

# The Effect of forensic Accounting Investigative Techniques in Preventing Revenue Leakages in Nigerian Federal Universities

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## ABSTRACT

Forensic accounting deals with the application of investigative, analytical and technical tools for the purpose of resolving fraud and fraudulent practices in contemporary society. Evidence of a high rate of revenue leakages in Nigerian Public Universities attested to the fact that the internal control systems of these institutions have not incorporated forensic accounting techniques in their operations. Thus, they find it extremely difficult to detect and prevent revenue leakages which have contributed to their dismal performance in terms of infrastructure, staff morale, and quality outputs. The objective of the paper was to examine the extent to which the application of Forensic Accounting Technology can help in preventing Revenue Leakage in Federal Universities in Nigeria. Primary data were collected with the aid of a research questionnaire and used in this study. The sample size of 238 respondents was determined from a census of targeted EFCC staff, and internal audit staff of selected Nigerian Federal Universities. To analyse the collected data, a requisite statistical tool that described and evaluated the relationships between Forensic accounting technology applications and revenue leakages. From the analysis, it was discovered that Forensic accounting technology helps in preventing revenue leakages in Nigerian Federal Universities. It means that the application of forensic accounting technology will help Nigerian Federal Universities to save money. The implication is that when these technological tools are employed and applied appropriately, there would be a reduction in revenue leakages. On the basis of these findings and conclusion, it was recommended that forensic accounting technology should be employed in Nigerian Federal Universities to help them curb revenue leakages in the system.

**Keywords:** Forensic Accounting, Forensic Accounting Technology, Revenue, Fraud

## INTRODUCTION

### Background

Fraud perpetration has become a tradition and a severe problem in most societies. This is common in both developed and developing nations, with nations like Nigeria having a proportion of it. It is rampant and is permeating the fabric of all sectors of the economy. The degree of boldness to commit fraud on a daily basis is so high to the extent that many people commit fraud with little or no fear of being caught. The rich, the poor, the young and elderly, males and females are now deeply involved in fraud and fraud-related activities (Adedire, 2016). Aduwo (2016) argued that the increasing sophistication of financial fraud is necessitating the inclusion of forensic accounting into public practice, which will bring about the successful investigation and prosecution of individuals who are involved in perpetrating these criminal activities in both public and private organizations.

Ojaide (2000) indicated that there is an alarming increase in the number of fraud and fraudulent activities committed in Nigeria, as such; there is a need for the services of forensic accountants to checkmate such activities. The implication of this assertion is that the internal control mechanisms in most establishments

and universities inclusive can no longer safeguard them from fraud; instead, a new category of accountants, specifically forensic accountants are necessary for this purpose.

The education sector of the economy appears to be affected by fraud in two ways. Firstly, it exerts much pressure on the education budget. Secondly, it impacts on cost, volume, and quality of educational services (Azuka, 2011). Fraud jeopardizes the success of long-term initiatives in every area of development. This means that education devoid of fraud is a sine-qua-non for national development. Perhaps, some tertiary institutions today have failed to recognize that fraud can be more dangerous when compared with other social problems like armed robbery which can only affect the institution within a short period of time.

The various fraud cases that are constantly being prosecuted by anti-graft agencies in Nigeria, such as the Independent Corrupt Practices Commission (ICPC) and Economic and Financial Crimes Commission (EFCC), relating to the misappropriation of funds by officials of educational institutions can attest to this claim. With this ugly unwanted trend of events, there abound various uncompleted projects, unrealized projects, and programmes (Ile & Odimmega, 2018). In the Nigerian Federal University system, it has been observed that huge spending has always been a big business, but it has become so massive today that the public through its legislators is demanding to know whether the huge outlays of money are being spent wisely or not..

Okoye and Gbegi (2013) observed that the use of Forensic Accounting significantly reduces the occurrence of fraud cases in the public sector and that there is a significant difference between Professional Forensic Accountants and Traditional External Auditors in their approach and techniques, therefore the use of Forensic Accountants can help better in preventing and detecting fraud cases in public sector organizations. Leakages of revenue happen when part of the accruable revenue is skimmed or removed fraudulently by an individual or group of individuals even before getting into the account books, all for their private purposes (Oyededeji, 2015). Fraudsters perpetrate their nefarious act either by manipulating expenditure or skimming revenue (Okoye, Maimako, Jugu & Jat, 2014), hence the need to put searchlights on both. However, the focus of this study is on the latter.

Revenue leakage has to do with skimming and has become a tradition to both staff and students in tertiary institutions, and a severe problem in Nigerian Federal Universities (Oyededeji, 2015). Forensic accounting techniques have been confirmed by academic literature to have a significant effect in preventing revenue leakages in organisations that employed them (Oyededeji, 2015). Singleton & Singleton (2010) affirmed that “the use of technology is essential for maximizing the efficiency and effectiveness of a fraud detection and prevention program. Okoye, Maimako, Jugu & Jat (2014) have stated that forensic accounting draws its skills from many disciplines and has some unique investigative techniques, which include evidence-gathering techniques that are acceptable in any competent court.

Hariharan (2009) noted that revenue leakage has been a universal phenomenon that has hampered service delivery in public organizations, which by implication include Universities. In fact, the degree of boldness to which these illicit elements employed their nefarious act is somewhat intimidating. The amount of fraud that is being committed on a daily basis is so big to the extent that one has begun to wonder if those saddled with the responsibility of accounting for finances in Universities commit fraud with little or no fear of being caught. Though there are different ways in which revenue can leak in establishments, that of the University system leaks through e-payments and remittances. Revenue leakages in Universities’ channels however range from cash larceny, cash skimming, system blocking, fake invoicing, forgery, and manipulation of financial records among other things. According to the Economic and Financial Crime Commission (2004), financial leakages such as financial embezzlement, larceny and skimming have a negative impact on revenue generation. These crimes are taking the centre stage in the scheme of operations and are on the large scale in government offices. These fraudulent acts have been attributed to factors such as system failure, infrastructural deficit, endemic corruption, lack of orientation, and experts whose skills are critical in

preventing the identified avenues for revenue leakages.

It is evidently clear from available academic literature that forensic accounting remains a new field in the accounting profession, and one cannot deny the fact that studies have been conducted on its relevance and application in fraud detection and prevention in organizations. The desire to explore the effectiveness of investigative techniques of forensic accounting in preventing revenue leakages in Federal Universities in Nigeria is the motivation for this study.

### **Statement of Problem**

In Nigeria, no public university can stand financially on its own despite the fact that they are veritable tools for the realization of national development; the development of cultured citizens, and the promotion of basic research and innovation. University education is meant to be the most powerful and critical success factor for individuals and society at large (Aina, 2007). In the recent past, retardation in this development has been experienced, especially in service delivery because of insufficient working capital. For the university system to address this phenomenon and perhaps sustain the developmental strides in infrastructures, something must be done to put a stop to all forms of leakages; hijacking of revenue is earned and the evaporating of earned revenue through inflated or fictitious expenditures, besides siphoning funds by some privileged individuals. This sort of unwholesome practices can be traced to poor internal controls system or improper implementation (Oyedeji,2015).

It suffices to say that the internal auditor has little or no independence because they work as an employee of the universities. The presence of external auditors has not been able to address the problem of fraud. These frauds are still being committed on a daily basis. The above scenario indicated that the duo, who have been part of an internal control system of the University system have not been able to address the menace of this monster. More and more development in the Information Communication Technology (ICT) world has contributed in no small measure to the menace (Okoye & Mbanugo,2020). It is now imperative to employ forensic accounting practitioners or at least borrow their technology skills and tools for use in public universities in Nigeria.

Evidence of a high rate of revenue leakages from e-payment systems in Nigerian Public Universities (Unijos Quarterly Report, 2016/2017) has attested to the fact forensic accounting investigative techniques are needed. Thus, the auditing techniques in use have failed, hence the reason for the massive revenue leakage in the public university system.

### **Research Questions**

The following research questions are raised to guide this study:

1. To what extent can the application of forensic accounting technology help in preventing revenue leakages in Nigerian federal universities?
2. To what extent can the application of forensic accounting investigative techniques will help in preventing revenue leakages in Nigerian federal universities?

### **The objective of the Study**

The main objective of this study is to examine the extent to which the application of forensic accounting techniques can serve as a panacea for preventing revenue leakages in Nigerian Federal Universities. While the following specific objectives are:

1. To determine the extent to which forensic accounting technology applications can prevent revenue leakages in Nigerian Federal Universities.

2. To examine the extent to which the application of forensic accounting investigative techniques can prevent revenue leakages in Nigerian federal universities.

### Hypotheses

**Ho1:** That application of forensic accounting technology has no significant effect on preventing revenue leakages Nigerian federal universities

**Ho2:** That application of forensic accounting investigation techniques has no significant effect on preventing revenue leakages in Nigerian federal universities

## REVIEW OF RELEVANT LITERATURE

### Forensic Accounting

Forensic accounting is the application of accounting knowledge and investigative skills to identify and resolve legal issues. It is the science of using accounting as a tool to identify and develop proof of money flow for use in court. The techniques for using this tool of accounting can be invaluable for anti-fraud and corruption crusaders. Definitions of forensic accounting abound: Dada, Owolabi & Okwu (2013) defined it as the integration of accounting, auditing and investigative skills to resolve legal financial matters. According to the Association of Certified Fraud Examiners (2010), forensic accounting is the use of skills in potential or real civil or criminal disputes, including generally accepted accounting and auditing principles in; establishing losses or profit, income, property or damage, estimations of internal controls, frauds and others that involve inclusion of accounting expertise into the legal system. Okoye and Gbegi (2013) supported this view but added that it is a merger of forensic science and accounting. On what constitute forensic science, Crumbley (2003) had opined that forensic science focuses on the application of the laws of nature to the laws of man. Crumbley refers to forensic scientists as examiners and interpreters of evidence and facts in legal cases that also requires expert opinions regarding their findings in court of law. The implication of these views is that forensic science entails the systematic and objective approach to evidence gathering by forensic accountants for usage in the court of law whenever the need arises.

Howard and Sheetz (2006) stated that forensic accounting is the process of interpreting, summarizing and presenting complex financial issues clearly, succinctly and factually often in a court of law as an expert. Forensic accounting is a discipline that has its own models and methodologies of investigative procedures that search for assurance, attestation and advisory perspective to produce legal evidence. Okoye, Maimako, Jat and Jugu (2016) viewed forensic accounting as an accounting field that is suitable for legal review, offering the highest level of assurance and including the generally accepted connotation of having been arrived at in a scientific way. It is concerned with the evidentiary nature of accounting data, and as a practical field of accounting that is concerned with issues of intentional non-compliance regulations and policies, due diligence, risk assessment. Others of concern are detection and prevention of financial misrepresentation, assets misappropriation and other sharp economic and financial practices (Skousen & Wright, 2008). The general expectation is that forensic accounting may offer some respite to the seeming vulnerability of conventional accounting and audit systems to financial fraud (Kasum, 2009; Crumbley, 2003; Effiong, 2012; Zysman, 2004).

### Forensic Accounting and Fraud Detection and Prevention

It is agreeable that an auditor does not have the absolute duty to uncover fraud, but is expected to practice fair and true reporting to ensure that the interests of the public as well as the employees are protected (Enofe, Okpako & Atube, 2013). Buckhoff and Schrader (2000) observed that the inclusion of forensic accounting as a course to the accounting curriculum can greatly benefit the three major stakeholders in

accounting education namely, the academic institutions, students, and employers of accounting graduates.

Empirical evidence from a study by Boritz, Kotchetova and Robinson (2008) indicated that forensic accountants could detect significantly higher number of fraud than auditors. Srivastava, Mock and Turner (2003) in their study found that forensic audit procedures significantly lowered fraud risks. Furthermore, research has also proven that proactive forensic data analysis using computer based sophisticated analytical tests can detect fraud that may remain unnoticed for years (Brown, Aiken & Visser, 2007). According to the US General Accounting Office (GAO) (1996) there are strong emphasis on fraud prevention and detection during statutory audits. The United States and international standards setters have increased the responsibility of auditors to consider the risks of fraud while conducting audits of financial statements.

A study by Bierstaker, Brody and Pacini (2006) revealed the perception of accountants regarding fraud detection and prevention methods. The findings revealed that organizational use of forensic accountants was the least often resorted to but had the highest effectiveness ratings. This is similar to the findings of Ernest and Young (2003) worldwide fraud survey, which states that only 20% of organizations employed forensic accountants although the satisfaction level for their service was rated at 88% as against the use of statutory auditors. There is however a greater call for auditors to acquire forensic skills in the discharge of their duty. This call has been corroborated by Enyi (2009) who submitted that all normal statutory audits should contain some elements of forensic enquiry as the evidence of fraudulent activities can be easily discovered if a thorough evaluation of the adequacy and compliance of the internal control mechanism is made. All these are aimed at fraud, including revenue leakages prevention and detection. This may not be achieved by an auditor without some understanding of forensic accounting methods (Effiong, 2012).

### **Investigative Techniques**

Singleton & Singleton (2010) stated that for many years, criminal investigators have relied on six basic investigative techniques to deal with crimes. These are: the development of informants, use of undercover agents, laboratory analysis of physical evidence, physical and electronic surveillance, interrogation and wiretapping (Where the law permits).

According to the authors, wiretapping is when a third-party secretly monitors communications in order to investigate an involved party. The image that comes to mind most commonly is intercepted phone calls or recorded in-person conversations. In reality, wiretapping laws apply to any wire, oral, or electronic communication that is intercepted.

### **Forensic Accounting Investigative Techniques**

In detecting, preventing and deterring fraudulent activities and corruption, forensic accounting techniques have been argued to be most important techniques. It is on records that the application of forensic accounting services on firms affects the level of fraudulent activities by deterrence.

The Chartered Institute of Management Accountants (CIMA) (2008) identified two major tools for anti-fraud professionals (Forensic Accountants) in fraud fighting which are premised on the ability to think and act logically. The tools are training and experience, and the necessary mindset.

CIMA (2008) also suggested everyday investigative techniques that are available to help in identifying irregularities, and research the anomaly to decide whether further action should be taken. These techniques are:

**Background reading:** it is important to keep up to date with fraud trends and issues. The general press can be a useful source of information for this, along with technical magazines, which often carry books on fraud

and financial irregularity. Also useful is a subscription to a publication specializing in fraud or buying a good reference book. The Internet is also a valuable, and vast, research tool.

**Risk assessment:** undertake a fraud risk assessment and design specific tests to detect the significant potential frauds identified through the risk assessment. Act on irregularities which raise a concern.

**Benchmarking:** comparisons of one financial period with another; or the performance of one cost centre, or business unit, with another; or of overall business performance with industry standards, can all highlight anomalies worthy of further investigation.

**Systems analysis:** it is important to examine the systems in place and identify any weaknesses that could be opportunities for the fraudster.

**Ratio analysis:** can be used to identify any abnormal trends or patterns.

**Mathematical modelling:** using the 'sort' tool on a spreadsheet can help to identify patterns in expenditure, etc. There are also specialist mathematical models such as Benfords Law, a mathematical formula which can help identify irregularities in accounts. Database modelling can also be utilized.

**Specialist software:** such as audit tools for data matching analysis can prove very useful. Other tools allow for analysis such as real time transaction assessment, targeted post-transactional review, or strategic analysis of management accounts.

**Exception reporting:** many systems can generate automatic reports for results that fall outside of predetermined threshold values (exceptions), enabling immediate identification of results deviating from the norm. With today's technology it is possible for an email or text alert to be sent directly to a manager when exceptions are identified.

According to CIMA (2008), many of these identification techniques can be automated to make the process more efficient. Hence, Singleton & Singleton (2010) have affirmed the use of technology as an essential thing for maximizing the efficiency and effectiveness of a fraud detection and prevention programme.

Other forensic investigative techniques that can be enhanced with the use of forensic accounting technologies Computer Assisted Review (CAR), which according to Losey (2016), is the review of documents with the assistance of computers and specially designed legal search and review software is a well-established best practice. The term Computer Assisted Review, and the alternative phrase that has the same meaning, Technology Assisted Review, means more than simply reviewing and coding documents on a computer. It is a process where computer software as indispensable tools is used to search and find relevant evidence in a big data setting.

For Galvanize (2015), Data Mining is another technology that is an important analytic process designed to explore data. The most important task in data mining is to extract non-trivial nuggets from large amounts of data. Brown (2012) posited that data mining is about processing data and identifying patterns and trends in that information so that you can decide or judge (Christopher, 2010; Trevor, Robert, & Jerome 2009).

Numbers may be used for more than just determining the strength of a company's financial statements, though. They can also be used for evaluating the quality of financial statements. One method is the application of Benford's Law, which states that many kinds of number sets should follow a logarithmic distribution known as Benford's distribution.

According to Coleman (2014), Frank Benford, a physicist at General Electric back in the 1930s, first

hypothesized the distribution that now carries his name after noticing that the first pages of the logarithm books were significantly more worn than the later pages.

Benford's Law can be used to detect anomalies in data, whether from clerical errors, random chance, or outright manipulation. When a set of numbers expected to conform to the distribution do not do so, this can be a sign that there is something wrong with the data (Coleman, 2014). Forensic accounting involving digging down date and extracting data in order to identify pattern, Benford's Law is a technique that can be employed by the Forensic Accountants in forensic accounting engagement. Benford's law, also called the first-digit law, is an observation about the frequency distribution of leading digits in many real-life sets of numerical data (Singleton & Singleton, 2010).

In the study of Pinkasovitch (2016), he opined that comparative ratio analysis also allows analysts and auditors to spot discrepancies within the firm's financial statements. By analyzing ratios, information regarding day's sales in receivables, leverage multiples and other vital metrics can be determined and analyzed for inconsistencies. A mathematical approach, known as the Beneish Model, evaluates eight ratios to determine the likelihood of earnings manipulation (Pinkasovitch, 2016).

Garcia (2014) emphasized the use of Data Matching technique as a task for finding records that refer to the same entity. Normally, these records come from multiple data sets and have no common entity identifiers, but data matching techniques can also be used to detect duplicate records within a single database. According to the author, Data Matching is also known as Record Linkage, Object Identification or Entity Resolution. It is capable of identifying and matching records across multiple data sets is a very challenging task for many reasons.

### **Revenue Generation in Nigerian Universities**

According to Akinsanya(2007) not so much was known of Internally Generated Revenue (IGR) in the Nigerian higher educational circles about two decades ago. For the era when there were fewer universities in the country and the oil revenue was massively available, the federal government provided all the funding for operations and capital development needs of the universities. Again, given the huge economic misfortunes facing the government, made worse by the recent global financial crises, the challenge of inadequate funding of the universities has become critically revealing. The IGR concept implies that the federal government does not have to accept responsibility for providing funding for all its universities on every expenditure heading. That way, the universities are, therefore, persuaded to seek ways of earning additional revenue locally and to use the same in any areas of university needs that the government is not able to provide for in a given budget period. At the early stage of the introduction of the IGR concept, the federal government had thought of centrally managing the IGR pool from all the federal universities, such that each university was required to forward the yearly IGR inflows to the government, and to, thereafter, apply for release back to it the amount needed for local use. That directive did not survive because of its obvious repugnance (Awitta, 2010 & Hongreen, 2002).

There are literatures indicating that some institutions have done greatly in the drive for substantial IGR contribution whereas a lot of others are yet to catch the vision or face negative environmental constraints (Wangenge-Ouma et al., 2008). The response of the universities in the face of this mammoth financial challenge, on the other hand, is to seek legitimate initiatives that will produce opposite impact on funding. But faced with location, structural and other social cultural challenges, how much of success the institutions can attain invokes a big question mark (Okojie, 2009). Wood (2000) opined that this is not to talk of the political and practical limitation that may confront senior management in her resource allocation function is yet another hurdle to cross.

In the federal universities, the government only funds a narrow list of expenditures including personnel,

research and capital cost development. But one wonders how a university can grow and develop without the right and full funding of the operations. Literature exists to support the claim that the amount the federal government advances for electricity, for instance, is enough to buy diesel for only one month of the 12 months in the year (Adeniyi, 2008).

Internally Generated Revenue (IGR) may be in the form of Education Counterpart Funding Scheme (ECFS) which serves to fund the university system apart from the statutory grant that is received from the Government. Erhagbe (2014) stated that IGR is the creation of “tangible” and “intangible” funds within the confines of one’s entity. It is a combination of all non-governmental monetary accruals to the institution and may involve diverse strategies. This means that the funds used in effectively transforming the institution’s landscape were not borrowed or realized through direct Government intervention. Okojie (2013) observed that some tertiary institutions have done reasonably well in their drive for substantial IGR and have used it to positively change the landscape of the institutions while some were yet to catch up with the vision.

Kpolovie and Esezi (2013) affirmed that over the years the Nigerian governments’ budgetary allocations for education have left much to be desired. According to the authors the allocation trend is abysmally retrogressive; a trend that has the tendency to destroy all that is positive in education. In Nigeria, the Federal Government has compelled each university to generate at least ten percent (10%) of its total revenue to complement its Federal Government allocation for Nigerian universities (Abayomi, 2013). It is in response to this that the universities have expanded the scope of their internally generated revenue to include: student fees/levies, grants and donations, private sector contributions (endowment funds, gifts and donations), commercial activities/consultancy and other diverse initiatives to augment their revenue generation sources (Ogbogu, 2011). These items that are mentioned above, among others are the various sources of internally generated revenue to the Nigerian universities. They are further discussed below.

Although there is a general government embargo on payment of tuition fees for undergraduate programmes in Nigeria, most of the Nigerian universities have devised other methods of fees collection from services such as accommodation in the halls of residence, sports, medical registration, departmental registration, library registration, examination fees and non-refundable admission deposits. These fees usually vary in the amount paid from one university to another (Ogbogu, 2011). Students’ contributions according to Bamiro and Adedeji (2010) for the period 1986-1994 increased from 0.28% to 3.89% of the total internally generated revenue. Also, between 1988 and 1998, the total locally generated income from students’ fees in the universities increased from 4% to 10%. Currently, undergraduate students registered in the various federal universities in Nigeria pay between N30, 000 (\$193.54) and N50, 000 (\$322) as fees; which is still relatively cheap (Ogbogu, 2011; Bamiro & Adedeji, 2010). Although attempts by federal universities to increase levies have always met with stiff opposition by students, it still remains the major source of internally generated funds to the Nigerian universities.

Beyond grants, donations and private sector contributions, Nigerian federal universities have embraced commercial ventures in response to government’s mandate that each university must generate at least 10% of its total revenues. The commercial ventures which are of different kinds include consultancies, petrol stations, bookshops, publishing houses, schools and hotels among others. The margin of profits from the different ventures, ranges from 4.7 million naira to 82.9 million naira annually from each university. The ventures which attract high profit margin are those offering professional services such as consultancy, distant learning programmes and hotel services. It is important to note that the University of Ibadan was the first to develop insights into commercial ventures; many of which were established in the 1970s. Generally, the profits made from these various ventures are ploughed back for expansion and for enhancing the working conditions of staff in the institution (Ogbogu, 2011).

## **Forensic Accounting Technology & Revenue Leakages Prevention**



In the University system, financial frauds case such as revenue leakages and mismanagement of finances are among disturbing issues that have impacted negatively management of the institutions. The implication of this is that a modernized internal control and auditing system that will incorporate the services of forensic accountants is needed in Universities. Thornhill (1995) stated that forensic audits require a clear and detailed audit plan that is designed to obtain information on how, when, and where a wrongdoing occurred and who committed such a wrongdoing.

The importance of forensic accountants in organizations, universities inclusive can be clearly understood from the context of failure in statutory audits to detect and prevent fraud as summarized by Owojori and Asaolu (2009). Forensic evidence plays significant role in settling litigations in law courts since they are universally accepted. According to Eiya and Otao(2013) a forensic accountant engages himself in criminal investigation on behalf of police force where his report is prepared with the objective of presenting evidence in a professional and concise manner. This implies that Universities can benefit significant from forensic evidence one issues relating for revenue leakages from the institutions becomes legal.

Similarly, forensic accountants help in improving the management accountability in an organization and institutions like Universities. Ramaswany (2009) stated that failure of corporate communication structure has made the financial community realize that there is a great need for skilled professionals that can identify, expose and prevent weaknesses in three key areas: poor corporate governance, flawed internal controls, and fraudulent financial statement. Forensic accounting skills are becoming increasingly relied upon within a corporate reporting system that emphasizes its accountability to stakeholders. From the above statement, a forensic accountant with his expert knowledge in crime will help to improve corporate reporting system designed by management which will expose and prevent poor governance, flawed internal control and fraudulent financial statement

Furthermore, forensic accountant is indeed an effective tool for strengthening the independence of auditors in the university system considering the analytic approach and sophisticated approaches to investigation of fraudulent acts. Most times external auditors are afraid to report cases of fraud committed by management to the stakeholders even when such frauds are obvious. This impairs the independence of the auditor who is afraid of losing his job since most times they are appointed by management who prepares accounts that is being audited (Albrecht, Albrecht& Dunn, 2001). According to Albrecht (2005) improving financial reporting system with expertise knowledge and skill in both financial matters, the forensic financial reporting system through the use of proactive method of fraud detection have strengthened external auditor's independence. Thus, since it has been noted that the incidences of revenue leakages in universities have been attributed largely to the ineffectiveness of their internal control system, forensic accounting skills therefore will significantly help in identifying points of leakages and proffer remedies for avoid such accounting lapses that are detrimental to the effective management of universities.

More so, forensic auditing as an aspect of forensic accounting will provide reliable and accurate evidences that will enhance the effectiveness of audit committees in an organization and in the university system in particular. Forensic accountants will assist audit committee members in carrying out their oversight functions by providing better tools that ensures that quality assurance audit report on the financial position of universities are produced by the external auditor. This of course is not unconnected to the view of Adewale (2008) that a forensic accountant in carrying out his responsibilities of controlling fraudulent activities use data driven fraud detection tool which is proactive unlike the traditional approach which is reactive and is been adopted by the external auditor in carrying out statutory audit functions.

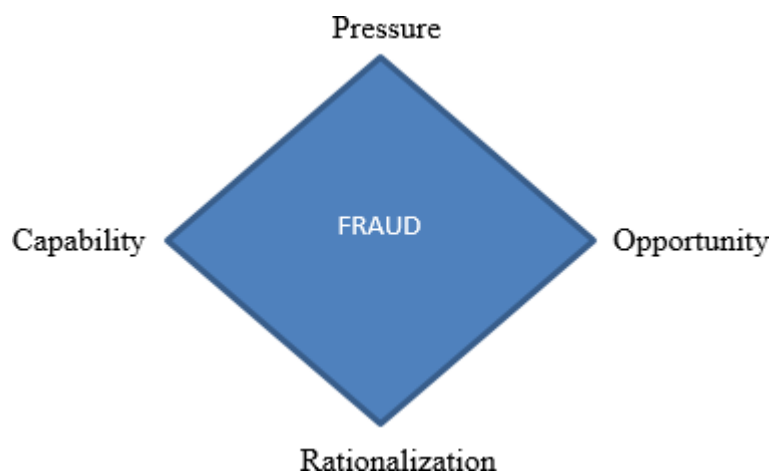
Another significant role of forensic accounting in the University system is that it is important tools that can be employ to detect frauds such as leakages in revenue accruable to the institutions scientifically and accurately. With the use of technological devices, a forensic accountant can easily detect financial fraud

perpetrated by either, account staff, management and their associate thereby preventing corporate failure. Their interview technique to evidence gathering is a sure way to achieving this aim. This agreed with, Cleary and Thibodeous (2005) that the forensic accountant knows how to detect and prevent business fraud using Benford law which is a fraud analytical digital tool. Hence, it could be said that a forensic accountant in helping to detect and prevent fraudulent activities could be seen to have helped organizations in reducing financial fraud which most times had leads to corporate collapse. Thus, since universities in Nigeria are not immune of fraudulent acts and revenue leakages related frauds in particular, the application of forensic accounting skills and techniques as alternatives to the current internal control mechanism used in these institutions will significantly help in blocking eminent and hidden sources of revenue leakages.

### Theoretical Framework

The study is based on fraud diamond theory and computer crime theory known as MOMM.

The fraud diamond theory provides a framework in which this study has anchored. The theory is propounded by Hermanson and Wolfe in 2004, which is a mere extension of the fraud triangle, which is the work of Cressey Donald in 1953. Hermanson and Wolfe (2004) argued that the diamond offers a better view of the factors leading to fraud. They added a fourth variable known as capability to the three-factor theory of Donald Cressey. The fraud perpetrator according to them must have the necessary traits, abilities or positional authority to pull off his crime. Wolfe and Hermanson (2004) argued that although perceived pressure might coexist with an opportunity and a rationalization, it is unlikely for fraud to take place unless the fourth element (i.e., capability) is also present. In other words, the potential perpetrator must have the skills and ability to commit fraud.



**Figure1: Fraud Diamond Theory**

**Source: Wolfe & Hermanson (2004, p.40)**

The fraud diamond by Wolfe and Hermanson (2004) maintained that opportunity opens the doorway to fraud, and incentive (i.e. pressure) and rationalization lead a person toward the door. However, capability enables the person to recognize the open doorway as an opportunity and to take advantage of it by walking through repeatedly.

### Computer Crime Theory: MOMM

MOMM one theory of computer-related crime, which is similar to the fraud triangle but specific to computer crime. Its acronym stands for motivations, opportunities, means, and methods and was propounded by Singleton & Singleton (2010) in their book called Fraud Auditing and Forensic Accounting,

Fourth Edition. Two of its elements are same with that of the fraud triangle (omitting only the rationalization leg). Means is closely related to opportunities and internal controls, with the addition of technology. Methods applies the systems model to computer-related fraud, but with clear inferences to the fraud tree for the schemes being committed using those methods. The computer-related theft can be depicted as an iterative process (see Figure 2).

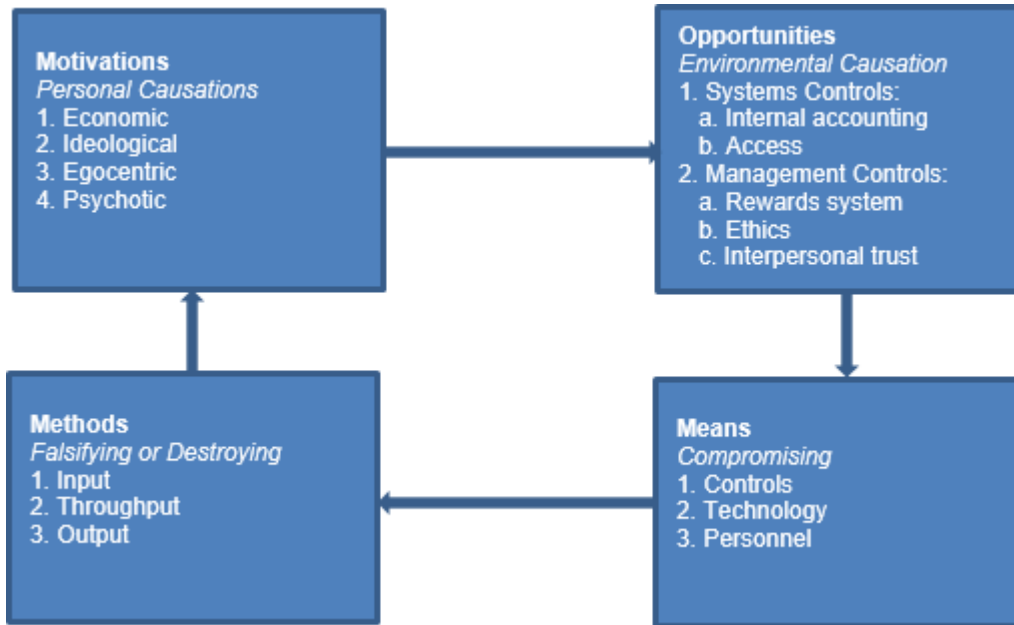


Figure 2: Computer Theft Iteration Theory (MOMM)

Source: Singleton, T. W. & Singleton, A. J. (2010)

**Economic motives** indicate that perpetrators have money as a main purpose. They have a need or desire to secure a financial gain from the crime. The object of the fraud does not have to be money, just something that can be converted into or exchanged for money.

**Ideological motives** are demonstrated when perpetrators feel compelled to seek revenge against someone or when they believe something is oppressing or exploiting them, not necessarily involving any economic motive. For example, acts of stealing classified information for foreign entities is often conducted for political and ideological reasons. Sabotage against computers by disgruntled employees is another example. Such criminals may think that computer technology threatens their economic and political survival or well-being, or may simply be seeking revenge.

**Egocentric motives** are those associated with egos, power, and pride. Most frauds include this motive to some degree. Young enthusiasts who seek the thrill of the challenge to commit computer frauds or crimes exhibit egocentric motives.

**Psychotic motives** include a distorted sense of reality, delusions of grandeur or persecution, and exaggerated fears of computers. There have been few reported incidents of computer abuse where psychotic motives were attributed to perpetrators.

Environmental conditions that have provided motives for computer related crime and abuse include both the internal environment of the firm that operates a computer and the external environment (the world or marketplace in general). Internal influences that can add to the motive for computer related crime and abuse include:

1. Work environment
2. Reward system
3. Level of interpersonal trust
4. Level of ethics in the entity’s culture
5. Level of stress (pressure for performance)
6. Level of internal controls effectiveness

Externally, motives for computer-related crime and abuse may be provided by the current morals and social values of society, competitive conditions in the industry, and economic conditions in the country or the world (Singleton & Singleton, 2010). The study anchors on these two theories, Fraud Diamond and MOMM.

## METHODOLOGY

This work employed the use of survey research design, which has necessitated the sourcing and use of primary data for the study. The choice of survey research design method was based on the fact that it uses observed data from a target population, and any reaction of that population to the study phenomenon. Enyi (2013) claimed that in any research is carried out in social and management sciences, the survey research is aimed mainly at creating a controlled relationship which can be used to take care of phenomena. The primary data were collected with aid of research questionnaire. A convenient sample size of 250 was taken from the population of forensic investigators of the Economic and Financial Crime Commission (EFCC) and internal audit staff of selected Federal Universities in North East Nigeria, and copies of the questionnaire were accordingly issued to the target respondents. However, only 221 copies were returned and accepted as valid for our analysis. The study used multiple regression to analyse and prove the two propositional statements that were made earlier.

## RESULTS AND DISCUSSION

**Table 1: Correlation Matrix**

		PRL	FAT	FAIT
PRL	Pearson Correlation	1	.583**	.422**
	Sig. (2-tailed)		.000	.000
	N	221	221	221
FAT	Pearson Correlation	.583**	1	.453**
	Sig. (2-tailed)	.000	.000	
	N	221	221	221
FAIT	Pearson Correlation	.422**	.453**	1
	Sig. (2-tailed)	.000	.000	
	N	221	221	221

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

The correlation result for dependent and independent variables in table 11 shows that all the variables have a positive relationship to Preventing Revenue Leakage (PRL). The result revealed that Forensic Accounting Technology (FAT), and Forensic Accounting Investigation Techniques (FAIT) correlate to Preventing Revenue Leakage (PRL) by 58.3% 69.3 and 42.2% respectively. This means that only Forensic Accounting Investigation Techniques correlated weakly to Preventing Revenue Leakage (PRL) by 42.2%.

**Table 2: Multicollinearity**

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	FAT	.574	1.742
	FAIT	.765	1.308

From Table above, the variance inflation factor (VIF) for the predictors are used to test if there is a strong linear association among them. The result of the multicollinearity shows that there is no multicollinearity among the independent variables, since the values of the VIF are all less than 4 which is the benchmark.

**Table 3: Coefficient of Determination and Durbin-Watson Test**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.728 a	.530	.523	.70165	2.031
a. Predictors: (Constant), FAT, FAIT					
b. Dependent Variable: PRL					

Table above shows the result of the summary of the correlation coefficient, *R*-Squared, adjusted *R*-squared standard error of estimated and the Durbin-Watson. In a multiple regression model, the *R*-squared shows the proportion of the total sample variation in the dependent variable that is explained by the independent variable. The coefficient of determination  $r^2=0.530$  shows a 53.0% contribution of Forensic Accounting Technology (FAT) and Forensic Accounting Investigation (FAIT) to Preventing Revenue Leakages (PRL). On the basis that the coefficient of determination is more than 50%, the two null hypotheses are rejected, meaning that forensic accounting technology and investigative techniques have significant positive effects on revenue leakages prevention in Nigerian federal universities. Forensic accounting technological tools have been discovered to be very effective in detecting and preventing any fraudulent activities of e transactions. Also, forensic accounting investigative techniques, as given in the literature, can help to search for documents' key words and sort documents by date ranges using computer. Worthy of note is the result from Durbin-Watson test which indicates no auto-correlation since the value is approximately 2.

## CONCLUSION AND RECOMMENDATION

In this study, an empirical analysis was conducted to determine the effect of forensic accounting investigative techniques in preventing revenue leakages in Nigerian Federal Universities. Based on the findings of the research, conclusions are drawn with specific reference to the Nigerian Federal Universities: the application of forensic accounting technologies and investigative techniques will help in preventing revenue leakages in Nigerian Federal Universities by more than 50%. On the basis of this conclusion, the study recommends the creation of a forensic accounting unit, or at least the deployment and application of forensic accounting investigative techniques in the audit unit of Federal Universities Nigerian so that further revenue leakages can be minimised.

Nigerian Federal Universities can acquire or develop these sorts of digital tools that have been found to be helpful in fighting economic and financial crimes. This recommendation is not without cost implications for engaging additional personnel on the University payroll, acquisition or developing of software, and or having to spend more regular and intensive training of internal auditors on the acquisition of skills and

technologies of forensic accounting.

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