. A., & Yusuf, M. B. (2019). The effect of fraud risk management, risk culture and performance of banking sector: A conceptual framework. *International Journal of Multidisciplinary Research and Development*, 6(1), 71-80.
 13. Kosgey R. K. & Solomon N. (2022). Independence of Forensic Auditors and Fraud Prevention in Commercial Banks in Kenya: A Case of Nakuru County, *Journal of Economics and Finance*. 13(3), 1-7: DOI: 10.9790/5933-1303040107.
 14. Lutui, R., & Ahokovi, T. (2017). Financial fraud risk management and corporate governance. The Proceedings of 15th Australian Information Security Management Conference (513). Perth, Western Australia: Edith Cowan University. doi:10.4225/75/5a84f10795b47.
 15. Madu-Chimau, L. C., Egbunike, A. P., & Okoro, E. G. (2020). Forensic Auditing and Fraud Detection in Nigeria: Evidence from Publicly Quoted Commercial Banks. *Management Economic Research Journal*, 6(4), 17-24.
 16. Ogiriki, T. & Appah, E. (2018). Forensic Accounting & Auditing Techniques on Public Sector Fraud in Nigeria. *International Journal of African and Asian Studies*, 4(7), 7-16.
 17. Okafor, O. G., Obiora, F. & Onuora, J. K. J. (2020). Impact of Forensic Audit and Financial Statement Fraud of Deposit Money Bank in Nigeria. *International Academy Journal of Management, Marketing and Entrepreneurial Studies*, 9(1), 88-98.
 18. Okoye, E.I. & Gbegi, D.O. (2013). Forensic accounting: A tool for fraud detection and prevention in the public sector (a study of selected ministries in Kogi state). *International Journal Academic Research Business Social Science*, 3, 1-19.
 19. Olaniyan N. O. & Awe S. O. (2021). Forensic Accounting as a Tool for Fraud Detection and Prevention in Public Sector: Moderating on MDAs. *International Business Management*, 15 (1), 1-8.
 20. Olaoye A. A. (2020). Combating Financial Crimes through Forensic Accounting in Nigerian Public Sector. *The Journal of Economic Research & Business Administration*, 3(133), 91-102. <https://doi.org/10.26577/be.2020.v133.i3.08>.
 21. Oyedokun, G. E. (2017). Forensic accounting techniques, tax justice and federally collected tax revenue in Nigeria (2000-2016). *Unpublished PhD Thesis*, Babcock University.
 22. Rygielski, C., Wang, J.-C. & Yen, D. (2002). Data mining techniques for customer relationship management. *Technology in Society*, 24, 483-502.
 23. Siddik, M. N. A. (2021). *Forensic Audit for Financial Frauds in Banks: The Case of Bangladesh*. In *Handbook of Research on Theory and Practice of Financial Crimes*. IGI Global.
 24. Taiya H. M., Jugu Y. G., & Ojaide F. (2021). Forensic Accounting Techniques: Tools for Preventing Revenue Leakages in Nigerian Federal Universities. *International Journal of Innovative Science and Research Technology*, 6(5), 1383-1393.
 25. Taufik, T. (2019). The effect of internal control system implementation in realizing good governance and its impact on fraud prevention. *International Journal of Scientific and Technology Research*, 8(9), 2159-2165.
 26. Ugbede, J., Ekpete, C. & Yahaya, A. (2021). Forensic Accounting as a Tool for Fraud Prevention in the Deposit Money Bank in Nigeria. *Journal of Applied Management and Advanced Research*, 3(2), 50-59.
 27. Zhaol, N., Yen, D., & Chang, I. (2014). Auditing in the e-commerce era. *Information Management and Computer Security*, 12(5), 389-400.