

Forensic accounting techniques and financial crime detection and prevention: evidence from Nigeria's economic and financial crimes commission

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Abstract

Purpose: This study examines the effect of forensic accounting techniques on financial crime detection and prevention in Nigeria's Economic and Financial Crimes Commission (EFCC), focusing on data analytics, digital forensics, and forensic document examination.

Methodology: The study adopted a quantitative cross-sectional survey design. Data were collected from EFCC personnel involved in Investigation, Forensic Accounting, Intelligence, Audit, and Legal/Prosecution functions using a structured five-point Likert-scale questionnaire. Of the 157 questionnaires administered, 152 were retrieved, two were excluded, and 150 valid responses were analysed. The data were analysed using descriptive statistics and Partial Least Squares Structural Equation Modelling (PLS-SEM) with SPSS 29 and SmartPLS 4.

Results and conclusion: The findings revealed that data analytics had a significant positive effect on financial crime detection but no statistically significant effect on prevention. Digital forensics and forensic document examination had significant positive effects on both financial crime detection and prevention. The study concludes that forensic accounting techniques contribute differently to financial crime control, with their effectiveness depending on the specific control outcome examined.

Implication of findings: The findings highlight the need for the EFCC to strengthen its use of digital forensics and forensic document examination while sustaining data analytics capabilities for financial crime detection. They also provide empirical evidence to guide institutional capacity development and the targeted deployment of forensic accounting techniques for financial crime control.

Keywords: Forensic accounting techniques, Financial crime detection, Financial crime prevention

1. Introduction

The increasing digitalization of financial activities has transformed financial crimes and the evidence available for investigation. Financial transactions now generate extensive electronic records across banking platforms, digital payment systems, organizational databases and communication channels, while financial misconduct may involve concealed transaction relationships, manipulated documentation and electronically stored evidence. These developments have increased the need for investigative approaches strong enough to analyse complex financial information and extract reliable evidence from digital and documentary sources (Akinbowale et al., 2020; Association of Certified Fraud Examiners [ACFE], 2024)

Forensic accounting has consequently become an important component of financial crime control because it integrates accounting expertise with investigative, analytical and evidential procedures. Rather than treating forensic accounting as a single capability, this study focuses on three techniques: data analytics, digital forensics and forensic document examination, which address different but complementary sources of evidence. Data analytics facilitates the identification of anomalies, relationships and suspicious transaction patterns; digital forensics enables the identification, preservation and examination of electronically stored evidence; while forensic document examination assists in identifying falsification, alteration and inconsistencies in financial and supporting records (Casey, 2011; Kapo et al., 2024; Kranacher & Riley, 2020).

These techniques of effectiveness may differ across financial crime control outcomes. Financial crime detection involves identifying transactions, records, patterns or evidence indicating that misconduct has occurred, while prevention emphasizes proactive monitoring, early identification of vulnerabilities and measures intended to reduce opportunities for financial misconduct. Although stronger detection may contribute to prevention by increasing the likelihood that misconduct will be discovered, a technique effective in uncovering an existing offence may not necessarily exert an equivalent preventive effect. This distinction is consistent with Deterrence Theory, which suggests that the perceived likelihood and consequences of detection influence decisions to engage in unlawful behaviour (Becker, 1968). Forensic capabilities that increase the probability of detecting concealed misconduct may therefore perform both detective and deterrent functions.

Despite the growing application of forensic accounting in financial crime control, important practical and empirical problems remain regarding the effectiveness of specific forensic techniques in Nigeria. Financial crimes increasingly involve complex transaction patterns, electronic records and manipulated documentation, requiring enforcement institutions to deploy analytical, digital and documentary capabilities capable of identifying and responding to such misconduct. However, the availability or application of these techniques does not necessarily mean that they contribute equally to financial crime detection and prevention. For an enforcement institution such as the Economic and Financial Crimes Commission (EFCC), limited evidence on the relative contribution of individual forensic techniques creates a practical concern regarding which capabilities should be strengthened and how forensic resources should be deployed across detective and preventive functions.

Empirically, existing Nigerian studies generally support the role of forensic accounting to fraud detection and prevention (Olaniyan et al., 2021; Ogbaini et al., 2024), but important limitations remain. Much of the literature examines forensic accounting as a broad or composite construct, thereby obscuring the independent effects of specific techniques such as data analytics, digital forensics and forensic document examination. Detection and prevention are also frequently incorporated into broader measures of fraud control despite representing distinct control outcomes. Furthermore, much of the Nigerian evidence comes from commercial banks, businesses, ministries, departments and agencies rather than specialized financial crime enforcement institutions. Consequently, there remains insufficient empirical evidence on whether these specific forensic accounting techniques demonstrate different effects on financial crime detection and prevention within the EFCC. This empirical and institutional gap provides the motivation for the present study.

The Economic and Financial Crimes Commission (EFCC) provides an appropriate institutional setting for addressing this gap. Established with statutory responsibility for investigating and combating economic and financial crimes in Nigeria, the Commission routinely encounters complex financial transactions, electronic information and documentary evidence in carrying out its mandate (Federal Republic of Nigeria, 2004). Evidence on the relative effectiveness of specific forensic techniques within the EFCC is therefore relevant to decisions about analytical capability, digital forensic infrastructure, specialist expertise, and the allocation of investigative resources.

The main objective of this study is to examine the effects of forensic accounting techniques on financial crime detection and prevention within Nigeria's Economic and Financial Crimes Commission (EFCC). Specifically, the study seeks to:

- i. Examine the effect of data analytics on financial crime detection and prevention within the EFCC;

- ii. Determine the effect of digital forensics on financial crime detection and prevention within the EFCC; and
- iii. Assess the effect of forensic document examination on financial crime detection and prevention within the EFCC.

In line with these objectives, the study tests the effects of each forensic accounting technique separately on financial crime detection and financial crime prevention.

2. Literature review

Forensic Accounting Techniques and Financial Crime Control

Forensic accounting combines accounting, auditing, investigative and evidential procedures to identify and examine suspected financial misconduct. Its investigative orientation distinguishes it from conventional auditing by extending financial examination of suspicious transactions, identifying of deliberate manipulation and developing of evidence that may support investigative or legal proceedings (Casey, 2011; Kranacher & Riley, 2020; Wells, 2014). Increasing digitalization has further expanded its relevance as financial investigations increasingly involve large transaction datasets, electronically stored information and digital and documentary evidence.

Financial crime control is examined through two distinct outcomes: detection and prevention. Detection means identifying transaction records, relationships or evidence indicating actual or suspected financial misconduct. Prevention, by contrast, involves proactive monitoring, early identification of vulnerabilities and measures intended to reduce opportunities or discourage financial misconduct (Wells, 2014). Forensic accounting techniques can contribute to both outcomes: data analytics can reveal suspicious financial patterns and support continuous monitoring; digital forensics can uncover electronic evidence and expose technology-related vulnerabilities; and forensic document examination can identify documentary manipulation while strengthening scrutiny of financial records. However, because detection and prevention represent different control functions, the effectiveness of one outcome does not necessarily mean an equivalent effect on the other.

Conceptual Framework

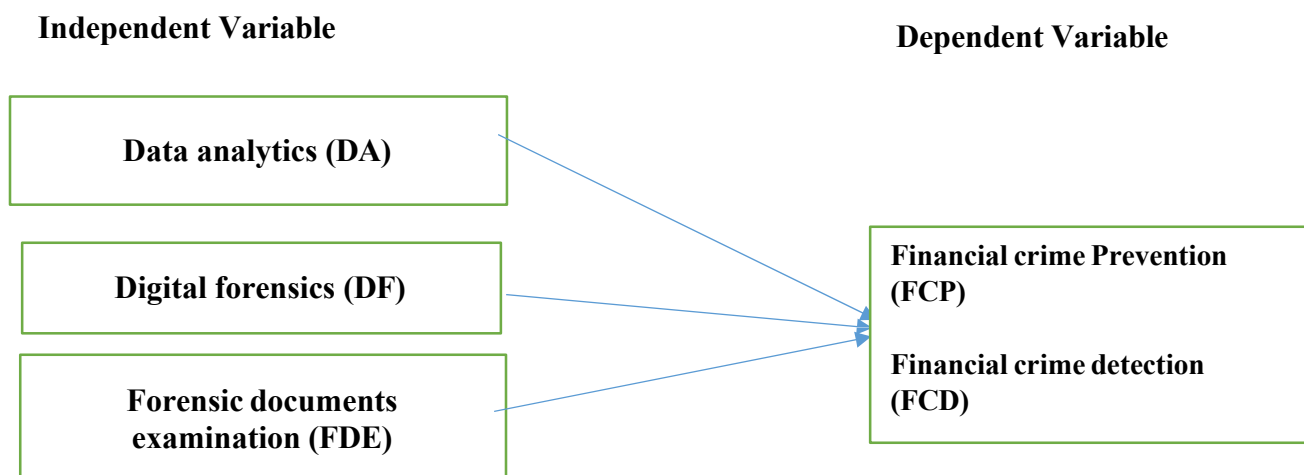


Figure 1: Conceptual Framework of the Study
Authors Compilation (2026)

The conceptual framework proposes that data analytics, digital forensics and forensic document examination influence two distinct financial crime control outcomes: detection and prevention. The three forensic accounting techniques constitute the independent variables, while financial crime detection and financial crime prevention constitute the dependent variables. Consistent with Deterrence Theory, forensic capabilities that increase investigative visibility and the likelihood of discovering misconduct are expected to contribute directly to detection and potentially strengthen prevention through enhanced monitoring and increased perceived risk of discovery. The relationships examined are presented in Figure 1.

Theoretical Framework

The study is anchored on Deterrence Theory, particularly Becker's (1968) economic analysis of crime. The theory proposes that offending decisions are influenced by the expected benefits and costs of unlawful behaviour, including the perceived probability of detection and resulting consequences. Where the likelihood of discovery is high, the expected risk of misconduct increases and may discourage offending

This perspective provides a theoretical explanation for the detective and preventive roles of forensic accounting. Data analytics can increase the likelihood that unusual financial patterns will be identified; digital forensics can expose electronically mediated activities; and forensic document examination can reveal falsified or manipulated records. These capabilities strengthen investigative visibility and may increase both the actual and perceived probability of detecting financial misconduct. Consequently, forensic accounting techniques may contribute directly to detection while supporting prevention through enhanced monitoring and deterrence. Because the three techniques operate through different mechanisms, however, their effects on detection and prevention may vary.

Empirical Review

Empirical studies generally indicate that forensic accounting contributes to the detection and prevention of financial misconduct, although the magnitude and nature of the effects differ by techniques, institutional setting and measures of fraud control. Akinbowale et al. (2020) demonstrated the relevance of forensic accounting techniques in combating economic crime, highlighting the increasing importance of technology-supported approaches in responding to sophisticated financial misconduct. Within the Nigerian public sector, Olaniyan et al. (2021) found that forensic accounting significantly contributed to fraud detection and prevention across ministries, departments and agencies. Similarly, Ogbaini et al. (2024) reported that forensic accounting strengthened fraud detection and prevention in the Nigerian public sector. These findings provide broad evidence of the usefulness of forensic accounting but offer limited insight into whether individual forensic techniques contribute differently to specific financial crime control outcomes.

Evidence relating specifically to technology-based techniques further demonstrates the growing role of analytical and digital capabilities in fraud control. Ofoje and Aggreh (2023) examined computerized forensic investigation techniques and fraud detection in the Nigerian public sector and reported that computerized forensic procedures were relevant to detecting fraudulent activities. Kapo et al. (2024) similarly highlighted the increasing application of data analytics, including data mining, machine learning and big-data techniques, in forensic accounting investigations. These approaches facilitate the examination of large volumes of financial information and the identification of anomalies and relationships that may be difficult to detect through conventional procedures. Oluyide (2025), however, found that the effects of individual forensic techniques on electronic fraud mitigation in Nigerian deposit money banks were not uniform, suggesting that the effectiveness of forensic techniques may depend on the particular technique and institutional context examined.

Recent evidence published in the *FUDMA Journal of Accounting and Finance Research (FUJAFR)* provides further support for examining forensic accounting techniques separately. Adamu et al. (2026) investigated Benford's Law, data mining and computer-assisted audit techniques in relation to occupational fraud in Calabar Municipal Council. Their study provides evidence on the application of specific analytical and technology-assisted techniques rather than treating forensic accounting solely as an aggregate construct. The study is particularly relevant because data mining and computer-assisted procedures demonstrate how technology-supported analysis can contribute to fraud control in a public-sector environment. Nevertheless, its focus on occupational fraud within a municipal council differs from the specialized financial crime enforcement context of the EFCC.

Ogar et al. (2026) examined forensic accounting techniques and money-laundering detection among listed commercial banks in Nigeria, focusing on financial statement analysis, data mining and digital analysis, fraud investigation and transaction tracing. Their emphasis on money-laundering detection demonstrates the relevance of analytical and investigative forensic techniques to identifying financial misconduct. However, the study was situated within the commercial banking sector and concentrated on detection rather than simultaneously distinguishing detection from prevention. Consequently, its institutional setting and outcome specification differ from the present study, which examines both financial crime detection and prevention within a statutory anti-graft institution.

More directly within the Nigerian public sector, Oboh et al. (2026) investigated forensic accounting techniques and fraud control and examined the moderating role of financial inclusion. Their study considered specific forensic techniques, including data mining, ratio analysis, trend analysis and the network method, thereby reinforcing the argument that forensic accounting consists of distinct techniques whose contributions to fraud control can be empirically examined. Although the study advances Nigerian public-sector evidence, its techniques and conceptualization of fraud control differ from the present study's focus on data analytics, digital forensics and forensic document examination and its separation of financial crime detection from prevention.

Evidence from other Nigerian settings also supports the importance of distinguishing institutional contexts. Kankpang et al. (2024) reported significant relationships between forensic accounting practices and fraud prevention and detection in Nigerian commercial banks. While banking-sector evidence demonstrates the relevance of forensic accounting to organizations exposed to financial misconduct, commercial banks primarily operate internal fraud-risk and compliance systems, whereas the EFCC has statutory investigative and enforcement responsibilities for economic and financial crimes. Findings derived from banks or conventional public institutions may therefore not fully explain how individual forensic capabilities operate within a specialized financial crime enforcement institution.

Taken together, the empirical literature establishes that forensic accounting can contribute to fraud and financial crime control but reveals important unresolved issues. First, many studies examine forensic accounting broadly or focus on techniques different from data analytics, digital forensics and forensic document examination, leaving limited comparative evidence on these three capabilities. Second, detection and prevention are frequently treated jointly as fraud control rather than examined as distinct outcomes, despite the possibility that a technique that is effective in identifying misconduct may not exert an equivalent preventive effect. Third, Nigerian evidence remains concentrated in commercial banks, ministries, departments, agencies and other organizational settings, with limited technique-specific evidence from specialized anti-graft institutions. The present study addresses these gaps by examining the separate effects of data analytics, digital forensics and forensic document examination on financial crime detection and prevention within the EFCC.

Research Hypotheses

Based on the theoretical arguments and empirical evidence reviewed, the following null hypotheses are formulated:

H01: Data analytics has no significant effect on financial crime detection within the Economic and Financial Crimes Commission.

H02: Data analytics has no significant effect on financial crime prevention within the Economic and Financial Crimes Commission.

H03: Digital forensics has no significant effect on financial crime detection within the Economic and Financial Crimes Commission.

H04: Digital forensics has no significant effect on financial crime prevention within the Economic and Financial Crimes Commission.

H05: Forensic document examination has no significant effect on financial crime detection within the Economic and Financial Crimes Commission.

H06: Forensic document examination has no significant effect on financial crime prevention within the Economic and Financial Crimes Commission.

3. Methodology

Research Design and Participants

The study adopted a quantitative cross-sectional survey design to examine the effects of data analytics, digital forensics and forensic document examination on financial crime detection and prevention within Nigeria's Economic and Financial Crimes Commission (EFCC). Respondents were drawn from relevant operational functions of the Commission, including Investigation, Forensic Accounting, Intelligence, Audit and Legal/Prosecution, whose responsibilities provide direct or supporting exposure to financial crime investigation and forensic processes.

Research Instrument and Measurement

Primary data were collected using a structured questionnaire containing multiple items measuring the study constructs. Respondents were recorded on a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. Although the broader study measured additional forensic accounting techniques and financial crime control dimensions, the present article is restricted to Data Analytics (DA), Digital Forensics (DF) and Forensic Document Examination (FDE) as the exogenous constructs and Financial Crime Detection (FCD) and Financial Crime Prevention (FCP) as the endogenous constructs.

Data analytics measured the application of analytical procedures for financial information, evaluating and identifying suspicious patterns and irregularities. Digital forensics captured procedures for identifying, preserving, examining and interpreting stored evidence scientifically while forensic document examination measured procedures for identifying manipulation and inconsistencies in financial and supporting documentation. Financial crime detection assessed the capacity to identify suspected financial misconduct, whereas financial crime prevention captured proactive control and the reduction of opportunities for financial offences.

Construct validity and reliability were assessed using indicator loadings, Cronbach's alpha, composite reliability (CR), average variance extracted (AVE), the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio. Indicator loadings and reliability coefficients of 0.70 and above were considered satisfactory, while AVE values of 0.50 and above were used to establish convergent validity.

Model Specification

The study estimated separate structural models for financial crime detection and financial crime prevention as follows:

Model 1: Financial Crime Detection

$$FCD = \beta_0 + \beta_1 DA + \beta_2 DF + \beta_3 FDE + \varepsilon$$

Model 2: Financial Crime Prevention

$$FCP = \beta_0 + \beta_1 DA + \beta_2 DF + \beta_3 FDE + \varepsilon$$

Where FCD = Financial Crime Detection; FCP = Financial Crime Prevention; DA = Data Analytics; DF = Digital Forensics; FDE = Forensic Document Examination; β_0 = intercept; β_1 - β_3 = structural path coefficients; and ε = error term.

Data Analysis and Ethical Considerations

Data were analysed using SPSS Version 29 and SmartPLS 4. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the data. Partial Least Squares Structural Equation Modelling (PLS-SEM) was utilized to assess the measurement and structural models. Structural-model assessment included path coefficients (β), coefficients of determination (R^2), predictive relevance (Q^2), and bootstrapping procedures.

Participation was voluntary; respondents were informed of the academic purpose and confidentiality of the information supplied was maintained. Finally, the researcher sought permission from the institute before administering the questionnaire.

4. Results and discussion

Preliminary Data Screening and Response Profile

Table 1: Demographic Profile of Respondents (N = 150)

Variable	Category	Frequency	Percentage
Gender	Male	118	78.7
	Female	32	21.3
Qualification	PhD	49	32.7
	Others	38	25.3
	BSc/HND	34	22.7
	MSc/MBA	29	19.3
Years of Experience	16 years and above	43	28.7
	1-5 years	39	26
	11-15 years	36	24
	6-10 years	32	21.3
Department	Audit Unit	37	24.7
	Investigation Unit	30	20
	Forensic Accounting Unit	29	19.3
	Intelligence Unit	28	18.7
	Legal/Prosecution Unit	26	17.3

Source: Author's Computation (2026)

A total of 157 questionnaires were administered to respondents within the Economic and Financial Crimes Commission (EFCC), of which 152 were retrieved, representing a retrieval rate of 96.8%.

Following data screening, two inadequately completed questionnaires were excluded, resulting in 150 valid responses and a valid response rate of 95.5%.

Table 1 presents basic information of the respondents. The sample comprised respondents from Investigation, Forensic Accounting, Intelligence, Audit, and Legal/Prosecution units, providing representation across operational functions relevant to financial crime investigation and forensic processes. The respondents also reflected varying levels of academic qualification and work experience, with the largest experience category comprising those with 16 years and above. Overall, the profile indicates that the study captured responses from personnel with diverse functional and professional backgrounds within the EFCC.

Descriptive Statistics of Study Constructs

Composite scores were computed for each construct by averaging the retained measurement items. Consistent with the measurement model, Data Analytics (DA) was measured using DA1–DA5, Digital Forensics (DF) using DF1–DF5, Financial Crime Detection (FCD) using FCD1–FCD4, Financial Crime Prevention (FCP) using FCP1–FCP4, and Forensic Document Examination (FDE) using FDE2–FDE5.

As presented in Table 2, respondents generally rated all the study constructs above the midpoint of the five-point Likert scale. Financial Crime Detection recorded the highest mean ($M = 4.16$, $SD = 0.66$), followed by Data Analytics ($M = 4.08$, $SD = 0.69$), Financial Crime Prevention ($M = 4.07$, $SD = 0.75$), Forensic Document Examination ($M = 4.04$, $SD = 0.70$), and Digital Forensics ($M = 4.01$, $SD = 0.72$). The relatively high mean scores indicate generally favourable perceptions of the application of the forensic accounting techniques and financial crime control outcomes examined in the study.

Table 2: Descriptive Statistics of Constructs (N = 150)

Construct	Mean	SD	Min	Max
Data Analytics (DA)	4.08	0.69	1.4	5
Digital Forensics (DF)	4.01	0.72	1.4	5
Financial Crime Detection (FCD)	4.16	0.66	1.25	5
Financial Crime Prevention (FCP)	4.07	0.75	1	5
Forensic Document Examination (FDE)	4.04	0.7	1.25	5

Source: Author's Computation 2026

Measurement Model Assessment

The measurement model was assessed through indicator loadings, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE).

The measurement model was assessed using indicator loadings, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE). Based on the measurement-model assessment, the retained indicators for Forensic Document Examination were FDE2–FDE5.

As presented in Table 3, all retained indicator loadings exceeded 0.70, ranging from 0.742 to 0.975. Cronbach's alpha values ranged from 0.883 to 0.958, while composite reliability values ranged from 0.915 to 0.970, indicating satisfactory internal consistency. The AVE values ranged from 0.683 to 0.890, all exceeding 0.50 and demonstrating satisfactory convergent validity. Overall, the measurement results support the reliability and convergent validity of the study constructs.

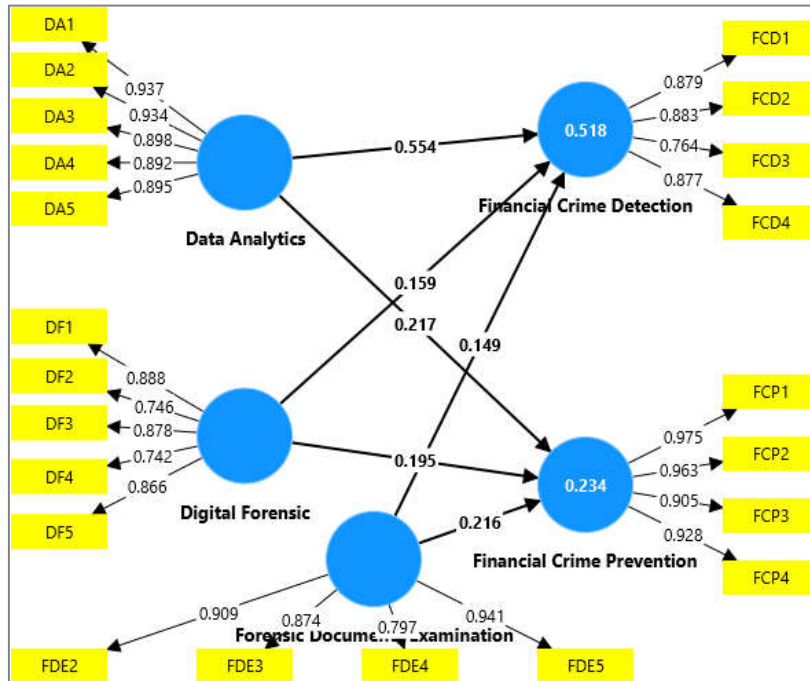


Figure 2: Outcome of Measurement Model
Source: Author's Computation (2026)

Table 3: Measurement Model Results

Construct	Items	Loadings	Cronbach's Alpha	CR	AVE
Data Analytics	DA1	0.937	0.949	0.961	0.83
	DA2	0.934			
	DA3	0.898			
	DA4	0.892			
	DA5	0.895			
Digital Forensics	DF1	0.888	0.883	0.915	0.683
	DF2	0.746			
	DF3	0.878			
	DF4	0.742			
	DF5	0.866			
Financial Crime Detection	FCD1	0.879	0.888	0.914	0.726
	FCD2	0.883			
	FCD3	0.764			
	FCD4	0.877			
Financial Crime Prevention	FCP1	0.975	0.958	0.97	0.89
	FCP2	0.963			
	FCP3	0.905			
	FCP4	0.928			
Forensic Document Examination	FDE2	0.909	0.904	0.933	0.778
	FDE3	0.874			
	FDE4	0.797			
	FDE5	0.941			

Source: Author's Computation 2026

Discriminant Validity

Discriminant validity was assessed using the Fornell–Larcker criterion and the Heterotrait–Monotrait (HTMT) ratio as presented in the Table below.

Table 4: Fornell–Larcker Discriminant Validity Results

Construct	DA	DF	FCD	FCP	FDE
Data Analytics	0.911				
Digital Forensics	0.486	0.827			
Financial Crime Detection	0.689	0.472	0.852		
Financial Crime Prevention	0.396	0.363	0.416	0.943	
Forensic Document Examination	0.39	0.292	0.411	0.357	0.882

Source: Author's Computation 2026

Table 5: HTMT Results

Constructs	DA	DF	FCD	FCP	FDE
Data Analytics					
Digital Forensics	0.523				
Financial Crime Detection	0.642	0.47			
Financial Crime Prevention	0.413	0.382	0.418		
Forensic Document Examination	0.413	0.316	0.404	0.381	

Source: Author's Computation (2026)

Under the Fornell–Larcker criterion, the square root of each construct's AVE, which produces the diagonal in Table 4, is greater than its correlations with other constructs. The diagonal values were 0.911 for DA, 0.827 for DF, 0.852 for FCD, 0.943 for FCP, and 0.882 for FDE. These exceed the corresponding inter-construct correlations, yielding evidence of discriminant validity. In addition, HTMT values ranged from 0.316 to 0.642, all below the conservative 0.85 threshold. Thus, the constructs are empirically distinct.

Structural Model and Hypothesis Testing

Table 6: Hypothesis Testing Results

Hypothesis	Path	β	SE	t-value	p-value	Decision
H01	Data Analytics → Financial Crime Detection	0.554	0.091	6.052	0.001	Reject H01
H02	Data Analytics → Financial Crime Prevention	0.217	0.115	1.895	0.058	Do not reject H02
H03	Digital Forensics → Financial Crime Detection	0.159	0.076	2.081	0.037	Reject H03
H04	Digital Forensics → Financial Crime Prevention	0.195	0.099	1.970	0.049	Reject H04
H05	Forensic Document Examination → Financial Crime Detection	0.149	0.070	2.119	0.034	Reject H05
H06	Forensic Document Examination → Financial Crime Prevention	0.216	0.086	2.496	0.013	Reject H06

Source: Author's Computation (2026)

Note: Decisions are based on a 5% significance level.

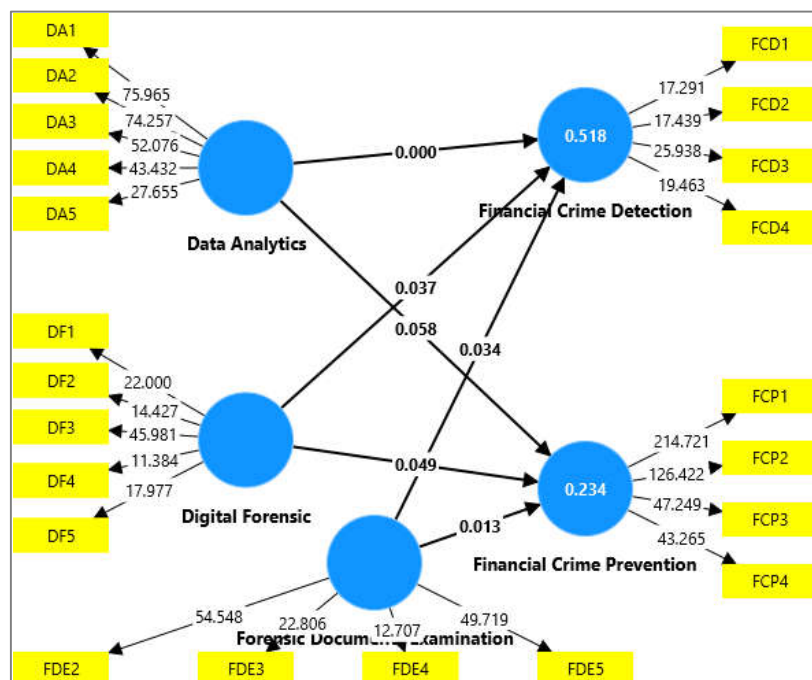


Figure 3: Outcome of Structural Model

Source: Author's Computation (2026)

The study assessed the structural model using path coefficients, standard errors, t-values, p-values, coefficients of determination (R^2), and predictive relevance (Q^2). Figure 3 and Table 6 display the results.

The model explained 51.8% of the variance in Financial Crime Detection ($R^2 = 0.518$) and 23.4% of the variance in Financial Crime Prevention ($R^2 = 0.234$). The Q^2 values were 0.274 for FCD and 0.198 for FCP, both greater than zero, indicating acceptable predictive relevance.

Hypothesis Testing Results

The results in Table 6 show that data analytics had a positive and statistically significant effect on financial crime detection ($\beta = 0.554$, $t = 6.052$, $p = 0.001$). Since the p-value is below the 5% significance level, H01 is rejected, indicating that data analytics significantly affects financial crime detection within the EFCC. However, data analytics had a positive but statistically insignificant effect on financial crime prevention ($\beta = 0.217$, $t = 1.895$, $p = 0.058$). Accordingly, H02 is not rejected, indicating insufficient statistical evidence that data analytics significantly affects financial crime prevention within the EFCC.

Digital forensics had a positive and statistically significant effect on financial crime detection ($\beta = 0.159$, $t = 2.081$, $p = 0.037$); therefore, H03 is rejected. Digital forensics also had a positive and statistically significant effect on financial crime prevention ($\beta = 0.195$, $t = 1.970$, $p = 0.049$), resulting in the rejection of H04. These results indicate that digital forensics significantly contributes to both financial crime detection and prevention within the EFCC.

Forensic document examination had a positive and statistically significant effect on financial crime detection ($\beta = 0.149$, $t = 2.119$, $p = 0.034$), leading to the rejection of H05. Similarly, forensic document examination had a positive and statistically significant effect on financial crime prevention ($\beta = 0.216$, $t = 2.496$, $p = 0.013$); hence, H06 is rejected. The findings therefore indicate that forensic document examination significantly affects both financial crime detection and prevention within the EFCC.

Overall, five of the six null hypotheses were rejected at the 5% significance level. The only null hypothesis not rejected was H02, relating to the effect of data analytics on financial crime prevention. The results therefore demonstrate that the effects of the forensic accounting techniques differ across the two dimensions of financial crime control.

Discussion of Findings

The findings show that data analytics, digital forensics, and forensic document examination contribute to financial crime detection and prevention within the EFCC. Data analytics emerged as the strongest predictor of financial crime detection, while digital forensics and forensic document examination significantly influenced both detection and prevention. This suggests that the effectiveness of forensic accounting techniques varies according to the financial crime control outcome being considered.

Data analytics had a positive and statistically significant effect on financial crime detection ($\beta = 0.554$, $p = 0.001$), indicating that analytical procedures that identify anomalies, suspicious patterns and unusual financial relationships contribute significantly to the detection of financial misconduct within the EFCC. This finding is consistent with Kapo et al. (2024), who emphasized the growing relevance of data analytics, data mining, machine learning and big-data techniques to forensic accounting investigations. It also aligns with Ofoje and Aggreh (2023), who found computerized forensic investigation techniques relevant to fraud detection in the Nigerian public sector. The result further corresponds with recent FUJAFR evidence emphasizing technology-assisted and data-oriented forensic techniques in fraud control. However, the present study extends this evidence by demonstrating the specific contribution of data analytics within a specialized financial crime enforcement institution rather than a conventional organizational setting.

Digital forensics ($\beta = 0.159$, $p = 0.037$) and forensic document examination ($\beta = 0.149$, $p = 0.034$) also had positive and statistically significant effects on financial crime detection. The digital forensics result indicates the importance of identifying, preserving and examining electronically stored evidence in an environment where financial misconduct increasingly involves digital transactions and electronic information. The significant effect of forensic document examination similarly demonstrates the relevance of examining financial and supporting records for alteration, falsification and inconsistencies. These findings are consistent with Olaniyan et al. (2021), who reported that forensic accounting contributes significantly to fraud detection in Nigerian ministries, departments and agencies. They also complement Ogar et al. (2026), whose FUJAFR study provides evidence on the relevance of forensic accounting techniques to money-laundering detection in Nigerian commercial banks. The present findings extend this evidence by isolating digital and documentary forensic capabilities within the EFCC.

For financial crime prevention, forensic document examination had a positive and statistically significant effect ($\beta = 0.216$, $p = 0.013$), while digital forensics also exerted a positive and significant effect ($\beta = 0.195$, $p = 0.049$). These findings suggest that documentary scrutiny and digital forensic capabilities may contribute not only to uncovering existing misconduct but also to strengthening preventive control by increasing the likelihood that manipulated records and electronically mediated activities will be identified. The findings are broadly consistent with Nigerian studies reporting positive relationships between forensic accounting practices and fraud prevention (Olaniyan et al., 2021; Kankpang et al., 2024; Ogbaini et al., 2024). They also support the broader evidence from Oboh et al. (2026) and Adamu et al. (2026) that specific forensic and technology-assisted techniques have relevance for fraud-control processes, although those studies employed different techniques, settings and measures of fraud control.

In contrast, data analytics had a positive but statistically insignificant effect on financial crime prevention ($\beta = 0.217$, $p = 0.058$). This result is particularly important because data analytics was the strongest

predictor of detection but did not attain statistical significance for prevention. The finding suggests that identifying suspicious patterns and anomalies does not, by itself, necessarily translate into preventive outcomes; analytical alerts may require subsequent investigative, evidential and control actions before they contribute to prevention. The result also demonstrates why detection and prevention should be examined separately rather than combined into a single measure of financial crime control. It differs from studies that report broadly positive relationships between forensic accounting and preventive outcomes, but such differences may reflect variations in the forensic techniques examined, institutional mandate, respondents and operationalization of fraud control.

The findings provide qualified support for Deterrence Theory. The significant effects of digital forensics and forensic document examination on both detection and prevention are consistent with the theoretical proposition that capabilities which increase the probability of identifying and substantiating misconduct can increase the perceived risk associated with financial crime. However, the insignificant relationship between data analytics and prevention indicates that enhanced detection capability does not automatically produce a corresponding preventive effect. Thus, the findings refine the application of Deterrence Theory in this context by suggesting that the deterrent value of forensic capabilities may depend not merely on identifying suspicious activity but also on the institutional actions that follow detection.

Overall, the findings demonstrate that forensic accounting techniques perform complementary rather than uniform functions within the EFCC. Data analytics appears particularly relevant to detecting suspicious financial activity, while digital forensics and forensic document examination contribute to both detective and preventive outcomes. The results therefore support a differentiated rather than aggregate understanding of forensic accounting effectiveness and reinforce the value of combining analytical, digital and documentary capabilities in financial crime control.

5. Conclusion

This study examined the effects of data analytics, digital forensics, and forensic document examination on financial crime detection and prevention within the EFCC. The findings show that the effectiveness of forensic accounting techniques varies according to the financial crime control outcome being considered. Data analytics emerged as the strongest predictor of financial crime detection but did not significantly influence prevention, while digital forensics and forensic document examination significantly influenced both outcomes.

The study concludes that forensic accounting techniques perform complementary rather than uniform functions in financial crime control. Effective financial crime control therefore requires an integrated forensic capability combining analytical, digital, and documentary techniques. The findings also provide qualified support for Deterrence Theory by showing that enhanced detection capability does not necessarily translate directly into preventive outcomes.

Recommendations

Based on the findings, the following recommendations are made:

1. The EFCC should strengthen its data analytics capacity for financial crime detection through appropriate analytical technologies, data-management infrastructure, and specialised training. A proper system procedure should be put in place for translating analytical alerts and identified risk patterns into timely investigative and preventive actions.

2. Digital forensics and forensic document examination should be properly kept, maintained, and strengthened with adequate infrastructure, specialised expertise, and continuous professional development. These capabilities should be integrated with data analytics to ensure that analytical, digital, and documentary evidence complement one another throughout the financial crime-control process.
3. The EFCC should evaluate forensic accounting investments based on their specific contributions to detection and prevention rather than using a single aggregate measure of effectiveness. This would support more targeted resource allocation and capacity development across forensic functions.

Reference

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