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FORENSIC INVESTIGATION AND LITIGATION SUPPORT EFFICACY ON FRAUD PREVENTION IN PUBLIC AGRICULTURAL SECTOR IN NIGERIA

BY

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Abstract

This study examines the efficacy of forensic investigation and litigation support in fraud prevention within Nigeria's public agricultural sector. Fraud remains a pervasive issue, with significant misappropriation of agricultural funds, land acquisition fraud, and financial misrepresentation. The study employs a descriptive survey research design, utilizing structured questionnaires administered to relevant personnel in the Federal Ministry of Agriculture. Findings indicate that forensic investigation significantly influence fraud prevention by enhancing financial scrutiny and accountability, while forensic litigation support plays a lesser role in proactive fraud mitigation. The research underscores the necessity of integrating forensic accounting with advanced technological tools such as digital forensics with robust technology. Recommendations include strengthening forensic practices, enforcing stricter legal frameworks, and fostering inter-agency collaboration. Limitations of the study include sample constraints and the evolving nature of forensic technologies, suggesting further research into the integration of artificial intelligence in fraud detection.

Keywords: *Forensic Investigation, Litigation Support, Fraud Prevention, Public Agricultural Sector and Nigeria.*

1.0 Introduction

Fraud is a pervasive issue worldwide, affecting various sectors, including agriculture, where public funds, subsidies, and development projects are often misappropriated (Ademola & Alabi, 2020). In Nigeria, agriculture plays a crucial role in employment, food security, and exports (Omotesho, 2022). However, the sector remains highly vulnerable to fraud due to weak regulatory frameworks, corruption, and a lack of stringent internal controls (Akinyemi & Adeyemi, 2021). These fraudulent activities, including land acquisition fraud, resource misallocation, and financial misrepresentation, undermine food security, economic stability, and sustainable agricultural development (Umar et al., 2023). A major challenge in Nigeria's public agricultural sector is land acquisition fraud, where public officials exploit legal loopholes to seize land intended for smallholder farmers (Idris, 2020). Additionally, misappropriation of funds allocated for agricultural development, including fertilizer subsidies and rural infrastructure projects, leads to inefficiency and reduced productivity (Ogunleye & Akinbile, 2021). Corruption in government initiatives, such as the Anchor Borrowers' Program, has resulted in funds being diverted for non-agricultural purposes, further hindering sectoral growth (Abubakar & Yahaya, 2022). Similarly, fraudulent claims and the diversion of agricultural subsidies by officials and middlemen deprive farmers of essential inputs, exacerbating economic inequality (Sani & Mohammed, 2021).

Moreover, fraudulent practices extend beyond land and financial misallocation to affect the fisheries, crop farming, livestock production, and agro-processing sectors. In the fisheries industry, fraud manifests through species misrepresentation, illegal harvesting, and mislabeling, eroding consumer trust and economic stability (Obasi, 2022). Likewise, crop farming suffers from false organic certification, pesticide residue fraud, and subsidy exploitation (Ogunleye et al., 2020). Livestock production is affected by fraudulent claims regarding free-range labeling, antibiotic use, and the misallocation of development funds, while agro-processing faces issues such as ingredient adulteration, false advertising, and food safety violations (Lawal & Adebayo, 2021). These widespread fraudulent activities highlight the

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limitations of traditional auditing techniques in addressing financial crimes (Oluwatoyin & Adebisi, 2022). Given these challenges, forensic investigation plays a crucial role in detecting and preventing fraud in Nigeria's public agricultural sector (Ogbulie & Nwogwugwu, 2023). Forensic accountants utilize investigative techniques, including financial statement analysis, fraud risk assessment, and whistleblowing mechanisms, to uncover financial discrepancies and trace misappropriated funds (Gana, 2021). Notably, forensic accounting has been instrumental in exposing mismanagement in Nigeria's fertilizer subsidy program and similar fraudulent schemes across Africa, such as South Africa's Land Bank scandal (Gwamna & Mohammed, 2020).

However, forensic investigations in Nigeria face significant obstacles, including weak enforcement mechanisms, reliance on cash-based transactions, and inadequate documentation (Yusuf & Adegoke, 2022). Informal financial practices further complicate fraud detection, making it difficult to establish audit trails (Shittu, 2021). To enhance forensic investigation and litigation support efficacy, it is essential to integrate advanced technological tools such as digital payment systems, blockchain for supply chain management, and stricter regulatory oversight (Oluwatoyin et al., 2022). Addressing fraud in Nigeria's public agricultural sector requires a multi-faceted approach involving government agencies, forensic experts, and legal frameworks (Bolarinwa & Alabi, 2023). Strengthening forensic investigation, aligning it with broader risk management strategies, and fostering collaboration among regulatory bodies can significantly enhance fraud detection and prevention. Bridging the existing knowledge gap and implementing evidence-based strategies, policymakers can promote transparency, accountability, and financial integrity, ensuring the sector's sustainable growth and economic stability. The ongoing fraud issues in Nigeria's agricultural sector highlight the critical need for an in-depth exploration of forensic dispute resolution and forensic investigation's role in fraud prevention. Despite various efforts, existing regulatory frameworks and forensic mechanisms are insufficient to tackle widespread corruption and mismanagement. This study aims to examine the efficacy of forensic investigation and litigation support in detecting and preventing fraud. Additionally, to ensure better fraud prevention and sustainable growth in Nigeria's public agricultural sector.

1.1 Literature Review

1.1.1 Concept of Fraud Prevention

The advent of digital platforms for trading agricultural products and services has opened new opportunities for financial crime, especially in emerging economies like Nigeria. Fraud in the agricultural sector shares similar elements identified in the broader concept of fraud. As highlighted by Tsegba et al. (2018), these include false representation, intentional deception, reliance by the victim, and subsequent economic damage. In agriculture, a typical scenario could involve falsifying the quality of inputs such as seeds or fertilizers to fraudulently claim subsidies or loans. The victim, typically the government or financial institutions, relies on the misrepresented information, leading to economic losses, misallocation of resources, and disruption of the supply chain (Okpala, 2022). Preventing fraud in agriculture requires a robust framework that incorporates both detection and prevention strategies. Fraud detection can be particularly challenging in the agricultural sector due to the dispersed nature of farming activities, poor regulatory oversight, and informal trading mechanisms (Awojobi & Bekun, 2023). However, with the increasing digitization of agricultural services, there is growing potential for employing data-driven fraud detection mechanisms, including the use of blockchain technology, which ensures transparency and traceability in transactions (Musa & Ahmed, 2023). Blockchain has been praised for its ability to provide an immutable record of transactions, thus making it difficult for fraudsters to alter records and manipulate financial or product data.

Fraud prevention in agriculture also hinges on effective internal controls. For instance, mechanisms such as mandatory audits of agricultural cooperatives and firms, strict monitoring of subsidy disbursement, and the use of digital platforms for financial reporting can reduce opportunities for fraud (ACFE, 2022). Internal controls must be designed to address specific vulnerabilities in the agricultural value chain, including the risk of collusion between farmers and officials in the misappropriation of government funds intended for rural development (Wells, 2020). These controls include segregation of duties, frequent audits, and establishing clear authorization procedures for the disbursement of funds or subsidies.

1.1.2 Concept of Forensic Investigation

According to Nortje & Bredenkamp (2020) forensic investigation is essential in the agricultural sector, where financial misconduct can lead to significant economic losses and legal repercussions. This field employs a combination of forensic accounting, auditing techniques, and investigative methodologies to uncover fraud, misappropriation of funds, and other illegal activities that may compromise the integrity of agricultural enterprises. In agriculture, stakeholders may falsify financial documents to secure loans, attract investors, or evade taxes. Forensic accountants play a crucial role in scrutinizing these records for authenticity and compliance with regulatory standards (Hoffman, 2022). Forensic investigations in agriculture must adhere to established legal frameworks and best practices. The documentation of financial transactions should be timely, comprehensive, and compliant with relevant regulations to ensure admissibility as evidence in legal proceedings (Alshurafat et al., 2021). The integration of forensic accounting principles with agricultural best practices enhances the credibility of investigations and supports the prosecution of offenders.

This involves the unauthorized use or theft of funds meant for agricultural purposes. Forensic investigators can analyze financial records to identify discrepancies and track the flow of funds to pinpoint instances of embezzlement or mismanagement (Alshurafat et al., 2021). The theft of crops, livestock, or equipment can severely impact agricultural productivity. Forensic investigations can help identify patterns

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of theft through inventory audits and financial analysis (Nortje & Bredenkamp, 2020). Many agricultural businesses rely on government grants and subsidies. Fraudulent applications or misrepresentation of facts to secure these benefits can be uncovered through forensic investigations, ensuring that funds are used appropriately (Tiwari & Debnath, 2021). With the advancement of technology, forensic investigators in the agricultural sector can utilize sophisticated tools for data analysis and evidence gathering. Digital forensics plays a critical role in tracing electronic transactions, emails, and other forms of communication that may reveal fraudulent activities (Lawal et al., 2022). For example, analyzing financial software and databases can help uncover hidden transactions or discrepancies in reported data.

1.1.3 Concept of Forensic Litigation Support

Litigation support or litigation assistance employs accounting and auditing methods to evaluate economic losses resulting from litigation, focusing primarily on the quantification of these losses (Özcan, 2019). When an individual, company, or organization engages in a lawsuit whether they initiated it or are responding to it they are participating in the "litigation" process. Litigation refers to the method of using a civil lawsuit to resolve a dispute. It involves a series of actions taken to address a conflict, which can occur through mediation or court trials (Bassey, 2018). Litigation support enhances legal practitioners' capacity to incorporate laws and guidelines that govern forensic accounting practices and methodologies. Dada et al. (2013) assert that forensic accounting provides an analysis suitable for court proceedings, forming the basis for discussion, debate, and ultimately dispute resolution. The primary goal of litigation support is to utilize technology to coordinate, interpret, and present case materials effectively. By facilitating the constructive acquisition, storage, organization, validation, evaluation, and dissemination of data, litigation support technology addresses existing deficits in case preparation (Dada & Jimoh, 2020). While no single technology can solve all challenges, litigation support teams can evaluate various options to determine the most appropriate solutions for specific cases.

In the agricultural sector, litigation support becomes crucial in addressing disputes related to financial misconduct, fraud, and regulatory compliance. For instance, allegations of fraud may arise concerning agricultural subsidies, insurance claims, or misrepresentation of produce quality. Litigation support specialists can employ forensic accounting techniques to quantify financial damages stemming from these disputes, ensuring that legal arguments are grounded in robust financial analysis (Bassey & Ahonkhai, 2017). Effective communication among all parties involved in a case is essential for successful litigation support. A common understanding of terminology and processes ensures that everyone is aligned regarding data management and analysis. This cohesion facilitates more manageable data handling and supports the legal team in pursuing the case effectively (Tapang & Ihendinihu, 2020).

1.1.4 Global Best Practice of Forensic Accounting

Prosecution support and investigative financial reporting play crucial roles in legal proceedings, particularly in cases involving financial crimes. These processes help prosecutors gather evidence and build strong cases against alleged perpetrators. According to Smith (2021), prosecution support involves providing legal teams with detailed analyses of financial data to uncover discrepancies or fraudulent activities. This support often includes forensic accounting techniques to trace money trails and identify irregular transactions (Jones, 2019). Investigative financial reporting, on the other hand, focuses on the comprehensive documentation and analysis of financial records to uncover potential evidence of financial misconduct or fraud (Brown & Johnson, 2020). Employing these methods, investigators can identify patterns of suspicious behaviour and provide prosecutors with the necessary evidence to pursue legal action against offenders (Smith, 2021).

1.1.5 Empirical Studies Review and Development of Hypothesis

1.1.5.1 Forensic Investigation on Fraud Prevention

Okoye et al. (2019) examined the role of forensic investigation strategies in combating fraudulent activities in the Anambra State public sector. Using a cross-sectional survey design, the study selectively sampled 250 individuals, comprising investigators, lawyers, and employees from Finance, Accounts, and Audit divisions of public organizations. Although the study did not specify the total population, it provided valuable insight into the selected sample. The researchers found that no universally accepted forensic investigative procedures exist for preventing fraud in the public sector. Despite this, a significant positive relationship was discovered between forensic investigation practices and fraud detection in government operations.

Eze (2019) explored the impact of forensic investigation and fraud prevention in the Nigerian public sector. The study utilized a descriptive survey method, combined with z-tests for hypothesis testing. The research sample comprised a diverse group of public sector employees, though the total population and sample size were not explicitly mentioned. The study identified a significant relationship between forensic investigation and fraud prevention in the public sector. Recommendations were made for enhancing forensic investigation techniques, particularly within senior management, to improve accountability. In the context of the agricultural sector, the findings are highly relevant, as fraud in agricultural finance often occurs at the executive level, where decision-making about fund allocation takes place.

In the agricultural sector, Ajayi et al. (2023) conducted a study on the effectiveness of forensic accounting in detecting financial mismanagement in agricultural subsidies in Nigeria. Their research employed a descriptive survey design and analyzed responses from agricultural officers and accountants across various states. Although the total population was not disclosed, the sample size used was robust enough to ensure generalizability. The results revealed a strong correlation between the implementation of forensic accounting practices and the reduction of fraud in agricultural funding. This

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reinforces the importance of forensic investigation in the agricultural sector, especially in subsidy programs that are prone to exploitation. The findings underline the necessity for comprehensive forensic investigation techniques to be applied to agricultural finance, where mismanagement could jeopardize food security and rural development.

Ile and Odimmega (2018) examined how forensic analysis methods were utilized to prevent fraud in higher education institutions. The study, which included financial managers in its sample, suggested that these professionals heavily depend on forensic procedures to ensure financial integrity. While the total population and sample size were not specified, the results showed that the adoption of forensic methods played a crucial role in preventing fraud. This reliance on forensic procedures is also evident in the agricultural sector, as Adeola and Ojo (2022) found that agricultural financial managers increasingly use forensic methods to safeguard against misappropriation of funds. Their research revealed a significant variance in the effectiveness of forensic practices across different agricultural institutions, highlighting the need for more uniform and sector-specific forensic approaches. Adopting these practices, agricultural institutions can better manage financial resources and reduce the risk of mismanagement. Based on the above. *H01: Forensic investigation has significant effect on fraud prevention in public agricultural sector of Nigeria is formulated.*

1.1.5.2 Forensic Litigation Support and Fraud Prevention

Bassey's (2018) study focused on microfinance institutions in Cross River State. The population of this study included all microfinance institutions in the state, with a sample size of 150 employees from five selected microfinance institutions. A quantitative analysis approach was used, where data was gathered from primary sources through structured questionnaires, and secondary sources through relevant documents. The analysis was performed using multiple regression, and the results showed that forensic investigation and litigation support had a negative impact on fraud, meaning that increased participation in forensic litigation reduces fraud. This finding implies that forensic experts provide crucial support in detecting and mitigating fraudulent activities within financial institutions. In the agricultural sector, especially in agro-financing and subsidies, forensic litigation support could play a similar role by mitigating fraud in subsidy allocation and the misappropriation of funds meant for farmers.

Dada and Jimoh (2020) examined the Nigerian public sector, specifically focusing on financial crimes. Their study population consisted of employees in various government ministries, with a sample size of 200 respondents selected through simple random sampling. They employed a survey research design with questionnaires and unstructured interviews to collect data, which was analyzed using linear regression. The hypothesis, tested at a 5% significance level, revealed that forensic litigation support had a substantial but negative impact on financial crimes in the Nigerian public sector, suggesting that increased litigation support services reduce the occurrence of such crimes. In Nigeria's agricultural sector, financial crimes such as money laundering, misappropriation of agricultural funds, and fraudulent claims for agricultural grants could be mitigated through forensic litigation support. For instance, forensic accountants could ensure that government funds meant for agricultural development are properly allocated and not diverted to other uses.

Okoye and Ndah (2019) focused on fraud detection in manufacturing firms in Nigeria. The population included employees in the accounting departments of selected manufacturing firms, and the sample size was 50 respondents across 10 firms. Data were collected using standardized questionnaires, and the analysis was conducted using the Ordinary Least Squares (OLS) method. The results indicated a statistically significant relationship between forensic litigation support and fraud detection in manufacturing firms, suggesting that these techniques effectively reduce fraud within the industry. Similarly, forensic litigation support can be critical in detecting fraud in Nigeria's agricultural sector. For example, in supply chains involving fertilizer distribution or mechanized farming equipment, forensic accountants could ensure that these resources reach their intended recipients. Fraudulent activities, such as over-invoicing and product misallocation, could be detected and addressed early with robust forensic oversight. In light with the foregoing, the below hypothesis id formulated. *H02: Forensic litigation support has significant effect on fraud prevention in public agricultural sector of Nigeria.*

1.1.6. Fraud Triangle Theory

The Fraud Triangle Theory, introduced by Cressey (1953), is instrumental in understanding the factors contributing to fraud within various sectors, including agriculture. According to this theory, three key elements must exist for fraud to occur: pressure, opportunity, and rationalization.

Pressure in the agricultural sector often stems from financial stressors, such as fluctuating market prices, rising operational costs, and the need for investment in technology or equipment. Farmers may face pressure from mounting debts due to loans for seeds, fertilizers, and machinery (Albrecht et al., 2019). For instance, agricultural producers may feel compelled to inflate crop yields or misreport production figures to secure loans or financial aid, as pressures from family expectations and community standards may further exacerbate these financial strains (Mansor & Abdullahi, 2015).

1.1.7Agricultural Innovation Systems Theory (AIST)

Agricultural Innovation Systems (AIST) emerged in the late 20th century as a framework to improve agricultural productivity and sustainability through collaboration among various stakeholders. While there isn't a single founder, the concept gained traction in the 1990s, influenced by organizations like the Consultative Group on International Agricultural Research (CGIAR) and the Food and Agriculture Organization (FAO). The term itself became widely recognized following the work of scholars like Hall et al.

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(2001) who highlighted the importance of networks, institutions, and knowledge flows in innovation processes.

1.8 Research Framework

Independent Variable **Dependent Variable**

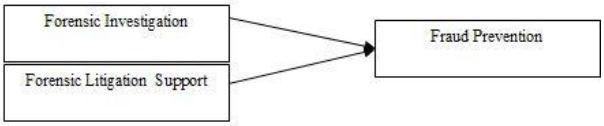

Figure 1: Conceptual framework

Source: Conceptualized by Researcher (2024)

2.1 Methodology

2.1.1 Research Design

The descriptive survey research design is appropriate for investigating fraud in the sector because it allows for a broad understanding of the characteristics and extent of fraud in various agricultural programs. The cross-sectional study approach with minimal researcher interference enables a snapshot of fraud-related issues at a specific point in time, which is critical for addressing ongoing and systemic issues in the sector.

2.1.2 Population, sample and Sampling Technique

The population for this study consisted of all staff within the Department of Finance and Accounts at the Ministry of Agriculture Headquarters in Abuja. According to the Human Resources Department, the total staff strength in the Federal Ministry of Agriculture is one thousand, eight hundred and ninety-seven (1,897) employees.

Taro Yamane (1967) formula (for calculating sample size of finite population) is adopted. In addition, the adoption of the formula increased the level of precision and the confidence level in determining the actual sample size which was necessary for the study. However, 10% of sample size was added to the sample and also administered with questionnaires to allow for attrition of the population size. Attrition is the loss of study units from a sample. Hence, 10% attrition rate of 400 is 40 and when added will give a total sample size of 440. Purposive sampling, also known as judgmental or selective sampling, is a non-random sampling technique widely employed in qualitative research to deliberately select participants based on specific criteria relevant to the research objectives (Patton, 2015). Purposive sampling facilitates the selection of participants who offer diverse perspectives and experiences relevant to fraud prevention t in agriculture.

Taro Yamane formula: $n = \frac{N}{1+N(e)^2}$

Where.

n = Sample size

N = Population Size (1897)

e = Significance level (0.05 or 5%)

Therefore, $n = \frac{N}{1+N(e)2}$

$n = \frac{1897}{1+1897(0.05)^2}$

n = 399.7

n= 400

Table 1: Sample Frame

Category	Estimated Percentage	Number of Staff in Total	Proportion in Sample Frame (400)
Forensic Experts	10%	190	10% of 400 = 40
Auditors	15%	285	15% of 400 = 60
Accountants	30%	569	30% of 400 = 120
Cashiers	25%	474	25% of 400 = 100
Storekeepers	20%	379	20% of 400 = 80
Total	**100%**	**1,897**	**400**

Source: Researcher, 2024

2.1.3 Methods of Data Collection and Analysis

Primary data was used for this study. Data was collected using 5-point Likert scale structured questionnaire. The questionnaires were administered to the respondents as sampled. This method ensures efficient dissemination of the survey instruments (Khan et al., 2020). The method of analysis for this thesis is descriptive statistics - the mean, median, maximum, and standard deviation to analyze the characteristics of the variable. The Partial Least Square Structural equation model (PLS-SEM) was used to model the regression analysis which was used testing the hypotheseses to determine if there were relationship between each of the independent variables and the dependent variable.

3.0 Results and Discussions

The data collected with the aid of a closed-ended structured questionnaire are presented in the tables below. The total number of questionnaires retrieved from the 440 administered to respondents were 423 giving a response rate of 96% while valid responses were 384 giving a valid rate of 87.3%. Hence, all further analyses were conducted using the 384 valid responses received.

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Table 2: Descriptive Statistics

Variable	Mean	Median	Min	Max	SDV	Kurtosis	Skewness
FP	3.76	4.00	1.00	5.00	1.20	0.21	-1.02
FIN	3.68	4.00	1.00	5.00	1.06	0.57	-0.92
FLS	3.61	4.00	1.00	5.00	1.23	-0.53	-0.70

Source: SmartPLS Output, 2024.

Table 2 presents the descriptive statistics for fraud prevention (FP), forensic investigation (FIN), and forensic litigation support (FLS). The mean values for all three variables are relatively high, with FP (3.76), FIN (3.68), and FLS (3.61), suggesting a generally positive perception of forensic accounting practices in the sampled firms. The median values of 4.00 further reinforce this trend, indicating that most responses are clustered around the upper scale. The standard deviations (SDV) indicate moderate variability, with FLS showing the highest dispersion (1.23), suggesting more diverse views on forensic litigation support. The skewness values are negative for all variables, implying a leftward skew in responses, meaning more firms rate these practices highly. Kurtosis values are close to zero, indicating a relatively normal distribution, except for FLS (-0.53), which exhibits slightly flatter distribution characteristics.

The findings align with prior research emphasizing the importance of forensic accounting in fraud detection and prevention. Studies such as Okoye & Gbegi (2022) and Olatunji (2023) highlight that forensic accounting techniques, particularly forensic investigation and litigation support, significantly enhance fraud risk management. The negative skewness suggests that while firms generally adopt these practices, there are still gaps that might require further improvements. The moderate standard deviations imply differences in implementation effectiveness across firms, consistent with studies emphasizing firm-specific factors in forensic accounting adoption (Adebayo et al., 2023). These results underscore the growing recognition of forensic accounting tools in combating financial fraud. However, the variability suggests the need for more standardized forensic practices and policy-driven enforcement to enhance consistency in fraud prevention strategies.

Table 3: Reliability of study scale

S/N	Variables	Items	Factor Loadings	Cronbach Alpha	Composite Reliability	Average Variance Extracted (AVE)	No of Items
1	**Fraud Prevention (FP)**	FP1	0.756	0.899	0.926	0.716	5
		FP2	0.737				
		FP3	0.773				
		FP4	0.781				
		FP5	0.791				
2	**Forensic Investigation (FI)**	FIN1	0.832	0.882	0.914	0.679	5
		FIN2	0.854				
		FIN3	0.843				
		FIN4	0.802				
		FIN5	0.787				
3	**Forensic Litigation Support (FLS)**	FLS1	0.878	0.915	0.937	0.747	5
		FLS2	0.874				
		FLS3	0.869				
		FLS4	0.834				
		FLS5	0.866				

Source: SmartPLS Output, 2024

Table 3 presents the reliability analysis of the study constructs: Fraud Prevention (FP), Forensic Investigation (FI), and Forensic Litigation Support (FLS). The reliability indicators—Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE)—demonstrate strong internal consistency and construct validity. Cronbach's Alpha: All values exceed the 0.70 threshold (Nunnally & Bernstein, 1994), confirming internal reliability. FLS (0.915) shows the

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highest reliability, followed by FP (0.899) and FI (0.882). Composite Reliability (CR): All constructs have CR values above 0.70, ensuring overall scale reliability. Average Variance Extracted (AVE): AVE values surpass the minimum 0.50 threshold (Fornell & Larcker, 1981), indicating strong convergent validity. The findings suggest that the study constructs are well-defined and reliable. The high factor loadings (above 0.70) indicate that the measured items effectively capture their respective constructs. Prior studies (Othman et al., 2022; Enofe et al., 2023) have emphasized that forensic accounting tools, including fraud prevention and forensic investigation, enhance audit quality and financial integrity. Additionally, forensic litigation support plays a critical role in legal dispute resolution (Botes & Saadeh, 2021). Thus, the strong reliability and validity of these measures reinforce their applicability in forensic accounting research, particularly in combating financial fraud and enhancing corporate governance.

Table 4: Correlation Matrix Using HTMT Criterion

Variables	FP	FIN	FLS
FP	1.000		
FIN	0.365	1.000	
FLS	0.451	0.342	1.000

Source: SmartPLS Output, 2024

The HTMT values in Table 4 indicate the discriminant validity among Fraud Prevention (FP), Forensic Investigation (FIN), and Forensic Litigation Support (FLS). According to Henseler et al. (2015), HTMT values below 0.90 suggest adequate discriminant validity, confirming that these constructs are empirically distinct. The findings show moderate correlations among the variables, with FP and FLS having the highest association (0.451), suggesting that strong fraud prevention mechanisms often integrate forensic litigation support. Conversely, FIN and FLS exhibit the lowest correlation (0.342), indicating that forensic investigation may function somewhat independently of litigation support. These results align with prior studies (e.g., Zainudin & Hashim, 2022; Adegbite et al., 2023), which highlight that effective fraud prevention strategies enhance forensic litigation efficiency. The implications suggest that organizations should strengthen forensic accounting mechanisms to reinforce audit quality and regulatory compliance.

Table 4.3 presents the Heterotrait-Monotrait Ratio (HTMT) Criterion, a pivotal tool in assessing the discriminant validity of latent constructs in structural equation modeling (SEM). In this study,

3.1 Test of Hypotheses

Table 5 shows the path coefficient of the regression results using SmartPLS. This is the result for testing the four hypotheses of the study.

Table 5: Path Coefficient of the Model

Hypotheses	Beta	T Statistics	P Val.	Decision	f^2
H_{01}: *Forensic Investigation -> Fraud Prevention*	0.206	3.324	0.001	Accepted	0.051
H_{02}: *Forensic Litigation Support -> Fraud Prevention*	0.090	1.177	0.239	Rejected	0.010

Source: SmartPLS Output, 2024

Table 5 presents the path coefficients, significance levels, and effect sizes (f^2) for the relationships between forensic investigations (FIN), forensic litigation support (FLS), and fraud prevention (FP).

H01: Forensic Investigation (FIN) → Fraud Prevention (FP)

The path coefficient (β = 0.206) is positive and statistically significant (T = 3.324, p = 0.001). This finding suggests that FIN has a meaningful impact on FP, indicating that forensic investigation techniques contribute significantly to fraud prevention. The effect size (f^2 = 0.051) suggests a small to moderate impact.

H02: Forensic Litigation Support (FLS) → Fraud Prevention (FP)

The path coefficient (β = 0.090) is positive but not statistically significant (T = 1.177, p = 0.239). This implies that FLS does not have a significant effect on FP, meaning that litigation support services alone may not be an effective deterrent to fraud. The effect size (f^2 = 0.010) indicates a negligible impact. The findings align with recent studies suggesting that forensic investigation is a proactive mechanism for fraud prevention, as it provides early detection and deterrence (Owolabi & Badejo, 2023; Adetoso & Ibanichuka, 2022). Conversely, the non-significance of FLS aligns with prior studies indicating that litigation support is more reactive, becoming effective only after fraud has occurred (Ibrahim & Sanni, 2021). These results emphasize the need for organizations to strengthen forensic investigation mechanisms rather than relying solely on litigation support for fraud mitigation. Future research may explore the integration of both forensic approaches for more effective fraud prevention strategies.

Table 6: R^2 and Predictive Relevance of the Model

Endogenous Variables	R^2	Q^2 (=1-SSE/SSO)	P Val.
Fraud prevention	0.803***	0.801	0.000

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Source: SmartPLS Output, 2024

The predictive sample reuse technique (Q^2) can also effectively show predictive relevance (Chin et al., 2008). Based on the blindfolding procedure, Q^2 shows how well data can be reconstructed empirically using the model and the PLS parameters. In this thesis, Q^2 was obtained using cross-validated redundancy procedures. As a guideline, Q^2 values should be larger than zero for a specific endogenous construct to indicate predictive accuracy of the structural model for that construct. As a rule of thumb, Q^2 values higher than 0, 0.25, and 0.5 depict small, medium, and large predictive relevance of the PLS-path model, whereas a Q^2 less than zero means the model lacks predictive relevance. As shown in table 4.5, Q^2 for both endogenous variables indicate large predictive relevance.

3.2 Collinearity Test

In addition to assessing the structural relationships, collinearity was examined to make sure it does not bias the regression results. This was done using the Variance Inflation Factor (VIF). VIF values above 5 are indicative of probable collinearity issues among the predictor constructs, but collinearity problems can also occur at lower VIF values of 3 to 5 (Becker et al. 2013). Ideally, the VIF values should be close to 3 or lower. If collinearity is a problem, a frequently used option is to create higher order models that can be supported by theory (Hair et al., 2016).

Table 7: Inner VIF Values of the Model

Variables	Performance
Forensic investigation	3.047
Forensic Litigation Support	2.076

Source: SmartPLS Output, 2024

From table 7, none of the VIF values is close to 5 which shows that there are no indications of probable collinearity issues among the predictor constructs for this study.

3.3 Summary of the Study

The research investigates forensic investigation and litigation support's effectiveness in fraud prevention within Nigeria's public agricultural sector. The study identifies prevalent fraudulent practices, including subsidy fraud, land misappropriation, and financial mismanagement. A descriptive survey design was employed, with a sample drawn from the Ministry of Agriculture's finance and accounting departments. Data analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM) revealed that forensic investigation significantly enhances fraud prevention, whereas litigation support is more reactive than preventive. The study highlights the need for robust forensic mechanisms and regulatory reforms.

3.4 Conclusion

Forensic investigation plays a vital role in fraud prevention within Nigeria's public agricultural sector by ensuring financial accountability and detecting fraudulent activities. Litigation support, while beneficial, is not as effective in preventing fraud but remains crucial in legal proceedings. The study emphasizes the importance of integrating forensic accounting into national anti-corruption strategies and leveraging digital tools to improve fraud detection mechanisms.

3.5 Recommendations

i. Strengthen forensic investigation mechanisms by training personnel in advanced forensic accounting techniques.
ii. Implement stricter legal frameworks to ensure timely prosecution of fraud cases.
iii. Integrate digital forensic tools, such as blockchain, to enhance transparency in financial transactions.
iv. Encourage inter-agency collaboration among regulatory bodies to improve fraud detection and reporting.
v. Enhance public awareness and whistleblowing mechanisms to mitigate fraudulent activities within the agricultural sector.

3.6 Limitations & Suggestions for Further Studies

This study is limited by its focus on the Ministry of Agriculture, which may not fully represent other agencies involved in agricultural finance. Additionally, the evolving nature of forensic technologies necessitates ongoing research. Future studies should explore the integration of artificial intelligence and machine learning in forensic investigations, as well as comparative analyses across multiple sectors to establish best practices for fraud prevention.

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