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## FORENSIC ACCOUNTING TECHNIQUES AND FRAUD MANAGEMENT OF BREWERY FIRMS IN SOUTH EAST, NIGERIA

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### Abstract

*This study examined the nexus between forensic accounting techniques and fraud management of brewery firms in South East, Nigeria. This study adopted field survey research design. The population consist of seven hundred and ninety six (796) staff of the three (3) brewery companies in South East, Nigeria. Taro Yamane formula was employed to determine the sample size of 266. Of the 266 copies of administered questionnaire, 242 copies were collected. Validity and reliability of the instrument were tested and achieved. Descriptive statistics was employed, while inferential statistics using Cronbach Alpha, Spearman's Correlation and Paired Sample T-Test were employed to test the hypotheses with the aid of SPSS version 23. The specific findings revealed that there is a significant relationship between data mining technique and enterprise resource planning ( $t$ -statistic = 6.046;  $p$ -value = 0.000); a significant relationship between ratio analysis technique and enterprise resource planning ( $t$ -statistic = 5.377;  $p$ -value = 0.000); a significant relationship between computer assisted auditing technique and enterprise resource planning ( $t$ -statistic = 5.377;  $p$ -value = 0.000) of brewery firms in South East, Nigeria at 5% level of significance respectively. In conclusion, forensic accounting techniques have a significant and positive relationship with fraud management of brewery firms in South East, Nigeria. This study recommended amongst others that companies should consolidate on forensic accounting techniques which will enable them to analyze their financial position, liquidity, profitability, risk, solvency, efficiency, operations effectiveness, and proper utilization of funds.*

**Keywords:** Effective Internal Control , Data Mining, Computer Assisted Auditing Technique

## **Introduction**

Fraud is a global phenomenon that has been in existence for long and it increases day by day. It is a deliberate act that causes a business or economy to suffer damages, often in the form of monetary losses. Fraud is rampant in both developed and developing countries and as well varies across places in its magnitude, its sources, the way it manifests itself and in its effects on administrative performance and development. Fraud is a deceit or trickery act deliberately practiced in order to gain some dishonest advantage. Forensic accounting is perceived to have evolved in response to certain emerging fraud related cases. The scandals that recently rocked the corporate world with classical examples being the often cited Enron and WorldCom cases have also brought the field of forensic accounting to the forefront. Forensic accounting is seen as encapsulating all other investigation related areas in uncovering financial fraud. Forensic accounting is the tripartite practice of utilizing accounting, auditing and investigative skills to assist in legal matters. It is a specialized field of accounting that describes engagements that result from actual or anticipated disputes or litigation. Forensic accounting can, therefore, be seen as an aspect of accounting that is suitable for legal review and offering the highest level of assurance (Hayes, 2022).

Forensic accounting focus is on both evidence of economic transactions and reporting which is contained within an accounting system, and the legal framework which allows such evidence to be suitable to the purpose(s) of establishing accountability and valuation (Amahalu, Nweze & Obi, 2017). Many cases of financial statement misrepresentation have been reported, and to that extent, affected companies like Enron, WorldCom, Adelphia, Global Crossing, Xerox, Qwest, and many others like Cendant, Lincoln Savings, ESM, Anicom, Waste Management, and Sunbeam, and their auditors have gone down. In effect, stakeholders, most especially the shareholders were greatly affected. The increase in financial crimes by white collar criminals are is alarming and these crimes are well planned and executed leaving no traces of fraud occurrence and advancement in technology has been a boon for these fraudsters where manipulation of financial figures are carried out in just a few clicks. Due to advancement in technology, compared to a decade back, currently, financial frauds are in peak, but very few come to limelight and in many cases identifying the fraud occurrence has been challenging. The spate of decadence in all spares of life and the difficulty of those responsible for preventing and detecting same has necessitated the request for special techniques of forensic accounting in resolving the allegation of fraudulent activities (Amahalu, Ezechukwu & Obi, 2017). Several studies have been done on the link between forensic accounting techniques and fraud management. The studies generated mixed result on whether forensic accounting techniques have link with fraud management. The first strand of literature found a positive relationship between forensic accounting techniques and fraud management (Krishna & Boddu, 2023; Okudo, Amahalu, Obi & Okafor, 2022). The second strand of literature found a negative relationship between forensic accounting techniques and fraud management (Olusoji, Samsudin & McMillan, 2021). Yet some other studies found no relationship between forensic accounting techniques and fraud management (Bagudu, 2022). The inconsistencies in the findings of these studies created a gap in knowledge which this study sought to fill. It is against this backdrop that this study sought to determine the relationship between forensic accounting techniques and fraud management of brewery firms in South East, Nigeria.

## **Objectives of the Study**

The main objective of this study is to ascertain the relationship between forensic accounting techniques and fraud management of brewery firms in South East, Nigeria.

The specific objectives are to:

- i. Evaluate the relationship between data mining technique and effective internal control of brewery firms in South East, Nigeria.
- ii. Examine the relationship between ratio analysis technique and effective internal control of brewery firms in South East, Nigeria.
- iii. Determine the relationship between computer assisted auditing technique and effective internal control of brewery firms in South East, Nigeria.

### **Research Hypotheses**

This research was guided by the following null hypotheses:

**Ho<sub>1</sub>:** There is no significant relationship between data mining technique and effective internal control of brewery firms in South East, Nigeria.

**Ho<sub>2</sub>:** There is no significant relationship between ratio analysis technique and effective internal control of brewery firms in South East, Nigeria.

**Ho<sub>3</sub>:** There is no significant relationship between computer assisted auditing technique and effective internal control of brewery firms in South East, Nigeria.

### **Conceptual Review**

#### **Forensic Accounting**

Forensic accounting is an approach to accounting which utilizes accounting, auditing, and investigative skills to conduct an examination into the finances of an individual or business (Rohrs-Schmitt, 2022). Forensic accounting is the area of accounting practice wherein the accounts are examined by independent accounts with the pre-notion objective of determining financial misconduct and reporting fraud. It is usually conducted by an independent accounting and auditing firms appointed by regulators, the management, or sometimes the government agencies to check alleged wrongdoing in the financial accounting system of the organisation under scrutiny of misconduct (Nwafor & Amahalu, 2021). Forensic accounting is a special practice of accounting where a financial professional, known as a forensic accountant, audits and investigates information and prepares it to be used in court.

#### **Forensic Accounting Techniques**

Forensic accounting techniques are used by investigative accountants to look at financial records, dig into their background and present a clear and concise account of what they mean and how they impact a particular matter that they have been asked to consider (Jaxa, 2023). Forensic accounting techniques are not the same as normal accounting methods, such as auditing techniques or methods for considering tax issues, but they may include the use of these skills along with investigation techniques, legal understanding and a natural tenacious desire to uncover a hidden issue.

#### **Data Mining Technique**

Data mining is the process of analyzing dense volumes of data to find patterns, discover trends, and gain insight into how that data can be used. Data miners can then use those findings to make decisions or predict an outcome (Stedman, 2023). Data mining is the process of sorting through large data sets to identify patterns and relationships that can help solve business problems through data analysis. Data mining techniques and tools enable enterprises to predict future trends and make more-informed business decisions (Amahalu & Obi, 2020). Data mining is the process of sorting through large data sets to identify patterns and relationships that can help solve business problems through data analysis.

### **Ratio Analysis Technique**

Ratio analysis is a quantitative method of gaining insight into a company's liquidity, operational efficiency, and profitability by studying its financial statements such as the balance sheet and income statement. Ratio analysis is a cornerstone of fundamental equity analysis (Bloomenthal, 2023). It is concerned with the calculation of relationships, which after proper identification & interpretation may provide information about the operations and state of affairs of a business enterprise. The analysis is used to provide indicators of past performance in terms of critical success factors of a business. This

### **Computer Assisted Auditing Technique**

Computer Assisted Auditing Techniques (CAATs) are the auditing methods involving computer software tools for analyzing business data and reporting to enhance the audit scope and transparency. Computer assisted audit techniques (CAAT) is a method of gathering and reviewing electronic records. CAAT is used to simplify or automate the data analysis and audit process, and it involves using computer software to analyze large volumes of electronic data for anomalies (Stone, 2023).

### **Fraud Management**

Fraud management is the process of identifying and preventing any potential fraudulent actions toward a business or its customers. This consists of reviewing transaction activities, users, accounts, and entities in order to avoid fraudulent behavior. Fraud management implies a strong commitment to prevention and to implementing fraud management solutions that avoid the risk brought by unplanned situations. Fraud risk management limits the fraud risk that may arise from the company's normal activities and operations and reduces its harmful consequences (Ejembi, Ijeoma, Amahalu & Obi, 2022).

### **Effective Internal Control**

An effective internal control structure includes a company's plan of organization and all the procedures and actions it takes to: Protect its assets against theft and waste; Ensure compliance with company policies and federal law; Evaluate the performance of all personnel to promote efficient operations (Muhtar, Winarna & Sutaryo, 2023). Effective internal controls are a must-have for any business. Organizations rely on accurate information, financial, operational or otherwise, to set their future strategy. Internal control measures are the key to ensuring this accurate information is available and up to date (Okharedia, Muritala & Ibrahim, 2023). Internal control is a process, effected by an entity's board of directors, management and other personnel, designed to provide reasonable assurance: That information is reliable, accurate and timely; Of compliance with applicable laws, regulations, contracts, policies and procedures (Hamed, 2023).

### **Forensic Accounting Technique and Fraud Management**

Today, businesses all over the world are facing a severe loss of revenue due to fierce competition and loss of income due to fraud. To survive in the market, business operators usually offer a variety of fraud accounting techniques for fraud detection. Since fraud is committed by humans, fraud is tightly coupled with human behavior. Thus, understanding the motivations of perpetrators or their psychological and personality traits that drive them to cross ethical boundaries can provide a new perspective for fraud detection (Amahalu Abiahu, Obi & Nweze, 2018). Given the complexity of analyzing human behavior to detect fraud, some approaches aimed to improve the precision and increase the speed of data processing through a hybrid automatic learning system or through incremental learning (Weed, Lok, Chawra & Zeitzer, 2023; Palanivinayagam & Damaševičius, 2023).

## **Theoretical Framework**

### **Fraud Triangle Theory**

Donald R. Cressey, a well-known criminologist, devised the fraud triangle. The fraud triangle is a model for explaining the factors that cause someone to commit occupational fraud. It consists of three components which, together, lead to fraudulent behavior: Perceived unshareable financial need, Perceived opportunity and Rationalization (Cressey, 1973). The premise of the fraud triangle is that to combat fraud, it is not only necessary to realize that it happens but to determine how and why it happens. The three “points” or elements of Donald Cressey’s fraud triangle are pressure/motivation, opportunity, and rationalization. All three elements must be present for fraud to occur. It is an intentional deception that causes the personal gain of an employee or an entity. In order to deter, detect and investigate fraud, one must understand how and why people commit fraud. Knowing the “how” helps managers and business owners create policies and design internal controls to reduce the occurrence of fraud. The “why” is more nuanced, but it is just as important in understanding fraud.

### **Empirical Review**

Binti, Gaguk and Zuhroh (2021) analyzed the relationship between the causes of fraud, good corporate governance, and fraud. This study applied logistic regression analysis to test the 27 samples of banking companies from 44 banking companies during 2016-2019, so there were 108 observations. This analysis showed that competence and opportunity have a significant positive effect on fraud, but rationalization, pressure, and arrogance have no effect on fraud.

Waked and Aljaaidi (2021) examined the relationship between one of the major corporate governance attributes; family ownership and the audit committee activity across a sample of 430 publicly traded firms on the Saudi Stock Exchange (Tadawul) for the period 2012–2019. Using the Pooled OLS regression, the study found that family ownership is negatively associated with audit committee activity. This study reported that family ownership is negatively associated with audit committee activity.

Kustono (2021) investigated corporate governance mechanism as income smoothing suppressor. A quantitative data in Indonesian public manufacturing companies’ financial statements dated December 31, 2009 - 2018 obtained from the Indonesian Capital Market Directory were used in the study. Hypothesis testing used a binary logistic regression approach. The practice of income smoothing exists in manufacturing companies in Indonesia. Audit tenure has a negative effect on income smoothing. The audit period is directly proportional to the auditor’s ability to limit income smoothing.

Bagudu (2022) examined the impact of forensic accounting techniques on the prevention of fraud in microfinance institutions in Anambra state, Nigeria. Specifically, assessment of relative size factor, data mining and ratio analysis was evaluated on the prevention of fraud in microfinance institutions. Quantitative approach was used on the survey of 69 participants of audit and account staffs of the microfinance institutions. Regression technique was used to evaluate the objective of the study where the findings discovered showed that relative size factor has positive and insignificant impact; data mining has positive and significant impact while ratio analysis has positive and insignificant impact on microfinance institutions fraud prevention.

## **METHODOLOGY**

Descriptive survey research design was employed in this study. The population of the study refers to the totality of the elements or variables under study. The population of this study

consists of seven hundred and ninety six (796) staff of the three (3) brewery companies in South East, Nigeria, which are; International Breweries Plc, Onitsha; Golden Guinea Breweries Umuahia and Nigeria Brewery Plc, Enugu. The sample size for this study was statistically determined using Taro Yamane formula for a finite population. The formula is given as:

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

Where: n= the sample size

N = the finite population size

e = level of significance (at 0.05 or 5% level of significance)

$$N = 796, e = 0.05$$

$$n = \frac{796}{1 + 796(0.05)^2}$$

$$n = \frac{796}{1 + 1.99} = 266.22$$

n = 266. Therefore, the sample size is 266

The study made use of primary data. Simple random sampling technique was used to administer the 266 copies of the questionnaire to the respondents across the three brewery firms. Based on the 266 copies of questionnaire that were administered to the respondents, 242 copies of questionnaire were retrieved. Copies of the questionnaire was rated on a 5-point Likert scale ranging from 5 (strongly agree) to 1 (strongly disagree).

### Reliability of the Instrument

To ensure reliability, this research used Cronbach alpha coefficient to test reliability.

## DATA PRESENTATION AND ANALYSIS

**Table 1: Analysis of Questionnaire**

Description	Numbers	Percentage (%)
No. of questionnaire administered	266	100
No. of questionnaires retrieved	242	91
No. of questionnaires not retrieved	24	9

Source : Field Survey, 2023

$$\text{Response Rate} = \frac{\text{Number of research tools retrieved}}{\text{Number of research tools distributed}} \times 100$$

$$= \frac{242}{266} \times \frac{100}{1} = 91\%$$

### Reliability Test of Research Tool using Cronbach's Alpha

**Table 2: Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items
.902	.937	9

Source: Researcher's computation using SPSS version 23, 2023

Cronbach's alpha is 0.902, which indicates a high level of internal consistency for the scale.



**Table 3 Spearman's Correlation Matrix**

		Correlations				
			effective internal control	data mining technique	ratio analysis technique	computer assisted auditing technique
Spearman's rho	effective internal control	Correlation Coefficient	1.000	.299**	.331**	.510**
		Sig. (2-tailed)		.000	.000	.000
		N	242	242	242	242
	data mining technique	Correlation Coefficient	.299**	1.000	.470**	.668**
		Sig. (2-tailed)	.000		.000	.000
		N	242	242	242	242
	ratio analysis technique	Correlation Coefficient	.331**	.470**	1.000**	.705**
		Sig. (2-tailed)	.000	.000		.000
		N	242	242	242	242
	computer assisted auditing technique	Correlation Coefficient	.510**	.668**	.705**	1.000
		Sig. (2-tailed)	.000	.000	.000	
		N	242	242	242	242

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Source: Researcher's computation using SPSS version 23, 2023

### Interpretation of Spearman's Correlation Matrix

The relationship between data mining technique, ratio analysis technique, computer assisted auditing technique and effective internal control is positively correlated with a coefficient value of 0.299, 0.331 and 0.510 respectively.

### Test of Hypotheses

#### Hypothesis I

**H<sub>0</sub>**: There is no significant relationship between data mining technique and effective internal control of brewery firms in South East, Nigeria.

**H<sub>1</sub>**: There is significant relationship between data mining technique and effective internal control of brewery firms in South East, Nigeria.

**Table 4 Paired Samples Test**

		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	There is no significant relationship between data mining technique and effective internal control of brewery firms in South East, Nigeria	.47693	.00258	.03153	-.11091	.48364	6.046	216	0.000

Source: Researcher's computation using SPSS version 23, 2023

**Interpretation**

The paired sample test seals up the relationship between data mining technique and effective internal control of brewery firms in South East, Nigeria as indicated by the t-value = 6.046 and probability value = 0.000 as shown in table 4. This implies that data mining technique has a significant influence on enterprise resource planning.

**Hypothesis II**

**H<sub>02</sub>:** There is no significant relationship between ratio analysis technique and effective internal control of brewery firms in South East, Nigeria.

**H<sub>2</sub>:** There is a significant relationship between ratio analysis technique and effective internal control of brewery firms in South East, Nigeria.

**Table 5 Paired Samples Test**

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	There is no significant relationship between ratio analysis technique and effective internal control of brewery firms in South East, Nigeria	.20051	.01049	.04202	-.22555	.69912	5.377	216	0.000

Source: Researcher’s computation using SPSS version 23, 2023

**Interpretation**

The paired sample test seals up the relationship between ratio analysis technique and effective internal control of brewery firms in South East, Nigeria as indicated by the t-value = 5.377 and probability value = 0.000 as shown in table 5. This implies that ratio analysis technique has a significant influence on enterprise resource planning.

**Hypothesis III**

**H<sub>03</sub>:** There is no significant relationship between computer assisted auditing technique and effective internal control of brewery firms in South East, Nigeria.

**H<sub>3</sub>:** There is significant relationship between computer assisted auditing technique and effective internal control of brewery firms in South East, Nigeria.



		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	There is no significant relationship between computer assisted auditing technique and effective internal control of brewery firms in South East, Nigeria	.28612	.00108	.03145	-.13944	.26816	5.902	216	0.000

Source: Researcher's computation using SPSS version 23, 2023

### Interpretation

The paired sample test seals up the relationship between computer assisted auditing technique and effective internal control of brewery firms in South East, Nigeria as indicated by the t-value = 5.902 and probability value = 0.000 as shown in table 6. This implies that computer assisted auditing technique has a significant influence on effective internal control.

## FINDINGS AND CONCLUSION

### Findings

Based on the analysis of this study, the following findings were deduced:

- i. There is a significant relationship between data mining technique and effective internal control of brewery firms in South East, Nigeria at 5% level of significance (t-statistic = 6.046; p-value = 0.000)
- ii. There is a significant relationship between ratio analysis technique and effective internal control of brewery firms in South East, Nigeria at 5% level of significance (t-statistic = 5.377; p-value = 0.000)
- iii. There is a significant relationship between computer assisted auditing technique and effective internal control of brewery firms in South East, Nigeria at 5% level of significance (t-statistic = 5.377; p-value = 0.000)

Conclusively, the study revealed that data mining technique, ratio analysis technique and computer assisted auditing technique have a significant positive effect on effective internal control at 5% level of significance.

### Recommendations

In view of the findings of the study, it is recommended that:

- i. Since there is a positive relationship between data mining technique and fraud management, firms should keep on focusing data mining strategy which will enable enterprises to predict future trends and make more-informed business decisions.
- ii. Consequent upon the significant relationship between ratio analysis technique and fraud management, firms should consolidate on ratio analysis which will enable a company to analyze its financial position, liquidity, profitability, risk, solvency, efficiency, operations effectiveness, and proper utilization of funds.

- iii. Considering the influence of computer assisted auditing technique on fraud management, firm should employ computer assisted auditing tools in order to improve compliance and lessens chance of making errors.

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### QUESTIONNAIRE

The response scale for the questions is as below:

5= Strongly Agree, 4= Agree, 3= Undecided, 2= Disagree, 1 = Strongly Disagree

S/N	Items/ Variables	SA	A	U	D	SD
	<b>Data Mining Technique and Enterprise Resource Planning</b>	5	4	3	2	1
1.	Data mining can help firms to develop more effective marketing strategies, increase sales and decrease costs					
2.	Data mining can be used by corporations for everything from learning about what customers are interested in or want to buy to fraud detection and spam filtering					
3.	Companies use data mining techniques to commodify their users in order to generate profit					
	<b>Ratio Analysis Technique and Enterprise Resource Planning</b>	5	4	3	2	1
4.	Ratio analysis compares line-item data from a company's financial statements to reveal insights regarding profitability, liquidity, operational efficiency, and solvency					
5.	Ratio analysis can mark how a company is performing over time, while comparing a company to another within the same industry or sector					
6.	Ratio analysis provides significant information to users of accounting information regarding the performance of the business.					
	<b>Computer Assisted Auditing Technique and Enterprise Resource Planning</b>	5	4	3	2	1
7.	CAATs provide auditors with tools that can identify unexpected or unexplained patterns in data that may indicate fraud					
8.	Computer assisted audit techniques allow for continuous monitoring and analysis					
9.	Computer Assisted Audit Techniques are computer programs or data that the auditor uses as part of the auditing procedures to audit and process data that are contained in an entity's information systems.					