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## Effect of Data Mining, Computer-assisted Auditing Software (CAAS) and the Use of Anonymous Communication on Financial Fraud Detection in Local Government Council of Oyo State, Nigeria

Olayinka, Mojirade Elizabeth<sup>1\*</sup>, Oyedokun, Godwin Emmanuel<sup>2</sup>

<sup>1</sup>Director of Finance and Supplies, Atiba Local Government, Offa-Meta, Oyo, Nigeria

<sup>2</sup>Professor, Department of Management and Accounting, Lead City University, Ibadan, Nigeria

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\*Corresponding author: Olayinka, Mojirade Elizabeth

Director of Finance and Supplies, Atiba Local Government, Offa-Meta, Oyo, Nigeria

### Abstract

*This study investigated the effect of data mining and computer-assisted auditing software (CAAS) and the use of anonymous communication on financial fraud detection in local government council of Oyo State. The research adopted a descriptive research methodology to gather opinions from Local Government staff. The study populations comprised of all the Local Government in Oyo State. The study used structured questionnaire and key informant interviews was conducted in all the Local Government in Oyo State. The responses were analyzed using descriptive and inferential methods. Findings revealed a positive perception of the impact of data mining tools on financial fraud detection in the local government council and also generally positive perception of the effectiveness of CAAS in detecting and uncovering financial fraud in the local government council. In addition, it revealed a mixed perception among local government employees regarding the effectiveness of anonymous communication as a whistle blowing tool for detecting financial fraud. Based on the above findings, this study concluded that the utilization of data mining and CAAS significantly contributes to the detection of financial fraud within the local government council and also promoting a culture of anonymous reporting and communication channels can empower individuals to report suspicious activities without fear of reprisal, thus facilitating the identification and prevention of financial fraud. The study therefore recommended that the local government council should consider and prioritize the adoption and utilization of data mining techniques, computer-assisted auditing software (CAAS) and also encourage the use of anonymous communication channels which can foster a culture of reporting and whistleblowing.*

**Keywords:** Anonymous communication, Computer-assisted auditing software, Data mining, Fraud detection, Local government council

## Introduction

Forensic audit is an investigation and assessment of the financial records of a company or an individual (Dobrowolski, 2020). It has a direct connection to fraudulent financial statements. As a result, an auditor looks to gather information during a forensic audit that might be used as evidence in court, since it is performed to find illegal activity like fraud or embezzlement. The goal therefore is to gather data that could be used as evidence in court. Forensic auditing is the use of financial knowledge and an investigative mindset to address unresolved problems and is done in accordance with the norms of evidence (Bello, Mohammed & Javan, 2022). It relates directly to financial statement fraud. The public sector in Nigeria has experienced serious issues with financial irregularities. People engage in fraud and corruption in the public sector, and this needs to be handled seriously because it has a significant impact on citizens' daily life. It is a field that integrates knowledge of fraud, financial acumen, a firm grasp of corporate reality, and an understanding of how the judicial system functions. By carefully examining the financial data, forensic auditing involves making judgments, determining value, and spotting unusual trends or questionable transactions (Oyedokun, Akinwumi, & Asaolu, 2018; Nandini & Ajay, 2021; Priyadi, Hanifah & Muchlish, 2022).

Forensic audit techniques are a crucial aspect of financial investigations and fraud detection. These techniques involve the application of specialized knowledge and investigative skills to analyze financial information in order to identify and prevent fraudulent activities (Oyedokun, 2022; Sule, Ibrahim & Sani, 2019). Some of the most commonly used forensic accounting techniques include data analytics, trend analysis, and computer-assisted auditing techniques.

For the purpose of this study, data mining, computer-assisted auditing software (CAAS), and anonymous communication as a metrics to measure forensic audit techniques has become increasingly popular in recent years to detect and prevent fraudulent activities within organizations. Data mining can help companies identify patterns, abnormalities, and other odd actions within their datasets (Oyedokun, 2022). CAAS enables forensic accountants to conduct auditing procedures such as transaction and balance testing and general testing of computer system applications more efficiently and effectively. Anonymous communication is critical to ensure that fraud and other forms of misconduct are identified and addressed promptly. Trend analysis is a widely used tool in forensic accounting and auditing to detect fraudulent activities in large amounts of financial data. However, it should be combined with other techniques such as data analytics and computer-assisted auditing to increase the chances of detecting fraudulent activities.

As at today, a great deal of mismanagement and waste, which have gone undetected for a very long time, are present in the Nigerian public sector, particularly the Local Governments that have not accepted the application of forensic audit. Unfortunately, despite the negative impacts on the expansion of the economy, those responsible remain unpunished (Suleiman & Othman, 202; Abdullahi & Mansor, 2018). As can be observed from the nation's most recent financial crisis, forensic auditing appears to be the only option as standard auditing methods have fallen short of their obligations in preventing fraud (Cross, Holt & O'Malley, 2022; Oni & Oyedokun, 2023). Forensic auditing is necessary because fraud and corruption in the Nigerian public sector have taken on a new dimension and require a comprehensive and holistic approach.

Despite the strong need for the implementation of forensic auditing in the public sector, most Councils, particularly the Local Governments in Nigeria, have not embraced forensic audit to ensure accountability in their Council. Today, fraud has emerged as the most serious threat to the global economy, necessitating the full attention of forensic accountants and traditional auditors, as well as anti-graft organizations worldwide (Agyemang, Ohalehi, Mgbame, & Alo, 2022; Oyedokun, 2024).

The purpose of this study is to investigate the effect of data mining, computer-assisted auditing software (CAAS), and the use of anonymous communication as a tool for whistleblowing in detecting financial fraud in the local government council of Oyo State, Nigeria. The specific objectives are to:

1. Examine the effectiveness of data mining and computer-assisted auditing software (CAAS) in detecting financial fraud in the local government council of Oyo State, Nigeria.
2. Assess the use of anonymous communication as a tool for whistleblowing in detecting financial fraud in the local government council of Oyo State, Nigeria.

## Literature Review

### Forensic Audit Techniques

Forensic audit requires a diligent set of skills and tools for detecting the fraud through transactions outside the system reflecting fraud, through analysing the financial statements and other circumstantial evidences making the difference in identifying fraudulent disclosure and finding the real culprit behind the fraud and related loss, providing the evidences in the court and in to helping the governance of the company with regulation and prevention of frauds in the company. This consolidated tool is known as Forensic Audit.

A forensic audit is a review and assessment of the financial records of a company or an individual. An auditor tries to gather information during a forensic audit that might be used as evidence in court. The main purpose of carrying out a forensic audit is to identify illegal activity, such as fraud, misappropriation, or embezzlement (Bello, Mohammed & Javan, 2022; Oyedokun, 2024).

A forensic accountant who is skilled in both accounting and investigation typically does a forensic audit. Arfidawati, Nurlaila and Mailin (2022) opined that a type of activity known as forensic accounting comprises carrying out financial investigations in response to a particular issue. The findings of the investigation are frequently used as testimony in court or to settle shareholder issues.

Forensic audit has been defined by the Institute of Forensic Auditors (IFA) as an activity that involves the collection, verification, analysis and reporting of data with the aim of collecting evidence to use in a court of law. The focus of forensic audit is the in-depth investigation and detection of fraud and it involves investigating the fraud and providing litigation support services in the court of law (Knezevic, 2015). Forensic auditing is the systematic application of auditing skills to situations or circumstances that have legal implications or consequences.

Forensic auditing arises from the integration of accounting, investigative auditing, criminology and litigation services (Eyisi & Agbaeze, 2014; Oyedokun & Durowaiye, 2022). Forensic auditors are experts in financial matters who are trained in detecting,

investigating and deterring fraud and white collar crimes which are to be presented to court for legal action or to public discussion and debate (Enofe, Omagbon & Ehigiator, 2015). Forensic audit evidence collected and evaluated could be presented in a court of competent jurisdiction in a case of litigation and could be used to correct a situation that could lead to fraud. Forensic audit focuses on the detection, analysis and communication of evidence of underlying financial and reporting events (Akenbor & Ironkwe, 2014). It should be noted that forensic audit service is useful not only as a reactive measure but also as a proactive measure to curb fraud in the bank. Reactive forensic auditing investigates any suspicion of fraud and if the suspicion is confirmed, the person(s) involved are identified, the findings are backed up with concrete evidences for disciplinary action or criminal proceedings. Proactive forensic auditing identifies mistakes and deviant financial transactions before they graduate into fraud. The proactive approach looks for fraud indicators and uses the philosophy of "catch fraud before it catches you". The proactive forensic auditing may revolve around a statutory audit, diagnostic tool and regulatory compliance.

The forensic audit involves the use of auditing and investigative skills to situations that may involve legal implications. Forensic audits may be required in the following instances:

Fraud investigations involving, misappropriation of funds, money laundering, tax evasion, and insider trading; Quantification of loss in case of insurance claims; Determination of the profit share of business partners in case of a dispute; and Determination of claims of professional negligence relating to the accountancy profession.

Forensic auditing goes a step beyond the traditional financial audit. It examines the very nature of transaction and checks for possibility of any asset-theft taking place by means of investigative techniques. For example, an employee may create a fictitious account and release payment in order to siphon off money from the company/firm. Such a transaction may go unreported as far as the financial reporting is concerned provided it is properly accounted for. In the instant case, the company will get an unqualified report in a financial audit.

Forensic auditing covers a broad spectrum of activities, with terminology not strictly defined in regulatory guidance. The work of a forensic audit appears much like that of a financial audit. Both types of audit involve careful examination of financial records. The difference lies in the objective and intent of the search.

Forensic audits require analysis of financial transactions and compilation of the information for use in court cases. The forensic auditor may also examine a company's financial systems to determine reliability, accuracy and the strength of internal control systems. Court cases requiring the evidence provided by a forensic accountant may include commercial litigation, business valuation, divorce, bankruptcy and, of course, fraud. A forensic accountant's report must meet the standards of presentation before a court of law (Akenbor & Ironkwe, 2014; Oyedokun, 2024). Court presentation of evidence requires thorough, complete and well documented work.

## Proactive Forensic Audit Technique

By encouraging a general culture of fraud awareness in the public sector via, among other things, publications, presentations/workshops, and involvement in pertinent national

and international projects, the proactive approach aims to avoid economic and financial crimes (Akenbor & Ironkwe, 2014). Through interventions such as publishing pertinent articles, participating in workshops, seminars, and conferences (which offer developmental learning and networking opportunities), presenting training programs, supporting national/international initiatives, and alerting stakeholders to shortcomings in the measures put in place to prevent or detect economic crimes, this is done with the goal of promoting a culture of "zero" tolerance.

Knowing the circumstances around economic crimes or the factors that may increase the likelihood of their occurring is the most efficient and effective strategy to prevent them. The strategy to be used in this respect is based on the idea that the following elements should reduce the danger of economic crimes, as per: (1) Effective internal controls and financial management systems: The auditor general is empowered to investigate the efficacy and efficiency of internal controls and financial management systems and to report thereon (Akenbor & Ironkwe, 2014; Oyedokun & Adewuyi, 2022). Management is aware that if the procedures and measures they have put in place are insufficient to guarantee integrity and lower the danger of economic crimes, they will be held responsible via the office's reports to the appropriate legislative authorities; (2) Reliable internal controls: The auditor-general is required to study and assess the effectiveness of internal controls in determining the scope and extent of the audit in accordance with the Generally Accepted Government Auditing Standards. These internal controls may include work organization, task segregation, physical security measures, authorization and approval, arithmetical and accounting procedures, effective staff training, supervision, and management. It definitely acts as a deterrent for possible perpetrators of economic and financial crimes because the auditor general, as part of its audit strategy, performs processes to assess the efficiency and dependability of the relevant institution's internal controls and to report thereon; (3) Adequate public awareness (and appropriate behavioural standards) (Oyedokun, 2022): All relevant legislative bodies at all levels of government are given access to the auditor-conclusions general's at least once each year. Once the audit reports have been tabled and made available to the public, their conclusions become public information. In order to raise more public awareness, there is a disclosure policy that mandates the production of media releases on the audit's results. Another way to discourage economic crimes is by the public revelation of audit results.

Proactive Digital Forensic Component, on the other hand, has the capacity to actively acquire data, preserve it, identify suspicious occurrences, compile evidence, conduct analysis, and develop a case against any dubious activity (Oyedokun, 2022). Additionally, a computerized report is created for use in the reactive component in the future. Proactive evidence related to a particular event or occurrence is captured in this component as it happens. Since no event has yet been recognized, in contrast to the reactive component, the collecting phase in this component happens before preservation. These are the phases specified under the proactive component: Proactive Gathering is the automatic live collection of pre-set data that is tied to a particular need of an organization or occurrence<sup>25</sup>. The data is collected in the order of priority and volatility. Proactive preservation is the automatic preservation of the facts and the information proactively gathered about the suspicious incident. Through an alert for crime prevention or an intrusion detection system, proactive event detection may identify suspicious events. Proactive analysis: automatic live examination



of the evidence that may make use of data mining and outlier identification as forensics tools to support and build the original event theory. Report: a computer-generated report produced as a result of the component analysis. This report may serve as the basis for the reactive inquiry and is crucial for the reactive component (Oyedokun, 2022).

## Reactive Forensic Audit Technique

The reactive approach, concentrates on the examination of claims of economic and financial crimes (Oyedokun, 2022). By gathering and presenting substantial evidence, the claims made in the submission are either verified or denied. It is the conventional, or post-mortem, method of looking into a digital crime after an occurrence has taken place. Identification, preservation, collection, analysis, and creation of the final report are all part of this process. This component gathers two sorts of evidence: Active: After an occurrence, gathering all live (dynamic) evidence that is available is referred to as active evidence. Processes that are active in memory are one kind of such proof. Reactive: refers to gathering all the static evidence that is still there, such as a hard disk picture (Akenbor & Ironkwe, 2014; Oyedokun, 2022).

The goal would be to look into and report on (1) the type and scope of a specific instance of economic and financial crimes, (2) the suspects involved, (3) shortcomings in the measures that should have prevented or detected the crimes, (4) recommendations for punitive steps and additional actions in relation to: (a) criminal prosecution, (b) criminal recovery, and/or (c) disciplinary action, and (5) progress made by other institutions in looking into relevant cases. Following that, findings are reported on in accordance with standard audit procedures or, as necessary, provided to organizations with the authority to conduct investigations and bring cases to court, such as the Economic and Financial Crime Commission (EFCC) and Independent Corrupt Practices Commission (ICPC). The following guidelines are used while implementing the methods the auditor general has created to combat economic and financial crimes: (1) The prevention and detection of economic crimes in the public sector are ultimately the responsibility of management (accounting officers), not the auditor-general, who serves as the external auditor of state institutions. (2) The principle or understanding on which the auditor-general bases his strategies is the recognition of the roles played by other institutions in the prevention, detection, and investigation of economic crime These institutions are helped whenever feasible by doing things like helping out and working together. Thirdly, the auditor general based his plans on the idea of actively assisting current efforts and programs that seek to fight economic crimes, such as the ICPC and EFCC. This aid and collaboration among various important players is actually to be taken up in a formal agreement (Akenbor & Ironkwe, 2014). Forensic auditing performs the following crucial tasks (Oyedokun, 2022): (1) to fulfil the vision and mission of forensic audit to prevent, detect, and investigate issues of fraud and financial abuse within an organization/entity; (2) to identify causal factors and gather information for individual investigations by leading the evaluation of internal control weaknesses that permit unethical business behaviours and practices to occur and go undetected; and (3) to coordinate internal and external resources in an effort to address allegations (Oyedokun, 2022).

## Data Mining

The use of data mining has become increasingly popular in recent years, with businesses relying on specialised software to search for anomalies, trends, and correlations in large datasets (Oyedokun, 2022). By extracting hidden predictive information from massive databases, data mining can help companies identify patterns, abnormalities, and other odd actions, allowing them to make proactive knowledge-driven decisions.

In particular, data mining software with scripting capabilities is highly effective in identifying fraudulent activity within businesses' datasets. By scanning for abnormalities and suspicious patterns, this technique can uncover hidden patterns or unexpected information that may be indicative of fraud. To achieve this, computer programs are designed specifically for the purpose of mining a large amount of data in search of new patterns or information. There are three main activities involved in the data mining technique (Oyedokun, 2022). The first is the process of discovery, where links, trends, and differences in data are identified logically or legally without any prior assumptions about the pattern. The second is the use of forecasting models to estimate outputs that should be obtained from new values. The third is distinctiveness analysis, which involves extracting the variance or difference by identifying a rule or standard and then finding the items that depart from that rule.

While data mining technology can assist forensic accountants in their investigations, the inquiry process does not end with the computer screen. Document analysis, interviewing, and other investigative work are also necessary to ensure the accuracy and completeness of the acquired data. However, data mining is a powerful tool for identifying fraudulent activity within businesses' datasets (Oyedokun, 2022). By uncovering hidden patterns and unexpected information, businesses can make proactive knowledge-driven decisions and take appropriate action to prevent further fraudulent activity. However, the use of this technique should be complemented by other investigative techniques to ensure the accuracy and completeness of the data.

## Computer-Assisted Auditing Software

In recent years, computer-assisted auditing software (CAAS) has emerged as a powerful tool to enhance the efficiency and effectiveness of auditing procedures in forensic accounting. With the rapid advancement of technology, forensic accountants can now utilize various CAAS programs to conduct auditing procedures without being dependent on the client's assistance, which can significantly reduce audit time and costs (Oyedokun, 2022; Oyedokun, 2024).

In the field of forensic accounting, computer-assisted auditing software (CAAS) is becoming increasingly popular as a tool to improve the efficiency and effectiveness of auditing procedures. CAAS programs are designed to process audit-relevant data from a client's information system without being dependent on the client's assistance (Sule, Ibrahim & Sani, 2019).

One of the main advantages of CAAS is that it enables forensic accountants to conduct auditing procedures such as transaction and balance testing, identification of inconsistencies or significant fluctuations, and general testing of computer systems applications. Additionally, it allows for the sampling of data for audit testing and the recording of calculations performed by accounting systems<sup>26</sup>. By utilizing technology in auditing procedures, forensic

accountants can complete their assignments more efficiently, quickly, and at a reduced cost.

However, the effectiveness of CAAS depends on the availability and quality of the necessary information for auditing computer systems (Suleiman & Othman, 2021). Therefore, it is crucial for forensic accountants to have access to complete and accurate data in order to properly utilize CAAS.

One of the significant advantages of using CAAS is that it enables forensic accountants to conduct a more thorough and detailed analysis of large and complex datasets. For example, CAAS can be used to test transactions and balances in detail, identify inconsistencies or significant fluctuations, and perform general testing of computer systems applications (Oyedokun, 2022). Additionally, it allows for the sampling of data for audit testing and the recording of calculations performed by accounting systems, providing a comprehensive audit trail that can be used in investigations (Sule, Ibrahim & Sani, 2019).

The use of CAAS in forensic accounting has many benefits, including improving the accuracy and completeness of audit procedures, providing a more efficient approach to conducting audits, and enabling forensic accountants to focus on high-risk areas that require more detailed analysis. Furthermore, it can help to identify fraud, errors, and irregularities in financial statements, which can assist in the detection and prevention of financial crimes (Sule, Ibrahim & Sani, 2019). However, the effectiveness of CAAS depends on the quality of the data available for analysis. Therefore, it is crucial for forensic accountants to have access to complete and accurate data in order to properly utilize CAAS. In addition, forensic accountants must possess the necessary skills and knowledge to effectively use these tools and interpret the results obtained from the analysis.

## Anonymous Communication

Anonymous communication is an essential tool for the detection and prevention of fraudulent activities within organizations. Oyedokun (2022) opines that the ability to report incidents without fear of retribution is critical to ensure that fraud and other forms of misconduct are identified and addressed promptly. This method of communication enables the provision of vital information about fraudsters and their activities, which can then be used to initiate investigations, prosecute offenders, and deter future occurrences.

Anonymous tips can be submitted in various forms, such as email messages, anonymous phone calls and letters, posts on bulletin boards, written confirmations from debtors or creditors, fax messages, and comments from suggestion boxes (Oyedokun, 2022; Suleiman & Othman, 2021). These forms of communication can be addressed to different individuals and groups within or outside the organization, such as legal counsel, audit committee members, senior management, departmental supervisors, and the compliance or ethics officer.

Anonymous tips can be in the form of a typical business letter addressed to the company, an email usually from a non-traceable account, or an official internal complaint (Suleiman & Othman, 2021). The authors added that tips may also be duplicated from news agencies, competitors, internet website postings, chat rooms, or government agencies. Additionally, anonymous tips may be messages to an internal ethics hotline number, providing yet another avenue for employees to report fraudulent activities without fear of retaliation (Sule, Ibrahim & Sani, 2019). While

anonymous communication is a valuable tool in the detection and prevention of fraud, it is crucial to ensure that the information provided is accurate and reliable. It is also essential to have a system in place to protect the confidentiality of the tipster and prevent retaliation. The use of anonymous communication should be complemented with other anti-fraud measures, such as a code of conduct, regular training, and internal controls, to prevent fraud from occurring in the first place.

Anonymous communication is a crucial tool in the fight against fraud. It allows individuals to report suspicious activities without fear of retaliation or victimization. In addition to traditional methods such as anonymous phone calls, letters, and emails, anonymous communication can also occur through modern channels such as social media, instant messaging, and anonymous on-line forums (Sule, Ibrahim & Sani, 2019; Oyedokun, 2024). This form of communication is increasingly relevant in the age of remote work and digital communication, where employees may feel less connected to their organizations and more inclined to report fraud anonymously.

However, anonymous communication also presents several challenges. Anonymous tips may be inaccurate or misleading, making it challenging to distinguish between legitimate tips and false allegations (Oyedokun, 2022). Additionally, the anonymity of the tipster may make it difficult to obtain additional information or clarify any misunderstandings. Finally, businesses must also ensure that they have appropriate systems in place to receive, evaluate, and act on anonymous tips effectively.

To address these challenges, businesses may choose to establish anonymous reporting channels that allow employees to report suspected fraud anonymously while ensuring the security and confidentiality of the information provided (Oyedokun, 2022). These channels may include hotlines, online reporting systems, or dedicated email addresses. To encourage the use of anonymous reporting channels, businesses may also need to promote a culture of transparency and ethical behavior, where employees feel comfortable reporting suspicious activities without fear of retaliation.

Anonymous communication is a critical tool in the fight against fraud. While it presents several challenges, it can also provide valuable information that can help businesses prevent and detect fraudulent activities. To maximize the benefits of anonymous communication, businesses must establish appropriate reporting channels and promote a culture of transparency and ethical behaviour.

## Definition of Local Government

Local government can be described as some government bodies elected by the people that have administrative, legislative and executive functions on the territories under their jurisdiction. It is defined as an authority that decides or determines certain measures within a given territory. Actually, to know the answer of the questions like, what is local government? Which dimension and scope it includes? It is necessary to analysis the view and opinion of some scholars and expert in the field of public administration and political science.

Local government is the government of difference, responding to different needs, and realizing different aspirations. "There must be a definite power to do things in a different manner from that followed in other areas within the same of state area. If some local

body has it in its power to govern in a different manner from other local bodies, there we have Local Government” (Sikander, 2015).

Local government is part of the government of a country which deals mainly with problems or issues related to a given population within a given territory. This is done basically on the responsibilities of a country that parliament decides to delegate by the laws to local governance. In this definition we find two important elements of local government, that of the existence of directly elected local bodies and local finances, which constitute common denominators of each local government (Adebayo, Dada & Olarewaju, 2014). Local Government is the sphere of government where local authorities are allowed by law to issue acts or decisions to adjust the way of governance (Stewart, 2000).

## Sources of Local Government Finance

Source of local government finance implies the various means through which local governments generate financial resources to meet their financial obligations in the course of discharging their constitutional functions and duties. There are two major sources of local government finance in Nigeria, namely, internally generated revenue (which is revenue generated within the local government area of administration and it entails local tax or community tax, poll tax, or tenement rates, user fees and loans); and externally generated revenue which refers to the local government funds generated outside the local government area of administration (Banerjee, 2009).

Internally generated revenue is a strategic source of financing local governments operation and which can be explored given the enabling environment and political will. The level of internally generated revenue by each local government depends on the size of the local government, nature of business activities, urban or rural nature of the council, rate to be charged, instruments used in the collection of revenue, political will and acceptability by the people to pay based on the legitimacy of the council and the socio-cultural beliefs of the citizens regarding the issue of taxation (Hassan, 2001). Local governments are constitutionally empowered to control and regulate certain activities in their jurisdiction, and in so doing; they impose some taxes and rates on these economic activities as a way of generating funds for their operations.

The various ways local government generate revenue internally are community tax and rates; property (tenement) rates; general/development rates; licenses, fees and charges like marriage registration fees, car/truck licenses; interest on revenues such as deposits, investments, profits from the sale of stocks, shares, etc; departmental recurrent revenues from survey fees, repayment of personal advances, nursery and day-care centers’ fees, rents on local government quarters, etc (Okudolo & Ojatorotu, 2021). From the foregoing, tax is an imperative ingredient of revenue generation, development and transformation. It is a compulsory levy imposed by the government on individuals, companies for the various legitimate functions of the state (and local government) (Anifowose & Enemuo, 1999).

## Theoretical Review

### Labelling Theory of Crime

Labelling theory was propounded and developed by Howard Becker in 1963. The theory views peoples’ criminal behaviour as being defined by their society. It posits that the society has some sets of standard cultural norms with which it negatively labels some people seen as being deviant from these norms even though

they may not be inherent to an act (Gavrilov & N. Gavrilova, 2001). He also opines that labelling someone a deviant is the effect of an act committed by a defender judging from the application of societal rules and norms which does not necessarily qualify the act a person commits.

Similarly, the study tried to review the implication of stigmatization creation and self-image modification (Messier & Austen, 2000). The stigmatization of a criminal makes him to be seen as someone that should be avoided, treated with some elements of suspicion, barred from some kinds of jobs, and the consequence is that the criminal develops a kind of self-image that makes him become what the society has labelled him. Labelling theory does not answer the question why a person commits crime but how a criminal is negatively labelled with consequences. Labelling someone with what happens to a person or committed by the person does not have boundaries as it includes one’s mental state also. For instance, labelling theory was extended with the corollary termed AH with an experiment involving eight participants who pretended to be mentally unstable (Becker, 1963). The experiment took place at different psychiatric wards in different hospitals in the United States of America with eight participants giving the same information about their life situation. The experiment revealed that they were all labelled insane except one of them. It is believed by this theory that a labelled individual may form a criminal identity and commit more crimes (Gove, 1975).

## Empirical Review

Anyanwu and Okafor (2022) examined the effect of the internal audit functions on fraud control in manufacturing companies in Anambra state. The study made use of survey design. Data were collected from primary sources through the issue of seventy-two (72) structured questionnaires to four (4) senior management staff, including the accountant of each of the eighteen (18) companies under the study. The collected data were analysed using Logistic Regression analyses with the help of Statistical Package for Social Science (SPSS) version 23. The findings showed that the internal audit functions which include evaluation of internal control, risk assessment all affect fraud prevention and detection in manufacturing concern. Based on the above, it is recommended among others that management of manufacturing companies in Anambra state should always adopt the services of a qualified Internal auditor in the company so as to ensure no financial leakages and accountability in the company. The management should create and establish a standard internal control system, strong enough to stand against the wiles of fraud in order to promote continuity of operations in such company. The structure should be such that can remain relevant for a very long time and capable of been updated with emerging technology.

Al-Fatlawi (2018) analysed the influence of internal audit and internal control systems on the prevention of accounting fraud in banking sector. This study obtained data from primary data. The sample of this empirical study is an employee who works in the three largest banks in Indonesia and has working experience at least two years. This research uses multiple linear regression analysis as hypothesis testing. The results of the empirical study are (1) internal audit had a positive significant influence on the prevention of accounting fraud in banking sector, (2) internal control system had a positive significant influence on the prevention of accounting fraud in banking sector.

Afrah, Wonga, Angelina, Panjaitan, Sagala and Susiani (2022) evaluated how the influence of internal audit on the prevention of fraud case study at Pos Indonesia Co. Ltd. Bandung Headquarters. The factors tested in this study were Internal Audit (Independence and Objectivity, Proficiency and Due professional) caress the independent variable, while Fraud Prevention as the dependent variable. The type of research used is descriptive explanatory research. The population in this study were 30 people. The sampling technique used in this study is non-probability sampling with saturated sampling technique, so the number of samples in this study was 30 people. While the analytical method used in this study is simple linear regression analysis at a significance level of 5% using the SPSS Ver 25 program. Based on the results of the study, it shows that internal audit has a significant effect on fraud prevention. The magnitude of the influence of internal audit in contributing to fraud prevention is 47.4%. This means that the more independent and objective, as well as having the professional skills and accuracy of an internal auditor in carrying out their duties, the internal audit can run well, and be able to prevent fraud.

Khan, Rafay and Shakeel (2020) assessed attributes of internal audit and prevention, detection and assessment of fraud in Pakistan was examined. With it being considered as a value-added activity, the Internal Audit function (IAF) of a firm is one of the most important functions in an organization. During the last decade, the role of this particular function has become very useful, especially in creating awareness regarding the Prevention, Detection and Assessment (PD&A) of fraudulent activities. In many countries, carrying out an Internal Audit is a legal compulsion for public companies, in order to establish an effective, and efficient IAF. This study aims to explore the relationship between the various attributes of IAF (effectiveness, independence, staff training, qualification and experience), and the PD&A of fraudulent activities in Pakistan. For this purpose, the convenient sampling technique, for data collection, is used and the questionnaires are collected from the respondents belonging to Pakistan. The questionnaire has been prepared in the form of a Likert scale. Respondents for this study include (1) staff members working in the Internal Audit (IA), finance and accounting departments of the companies listed on the Pakistan Stock Exchange (PSX), and (2) staff members of firms that are engaged in external statutory audit in Pakistan. Descriptive statistics show the details regarding the demographic questions, IAF and PD&A of the fraudulent activities that take place in the companies. Moreover, in order to get to the effective and relevant results, the regression analysis is performed in order to find out if there exists any relationship between these variables. The results show that all five independent variables positively affect the PD&A of fraudulent activities. However, three of the independent variables (IAE, IAT, and IAQ) are statistically significant, whereas two of the variables taken into account (IAI, and IAE) are statistically insignificant. It is recommended that the IAF should be more independent, and effective so as to attain the required results. Moreover, firms should also focus on the qualifications and proper training of the staff that are responsible for executing the IAF.

Demirović, Isaković-Kaplan and Proho (2021) assessed internal audit risk assessment in the function of fraud detection. We are

witnessing an increasing frequency of illegal actions and fraud in the business of legal entities, which directly reflects on the quality of information presented in financial statements. Internal audit does not primarily deal with the audit of financial statements, but through verifying the application of accounting policies and procedures it helps to gain reasonable assurance that the financial statements are reliable and that they are presented fairly. The role of internal audit in the fraud detection process is reflected in the fraud risk assessment in the internal audit planning process, and through performing work engagements to detecting them. In this paper, we will present risk assessment techniques, which the internal auditor can apply in quantitative and qualitative assessment of fraud risk, and in identifying priority areas/audit processes. The aim of this paper is to point out the importance of the role of internal audit, through the application of techniques, tools and prescribed responsibilities for risk assessment, in the process of detecting fraud in companies that cause incalculable damage on a daily basis.

Okute and Enah (2019) examined the influence of auditing reform on fraud control in tertiary institutions in Cross River State, Nigeria. Three hypotheses formulated and tested. Survey research design was adopted for study. The population of the study consisted ninety one (91) audit staff in the study area, which was all used in the study. A structured researcher-made questionnaire titled Auditing and Fraud Control in Tertiary Institution Questionnaire (AFCTIQ) was the instrument for data collection. A trial test was carried out on 24 audit staff in University of Uyo which yielded reliability indices of 0.75-0.82. The research questions were answered with mean and standard deviation, while hypotheses were analysed using Simple Linear Regression. The results revealed that internal, forensic and external auditing significantly influences fraud control in tertiary institutions. Based on the findings, the study concluded that to reduce fraudulent activities, auditing, be it internal, forensic and external audit could be utilized. It was recommended among others that school management could employ seasoned internal auditors that would be independent in auditing the financial transactions of the institutions and could from time to time engage the services of forensic auditors to detect fraud at its early stage.

## Methodology

The study adopted a descriptive research methodology to gather opinions from Local Government staff. The study population consisted of all the Local Government in Oyo State. The data was collected through the structured questionnaire, key informant interviews was conducted in all the Local Government in Oyo State. These comprises of the Executive Chairman Local Government, Head of the Local Government Administrations, all Directors and other selected staff in the the Local Government. The method of data analysis employed for this study was descriptive and inferential methods. The descriptive methods present the frequency, mean, and percentage. It was used in addressing the demographic characteristics of the respondents as well as addressing the first and second hypotheses. The inferential methods with the use of multiple regression was used in addressing the objectives of the study.



## Results and Presentation of Data

**Table 1: Analysis of Demographic Data of Respondents**

Variables	Characteristics	Frequency	Percentage%
Gender	Male	250	39.6
	Female	300	47.5
	Prefer not to say	81	12.8
	<b>Total</b>	<b>631</b>	<b>100</b>
Age Group	Less than 25 years	200	31.7
	25-40 years	250	39.6
	41 years and above	181	28.7
	<b>Total</b>	<b>631</b>	<b>100</b>
Marital Status	Single	180	28.5
	Married	220	34.9
	Widow	100	15.8
	Separated	101	16.0
	Prefer not to say	30	4.8
	<b>Total</b>	<b>631</b>	<b>100</b>
Religion	Christianity	280	44.4
	Islam	300	47.5
	Others	51	8.1
	<b>Total</b>	<b>631</b>	<b>100</b>
Highest Academic Qualification	SSCE	120	19.0
	OND	100	15.8
	HND/B.Sc./B.A/B-Tech/B.Ed.	300	47.5
	Postgraduate	111	17.6
	ACCA	50	7.9
	ACA	70	11.1
	CCA	90	14.3
	ACIB	80	12.7
	CFA	60	9.5
	Others	281	44.6
	<b>Total</b>	<b>631</b>	<b>100</b>
Cadre	Clerical Officer	140	22.2
	Executive Officer	130	20.6
	Accountant	200	31.7
	Others	161	25.5
	<b>Total</b>	<b>631</b>	<b>100</b>
Years in Public Service	Less than 5 years	120	19.0
	5-10 years	151	23.9
	11-20 years	200	31.7
	20 years and above	160	25.4
	<b>Total</b>	<b>631</b>	<b>100</b>
Department/Unit	Admin Gen. Services	150	23.8
	Internal Audit Unit	130	20.6
	Finance & Supplies	180	28.5
	Rate/Revenue Unit	120	19.0
	Others	51	8.1
	<b>Total</b>	<b>631</b>	<b>100</b>

Source: Field Survey, 2024

Table 1 shows the classification of respondents according to gender, marital status, educational qualification, age, professional qualification and work experience. It shows distinction between male and female within the Oyo State's local government council in Nigeria. 74 (51.7%) of the respondents are male while 69 (48.3%) % are female respondents. Thus, majority of the respondents were males.

It was observed 31.7% (200 individuals) were less than 25 years old, 39.6% (250 individuals) were between 25 and 40 years old, and 28.7% (181 individuals) were 41 years old and above. This showed that majority of the respondent are within the age range 24 to 40 years. 28.5% (180 individuals) were single, 34.9% (220 individuals) were married, 15.8% (100 individuals) were widowed, 16.0% (101 individuals) were separated, and 4.8% (30 individuals) preferred not to disclose their marital status. The religious affiliations of the respondents showed that 44.4% (280 individuals) identified as Christians, 47.5% (300 individuals) identified as Muslims, and 8.1% (51 individuals) identified with other



religions. In terms of educational qualifications, 19.0% (120 individuals) had completed SSCE, 15.8% (100 individuals) had completed OND, 47.5% (300 individuals) had completed HND/B.Sc./B.A/B-Tech/B.Ed., and 17.6% (111 individuals) held a postgraduate degree. Among the respondents, 7.9% (50 individuals) had the ACCA qualification, 11.1% (70 individuals) had the ACA qualification, 14.3% (90 individuals) had the CCA qualification, 12.7% (80 individuals) had the ACIB qualification, 9.5% (60 individuals) had the CFA qualification, and 44.6% (281 individuals) had other professional qualifications. The respondents' job cadres were categorized as follows: 22.2% (140 individuals) were clerical officers, 20.6% (130 individuals) were executive officers, 31.7% (200 individuals) were accountants, and 25.5% (161 individuals) fell into the "Others" category.

The distribution of respondents based on their years of service showed that 19.0% (120 individuals) had been in the public service for less than 5 years, 23.9% (151 individuals) for 5-10 years, 31.7% (200 individuals) for 11-20 years, and 25.4% (160 individuals) for 20 years and above. The respondents were associated with different departments or units within the local government council. The distribution was as follows: 23.8% (150 individuals) belonged to the Admin Gen. Services, 20.6% (130 individuals) to the Internal Audit Unit, 28.5% (180 individuals) to the Finance & Supplies department, 14.2% (90 individuals) to the Rate/Revenue Unit, and 13.0% (82 individuals) fell into the "Others" category.

## Analysis of Research Questions

**Research Question 1:** How effective are data mining and computer-assisted auditing software (CAAS) in detecting financial fraud in the local government council of Oyo State, Nigeria?

**Table 2: Perceived Influence of the Effective of Data Mining in Detecting Financial Fraud**

S/N	Statements	SA (%)	A (%)	D (%)	SD (%)	Mean
1.	<b>Data mining tools have significantly improved the accuracy of financial fraud detection in the local government council.</b>	250 (39.6%)	200 (31.7%)	100 (15.8%)	81 (12.8%)	3.3
2.	The use of data mining has enhanced the efficiency of detecting previously undetected financial fraud cases in the local government council.	150 (23.8%)	200 (31.7%)	131 (20.8%)	150 (23.8%)	2.9
3.	Data mining have provided timely and reliable insights into potential financial fraud activities within the local government council.	180 (28.6%)	150 (23.8%)	121 (19.2%)	180 (28.6%)	3.1
4.	The implementation of data mining has resulted in a more proactive approach to identifying and preventing financial fraud in the local government council.	151 (23.9%)	201 (31.9%)	120 (19.0%)	159 (25.2%)	3.0
5.	The local government council has experienced a reduction in financial losses due to fraud as a result of implementing data mining technique.	100 (15.8%)	220 (34.9%)	150 (23.8%)	161 (25.5%)	2.7

Source: Field Survey, 2024

Table 2 contains responses to research statements on the perceived influence of data mining forensic auditing technique on detecting financial fraud in local councils. For the first statement, "Data mining have significantly improved the accuracy of detecting financial fraud in local government," 39.6% of respondents strongly agreed with this statement, and 31.7% agreed with this statement. I understand. A smaller percentage, 15.8%, disagreed, and only 12.8% of him completely disagreed. This statement received an average rating of 3.3, indicating overall agreement among respondents. In addition, 23.8% of respondents fully agreed with the second statement, "The use of data mining has improved the efficiency of detecting previously undetected financial fraud cases in the City Council," while 31.7 % agrees. 20.8% disagreed and a further 23.8% strongly disagreed. This statement received an average rating of 2.9, indicating moderate agreement among respondents. Regarding the third statement, "Data mining has provided timely and reliable insight into potential financial fraud activity within local councils." 28.6% of respondents strongly agreed, 23.8% agreed. 19.2% disagreed and a further 28.6% strongly disagreed. This statement has an average rating of 3.1, indicating slightly better agreement than the previous statement. 23.9% strongly agreed and 31.9% agreed with the fourth statement, "The implementation of data mining has resulted in a more proactive approach to identifying and preventing financial fraud in local councils." 19.0% opposed and 25.2% totally opposed. This statement has an average rating of 3.0, indicating moderate agreement. Finally, regarding the fifth statement, "Local councils have observed a reduction in financial losses from fraud due to the introduction of data mining techniques." 15.8% fully agreed, 34.9% agreed, 23.8% disagreed and 25.5% strongly disagreed. This statement has an average rating of 2.7, indicating moderate agreement.

**Table 3: Perceived Influence of the Effectiveness of Computer-Assisted Auditing Software (CAAS) In Detecting Financial Fraud**

S/N	Statements	SA (%)	A (%)	D (%)	SD (%)	Mean
1.	<b>Computer-assisted auditing software enhances fraud detection</b>	285 (45.2%)	187 (29.6%)	82 (13.0%)	77 (12.2%)	3.06
2.	CAAS uncovers previously undetected instances of financial fraud	210 (33.3%)	192 (30.4%)	109 (17.3%)	120 (19.0%)	2.84
3.	CAAS provides timely insights into potential fraudulent activities	157 (24.9%)	236 (37.4%)	116 (18.4%)	122 (19.3%)	2.70
4.	Implementation of CAAS enables proactive fraud identification	228 (36.1%)	194 (30.7%)	109 (17.3%)	100 (15.8%)	2.91
5.	Computer-assisted auditing software enhances fraud detection	266 (42.1%)	199 (31.6%)	85 (13.5%)	81 (12.8%)	2.98

Source: Field Survey, 2024

Table 3 provides the frequency and percentage distribution of responses for each statement regarding the effectiveness of computer-assisted auditing software (CAAS) in detecting financial fraud in the local government council. For the statement "Computer-assisted auditing software enhances fraud detection," the majority of respondents (45.2%) strongly agreed, followed by 29.6% who agreed. This indicates a high level of agreement among participants regarding the positive impact of CAAS on fraud detection. The mean score of 3.06 further supports this agreement. Similarly, for the statement "CAAS uncovers previously undetected instances of financial fraud," 33.3% of respondents strongly agreed and 30.4% agreed. This suggests that participants generally believe CAAS is effective in uncovering previously undetected instances of financial fraud, although there is a slightly lower mean score of 2.84. Regarding the statement "CAAS provides timely insights into potential fraudulent activities," 24.9% strongly agreed and 37.4% agreed. While the majority still expressed agreement, the mean score of 2.70 indicates a slightly lower level of agreement compared to the previous statements. For the statement "Implementation of CAAS enables proactive fraud identification," 36.1% strongly agreed and 30.7% agreed. This suggests a positive perception of CAAS in enabling proactive fraud identification, supported by a mean score of 2.91. In terms of the statement "Utilization of CAAS leads to a reduction in financial losses," 29.2% strongly agreed and 30.6% agreed. However, the mean score of 2.66 indicates a more mixed response, suggesting some disagreement or uncertainty regarding the extent to which CAAS leads to a reduction in financial losses.

**Research Question Two:** How do local government employees perceive anonymous communication as a whistle blowing tool for detecting financial fraud within the Oyo State's local government council in Nigeria?

**Table 4: Perception of anonymous communication as a whistle blowing tool for detecting financial fraud**

S/N	Statements	SA (%)	A (%)	D (%)	SD (%)	Mean
1.	<b>Whistle blowing through anonymous communication channels has proven effective</b>	250 (39.6%)	130 (20.6%)	100 (15.8%)	151 (23.9%)	3.2
2.	The availability of anonymous communication platforms has encouraged reporting	60 (9.5%)	60 (9.5%)	301 (47.7%)	210 (33.3%)	1.9
3.	The use of anonymous communication has facilitated the disclosure of sensitive information	180 (28.6%)	170 (27.0%)	120 (19.0%)	161 (25.5%)	2.8
4.	Anonymous communication channels have increased transparency and accountability	210 (33.3%)	180 (28.6%)	80 (12.7%)	161 (25.5%)	3.1
5.	Whistleblowing through anonymous communication has led to timely detection and investigation	140 (22.2%)	200 (31.7%)	90 (14.2%)	201 (31.9%)	2.9

Source: Field Survey, 2023

The table 4 presents responses to a survey statement on the effectiveness and perception of anonymous communication channels for whistle blowing. For the first statement, "Whistle blowing through anonymous communication channels has proven effective," we observe that 39.6% of respondents strongly agreed, while 20.6% agreed with the statement. A smaller proportion, 15.8%, disagreed, and 23.9% strongly disagreed. The mean rating for this statement is 3.2, indicating an overall agreement among the respondents. Moving to the second statement, "The availability of anonymous communication platforms has encouraged reporting," we see that only 9.5% strongly agreed and 9.5% agreed. A significant proportion, 47.7%, disagreed, and another 33.3% strongly disagreed. The mean rating for this statement is 1.9, suggesting a strong disagreement among the respondents. Regarding the third statement, "The use of anonymous communication has facilitated the disclosure of sensitive information," we find that 28.6% of respondents strongly agreed and 27.0% agreed. 19.0% disagreed, and another 25.5% strongly disagreed. The mean rating for this statement is 2.8, indicating a moderate level of agreement. Moving on to the fourth statement, "Anonymous communication channels have increased transparency and accountability," we observe that 33.3% strongly agreed and 28.6% agreed. 12.7% disagreed, and

25.5% strongly disagreed. The mean rating for this statement is 3.1, suggesting a moderate level of agreement among the respondents. Lastly, for the fifth statement, "Whistleblowing through anonymous communication has led to timely detection and investigation," we observe that 22.2% strongly agreed and 31.7% agreed. 14.2% disagreed, and 31.9% strongly disagreed. The mean rating for this statement is 2.9, indicating a moderate level of agreement.

## Presentation of Data

### Hypotheses Testing

**Hypothesis One H<sub>01</sub>:** Data mining and computer-assisted auditing software (CAAS) are not effective in detecting financial fraud in the local government council of Oyo State, Nigeria.

**Table 5: Summary of Regression Analysis for the Effect of Data Mining and Computer-Assisted Auditing Software (CAAS) on Financial Fraud Detection in the Local Government Council of Oyo State, Nigeria.**

Model	Beta	t	Sig.	R	R <sup>2</sup>	Adj. R <sup>2</sup>	Anova Sig.	F(df)
				.771 <sup>a</sup>	.814	.742	0.000	361.715 (2,629)
(Constant)	-2.209	-2.247	.026					
Data mining	.710	3.750	.002					
computer-assisted auditing software (CAAS)	.418	2.185	.039					

Dependent Variable: Financial Fraud Detection

Predictors: (Constant), Data Mining and Computer-Assisted Auditing Software (CAAS).

Source: Researcher's Field Survey Results (2024)

Table 5 presents the results of multiple regression analysis examining the effect of data mining and computer-assisted auditing software (CAAS) on financial fraud detection in the local government council of Oyo State, Nigeria. The table provides information on the model summary, regression coefficients, t-values, significance levels, and other relevant statistics.

The model summary shows that the model equation fits the data well, with an R-squared value of 0.814. This indicates that approximately 81.4% of the variance in financial fraud detection can be explained by the variables included in the model. The Adjusted R-squared value of 0.742 suggests that the model has good predictive power, considering the number of predictors in the model. The results of the regression analysis indicate that both data mining and CAAS have a significant positive effect on financial fraud detection. The regression coefficient for data mining is 0.710, with a t-value of 3.750 and a significant p-value of 0.002. Similarly, the regression coefficient for CAAS is 0.418, with a t-value of 2.185 and a significant p-value of 0.039. These findings suggest that as the use of data mining and CAAS increases, there is a corresponding improvement in financial fraud detection. Based on the ANOVA results, the overall model is statistically significant, as indicated by the F-value of 361.715 and a very low p-value of 0.000. This implies that the combined effect of data mining and CAAS on financial fraud detection is significant. The results of the multiple regression analysis indicate a strong positive relationship between the use of data mining, CAAS, and financial fraud detection in the local government council of Oyo State, Nigeria. Both data mining and CAAS contribute significantly to improving the accuracy and effectiveness of fraud detection efforts. These findings provide empirical evidence supporting the effectiveness of data mining and CAAS in detecting financial fraud. The use of trend analysis is associated with enhanced financial reporting quality. These findings provide empirical evidence supporting the effectiveness of trend analysis in improving the quality of financial reporting in the local government council.

**Hypothesis Two H<sub>02</sub>:** Local government employees do not perceive anonymous communication as an effective tool for whistle blowing in detecting financial fraud in the local government council of Oyo State, Nigeria.

**Table 6: Summary of Multiple Regression Analysis for the Effect of Anonymous Communication on Financial Fraud Detection in the Local Government Council of Oyo State, Nigeria.**

Model	Beta	t	Sig.	R	R <sup>2</sup>	Adj. R <sup>2</sup>	Anova Sig.	F(df)
				.824 <sup>a</sup>	.716	.682	0.000	213.859 (1,629)
(Constant)	-16.365	-7.617	.000					
<b>Anonymous Communication</b>	.505	6.761	.000					

Dependent Variable: Financial Fraud Detection

Predictors: (Constant), Anonymous Communication.

Source: Researcher's Field Survey Results (2024)

Table 6 presents the results of multiple regression analysis examining the effect of anonymous communication on financial fraud detection in the local government council of Oyo State, Nigeria. The table provides information on the model summary, regression coefficients, t-values, significance levels, and other relevant statistics. The model summary shows that the model

equation fits the data well, with an R-squared value of 0.716. This indicates that approximately 71.6% of the variance in financial fraud detection can be explained by the variable of anonymous communication. The Adjusted R-squared value of 0.682 suggests that the model has good predictive power, considering the number of predictors in the model.

The results of the regression analysis indicate that anonymous communication has a significant positive effect on financial fraud detection. The regression coefficient for anonymous

communication is 0.505, with a t-value of 6.761 and a significant p-value of 0.000. This finding suggests that the use of anonymous communication is associated with improved financial fraud detection. Based on the ANOVA results, the overall model is statistically significant, as indicated by the F-value of 213.859 and a very low p-value of 0.000. This implies that the effect of anonymous communication on financial fraud detection is significant. The results of the multiple regression analysis indicate a strong positive relationship between anonymous communication and financial fraud detection in the local government council of Oyo State, Nigeria. The use of anonymous communication is associated with improved effectiveness in detecting financial fraud. These findings provide empirical evidence supporting the effectiveness of anonymous communication in enhancing financial fraud detection efforts.

## Discussion of Findings

The findings from Objective one of this study shows a positive perception of the impact of data mining tools on financial fraud detection in the local government council. Participants generally agree that data mining has improved accuracy, efficiency, timely insights, proactive identification, and reduction in financial losses due to fraud. These findings suggest that the implementation of data mining techniques can be beneficial in enhancing fraud detection and prevention strategies within the local government council. Overall, the findings from this table indicate a generally positive perception of the effectiveness of CAAS in detecting and uncovering financial fraud in the local government council. However, there is some variation in the level of agreement across different aspects of CAAS's capabilities. It is important to consider these variations when evaluating the potential impact of CAAS implementation in fraud detection and prevention strategies. These findings provide empirical evidence supporting the effectiveness of data mining and CAAS in detecting financial fraud. The use of trend analysis is associated with enhanced financial reporting quality. These findings provide empirical evidence supporting the effectiveness of trend analysis in improving the quality of financial reporting in the local government council.

Review of related studies from Ezenwafor and Udukeke (2019) as well as Lyytinen, Nickerson and King (2021) provides strong support for the positive perception of data mining tools and CAAS in detecting financial fraud within local government councils. The findings suggest that data mining techniques, such as trend analysis, association rules, and anomaly detection, have shown significant improvements in fraud detection accuracy and timely insights. Moreover, the implementation of CAAS has been associated with enhanced effectiveness in identifying previously undetected instances of financial fraud. These findings align with the positive perception presented in the previous table, highlighting the potential benefits of data mining tools and CAAS in enhancing fraud detection and prevention strategies.

However, it is important to acknowledge the variations in the level of agreement across different aspects of data mining and CAAS capabilities (Yadav & Bhanawat, 2020). Some studies have raised concerns regarding the limitations and challenges associated with these forensic auditing techniques, such as the potential for false positives and negatives, the need for continuous updates and refinements, and the importance of human judgement in conjunction with automated tools (Dallagassa, dos Santos Garcia, Scalabrin, Ioshii & Carvalho, 2022; Wadesango, & Nyakurera, 2020). These perspectives emphasize the importance of a balanced

approach that combines technology with human expertise to ensure effective fraud detection and prevention.

Local government councils should consider the empirical evidence presented in this review when evaluating the potential implementation of data mining tools and CAAS in their fraud detection strategies. It is crucial to address the challenges and limitations associated with these forensic auditing techniques, such as the cost of implementation and maintenance, the need for specialized skills, and privacy concerns (Ezenwafor & Udukeke, 2019). Additionally, ongoing monitoring, evaluation, and adaptation of these tools are necessary to keep up with evolving fraud schemes and ensure their continued effectiveness (Charity, 2021). It is worth noting that the findings presented in the previous table and supported by the empirical review have significant implications for local government councils in their efforts to combat financial fraud. The positive perception of data mining tools and CAAS suggests that these forensic auditing techniques can play a crucial role in enhancing fraud detection and prevention strategies within the local government context (Ezenwafor & Udukeke, 2019; Wadesango & Nyakurera, 2020). By leverage data mining techniques, local government councils can improve the accuracy of fraud detection, leading to more effective identification and investigation of fraudulent activities. The ability to detect fraud in a timely manner is particularly important in preventing financial losses and minimizing the potential damage caused by fraudulent behaviour. The findings indicating a reduction in financial losses due to fraud further emphasize the potential economic benefits of implementing data mining tools.

Moreover, the positive association between trend analysis and improved financial reporting quality highlights the importance of utilizing data analysis techniques to enhance overall governance and transparency within local government councils (Marei & Iskandar, 2019). By effectively analysing trends and patterns in financial data, councils can identify potential irregularities and ensure the integrity and reliability of financial reporting processes. The findings also acknowledges the variations in the level of agreement across different aspects of data mining and CAAS capabilities. This variation suggests that certain factors, such as the availability of anonymous communication platforms and the timeliness of detection and investigation, may require further attention and improvement to maximize the benefits of these forensic auditing techniques. It is crucial for local government councils to address these variations and consider the specific needs and challenges within their own context when implementing data mining tools and CAAS.

The findings from objective two of the study on the survey conducted within Oyo State's local government council in Nigeria reveal a mixed perception among local government employees regarding the effectiveness of anonymous communication as a whistle blowing tool for detecting financial fraud. While there is agreement on certain aspects of its effectiveness, such as proven effectiveness, disclosure of sensitive information, and increasing transparency and accountability, there are disagreements regarding the availability of anonymous communication platforms encouraging reporting and whether it has led to timely detection and investigation. These findings align with previous empirical studies conducted in both corporate and public sectors. This support the positive impact of anonymous communication on fraud detection, emphasizing its ability to provide a safe and secure channel for employees to report fraudulent activities without fear



of retaliation (Marei & Iskandar, 2019; Guthrie & Taylor, 2017; Dey, Heese & Pérez-Cavazos, 2021). These studies highlight increased reporting rates and improved fraud detection as a result of anonymity. However, contrasting findings from a study shed light on employee concerns regarding the reliability and credibility of anonymous reports, casting doubt on the overall effectiveness of anonymous communication as a whistle blowing tool in a local government context (Guthrie & Taylor, 2017; Wilde, 2017).

Considering the discussion of the findings, the agreement on certain aspects of anonymous communication's effectiveness indicates its potential value in detecting financial fraud. The positive relationship between anonymous communication and financial fraud detection, as revealed by the multiple regression analysis, provides empirical evidence supporting its effectiveness in enhancing fraud detection efforts within the local government council. To address the mixed perceptions and improve the effectiveness of anonymous communication as a whistle blowing tool, the local government council should focus on several key areas. Firstly, it is crucial to address the concerns raised by employees regarding the availability and reliability of anonymous reporting platforms. This may involve implementing user-friendly and accessible systems that inspire confidence in the reporting process (Dey, Heese & Pérez-Cavazos, 2021; Wilde, 2017; Masanja & Mitti, 2020). Additionally, efforts should be directed towards streamlining the investigative process to ensure timely actions are taken upon receiving anonymous reports. This can involve establishing clear protocols for handling and following up on reported incidents, facilitating prompt investigations, and ensuring appropriate measures are taken to address identified fraudulent activities.

Furthermore, ongoing evaluation and improvement of the anonymous reporting system are essential to address any barriers or limitations that may impede the timely processing and investigation of reported incidents. By actively seeking feedback from employees and continuously refining the anonymous communication process, the local government council can strengthen the overall effectiveness of this whistle blowing tool. This emphasizes the importance of anonymous communication as a valuable tool in the detection of financial fraud (Masanja & Mitti, 2020). By addressing the challenges raised by employees and leverage the benefits of anonymous reporting, local government councils can foster a culture of transparency, accountability, and fraud deterrence. Continued efforts to improve the anonymous communication process will contribute to safeguarding the financial integrity of the local government council and enhancing fraud prevention strategies (Dey, Heese & Pérez-Cavazos, 2021; Wilde, 2017). In addition to the empirical review and the discussion of the findings, it is important to consider the broader implications and potential limitations of the study. While the survey responses provide valuable insights into the perception of anonymous communication as a whistle blowing tool for detecting financial fraud within the local government council, there are certain factors that may influence the results.

## Conclusion and Recommendations

This study examined the effect of various forensic auditing techniques, including data mining, computer-assisted auditing software (CAAS), anonymous communication in improving financial fraud detection within the Local Government Council of Oyo State, Nigeria.

The results indicate that the utilization of data mining and CAAS significantly contributes to the detection of financial fraud within the local government council. The statistical analysis reveals a significant relationship between these forensic auditing techniques and financial fraud detection, highlighting the positive effect they have on identifying fraudulent activities. This finding underscores the importance of incorporating advanced technological tools in the fight against financial fraud.

Additionally, the adoption of anonymous communication is found to have a significant positive impact on enhancing financial fraud detection. This suggests that promoting a culture of anonymous reporting and communication channels can empower individuals to report suspicious activities without fear of reprisal, thus facilitating the identification and prevention of financial fraud. However, it is worth noting that the adoption of CAAS is associated with a decrease in the efficacy of the internal control system in preventing financial fraud. This finding suggests that while CAAS may offer certain benefits, its implementation should be carefully evaluated to ensure it does not compromise the overall effectiveness of the internal control system.

The study therefore recommended that the local government council should prioritize the adoption and utilization of data mining techniques. Data mining has demonstrated a significant positive impact on financial fraud detection. By leveraging data mining algorithms and analyzing large volumes of financial data, the council can enhance its ability to detect patterns, anomalies, and suspicious activities effectively. This will enable proactive measures to prevent financial fraud within the council. The local government council should also consider the adoption and utilization of computer-assisted auditing software (CAAS). It provides advanced capabilities for auditing, analyzing financial data, and identifying potential fraud risks. By leveraging CAAS, the council can automate auditing processes, conduct more comprehensive analysis, and improve the efficiency and accuracy of fraud detection efforts.

Encouraging the use of anonymous communication channels can foster a culture of reporting and whistleblowing. By implementing secure and confidential reporting mechanisms, individuals within the council can feel safe and protected when reporting suspicious activities. This can lead to early detection and prevention of financial fraud, as well as improved transparency and accountability.

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