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# FORENSIC AUDIT AND FRAUD PREVENTION OF QUOTED AGRICULTURAL FIRMS IN NIGERIA

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## ABSTRACT

Fraud has stubbornly remained a phenomenal threat in the corporate world, involving a wide range of undercover crimes perpetrated primarily by employees at all levels of an organizational hierarchy. All organizations including agricultural firms, are subject to fraud risks. Large frauds have led to the downfall of entire organizations, massive investment losses, significant legal costs, incarceration of key individuals, and erosion of confidence in capital markets. Publicized fraudulent behaviour by key executives has negatively impacted the reputations, brands, and images of many organizations around the globe. This dreaded fraudulent acts around the globe may be demystified through a forensic audit which is a lifeline for many corporate organizations survival as it offers useful and unique auditing services and techniques. This study empirically examined forensic audit and fraud prevention of quoted agriculture firms in Nigeria. Proactive forensic audit and reactive forensic audit, were the proxies of forensic audit, while sound internal control and effective ethical culture were the sub-constructs of fraud prevention. The study adopted correlational survey design and used primary data via structured questionnaire. The study population comprised of 85 participants of the five quoted agricultural firms traded on the floor of the Nigeria Exchange Group and the data were analyzed by Pearson Product Moment Correlation and multiple regression tools with the aid of Statistical Packages for the Social Sciences version 27. The study found that all the forensic audit proxies; proactive forensic audit and reactive forensic positively and significantly related to sound internal control and effective ethical culture of quoted agriculture firms in Nigeria in the period of this study. The study concludes that forensic audit is capable of preventing fraud in the Nigerian quoted agriculture firms. It was recommended that the quoted agriculture firms in Nigeria should adopt and employ the application of forensic audit in addition to the statutory external auditor to prevent the deceitful prance of opportunistic managers in the organization.

**Keywords: Forensic Audit, Proactive Forensic Audit, Reactive Forensic Audit, Sound Internal Control**

## Introduction

Agriculture is indispensable to the existence and survival of all countries in this world. Most nations all over the world make it a priority by developing and exploiting this sector for feeding and earning of revenue for economic growth and development purposes. When discussing agriculture, food comes to mind which is one of the basic necessities of life. To a layman, agriculture generally refers to food production but it goes far beyond that. Agriculture is the science or practice of farming, including cultivation of the soil for the growing of crops and the rearing of animals to provide food and raw materials for other sectors of the economy. Agricultural development is one of the most powerful tools to end extreme poverty, boost shared prosperity and feed a projected 9.7 billion people by 2050 (WorldBank, 2023). Similarly, World Bank, (2016) revealed that about 65% of poor working adults rely on agriculture to make a living. This sector accounted for one-third of the global Gross Domestic Product (GDP) and employs over 1.3 billion people throughout the world or close to forty 40% of this global workforce (World Bank Group, 2017). Due to its relative importance and future gains, it is known to be a major source of raw materials for processing industries in the manufacturing of finished goods and services. It produces about 80% of all manufacturing industries' raw materials used in the production of finished goods in most economies of the world. For many years, agricultural productivity has been a key drive for development strategies because of its impact on economic growth and development. It is also a known fact that the easiest means through which mankind can get out of poverty to a condition of relative material affluence is by increasing agricultural productivity. In Africa, the sector's share of GDP was 12.7 % and provided employment to more than 60 % of the labour force (African Fact Sheet, 2016). In Nigeria, the agricultural sector comprises forestry, livestock, fishing, food, and cash crops production such as yams, cassava, maize, cocoa, groundnut,, and oil palm among others. Nigeria is blissfully endowed with natural resources such as abundant land supply, human and forestry resources that are necessary for the development of agriculture. Nigeria has a total land area of about 98.3 million hectares out of which 71.2 million hectares (72.4%) are cultivated but only 34.2 million hectares representing (34.8%) are used (Oluwatoyese & Applanaidu, 2021). Agriculture is the most important sector of the economy in Nigeria from the standpoint of rural employment, sufficiency in food and fibre and export earning prior to the discovering of oil. This assertion is based on the fact that as at independence in 1960, little was known about petroleum as a source of revenue for the Nigerian economy. There was sustainable emphasis on agriculture to the extent that Nigeria was a major exporter of such agricultural products as palm produce, cocoa, groundnut, cotton and rubber. In addition to these cash crops, the national agricultural system was able to produce enough of food crops like yam, cassava, maize, millet, sorghum and soya beans, to the extent that there was almost no need for food importation. However, with the advent of petroleum in the early 1970's, petroleum became the country's major foreign exchange earner and agriculture became grossly neglected (Nchuchuwe and Adejuwon, 2012). At the on-set of the oil boom in the late 1970s, the Nigerian economy became a mono-cultural one with oil being the major source of income leading to the neglect of all other sectors including the agricultural sector (Ogunjimi, 2021). Thus, agriculture which was the second largest sector after oil, fell from 48% of GDP in 1970 to 20.6% in 1980 and was only 23.3% of GDP in 2005 (CBN, 2009). Consequently, successive governments of Nigeria have implemented several agricultural development programmes and policies in order to unbridled the potentials of Nigerian agriculture to feed its nation and become a leading exporter of food, supplier of industrial inputs and employer of labour. Former president Olusegun Obasanjo introduced the cassava project as a prominent agricultural programme in 2004-2005; President Yar Adua' 7-point agenda also places emphasis on food security, and President Goodlucks' initiated agricultural transformation programme. Nigeria experience economic recession coupled with hyperinflation in 2015 to late 2017 hunger became so rampant in the country as such the need for the Muhammadu Buhari administration to devise a means of bringing the people out of the scourge of hunger. Part of the policies were the injection of billions of Naira into the Small and Medium Enterprises (SMEs) and of recent the border closure in order to reduce importation of foreign agricultural products and to help develop the nascent economy. This sector's contribution to the growth of the Nigerian economy in 2012 stood at 39.21 and 41.93% improvement in the third quarter of 2013. This is because agricultural output continued to experience improved production in 2013. The sector recorded growth rate of 3.83% in the fourth quarter of 2012 as against 5.68 in the fourth quarter of 2011. Output in the third quarter of 2013 stood at 5.08%, up from the 3.89% recorded in the corresponding period of 2012 and also higher than the 4.52% recorded during the second quarter of 2013 with a low level of job creations (NBS, 2013).

Despite its oil resources, Nigeria remains fundamentally an agrarian economy. Agriculture accounts for approximately 22% of its national GDP and provides employment to about 30% of the workforce, especially in rural areas (NBS, 2020). Smallholder rain-fed farming dominates the sector, with limited mechanization and low resilience to climate fluctuations. Key crops include maize, rice, sorghum, millet, cassava, yam, and cash crops like cocoa, oil palm, and rubber. Livestock farming also constitutes an important agricultural activity (FMARD, 2016). This implies that a healthy, robust and stable agriculture sector plays a critical strategic role in supporting economic activity and food sufficiency In recent times however, the country is finding it very difficult to provide sufficient food for the teeming population which has resulted in the majority of the country's citizens slipping into poverty. Over 53 million (about 30 percent) of Nigerians remain undernourished and majority of Nigerians (65 percent) remain food insecure (Dada, 2011). Likewise, the poverty statistics show that about 72 percent of Nigerians (118.2 million people) are poor (Nwankpa, 2015). These programmes failed due to policy inconsistencies, (lack of continuity), with each administration establishing new policy instead of building on or modifying already existing policy as result of fraudulent tendencies (Ifeanacho, Nte & Nwagwu, 2009). Fraud permeates several areas of the Nigerian economy including the agricultural sector. Agricultural fraud can take many different forms, such as fraudulent crop exporters, crop insurance fraud, and conflicts of interest caused by active farmers and farmland owners serving on agricultural committees. Federal subsidy systems, which have been plagued for years by issues including poor accounting controls, unscrupulous government officials, and waste, are a major source of agricultural fraud. Studies by Nchuchuwe and Adejuwon (2012) opined that corruption and sharp practices in agricultural sector pose a lot of challenges to making agriculture demand-driven. Abeki and Abubakar (2023) assert that the wave of the rampaging fraud, plundering every corporate entities, has blown the desired healthy banks and continued unabated, creating unprecedented and colossal financial loss that is bleeding the global economy into a state of comma. Fraud is like termites which gradually eat giant iroko tree to an undesirable end and it has factually imposes tremendous costs upon businesses and government agencies throughout the world. Ibanichuka, (2022) describes fraud as a generic term to represent all the multifarious activities of persons, and/or corporate entities, whether private or public, that denotes deceit to gain unfair advantage over another by the perpetrators. Those involved in such activities are known as fraudsters. Similarly, the Association of Certified Fraud Examiners (ACFE, 2022) defines fraud as one in which an employee uses his or her occupation to enrich himself or herself through the deliberate misuse or misappropriation of employer's resources or assets. Likewise, the Association of Certified Fraud Examiners (ACFE, 2016) has estimated that in general business organizations would in most cases lose 5% of their yearly revenue to fraud. The Association of Certified Fraud Examiners (2018) reports estimated the cost of corporate fraud globally to be $3.7 trillion. Gee and Button (2019) also pointed out that the global fraud losses are equivalent to 6.05% of GDP, that is, $5.127 trillion, while related losses have increased by 56% in the last decade. ACFE's recently released "2022 Report to the Nations", underlines that the median cost of every incident of occupational fraud globally amounts to $117,000 with a median period of 12 months.

Reverberating the repulsive scenarios above, however, the most imperative lifeline as a therapeutic solution that could bring these deadly and worrisome fraudsters on their knee is forensic audit. Forensic relates to the application of scientific knowledge to legal problems or usable in a court of law (Bolgana and Robert 1985). Forensic Auditors are experts in monetary clips who are trained in detecting, investigating, deterring, and preventing fraud and white collar crimes which can be accessible to court for legal action or to public dialogue. Forensic Audit is an examination and evaluation of firms or individual's financial information of use as evidence in court of law. In other words, forensic auditing is referred as summarizing and adapting audit investigative method, criminology, litigation services, and financial skills to detect fraud. Onuorah & Ebimobowei (2012) asserted that forensic auditing needs to be adapted to every organization internal control system. The call for forensic audit became imperatively apparent as the conventional auditing has become ineffective in its preventive role, and lack of integrity which is an essential quality of an auditor to unravel this contemporary sophisticated fraudsters. Gao (2010) posited that perpetrators of fraud have many resources that they employ to escape or make it difficult to detect. Therefore, with the constantly changing variants of fraudulent practices and sophisticated cyberattacks, organizations can no longer rely on the known and traditional fraud detection mechanisms as most existing mechanisms do not provide in-depth analysis of fraudulent practices (Glover and Aono, 2010). Considering the magnitude of fraudulent practices around the world, it is not surprising that stakeholders (audit standard setters, professional auditors, regulatory agencies and investors) have expressed a strong desire to improve the mechanisms adopted by forensic auditors to promote better and early prevention and detection of fraud (Christensen et al., 2016). This and many other reasons led the Institute of Chartered Accountants (ICAN) of Nigeria into establishing the faculty of audit investigation and forensic auditing in 2011, with a specific mandate to research into what should be the skills, knowledge and experience required of a forensic auditor. Unfortunately, most of the research on forensic auditing in Nigeria and globally focused on an auditor's responsibilities (Omar et al., 2012; Achua, 2009; Adesola, 2008), forensic auditor's education (Seda and Kramer, 2014; Cohn, 2014; White, 2013), neglecting the importance of mechanism (skills, knowledge and experience) in the discharge of forensic audit assignment. It is against this backdrop that the study seeks to examine the forensic audit and fraud prevention of quoted agricultural firms in Nigeria.

**Statement of the Problem**

The global corporate community is facing a fraud epidemic due to lax internal control and improper external auditors' failure to exercise due diligence. This has negatively impacted firms' productivity, operational efficiency, brand damage, financial losses, and public and stakeholder trust. High-profile corporate scandals, such as Enron, MG Rover Group, CINAR, Swissair, FlowTex, and Adelphia Communications, have exposed systematic power abuse and unethical business practices. Professional accountants and attorneys are under pressure to find more effective ways to expose financial crimes. Forensic auditing is needed to uncover frauds and provide evidence in court. Previous research (Gao, 2010; Greek, 2011; Hassink et al., 2010; Ijewereme, 2015) has shown mixed results, with some studies showing effectiveness in identifying sophisticated fraud in developing countries. This study aims to investigate fraud prevention and forensic audit of listed agricultural companies in Nigeria.

**Objectives of the Study**

This study's overarching goal was to examine forensic audit and fraud prevention practices of publicly traded agricultural companies in Nigeria, with the following particular goals in mind:

i. Examine proactive forensic audit and sound internal control of quoted agricultural firms in Nigeria.
ii. Explore proactive forensic and effective ethical culture of quoted agricultural firms in Nigeria.
iii Find out the relationship between reactive forensic audit and sound internal control of quoted agricultural firms in Nigeria.
iv Investigate the relationship between reactive forensic audit and effective ethical culture of quoted agricultural firms in Nigeria.

**Research Questions**

The researchers asked the following research questions below in order to find possible answers for the purposes of achieving the above objectives

i What is the relationship between proactive forensic audit and sound internal control of quoted agricultural firms in Nigeria?

ii How does proactive forensic relate to effective ethical culture of quoted agricultural firms in Nigeria?
iii What is the relationship between reactive forensic audit and sound internal control of quoted agricultural firms in Nigeria?
iv How does reactive forensic audit relate to effective ethical culture of quoted agricultural firms in Nigeria?

**Research Hypotheses**

The following null hypotheses were formulated and tested at 0.05 level of significance:
i There is no significant relationship between proactive forensic audit and sound internal control of quoted agricultural firms in Nigeria.
ii Proactive forensic does not significantly relate to effective ethical culture of quoted agricultural firms in Nigeria.
iii There is no significant relationship between reactive forensic audit and sound internal control of quoted agricultural firms in Nigeria.
iv Reactive forensic audit does not significantly relate to effective ethical culture of quoted agricultural firms in Nigeria

## LITERATURE REVIEW

### Theoretical Framework.

This study was anchored on routine activity theory and policeman theory respectively.The reason behind these theories is that under routine activity theory assume that for fraud to occur in a business, there must be a unison in time and space of a likely offender, a suitable target, and the absence of a competent sentry with functioning internal control mechanism against fraud occurrence (Felson & Clarke, 1998). On the other hand, the policeman theory, it is assumed that the forensic auditor is a policeman whose primary concern is to the detection and prevention of fraud so as to reduce the overall cases of reported corporate fraud incidence (Ittonen, 2010). The theory therefore assume the existence of a fraudster and the need to employ the services of a forensic auditor to help identify red flags and build efficient and effective internal control mechanism for the organization to prevent fraud.

### Routine Activities Theory

The key proponent of Routine Activities Theory were Lawrence Cohen and Marcus Felson in the year 1979. This theory was used to explain attributes of antisocial behavior between 1947 and 1974 in the United State of America with an aim to expose trends of crime (Cohen & Felson, 1979). The theory was progressive in nature and was used to examine changes in crime rate after World War II (Kennedy & Forde, 1990). Routine Activities Theory has been used to enhance a deeper insight of deceitful behavior. Additionally, Routine Activities Theory has assisted people to understand various attributes of a fraudster which are valuable in the fight against fraud (Hartel, Junger & Wieringa, 2010). Routine Activities Theory is an important concept of fraud theory which refers occurrence of fraud as a relationship of people and place. Thus, Routine Activities Theory presents a straightforward explanation of why crimes such as fraud occur. Explicitly, the theory explains why fraud takes place under some particular situations 18 instead of understanding actions of fraudster as time-based occurrence (Felson & Clarke, 1998). In the beginning, Routine Activities Theory was used to contact people who were involved in property crimes but nowadays it has heavily been applied to many other kinds of deviant behavior such as fraud. The diversity of activities done in organizations has often enabled fraudsters to get into contact with employees which has made fraud control a difficult task. The theory has therefore played a crucial role in fraud elimination because routine activities performed by employees would act as an initial stage for fraud control in the organization. Routine activities theory affirms that fraud would certainly occur in case employees are left unsupervised and fraud deterrence mechanisms are weak in absence of solid barriers (McQuade, 2006). According to Miller (2013), fraud occurs when suitable objects and motivated offender meet in absence of capable guardians. Routine Activities Theory assists management to identify ways in which fraud can occur by helping them to understand challenges which can be experienced in fraud control. Tilley (2009) argued that Routine Activities Theory analyses attributes of a fraudster by understanding practices that make fraud to occur in order to develop strategies to eradicate it. Therefore, routine activities theory argues that incidences of fraud can reduce in the organizations in case management decrease probability for dishonest activities (Williams, 2016). Routine Activities Theory was useful in the current study because organization attitude towards control of fraud appear to be merely simplified and vindicated. Therefore, there is likelihood that fraud might increase if organizational managers do not take drastic measures to ensure there are adequate controls of routine-based activities. Employees in County

### The Policeman Theory

The policeman theory claims that the auditor is responsible for searching, discovering and preventing fraud (Ittonen, 2010), which was certainly the case in the early 20th century. However, the role of auditors' today is focused on providing reasonable assurance and attesting to the true and fair representation of institutions' finances. The perception and beliefs of the public and non-auditors who are stakeholders' are very much reflective of the philosophical foundation of this theory. The public and users of financial statements and audit reports not only believe that it is the responsibility of the auditor to detect and prevent fraud, but expects auditors' to fully carry out this task (e.g. Fulop et al., 2019; Xu & Akther, 2019; Fadzly & Ahmad, 2004; Lin, & Chen, 2004), thus creating a gap between auditors' and the public as a result of the mismatch in expectation between the two parties. The detection of fraud is a very hot topic of debate on the auditors' responsibilities, and typically after events where financial statement frauds have been revealed, the pressure increases on increasing the responsibilities of auditors in detecting fraud (Ittonen, 2010). While in the context of public sector auditing, with the changes brought on by globalization and liberalization, access to information and the rising expectations of the citizens, Supreme Audit Institutions (SAIs) as "alternate watch dogs" examined expenditure and looks into the processes and procedures that influence the decisions to determine the cost-effectiveness of public expenditure (Khan, & Stern, 2007). In addition, as citizen or stakeholders demands for better delivery of services and more equity of resources, the policeman theory could support the argument that there is need for strong monitoring, evaluation, audit, and information sharing with reference to the role of an independent and responsive SAI to assist the national government improves her performance of oversight and ensure accountability and transparency for the benefit of the citizens (Khan, & Stern, 2007).

**Conceptual Framework**

**Agricultural Sector**

Agriculture is an important sector of the economy with a high potentials for employment generation, food security and poverty reduction. However, these potentials has remained largely untapped which has led to the dwindling performance of the agricultural sector both domestically and in the international trade over years.

**Source: Makinwa, (2017)**

Nigeria is one of the largest countries in Africa, with a total geographical area of 923,768 square kilometers and an estimated population of about 223,804,632 million (Worlfdometer, 2024). It lies wholly within the tropics along the Gulf of Guinea on the western coast of Africa. Nigeria has a highly diversified agro-ecological condition, which makes possible the production of a wide range of agricultural products. Hence, agriculture constitutes one of the most important sectors of the economy. The sector is particularly important in terms of its employment generation and its contribution to Gross Domestic Product (GDP) and export revenue earnings. As at 1961, Nigeria was the leading exporter of groundnut with a world's share of 42%. The country also had 27% of the world's palm oil export, 18% of cocoa and 1.4% of cotton as the major West African cotton exporter. It has been a sector where more than 60% of the country's population and the proportion of the Gross Domestic Product (GDP) attributed to agriculture holds about 40% (UNCTAD, 2018). That advantage however declined over years particularly in the years of oil discovery (1956) and that of the years of oil boom in (1973-1983) hence, the Nigeria dominance in the export of groundnut was eclipsed by China, United States of America (USA) and Argentina as at 2008. Indonesia and Malaysia took over in palm oil, Cote d'voire and Ghana also become the leading exporter of cocoa while Mali and Burkina Faso led cotton exports. The competitors maintained their dominance due to strong marketing organizations that linked the farmers to markets and provided support in the form of improved planting material, fertilizer, credit and rural infrastructure.

Consequently, it is estimated that Nigeria has lost a US$10 Billion (1.6 Trillion Naira) annual export opportunity from groundnut, palm oil, cocoa and cotton alone due to continuous declines and stagnations in their exports. Thus food imports are growing at an unsustainable rate of 11% per annum. Nigeria was the world largest importer of United States hard red and white winter wheat with an annual import of 635 billion of Naira. It is also the second largest importer of rice (356 billion of Naira), sugar (217 billion of Naira) and fish (97 billion of Naira), Federal Ministry of Agriculture and Rural Development FMARD, (2011). The Nigeria's agricultural sector in a historical perspective can be said to have experienced the four distinct agricultural policy phases, The first phase spanned the entire colonial period and the first post-independence decade from 1960 to about 1969; the second covered the period from about 1970 to about 1985; the third phase started from about 1986 in the structural adjustment period; and, the fourth was what could be characterized as the post-structural adjustment era, starting from about 1994

Mayong et al, (2003). Some of those policies and programmes include; Agricultural Commodity Marketing and Pricing Policy such as the establishment of six national commodity boards in 1977 to replace the regional, multi-commodity boards that had been operating since 1954.

The six new national commodity boards were for cocoa, groundnut, palm produce, cotton, food grains and rubber. Another policy was Input Supply and Distribution Policy that also include Centralization of fertilizer procurement and distribution in 1975, the creation of a national network of agro-service centers and the creation of a National Seed Service (NSS) in 1972. Similarly, the Water Resources and Irrigation Policy was introduced with the establishment of eleven River Basin Development Authorities in 1977, the Agricultural Input Subsidy Policy, Agricultural Credit Institution, Agricultural Research and Development like a decree promulgated in 1971 created Agricultural Research Council of Nigeria, agricultural and business regulations under the Structural Adjustment Programme (SAP, 1986), guaranteed credit to agriculture under ACGSF, the sustained implementation of the Anchor Borrowers' Programme, and provision of subsidized fertilizer and agricultural inputs particularly of 2015-2017 by the former Nigeria's president, Muhammadu Buhari among others. Agricultural transformation and food security: Agriculture will continue to be a stable driver of GDP growth, with an average growth rate of 6.9 percent over the Plan period. The Agricultural sector will boost growth by expanding crop production and the fisheries, livestock, and forestry sub-sectors as well as developing the value chain. Investment in agriculture will drive food security by achieving self-sufficiency in tomato paste, rice, wheat, cashew nuts, groundnuts, cassava, vegetable oil among others. However, the laudable efforts of agriculture has brought to its knees by fraud as it permeates several areas of the Nigerian economy including the agricultural sector.

**The Concept of Fraud**

Fraud is a global problem that affects organizations all over the world (ACFE, 2020). Fraud has been defined differently by different studies because fraud is seen differently by different individuals or organizations as fraud for one may be completely not for another (Baldock, 2016). Fraud can be described as an unlawful act of acquiring wealth by an individual or group of people in a planned manner. Some forensic accounting experts traced fraud history to the ancient Egypt in respect of those who took inventory of Pharaoh's valuables like grains and gold. Embezzlements and bribes then were very minimal and punishment for culprits very harsh. Archaeological findings in Mesopotamia and Egypt in 3300 B.C and 3500 B.C respectively showed evidence suggestive that accountants/scribes recorded economic transactions using clay tables of papyrus scrolls. Any suspicion of tampering with the record would result in the original one being enfolded and wrong doings fined and serious cases of mutilation might attract death (Oyedokun, 2012 and Zysman, 2004). Similarly, Lokanan (2015) explains fraud as a multifaceted phenomenon, whose contextual factors are not fixed to a particular framework. While Kurpierz and Smith (2020) point out that fraud is a colloquial and technical term that is used as an umbrella system to describe a large number of dishonest and harmful behaviours. Consequently, the harm caused by fraud goes beyond direct financial loss, to the collateral damage that may include harm to external business relationships, employee morale, firm reputation, and branding (Bierstaker et al., 2006). Occupational fraud goes undetected and is often never reported so determining the full extent of its losses is usually very difficult (ACFE, 2020). ACFE (2020) underscores that asset misappropriation has the highest level of occurrence of 86% cases but with the smallest median loss effect of $100,000 per case. This is followed by corruption as the second-highest level of occurrence of 43% cases amounting to a median loss of $200,000. Financial statement fraud is the least occurrence with only 10% of scheme cases but this scheme has the most devastating effect with a median loss of $954,000. Generally, fraud is a deliberate intention motivated to receive or attract undue advantage. This understanding, therefore, differentiates fraud from error, which in business parlance is referred to as unintentional omissions or disclosures or misstatements. This implies that error is not to misappropriate the assets of an organization (Madray, 2006). In a simple term, fraud involves working outside the regulatory framework (Jones, 2011). It entails breaking the law and violating the regulatory framework.

**Fraud Prevention**

Fraud prevention is an integrated effort to suppress the occurrence of the factors that lead to fraud (Wulandari & Nuryanto, 2018). Prevention can minimize fraud (Ngai et al., 2011) and will keep costs down in the future (Law, 2011). Prevention is the most proactive fraud-fighting measure. The design and implementation of control activities should be a coordinated effort spearheaded by management with an assembled cast of employees. Collectively, this cross section of the organization should be able to address all of the identified risks, design and implement the control activities, and ensure that the techniques used are adequate to prevent fraud from occurring in accordance with the organization's risk tolerance. The success of any fraud prevention program depends on its continuous communication and reinforcement. Stressing the existence of a fraud prevention program through a wide variety of media — posters on bulletin boards, flyers included with invoices and vendor payments, and articles in internal and external communications gets the message out to both internal and external communities that the organization is committed to preventing and deterring fraud. A new study has found that a healthy and ethical company culture plays a more important role in preventing fraud than its board of directors does. Professor Mahbub Zaman, Professor of Accounting at the University of Hull, Hanen Khemakhem, Nadia Smaili and Richard Fontaine explain more. Fraud prevention can be achieved by establishing sound internal control and corporate ethical culture.

**Internal Control Mechanism**

The term internal controls has a variety of definitions but generally speaking, internal controls is a process designed to provide reasonable assurance concerning the achievement of specific aims in effectiveness and efficiency of operations, reliability of financial reporting and compliance with laws and regulations. Accounting tools (AT, 2022) defines internal control as a set of activities that are layered onto the normal operating procedures of an organization, with the intent of safeguarding assets, minimizing errors, mitigate the amount and types of risk to which a firm is subjected, and ensuring that operations are conducted in an approved manner. Similarly, Hevesi (2005) defined internal control as the integration of the activities, plans, attitudes, policies, and efforts of the people of an organization working together to provide reasonable assurance that the organization will achieve its objectives and mission. Millichamp (2002) also views internal control system as the whole system of controls, financial and otherwise, established by the management in order to carry on the business of safeguard the assets and secure as far as possible the completeness and accuracy of the records. Controls are also useful for consistently producing reliable financial statements. The Committee of Sponsoring Organizations of the Treadway Commission (COSO, 2013) defines internal controls as a process performed by the board of directors, managers and other personnel of a business to provide reasonable assurance in achieving firm's objectives in terms of controls, effectiveness and efficiency of business operations, reliability of financial reporting and compliance with laws and regulations.

**Components of Internal Control**

Commission of Sponsoring Organization (COSO) stated that ICS is said to work properly if the five components - control environment, risk assessment, control activities, communication of information and monitoring are present and functioning well (Commission of Sponsoring Organization, 2013).

**Control environment** are factors which determine the effectiveness of policies, procedures and methods specific to a process (Ikeotuonye Victor and NnennaLinda, 2016). The control environment comprises the ethical values of the organization and integrity, these parameters enable the top management to carry out its governance oversight responsibilities; the organizational structure and assignment of authority and responsibility; the process for attracting, developing, and retaining competent individuals; and the accuracy of performance measures, incentives, and rewards to drive accountability for performance. The resulting control environment has a pervasive impact on the overall system of internal control (Akwaa-Sekyi and Gené, 2016). Price water House Coopers (2012) indicated that, the control environment includes the governance and management functions and the attitudes, awareness, and actions of those charged with governance and management concerning the entity's internal control and its importance in the entity.

**Communication of information** is concerned with identification, capture and exchanging of operational, financial and compliance related information on timely bases. Information that is relevant, accurate, appropriate, understandable, accessible and timely will enable personnel in the organization to manage, conduct and control operations (AbiolaI and Oyewole, 2013). According to Badara and Saidin (2013) relevant information must be identified, recorded and communicated in a form and time frame that will allow people to carry out their responsibilities. Communication of information can reduce the risk of fraud. Lack of proper safe means of receiving and disseminating information to the relevant authority for action increases cases of non-reporting of suspicious activities that leads to fraud (Hayali et al., 2013).

**Control activities**

Internal control activities are applied in almost every step of the enterprise. They include controls that are important for the business for purposes such as detecting and preventing problems of businesses, ensuring that they carry out the right activities and directing them. Policies are determined in line with these purposes. Control activities are the measures established through policies and procedures that help guarantee the management's orders to mitigate risks and achieve its goals (COSO, 2013). Furthermore, this is achieved where organizations have clear policies stating what is expected alongside procedures that put policies into actions (COSO, 2013). This is supported by Zakaria et al. (2016) who argues that control activities ensure that risks are reduced through preventive and detective activities features and can be performed manually and automatically. Chen et al. (2017) on the other hand argues that segregation of duties and other controls are an important aspect of control activities that reduce the likelihood of manipulation of earnings. Dawson (2015) adds that control activities are represented by actual checks and balances that exist within the institution, it is specific, and the most common form is bank reconciliation. Internal control activities include the policies, procedures, and the organizational structure of an organization. Organizations set up policies and procedures to make sure that identified risks do not avoid an organization from reaching it aims. Clearly determined activities keep risks at the lowest levels and maintain effectiveness.

**Information sharing** is an important tool for alerting the concerned parties about any suspicious activity and fraud prevention. The shared information by reserve or central bank about methods of operations incase of fraud cases reported help in identifying loopholes, initiation of corrective measures and encourage review of guidelines (Chakrabarty, 2014).

**Monitoring** is the evaluation of the events and transactions of the organization to determine whether performance of the organization is qualitative and to check effectiveness of the controls. Monitoring involves all management oversight of the ICS (Etengu and Amony, 2016). Commission of Sponsoring Organization (2013) stated that continuous evaluations or separate evaluations or combination of the two evaluations are used to assess the presence and functionality of ICS components. Assessment of ICS can also be done through internal and external audits to determine the effectiveness (Kumuthinidevi, 2016). The staff on the other hand have responsibilities of evaluating various systems of internal controls and enhance them where needed. Any discovered deficiencies should be addressed immediately and added to the overall systems of internal control (AbiolaI and Oyewole, 2013). The staff on the other hand have responsibilities of evaluating various systems of internal control and enhance them where needed. Any discovered deficiencies should be addressed immediately and added to the overall systems of internal control (AbiolaI and Oyewole, 2013). By monitoring, internal control activities are continuously kept under strict watch and their performance are assessed. Despite the adoption and implementation of the COSO, (1992, & 2013) robust internal control factors analysis framework by organizations, perpetration of fraud continued unabated.

**Sound Internal Control**

A well-structured internal control is a censorious element of management and a bedrock for the safe and sound operation of organizations. sound internal control systems include procedures for reporting immediately to appropriate levels of management any significant control failings or weaknesses that are identified, together with details of corrective action being undertaken (Graham, 2015). It helps to ensure that the goals and objectives of agriculture firms will be met and achieve long-term profitability targets, and maintain reliable financial and managerial reporting. Internal control can also help to ensure that the agriculture firms will conform to laws and regulations as well as strategies, plans, internal rules and procedures, and decrease the risk of unexpected losses or damage to the agriculture firms' reputation. COSO Framework's role is to drive internal controls and to allow the understanding of these goals using improved performance and governance. In addition to this, with an effective internal control system, erroneous, fraudulent transactions and irregularities are less likely to happen in the agricultural sector (Ozten & Kargın, 2012). A properly designed and constantly enforced system of operational and financial internal control helps the board of directors and management safeguard the firm's resources, produce reliable financial reports, and comply with laws and regulations. Thus, sound internal control also reduces the possibility of significant errors and irregularities and assists in their timely detection when they do occur.

**Corporate Ethical Culture**

Oriade et al. (2021) conceptualized ethical organizational culture as employee perceptions of the extent of organizational commitment regarding ethical issues involving employees and their management. Mahmoudi and Bagheri Majd (2021) asserted that corporate ethical culture is created within organizations through ethical policy management practices, enforcement, and actions. An organization's ethical culture creates and instils ethical beliefs among its members regarding what members feel will increase their moral obligation to protect the interests of the organization they serve. The most common form of fraud in accounting and financial reporting is in online sales financial reports, which occur worldwide (Soomro et al., 2021). Organizations that cultivate an ethical culture always uphold ethics in their daily processes and communications, while members of the organization will also follow the established culture (Bierstaker et al., 2006). Corporate culture is one of the factors considered capable of preventing acts of accounting fraud. It is a sense-making and control mechanism that guides individual behavior and attitudes (Robbins & Coulter, 2002). Individuals' behavior in an organization reflects the culture of the organization. When the organization cultivates good ethics in its daily actions, its employees follow the existing culture. An environment with an ethical culture coupled with sound moral reasoning can prevent accounting fraud. Individuals with high moral sense can better distinguish between good and bad behavior and control their actions accordingly (Liyanarachchi and Newdick, 2009). An ethical organizational culture will form individuals with the character to uphold ethics. These individuals will prioritize honesty and truth. Likewise, the integrity within an individual will also thrive in an organizational environment that supports openness. Individuals who are committed to existing values and norms will have high integrity. AlSwidi, Gelaidan, and Saleh (2021) found that ethical organizational culture positively affects employee integrity. Thus, employees that upholds ethics will have high integrity.

**The Role of Ethical Culture in Creating an Ethical Workplace**

Developing a sound ethical corporate culture is key to help prevent, detect, deter and respond to minimizing of occupational fraud risks. Creating an environment that encourages adherence to high ethical values can go a long way to reduce the perpetration of frauds in organizations especially the attitude and behavior of leaders.

In other words, organizations that uphold integrity and do not compromise on ethical standards set an ethical tone at the top that trickles down to the rank and file of the organization. Top management must provide that environment and guidance by harnessing multiple formal and informal cultural systems. The Association of Certified Fraud Examiners (2011) posits that, if top management does not uphold and prioritize high ethical standards, employees are likely to commit fraud. Employees closely watch the behavior of their leaders and that informs their behavior as well. The Association of Certified Fraud Examiners further proposes four key steps that top management should follow - communicate expectations to employees, lead by their examples, provide safe mechanisms to report culprits, and reward integrity (2011). That is, a high ethical culture created within an organization through the practices of and values of management can deter unethical behavior of employees. In addition, according to Schein (as cited by Rae & Wong, 2012), "the most powerful mechanisms for embedding and reinforcing culture are (1) what leaders pay attention to, measure and control; (2) leader reactions to critical incidents and organizational crises; deliberate role modeling, teaching and coaching by leaders; (3) criteria for allocation of rewards and status; and (4) criteria for recruitment, selection, promotion, retirement and excommunication". Nevertheless, for these strategies to gain genuineness and touch the 'heart' of employees, they must go beyond lip service – words and deeds must correspond. Employees are constantly evaluating management's decisions and behaviors as key indicators of what is practically acceptable and unacceptable in the organization. They watch to see if leaders show commitment to what they profess in their talk and daily behavior. Hence, if top management don't set worthy examples, they would have no moral courage to deter corporate fraud. Therefore, personal integrity is an essential component of leadership and ethical culture. In the classic words of Peter Drucker, "the final proof of its (leadership) sincerity and seriousness is uncompromising emphasis on integrity of character. For it is character through which leadership is exercised, it is character that sets the example and is imitated in turn" (cited in Drucker, 2007). Nonetheless, top management team must be more than individuals of high character. They must influence their followers to behave ethically. Influence means that the relationship between top management and other employees is not passive; and that influence is not coercive (Daft, 2015). Thus, in order to be effective, top leaders must be perceived as both moral persons and moral managers (Rae & Wong, 2012). Therefore, top management should communicate clear and consistent message to their followers.

**Corporate Ethical Culture and Fraud Prevention**

Corporate culture that upholds honesty and ethics can prevent fraud (Liu, Tsui, and Kianto, 2021). The above theory with arguments from Hardcopf, Liu, and Shah (2021) says that fraud can be prevented by increasing ethics in organizational culture. The ethical culture in an organization dramatically influences the mindset and way of behaving of people in the organization. Corporate culture significantly affects a person's behavior, to be ethical or not (Noviriantini, Darmawan, and Werastuti, 2015). Therefore, cultivating good ethics in the organization is very important, ensuring that the behavior of individuals in the organization also becomes ethical. A good organizational culture is critical in preventing fraud. Preventive measures can be implemented through a well-developed work culture that will result in good organizational fundamental values such as upholding honesty and integrity, respect, and quality of work, as well as excellent service and respect for openness and transparency (Zelmiyanti & Anita, 2015). Several previous studies conducted by Artini, Adiputra, and Herawati (2014); Virmayani, Sulindawati (2017); and Zelmiyanti and Anita (2015), have found that ethical organizational culture has a positive effect on the prevention fraud through forensic audit.

**The Concept of Forensic Audit**

Forensic audit is a specialty practice area within accounting and auditing domain which examines the financial information of any entity in order to determine whether any fraud has taken place or not and findings of this type of audits are used as expert's testimony in court of law. Institute of Forensic Accountants of Nigeria (IFAN, 2011) defines forensic audit as the activity that consists of data gathering, verifying, processing, analyzing and reporting in order to obtain material facts and/or evidence in the area of legal or financial disputes and or financial irregularities including fraud and giving preventive advice. Forensic auditing is the integration of accounting, auditing and investigative skills (Zysman, 2004). Dhar and Sarkar (2010) define forensic auditing as the application of accounting concepts and techniques to legal problems. It demands reporting, where accountability of the fraud is established and the report is considered as evidence in the court of law or in administrative proceedings. Degboro and Olofinsola (2007) noted that forensic investigation is about the determination and establishment of fact in support of legal case. That is, to use forensic techniques to investigate and detect a crime is to expose all its attending features and identify the culprits. Significantly, forensic auditing is a discipline that has its own models and methodologies of investigative procedures that search for assurance, attestation and advisory perspective to produce legal evidence. It is concerned with the evidentiary nature of accounting data, and as a practical field concerned with accounting fraud and forensic auditing; compliance, due diligence and risk assessment; detection of financial misrepresentation and financial statement fraud (Skousen and Wright, 2008); tax evasion; bankruptcy and valuation studies; violation of accounting regulation (Dhar and Sarkar, 2010). Curtis (2008) argues that fraud can be subjected to forensic auditing, since fraud encompasses the acquisition of property or economic advantage by means of deception, through either a misrepresentation or concealment. Bhasin (2007) notes that the objectives of forensic auditing include: assessment of damages caused by an auditor's negligence, fact finding to see whether an embezzlement has taken place, in what amount, and whether criminal proceedings are to be initiated; collection of evidence in a criminal proceedings; and computation of asset values in a divorce proceedings. He argues that the primary orientation of forensic auditing is explanatory analysis (cause and effect) of phenomenon- including discovery of deception (if any), and its effects-introduced into the accounting domain. Nowadays, the forensic audit has come to light as a distinguished field in the industry that helps the management to prevent fraud. The proactive and reactive forensic audit.

**Proactive Forensic Audit**

Proactive forensic auditing is a technique used either by management or by auditors to carry out general reviews of activities to highlight risks arising either out of fraud or from any other source with the purpose of initiating focused reviews of particular areas, targeting specific threats to the organization. The proactive technique is aimed at preventing economic and financial crimes by promoting an overall fraud awareness culture in the public sector through, inter alia, publications, presentations/workshops, and participation in relevant national and international initiatives (Uzoka, 1990). This is done with the aim of promoting a culture of "zero" tolerance through interventions, such as publishing relevant articles, participating in workshops, seminars, and conferences (which provide developmental learning and networking opportunities), presentation of training programmes, providing support to national/international initiatives, and making stakeholders aware of deficiencies in the measures instituted to prevent or detect economic crimes. The most efficient and effective way to prevent economic crimes is to know the circumstances surrounding them or the conditions that will enhance the possibility of their occurrence. According to Levanti (2001) and Squires (2003), the approach to be followed in this regard is based on the fact that the following aspects should minimize the risk of fraud: (i) Strong financial management systems: The auditor-general is authorized to enquire into the efficiency and effectiveness of internal controls and financial management systems and to report thereon. Management is well informed that, should the measures and systems implemented by them not be adequate to ensure probity and reduce the risk of economic crimes, they will be held accountable through the office's reports to the relevant legislative bodies; (ii) Effective internal controls: In determining the scope and extent of the audit, in terms of the Generally Accepted Government Auditing Standards, the auditor-general is compelled to study and evaluate the reliability of internal controls, which could include organization of work, segregation of duties, physical security measures, authorization and approval, arithmetical and accounting procedures, effective training of staff, supervision, and management. The fact that the auditor-general, in its audit approach, conducts procedures to evaluate the effectiveness and reliability of the relevant institution's internal controls and to report thereon, serves as a very definite deterrent for potential perpetrators of economic and financial crimes;(iii) Adequate public awareness (and acceptable standards of conduct): The results of the auditor-general's findings are made available to all the relevant legislative bodies at all government levels, at least annually. These findings become public knowledge once the audit reports have been tabled and the general public has access to them. There is a disclosure policy entailing the issue of media releases on the findings of the audit to provide additional public awareness. This public disclosure of audit findings serves as another deterrent to fraudulent activities.

**Reactive Forensic Audit**

On the other hand, the objective of reactive forensic audit is to investigate cases of suspected fraud so as to prove or disprove the suspicions, and if the suspicions are proven, to identify the persons involved, support the findings by evidence and to present the evidence in an acceptable format in any subsequent disciplinary or criminal proceedings. Ansari (2005) stated that the reactive technique focuses on the investigation of allegations of economic and financial crimes. The submitted allegations are confirmed or refuted by collecting and submitting substantive evidence. The aim would be to investigate and report on: (i) the nature and extent of the specific instance of economic and financial crimes; (ii) the suspects involved; (iii) deficiencies in the measures that should have prevented or detected the crimes; (iv) recommending punitive steps and further actions in respect of: (a) criminal prosecution; (b) criminal recovery; and/or (c) disciplinary action; and (v) progress made by other institutions in investigating relevant cases. Findings are then reported on through the normal audit process or, when applicable, are handed over to institutions with investigating and prosecuting powers, such as the Economic and Financial Crime Commission (EFCC) and Independent Corrupt Practices Commission (ICPC).

**Steps in a Forensic Audit**

A forensic audit comprises the following steps for successful execution.

**Planning the Interview:**

During the planning stage, the forensic auditor and platoon will plan their investigation to achieve objectives, similar as relating what fraud, if any, is being carried out, Determining the period during which the fraud passed, Discovering how the fraud was concealed, Naming the perpetrators of the fraud Quantifying the loss suffered as a result of the fraud Gathering applicable evidence that's permissible in court Suggesting measures to help similar frauds from being in the unborn.

**Collecting evidence**: The evidence collected should be acceptable to prove the fraudster's identity in court, reveal the fraud scheme's details, and document the financial loss suffered and the parties affected by the fraud. A logical inflow of evidence will help the court understand the fraud and the evidence presented. Forensic auditors must take preventive measures to ensure that documents and other evidence collected aren't damaged or altered by anyone.

**Reporting:** A forensic inspection requires a written report about the fraud to be presented to the customer to do to file a legal case if they so ask. At a minimum, the report should include the investigation findings, A summary of the evidence collected, An explanation of how the fraud was executed Suggestions for precluding analogous frauds in the unborn — similar to perfecting internal controls.

**Court Proceedings:** The forensic auditor must be present during court proceedings to explain the evidence collected and how the platoon linked the suspect. They should simplify any complex account issues and explain the case in a minister's language so that people who do not understand legal or counting terms can understand the fraud easily.

**Forensic Audit and Fraud**

Fraud is rarely seen, but what is observed or noticed are the symptoms, hence forensic audit services provide firms with the necessary tools to detect and deter fraudulent practices (Enofe, Okpako, and Atube (2013). Thus forensic audit can be adapted as internal audit strategy to prevent fraudulent activities. Onuorah and Ebimobowei (2012) in their study on the effect of forensic accounting services on fraud detection in Nigerian banks concluded that forensic accounting services offer banks with the necessary tools to deter fraudulent activities. Similarly, Islam, Rahman, and Hossan (2011) found that forensic audit tools are critical tool in the fight against corruption, detection and prevention of fraud in Bangladesh. While, Dada, Owolabi, and Okwu (2013) and Modugu and Anyanduba (2013) found a positive linkage between forensic audit and fraud reduction, consequently forensic audit is a useful tool in fraud detection and reduction. In summary, forensic auditing is a very specialize type of engagement, which requires highly skilled team members who have experience not only of accounting and auditing techniques, but also of the relevant legal frame work, fraud auditing, and investigative skills etc. There are numerous types of fraud that a forensic auditor could be asked to investigate. The investigation is likely to ultimately lead to legal proceedings against one or several suspects, and members of the investigative team must be comfortable with appearing in court to explain how the investigation was conducted, and how the evidence has been gathered. Forensic auditors must therefore receive specialist training in such matters to ensure that their credibility and professionalism cannot be undermined during the legal process.

**Forensic Auditor and Fraud Prevention**

Fraud Prevention entails formation of attitudes of honesty, sincerity and assistance to ensure elimination or drastic reduction in the level of fraud occurrence. Enofe, Omagbon and Ehigiator (2015)noted that one major way to victorious fraud deterrence is to focus on organization’s traditions and adopt strategies to make it fraud free or low fraud atmosphere. This can be accomplished by identifying the root causes, blocking the loopholes identifying the lacuna being exploited by the perpetrators and above all workers’ welfare must be taken care of properly. Forensic auditor uses specialist and professional skills/tools in the performance of his duties. Olajide (2014) affirmed that for a forensic auditor to effectively prevent fraud, he should possess knowledge, skills and competencies in the under listed fields:

i. Accounting, auditing and investigation skills
i. Criminology particularly leaning to the origin, scope, dynamics of fraud and financial crimes; the legal, regulatory, professional environment and technical issues.
ii. Forensic and litigation consultative services, including research and analysis validation of losses, liabilities and damage investigation as well as conflict resolution.

**Empirical Review**

Some studies have been conducted in many countries on forensic audit tools and fraud control. Some of these studies are discussed below:

Aremu and Olayinka (2023) investigated the impact of forensic accounting techniques on procurement practices in Nigeria. Two out of five federal government agencies were deliberately chosen for the research. The target population consisted of 131 accountants within the two selected agencies, and questionnaires were distributed to all 131 accountants, with 126 questionnaires successfully retrieved. The researchers employed multiple regression analysis to analyze the collected data. The results revealed that forensic accounting techniques exert a positive and significant influence on public procurement practices and the attainment of value for money in the Nigerian public sector.

Adane et al. (2023) delved into the impact of forensic accounting on public procurement, highlighting it as a novel approach to fraud prevention in Ethiopia. They selected 10 public institutions in Ethiopia for their study, with a sample size consisting of 109 procurement officers from these institutions. Questionnaires were administered to the 109 respondents, and multiple linear regression was employed for data analysis. The study's results indicated that forensic accounting has the potential to decrease public procurement fraud, revealing a negative significance between forensic accounting and public procurement fraud in Ethiopia.

Alao et al. (2023) investigated the influence of forensic accounting techniques on corruption in the Nigeria Southwest public sector. The study utilized a survey research design with a population comprising 395 staff from ministries and government agencies. The sample size included 254 respondents selected from these ministries and agencies. Multiple regression analysis was employed for data analysis, and the findings demonstrated that forensic accounting exerts a significant influence on reducing corruption in the Nigeria public sector.

Ewa (2022). The study looked at data mining, accounting ratios, and trend analysis tools for detecting or stopping fraudulent MDA activity. The study data were treated to the multiple regression analysis approach (OLS) using a survey research design. The study found that forensic accounting technology (data mining, accounting ratios, and trend analysis) considerably and favorably enhances an MDA's ability to detect and/or prevent fraud. The results of the investigation indicate that MDAs should invest more in their human resources to ensure that each MDA has reliable IT infrastructure and that its personnel are professionally skilled in information technology.

Ojo-Agboju et al. (2022) examined how forensic accounting influenced fraud detection and prevention in a few Deposit Money Banks (DMBs) in Nigeria. Using their survey design, Access Bank, First Bank, GT Bank, Union Bank, UBA, and Zenith Bank recruited 115 resident internal control officials, branch operation managers, and cash officers/head tellers as a sample for the study. The questionnaire was given to the participants using a straightforward, proportionate random sample approach. Their investigation, which employed basic linear regression, revealed a strong correlation between forensic accounting and fraud detection even if it had no effect on fraud prevention in the DMBs they mentioned. The investigation came to the conclusion that fraud in the DMB branch operations in Nigeria could not be stopped by forensic accounting.

Alhassan (2021) examined the impact of forensic accounting on fraud prevention and detection, employing a survey research design. The study focused on 10 ministries in the Federal Capital Territory of Nigeria. The sample size included 150 respondents, consisting of auditors and accountants. Analysis of variance (ANOVA) served as the method for data analysis in the study. The findings indicated that forensic accounting has a positive influence on both fraud detection and prevention, with a significant and noteworthy effect.

Okoye et al (2020) examined forensic accounting techniques used to detect labor fraud in the state of Anambra, Nigeria. The study used targeted sampling and a cross-sectional research design. The study population consisted of state anti-corruption agencies with a sample size of two hundred and fifty, comprised of investigators, prosecutors, finance, accounting and auditing staff. In their study, the questionnaire was used as the main source of data, and the data obtained were analyzed using descriptive statistics and the Kruskal-Wallis test. The result of the study suggests that there are no generally accepted forensic investigation techniques to detect fraud in the public sector and that there is a positive and significant association between forensic accounting methods and fraud detection in the public sector. The research found that data mining techniques should be fully applied in public sector fraud detection in Nigeria.

Adesina et al (2020) studied how Forensic Audit Influence Fraud Control: Evidence in Nigeria's Deposit Money Banks (DMBs). The population consists of 22 DMBs in Nigeria. A sample of seventeen (17) banks was selected for the study. The survey research design was employed while the statistical tool used for the analysis of data was Analysis of Variance (ANOVA). The result showed that forensic audit is a very important requirement for effectual and well-organized control of financial frauds in the Nigerian DMBs.

Edheku and Akpoveta (2020) studied Forensic Accounting and Fraud Detection in the Public and Private sectors in Abuja Metropolis, Nigeria. A sample size of 43 was derived from accounting officers from four selected federal ministries and five private multinational organizations operating in Abuja. The analysis of the research was done using mean deviation while the tool used to test the hypothesis was Cronbach Alpha. The finding of the study revealed that accounting officers in the private and public sectors strongly agree that forensic accounting has an impact on fraud detection.

Uniamikogbo et al (2019) studied "forensic audit and fraud detection and prevention in Nigerian banking sectors". The population of the study consists of 16 DMBs listed on the Nigerian Stock Exchange. The study adopted the ex-post facto research method, thus secondary data was used. The data collected were analyzed using the statistical package for social science. The study reveals that DMBs have to increase how they apply forensic auditing in fighting fraud.

Ukuma (2019) carried out a study on forensic auditing and fraud reduction in Nigeria. The study employed survey research design with the use of questionnaire, interviews and secondary sources of data collection with a sample of 48 operational and general managers including bank auditors while only 16 banks was employed in data analysis. The data obtained was analysed with ordinary least square method and the result obtained showed that forensic auditing significantly relates with internal control and cash management system of banks but insignificantly related with loan processing and repayment systems.

Ogiriki and Appah (2018) investigated forensic accounting and auditing techniques in public sector fraud in Nigeria. The study employed ex post-facto research design with the assistance of questionnaire as the major source of primary data collection. The data obtained was analysed using ordinary least square. The result suggested that forensic accounting and auditing techniques such as continuous audit, computer assisted audit tools, data mining, Bedford law and financial ratio analysis shows a significant and positive relationship with public sector fraud prevention and detection in Nigeria.

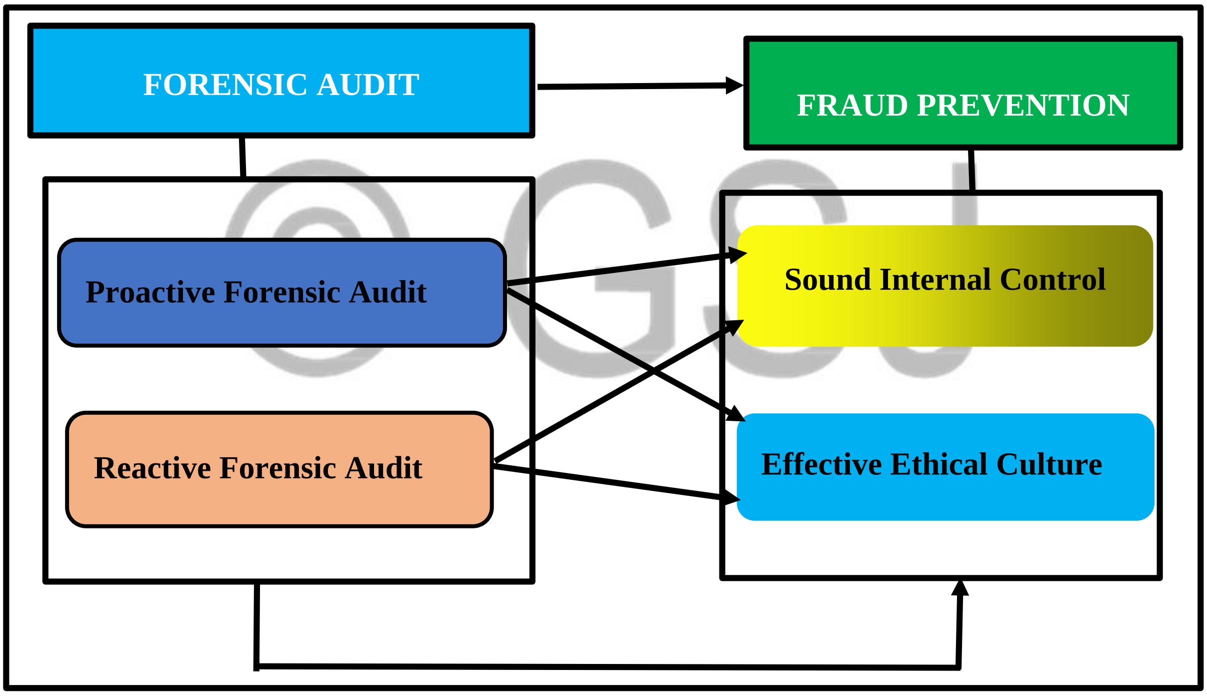
Bassey (2018) investigated "the effect of forensic accounting on the management of fraud in microfinance institutions in Cross River State". The sample comprised 55 managers out of a population of 65. The survey method was used. Primary and secondary data were also used. The Ordinary Least Square procedure was used in testing hypotheses. The implication of the outcome shows that active engagement of forensic investigation and litigation support decreases fraud in the sampled companies. Managers of the sampled firms were encouraged to focus more on forensic accounting thereby monitoring and investigating alleged persons who commit frauds.

Olaoye and Olanipekun (2018) carried out a study on the Impact of Forensic Accounting and Investigation on Corporate Governance in Ekiti State. A sample size of 92 respondents was selected out of a population of 120 forensic accountants and practitioners. The study adopted a survey and explanatory research design. The data collected were analyzed using Binary Logistics Regression Technique. The study revealed that forensic accounting and investigation have an impact on Corporate Governance.Agbata,

Ekwueme and Jeroh (2017) studied the "anatomy of pension fraud in Nigeria: its motives, the management and the future of the Nigerian pension scheme". The study population consisted of 435 accountants, auditors, finance officers and pensioners of some selected institutions in Anambra state. The sample size was 417. Data were collected from primary source with the aid of a questionnaire. The statistical tool adopted in the analysis of the data was multiple regression analysis using Minitab ver. 17. The research outcomes revealed that the pension scheme in existence in Nigeria seems not to be effective because of raging and disturbing pension frauds committed almost on daily basis. Also, fraud has constantly been a stumbling block in the effective management of Nigerian pension funds.

Dabor et al (2017) studied "Forensic Accounting and Fraud Control in the Nigerian Banking sector". The population is the workers of the entire Banks of Nigeria. The sample size was made up of 50 respondents. The

Likert scale questionnaire was used to ascertain the degree of respondents. The z-test statistical tool was used to examine the difference in response. The finding of the study indicates that the adoption of forensic accounting will lead to a reduction in financial statement fraud in Nigeria's Banking Sector.
Aigienohuwa et al **(2017)** examined "the effectiveness of forensic accounting and fraud mitigation in the Nigerian banking industry". Primary data was used through a questionnaire. The result showed that forensic accounting significantly minimizes fraud in Nigerian banks and improves greatly their internal control systems. Bank regulators and shareholders were encouraged to sternly impose forensic accounting of banks and insist that internal control and internal audit staff practice it.
Oseni (2017) examined "Forensic Accounting and Financial Fraud in Nigeria: problems and prospects". A sample size consisting of 140 respondents was used. The survey research design was employed using a Likert scale questionnaire. The statistical tool used for the analysis of data was the chi-square. The finding revealed that Forensic Accounting Services provide corporate organization with the necessary tools to detect and prevent Fraud and Financial Crimes. Okoye and Gbegi (2013) studied "forensic accounting as a tool for fraud detection". A sample size of 370 employees in a population of 5010 was selected from five ministries in Kogi State. The study used survey design as a method of collecting data. The statistical tool used for analyzing data is (ANOVA). The finding indicated that applying forensic accounting significantly reduces fraud in the government entities.
Ogutu and Solomon (2016) analysed forensic auditing and reduction of fraudulent practices in Nakuru County in Kenya. The study adopted descriptive survey research design with a well designed questionnaire with a sample of twenty five accounting firms. The data obtained from the questionnaire was analysed with ordinary least square technique and the findings suggested that forensic accounting experts should possess auditing, investigative, fraud and legal skills to be able to deal with modern fraud. Therefore, the study recommended that accounting firms and internal auditors should be trained with scientific forensic skills to reduce fraudulent activities.




**Source: Abeki and Abubakar (2023); ACFE (2021); Oni , Ishola Oluwatosin and Oyedepo (2020)**

**Fig 1: Operational Conceptual Framework Model of Forensic Audit and Fraud Prevention of Quoted agricultural firms in Nigeria**

**Gap in Literature.**
A cursory look at the reviewed literature, extensive studies has been conducted in many countries of the world on forensic audit in fraud control. For example, Okoye et al (2020), Adesina, Erin, Ajetummobi, Ilogho and Asiriuwa (2020), Edheku and Akpoveta (2020), Uniamikogbo, Adeusi and Amu (2019), Ogiriki and Appah (2018); Sidharta and Fitriyah (2015) in Indonesia; Ogutu and Solomon (2016)in Kenya; focused on deposit money banks. Similarly, studies have been conducted on fraud in Nigeria, Onodi et al (2015); Eyisi and Ezuwore (2014), Enofe, Utomwen and Danjuma (2015) etc. were centered on deposit money and commercial banks and other firms but none was done on agricultural firms. It is against this background that this study examined the relationship between forensic audit tools and fraud prevention quoted agricultural firms in Nigeria.

This study differed from previous studies in the following ways:

i. None of the studies on Forensic audit and fraud control was done in the agricultural sector

ii. Previous studies have mixed contradictory results, so this study hopes to ascertain its own findings on the synchrony between forensic audit tools and fraud detection.

iii. This study is also based on a different time period too; visa viz its own methodology that was distinct from other studies.

Therefore, this current study examined the relationship between forensic audit and fraud prevention of quoted agricultural firms in Nigeria

## 3. METHODOLOGY

The study used a survey design to obtain information on forensic audit and fraud prevention. The use of questionnaire is more appropriate in these circumstances as it helps to provide in-depth access to the opinion of the auditors who are more concerned on the subject matter. Hence, data were collected from primary sources through a structured questionnaire distributed to the target respondents. The population of the study comprised of 85 participants of the five quoted agricultural firms traded on the floor of the Nigeria Exchange Group.

A census sampling technique was employed, and the target respondents are forensic auditors, external auditors and professional accountants in these quoted firms to provide information for the study. The reliability and validity of the research instrument was tested using the Cronbach alpha. The questionnaire was distributed to the respondents using an online survey due to the dispersed locations of the auditing firms and the collected data was analyzed using multivariate regression model via SPSS 27.

**Model Specification**

In line with the conceptual frame work and hypotheses stated earlier, data collected for this study was analyzed using a multiple regression technique as specified below: This study adopted the econometric model as put forward by Roychowdhury (2006); Cheng and Warfield (2005); (Yusuf & Abubakar, 2017). Thus, the following regression equations are the functional form of our model as given.

**Functional form of the model**:

ICM = f (PFA, RFA) …………..………………………….. (1)

EEC = f (PFA, RFA)…………..…………………………….. (2)

The above functional equations are trans-modified into mathematical form by adding constant term ($\alpha_0$, $\beta_0$ ),and slope ($\alpha_1 - \alpha_2$, & $\beta_1 - \beta_2$,) in the model below:

**Mathematical form of the model:**

ICM $= \alpha_0 + \alpha_1 PFA + \alpha_2 RFA$ …………………….............… (3)

EEC $= \beta_0 + \beta_1 PFA + \beta_2 RFA$……………….…..…….............. (4)

The above mathematical equations are trans-modified into econometric form by adding constant term ($\alpha_0$, $\beta_0$) slope ($\alpha_1 - \alpha_2$, & $\beta_1 - \beta_2$) and error term ($\varepsilon$, & $\mu$) in the model below:

**Econometric form of the Model:**

ICM $= \alpha 0 + \alpha 1 PFA + \alpha 2 RFA + \varepsilon$ ………………… (5)

EEC $= \beta 0 + \beta 1 PFA + \beta 2 RFA + \mu$ ………………… (4)

Where:

| | |
|---|---|
| ICM | =Internal Control Mechanism |
| EEC | =Effective Ethical Culture |
| PFA | = Proactive Forensic Audit |
| RFA | = Reactive Forensic Audit |
| $\alpha 0, \beta 0$, | =Constants |
| $\alpha_1 - \alpha_2$, $\beta_1 - \beta_2$ | = Coefficient of predictor variables |
| $\varepsilon$, &$\mu$ | =Error terms |

## 4. RESULTS AND DISCUSSION

This chapter presents the data collected through structured questionnaire, data analysis with the aid of Statistical Package for Social Science version 27, interpretation and discussion of findings.

**Table 1. Reliability Statistics Results**

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .976 | .9765 | 5 |

**Source: SPSS 27 Output of Research Data, 2024**

Constructs of multi-item scale were tested by Cronbach Alpha with the aid of the Statistical Package for the Social Sciences (SPSS) version 27 to measure the reliability of the data. The higher the Cronbach's alpha coefficient is, the greater the internal consistency of the items in the scale (Gliem & Gliem, 2003). Consequently, a Cronbach Alpha of 0.976 based on Standardized items suggests an indication that the research instrument's scale and the items, to a large extent, exhibit high internal consistency as shown in table above. This implies that the internal consistency of the measures used in this study can be considered good for constructs.

**Descriptive Statistics**

Descriptive statistical analysis conducted by the study included frequency distribution, mean and standard deviation.

**Table 2. Descriptive Statistics Results**

| | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|
| Proactive forensic Audit | 1.20 | 4.25 | 2.41 | 1.52 |
| Reactive forensic Audit | .59 | 4.21 | 2.11 | 1.31 |
| Sound Internal Control | .49 | 4.27 | 2.12 | 1.42 |
| Effective Ethic Culture | .07 | 2.66 | .98 | .83 |

**Source: SPSS 27 Output of Research Data, 2024**

The above table 2 indicated that the all the variables have an average of 2.41, 2.11, 2.12 and 0.98 with a minimum of 1.20, 0.59, 0.49 and 0.07 respectively. They also have standard deviation of 1.53, 1.31, 1.42 and 0.83 respectively.

**Correlation Analysis**

Pearson Product Moment correlation analysis was conducted with the aid of Statistics Package for Social Sciences (SPSS) 27 to investigate the relationship between forensic audit and fraud prevention of quoted agricultural firms in Nigeria as presented in table below.

**Table 3. Correlation Results.**

| Variables | | PFA | RFA | SIC | CEC |
|---|---|---|---|---|---|
| PFA | Pearson Correlation | | | | |
| | Sig. (2-tailed) | | | | |
| RFA | Pearson Correlation | .974** | | | |
| | Sig. (2-tailed) | .005 | | | |
| SIC | Pearson Correlation | .977** | .999** | | |
| | Sig. (2-tailed) | .004 | .000 | | |
| EEC | Pearson Correlation | .743 | .861 | .675 | |
| | Sig. (2-tailed) | .012 | .010 | .031 | |

**Source: SPSS 27 Output of Research Data, 2024**

This study adopted Cohen‟s (1998) guideline, r = 0.10 to 0.29 for a weak correlation, r =0.30 to 0.49 for a moderate correlation, and r = 0.50 to 1.0 for a strong correlation for interpreting the result of the analysis. In table 3, the correlation results of forensic audit in the dimensions of PFA (proactive forensic audit) and RFA (reactive forensic audit) revealed strong relationship with SIC(sound internal control) and EEC (effective ethical culture) as flagged by the coefficients of (r = 0.977 & r = 0.743) and (r = 0.999 & r = 0,861 respectively. This suggests that both proactive and reactive audit by the forensic auditors proved as curative remedy to fraudulent practices.

**Regression Analysis**

Multiple regression model was adopted and used for the analysis to know the relationship between the predictor and criterion variables of the study. The statistics tested for include regression equation for the variables, coefficient of determination ($R^2$ ), t-test, f-test and Durbin Watson (DW) statistics. The Statistics Package for Social Sciences (SPSS) version 27 was used to run the analysis.

**PANEL 1:** $\textbf{SIC} = \alpha_0 + \alpha_1\textbf{PFA} + \alpha_2\textbf{RFA} + \varepsilon$

**Table 4: Multivariate Regression Results of Panel 1**

| Variables | Standardized Coefficient β | t-statistic | P-value |
|---|---|---|---|
| **PFA** | 0.957 | 5.312 | 0.001 |
| **RFA** | 0.874 | 3.749 | 0.010 |

| | |
|---|---|
| | **$R^2$ = 0.87 Adj $R^2$ = 0.76 F = 12.013 (0.004)** |

*Significant at 5% (0.05) level of significance

**Source: Prepared by the Authors (2024) via SPSS 27**

**Interpretation:** The result of the multivariate regression is presented in table 4 of panel 1 explains the empirical statistical relationship between the dependent variable (sound internal control) and the independent variables. The explanatory power **$R^2$** of the regression model shows that PFA and RFA revealed strong ability to predict fraud prevention proxy – sound internal control as accounted for about 87% of the cross sectional variations in the dependent variable of **SIC**. This implies that the remaining 13**%** variation in **EPS** cannot be explained because it may be related to other variables which are not depicted in this model. The implication is that there may be number of variables which can have impacts on fraud prevention of quoted agriculture firms in Nigeria that needs to be studied. Adjusted $R^2$ tells how well the data points fit a regression line showing the percentage of variation explained only by the independent variables that actually affect the dependent variable. A value of 0.76 in this study indicates true 76% of variation in the outcome variable is explained by the predictors in the model. The F-ratio in the ANOVA tests whether the overall regression model is a good fit for the data. The table shows that the independent variables proxies statistically and significantly predict the dependent variable, F = 12.013, p (0.004) < .05 (i.e., the regression model is a good fit of the data).

The coefficients model displays positive relationship between forensic audit and fraud prevention of quoted agriculture firms in Nigeria. Furthermore, the coefficient value of (r = 0.957 & r = 0.874) for ADA & ARL means that a unit change in PFA & RFA will improve SIC by about 0.957 & 0.874) respectively. Their overall P-values (0.001, & 0.010) are all found to be statistically significant since they are less than standard alpha (0.05) level.

**PANEL 2: EEC = $\beta_0+\beta_1 PFA+\beta_2 RFA+\mu$**

**Table 5: Multivariate Regression Results of Panel 2**

| Variables | Standardized Coefficient β | t-statistic | P-value |
|---|---|---|---|
| **PFA** | 0.878 | 6.213 | 0.021 |
| **RFA** | 0.789 | 4.581 | 0.034 |
| | **$R^2$ = 0.753 Adj $R^2$ = 0.731 F = 7.152 (0.003)** | | |



*Significant at 5% (0.05) level of significance

**Source: Prepared by the Authors (2024) via SPSS 27**

**Interpretation:** The result of the multivariate regression of panel 2 presented in table 5 elucidates the empirical statistical relationship between the dependent variable (effective ethical culture) and the independent variables. The explanatory power **$R^2$** of the regression model shows that PFA & RFA revealed strong ability to predict fraud prevention proxy – effective ethical culture as they accounted for about 75% of the cross sectional variations in the dependent variable of **EEC**. This implies that the remaining 25**%** variation in **PER** cannot be explained because it may be related to other variables which are not depicted in this model. The implication is that there may be number of variables which can have impacts on fraud prevention of quoted agriculture firms in Nigeria that needs to be studied. Adjusted $R^2$ explains how well the data fit a regression line showing the percentage of variation explained only by the independent variables that actually affect the dependent variable. A value of 0.73 in this study indicates true 73% of variation in the outcome variable is explained by the predictors in the model.

The F-ratio in the ANOVA tests whether the overall regression model is a good fit for the data. The table shows that the independent variables proxies statistically and significantly predict the dependent variable, F = 7.152, P (0.003) < .05 (i.e., the regression model is a good fit of the data). The coefficients model displays positive relationship between forensic audit and fraud prevention of quoted agriculture firms in Nigeria. Furthermore, the coefficient value of (0.878 & 0.784) for PFA & RFA means that a unit change in PFA & RFA will improve EEC by about 0.878 & 0.784 respectively. Their overall P-values (0.021, & 0.034) are all found to be statistically significant since they are less than standard alpha (0.05) level.

| HO: | Null Hypotheses | Standardized Coefficients | P-Value | Relationship | Decision |
|---|---|---|---|---|---|
| **$Ho_1$** | PFA & SIC | 0.957 | 0.001 | Positive and significant | Reject |

| | | | | | |
|---|---|---|---|---|---|
| **$Ho_2$** | PFA & EEC | 0.878 | 0.021 | Positive and significant | Reject |
| **$Ho_3$** | RFA & SIC | 0.874 | 0.010 | Positive and significant | Reject |
| **$Ho_4$** | RFA & EEC | 0.789 | 0.034 | Positive and significant | Reject |

**Table 6. Summary of the Findings**

**Source: Prepared by the Authors (2024) via SPSS 27**

**Discussion of Findings**

The study examined the relationship between forensic audit and fraud prevention of agriculture firms in Nigeria. The findings of this study is discussed as follows:

**Proactive Forensic Audit and Sound Internal Control**

Forensic audit statistically relates to fraud prevention of quoted agriculture firms in Nigeria in the period of this study. Based on the hypotheses tested, it was established multivariate regression results of panel 1 in table 5 indicated that forensic audit in the perspective of proactive forensic audit had a positive and statistical significant relationship with sound internal control with (β = 0.957, P = 001). This finding has demonstrated that curtailing the fraudulent swagger of the opportunistic managers by forensic auditors could prevent and mitigate the wave of fraud of the quoted agriculture firms in Nigeria. Thus, $HO_1$ was rejected implying that proactive forensic audit will exterminate and prevent fraudulent practices in agriculture firms in Nigeria. This finding is in tandem with the findings by **Adesina, Erin, Ajetummobi, Ilogho and Asiriuwa (2020)** that studied how Forensic Audit Influence Fraud Control showed that forensic audit is a very important requirement for effectual and well-organized control of financial frauds in the Nigerian DMBs.

**Proactive Forensic Audit and Effective Ethical Culture**

Forensic audit statistically relates to fraud prevention of quoted agriculture firms in Nigeria in the period of this study. In line with the results of the hypotheses tested, it recognized that multivariate regression results of panel 2 in table 6 shown that forensic audit in the perspective of proactive forensic audit had a positive and statistical significant relationship with effective ethic culture with (β = 0.878, P = 021). This findings have suggested that reducing the fallacious profiles of the opportunistic behaviour of managers may deter and prevent fraud tendencies of the quoted agriculture firms in Nigeria. Thus, $HO_2$ was rejected suggesting that proactive forensic audit will minify fraudulent practices in agriculture firms in Nigeria This finding is in tandem with the findings by **Uniamikogbo, Adeusi and Amu (2019**) who studied forensic audit and fraud detection and prevention in Nigerian banking sectors demonstrated forensic auditing substance in fighting fraud.

**Reactive Forensic Audit and Sound Internal Control**

Forensic audit statistically relates to fraud prevention of quoted agriculture firms in Nigeria in the period of this study. The multivariate regression results of panel 1 in table 5 indicated that forensic audit in the perspective of reactive forensic audit had a positive and statistical significant relationship with sound internal control with (β = 0.874, P = 010). This finding has showcased that forensic auditors have what it takes to checkmate the deceitful prance of the opportunistic managers and this may grantee better ethical corporate business climate to prevent fraud in the quoted agriculture firms in Nigeria. Thus, $HO_3$ was rejected suggesting that reactive forensic audit mechanism will mitigate fraud menace in agriculture firms in Nigeria. This finding broadly supports with the findings by **Ukuma (2019)** that carried out a study on forensic auditing and fraud reduction in Nigeria revealed that forensic auditing significantly relates with internal control and cash management system of banks

**Reactive Forensic Audit and Effective Ethical Culture**

Forensic audit statistically relates to fraud prevention of quoted agriculture firms in Nigeria in the period of this study. The multivariate regression results of panel 2 in table 6 indicated that forensic audit in the perspective of reactive forensic audit had a positive and statistical significant relationship with effective ethical culture with (β = 0.789, P = 034). This findings have suggested that forensic auditors have the pedigree to curtail the dishonest behaviour of managers of the quoted agriculture firms in Nigeria. Therefore, $HO_4$ was rejected implying that the reactive forensic audit will result in reducing the occurrence of fraud in the Nigerian agricultural sector.This finding agrees with the findings by **Ogiriki and Appah (2018)** who investigated forensic accounting and auditing techniques in public sector fraud in Nigeria shows a significant and positive relationship with public sector fraud prevention and detection in Nigeria.

## 5. Conclusions and Recommendations

This study examined forensic audit and fraud prevention of quoted agriculture firms in Nigeria. The results suggest that proactive forensic auditors have the pedigree to curtail the fraudulent swagger of the opportunistic managers by forensic auditors could prevent and mitigate the wave of fraud of the quoted agriculture firms in Nigeria. The study also established that the presence of proactive forensic auditors may reduce the fallacious profiles of managers and thereby deter and prevent fraud tendencies of the quoted agriculture firms in Nigeria. Furthermore, the study equally showcased that the practice of reactive forensic audit mechanism would decrease fraud in the agriculture firms. From the light of the findings of this study, it was concluded that forensic audit is capable of preventing fraud in the Nigeria quoted agriculture firms. It was recommended that the quoted agriculture firms should adopt and employ the application of forensic audit in addition with the statutory external auditor to prevent deceitful prance of opportunistic managers in the organization.

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