EFFECT OF FORENSIC ACCOUNTING TOOLS ON FRAUD INVESTIGATIONS USING
BENEISH FRAUD STATEMENT INDEX

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ABSTRACT
The study examined the effect of forensic accounting tools on fraud investigation using Beneish fraud statement index. Forensic accounting has been pivotal in the corporate agenda after the financial reporting problems which took place in some companies around the world; for example, Enron, Tyco, and WorldCom. These scandals resulted in the loss of public trust and huge amounts of money. Forensic accounting goes beyond fraud prevention but inclusion of marital issues, disputes etc. The study employed Beneish fraud statement index. The M-Score uses eight financial ratios to detect whether a company has manipulated its earnings. The variables were generated from the company’s financial statements and create a score to describe the extent to which the earnings have been manipulated. The M-Score focused on earnings manipulation, the M-Score greater than -2.22 indicate that the company has maneuverer with its earnings. It needs to be noted that fraud could be handled through three main strategies: prevention, detection and control.

Keywords: Fraud, Forensic Accounting, investigation tools, Beneish fraud statement index

INTRODUCTION
Forensic accounting is rapidly growing area of accounting concerned with the detection and prevention of financial fraud and white collar criminal activities (Kranacher, 2010). ‘Forensic Accounting Forensic Investigation involves total reporting, where the accountability of the fraud is based on the evidence from the court of law or in the administrative proceeding. It is often said Accountants look at the numbers but Forensic accountants look behind the numbers (Okoye 2009). Forensic accountants are trained to look beyond the numbers and deal with the business realities of the situation.
Analysis, interpretation, summarization and presentation of complex financial and business-related issues are prominent features of the profession (Bhasin 2007). Forensic accounting is a useful tool in detecting, investigating and preventing fraud especially where corporate fraud is a global phenomenon in the likes of Enron, WorldCom fraud (SOX 2002).

Apparently in Nigeria, the Cadbury PLC scandal has remained a reference point for fraudulent financial reporting while other incidences of fraudulent financial reporting in Nigeria include the fraud at Afri-bank Plc and Lever brothers (Nig) Plc (Ajayi 2006). Fraudulent financial reporting has dire consequences for the economy of any Nation and the victim organisations. Its effects include financial loss and dent on the reputation of the victim organization (Burnaby et al. 2011). Effect of the financial fraud is considered to be billions of dollars yearly (Bourke, 2006). In the light of the high profile fraud at WorldCom and Enron average loss per case increased to $400million (Beasley et al. 2010). Also, Enron scandal had led to the disintegration of Arthur Anderson- an International Accounting firm. Thus, in Nigeria, the growing incidence of corporate fraud has meant that investors’ confidence in the capital market has waned. In fact the current down turn in the market has been blamed partly on the fraud at the Nigerian Stock Exchange (Osaze 2011). Investors in Cadbury (Nig) plc also lost heavily as the share price of the company took a downward turn. In view of this, therefore, the researcher is interested to undertake a study on the impact of Forensic Accounting as Tools on Fraud Investigations in Nigeria.

LITERATURE REVIEW

Forensic Accounting

Forensic accounting employ the use of accounting, auditing, information systems and investigative skills to conduct investigations into fraudulent practices. It is listed among the top 20 careers of the future. The main job of forensic accountants is to catch fraud perpetrators and also tracing money laundering and identity theft activities as well as tax evasion. Insurance companies hire forensic accountants to detect insurance frauds such as arson, and law offices employ forensic accountants to identify marital assets in divorce cases (Babatunde, 2017 & Weygandt et al. 2008). Forensic accounting has been pivotal in the corporate agenda after the financial reporting problems which took place in some companies around the world. These scandals resulted in the loss of public trust and huge amounts of money. Forensic accounting goes beyond fraud prevention but inclusion of marital issues, insurance, disputes etc (Babatunde, 2017). In addition, in order to avoid fraud and theft, and to restore the badly needed public confidence, several companies took the step to improve the infrastructure of their internal control.
and accounting systems drastically that forensic accounting was developed (Babatunde, 2017, Weygandt el al, 2008 & Wells, 2003).

**Forensic Accounting Versus Fraud Examinations**

Forensic accounting and fraud examination are different but related. Forensic accounting work is done by accountants in anticipation of litigation and can include fraud, valuation, bankruptcy and a host of other professional services. Fraud examinations can be conducted by either accountants or non-accountants and refer only to antifraud matters (Wells, 2003).

However, previous studies on fraud examination has identified that revenue account as most primary target for financial statement fraud (Perols, 2008 & Beneish, 1997). Areas of improper revenue recognition include bill-and-hold sales, conditional sales, fictitious sales and improper cut-off sales. Usually, financial statement fraud can be committed through the following tools: Falsification, alteration or manipulation of material financial records, supporting documents or business transactions Material intentional omissions or misrepresentations of events, transactions, accounts or other significant information from which financial statements are prepared Deliberate misapplication of accounting principles, policies and procedures used to measure recognize, report, and disclose economic events and business transactions

Moreover, intentional omission of disclosures or presentation of inadequate disclosures regarding accounting principles and policies and related financial amounts (Tiscini & Donato, 2004) Recording fictitious revenues was the most common way to manipulate revenue accounts Recording revenues prematurely was the second most common type of revenue related financial statement fraud (Abd et al. 2010). Three common methods of concealing liabilities and expenses are: (i) Liability/expense omissions, (ii) Capitalisation of expenses and (iii) Failure to disclose warranty costs and liabilities (AICPA 2007). A study of fraud in a non-profit organizational setting found the following among others: Cash is the most common type of asset misappropriated.

One type of cash misappropriation is fraudulent disbursement that occurs when an organization pays an expense that it does not owe; There are many types of fraudulent disbursement transactions; Fraudulent billing occurs when false or inflated invoices are paid; Expense reimbursement fraud occurs when falsified claims for expenses are submitted by employees for such things as travel reimbursement; Corruption can take the form of bribes where cash or another asset is accepted or paid to aid in the fraud. Reward can also be accepted or paid for the fraud; Conflicts of interest was the most common type of corruption (Greenlee et al. 2006).
Roles of Forensic Accountant in Public and Private Sector

Criminal Investigations
The police can call upon practicing forensic accountant to help in criminal investigations relating to corporate bodies as well as individuals. The forensic accountant is also encourage to use his skills to examine documents and other available evidence to give his/her opinion.

Fraud Investigations and Computer Forensic
Forensic accountant may be called upon to assist in business investigations which involve fund tracings, asset identification and recovery. Forensic accounting intelligence and due diligent review. Forensic accountant undertake a detailed review available to make an informed decision and given assistant in electronic data recovery and enforcement of rights.

Matrimonial Disputes
Solicitors most often times need the services of forensic accountant in divorce case involving disputes about matrimonial assets. Matrimonial disputes require forensic accountant to trace, locate and evaluate assets. The assets will be valued to ensure equity when dividing/splitting the divorcing couples’ assets and liability.

Personal injury claims
Where losses arise as a result of personal injury, insurance companies sometimes seek expert opinion from forensic accountants before deciding whether the claim is valid, and how much to be paid.

Litigation Consultancy
Working with lawyers and their client in litigation and assisting with evidence, strategy and case preparation. So, they attend to present investigative evidence to the court so as to assist the presiding judge in deciding the outcome of the case.

Professional Negligence
Forensic accountants assist in professional negligence matter to investigate whether such act of negligence has taken place and to quantify the loss which has resulted from such negligence. The professional might be lawyer, accountant, engineer e.t.c while the expert use his/her investigative skills to provide the required services.

Expert Witness Cases
Forensic Accountants are normally called to court to testify in civil and criminal court hearings, as expert witnesses to present investigative evidence to the court so as to assist the presiding judge in deciding the outcome of the case.

**Meditation and Arbitration**

Forensic accountants assist in professional negligence matter to investigate whether such act of negligence has taken place and to quantify the loss which has resulted from such negligence. The professional might be lawyer, accountant, engineer etc. The expert use his/her investigative skills to provide the required services.

**Forensic Accounting Tools**

**Training**

The training received by accountants is a very good basis for fraud examination. The broad understanding of business processes, is an important asset, as is their knowledge of the systems and procedures that should be in place within an organisation, to allow it to operate efficiently and effectively. A further asset is the ability to think and act logically, which is something the management accountant develops with experience. Therefore, the first important tool available is training and experience.

**Mindset**

The second tool is the necessary mindset – that fraud is always a possibility. A healthy amount of professional scepticism should be maintained when considering the potential for fraud. This does not mean that every time someone seems to be working excessive overtime, without taking leave, they are in the process of committing a fraud, or that inaccuracies in the accounts are there to cover up a fraud. Nevertheless, they might. Having considered the possibility of fraud, the next step may be to undertake some further research or pass concerns to a line manager.

**Risk Assessment and Systems Analysis**

Undertaking a fraud risk assessment and design specific tests is 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. It is important to examine the systems in place and identify any weaknesses that could be opportunities for the fraudster.

**Mathematical Modelling**
Mathematical modelling involves using the varieties of tools on a spreadsheet that can help to identify patterns in expenditure. There are also specialist mathematical models such as Benfords Law, Altman’s discriminant function algorithm, Beneish Fraud Statement Index, they are all mathematical formula which can help identify irregularities in accounts. Database modelling can also be utilised. (Ifath, Pranathi, Asra, & Amathun, 2014)

**Exception Reporting**

Many systems can generate automatic reports for results that fall outside of predetermined threshold values 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. The conventional accounting and auditing with the help of different accounting tools like ratio technique, cash flow technique, a standard statistical tool examination of evidences are all part of forensic accounting. The fast-changing world of information technology and the exponential increase in the use of computer systems threaten the forensic accounting fraternity. The technology used by criminals and fraudsters is changing constantly and forensic accounting need to stay on top of their game to prevent and detect these fraudulent practices.

**Financial Statement Fraud**

**Improper recognition of Assets**

Chartered Institute of Management Accountants (CIMA) defined financial statement fraud as holding the books open after the end of the accounting period, Inflation of sales figures which are credited out after the year end, backdating agreements, recording fictitious sales and shipping, improper classification of revenues, inappropriate estimates for returns, price adjustments and other concessions, Manipulation of rebates, recognising revenue on disputed claims against customers, recognising income on products shipped for trial or evaluation purposes, improper recording of consignment or contingency sales, over/under estimating percentage of work completed on long-term contracts, Incorrect inclusion of related party receivables, side letter agreements: agreements made outside of formal contracts, round tripping (practice whereby two companies buy and sell the same amount of a commodity at the same price at the same time. The trading lacks economic substance and results in overstated revenues), Bill and hold transactions (where the seller bills the customer for goods but does not ship the product until a later date), Early delivery of product/services such as partial shipments, soft sales, contracts with multiple deliverables, upfront fees), Channel stuffing or trade loading; where a company inflates its sales figures by forcing more products through a
distribution channel than the channel is capable of selling).

**Mis-Statement of Assets, Liabilities and Expenses**
Overstating assets acquired through merger and acquisitions, Improper capitalisation of expenses as fixed assets such as software development, research and development, start up costs, interest costs, advertising costs. Manipulation of fixed asset valuations, schemes involving inappropriate depreciation or amortisation, Incorrect values attached to goodwill or other intangibles, fictitious investments, improper investment valuation such as misclassification of investments, recording unrealised investments, declines in fair market value/overvaluation; fictitious bank accounts, inflating inventory quantity through inclusion of fictitious inventory, improper valuation of inventory, fraudulent or improper capitalisation of inventory, manipulation of inventory counts, Accounts receivable schemes such as creating fictitious receivables or artificially inflating the value of receivables, Mis-statement of prepayments and accruals, Understating loans and payables, Fraudulent management estimates for provisions, reserves, foreign currency translation, impairment, Off balance sheet items, Delaying the recording of expenses to the next accounting period.

**Other Accounting Mis-Statements**
Other accounting mis-statement includes: improper treatment of inter-company accounts, Non clearance of suspense accounts, misrepresentation of suspense accounts for fraudulent activity, Improper accounting for mergers, acquisitions, disposals and joint ventures, manipulation of assumptions used for determining fair value of share based payments, Improper or inadequate disclosures, Fictitious general ledger accounts, Journal entry fraud (using accounting journal entries to fraudulently adjust financial statements), Concealment of losses.

**Forensic accounting theory**
Forensic accounting theory looks at how the accounting and non-accounting decisions made at the start, during or at the end of the investigation process affects the choice of forensic detection methods and techniques used, and the interpretation of the findings of forensic investigation. Forensic accounting theory states that the techniques and methods used to detect fraud reflect the accounting and non-accounting decisions that were taken into consideration by the forensic investigator. In other words, the main premise of forensic accounting theory is that the choice of forensic detection methods is not merely a result of the forensic investigator’s experience, skills or knowledge but rather depends on the accounting and nonaccounting considerations made by the forensic investigator at the start, during, or at the end of fraud detection process.
Thus, forensic accounting theory suggest that the choice of methods or techniques used to detect creative accounting or manipulations in financial reporting, and the outcome of using such methods or techniques, reflect the accounting and non-accounting decisions that were taken into consideration by the forensic accountant or investigator.

**METHODOLOGY**

The study employed the use of secondary data using financial statements of Enron Corp, these statements consist of income statement, balance sheet statement and cash flows statement. A financial fraud exists if the numbers in the three statements are not correctly interrelated. Using the guidelines provided by Modified Altman, Beneish, thus a determination would be made as to whether or not the resulting picture from the ratios or indexes from Enron’s financial statements make good sense, or otherwise give indication of possible fraud and imminent bankruptcy. The analysis would also give a clue as to the earliest period when the fraud might have occurred.

**DISCUSSION ON RESEARCH FINDINGS**

Findings Using Beneish Fraud Statement Index

The study employed Beneish fraud statement index. The M-Score uses eight (8) financial ratios to detect whether a company has manipulated its earnings. The variables were generated from the company’s financial statements and create a score to describe the extent to which the earnings have been manipulated. The M-Score focused on earnings manipulation, the M-Score greater than -2.22 indicates that the company has maneuverer with its earnings. The eight variables used for developing the M-Score were as follows:

- **DSRI** - Days’ sales in receivable index = \( \frac{\text{receivables current year/sales current year}}{\text{receivables prior year/sales prior year}} \).
- **GMI** - Gross margin index = \( \frac{\text{(sales prior year minus cost of goods sold prior year)/sales prior year}}{\text{(sales current year minus cost of goods sold current year)/sales current year}} \).
- **AQI** - Asset quality index = \( \frac{\text{Current assets + Property, plant and equipment}/\text{Total assets}}{\text{sales current year/sales prior year}} \).
- **GI** - Sales growth index = \( \frac{\text{sales current year/sales prior year}}{\text{sales current year/sales prior year}} \).
- **DEPI** - Depreciation index = \( \frac{\text{Depreciation current year/ Depreciation + PPE current year}}{\text{Depreciation prior year/ Depreciation + PPE prior year}} \).
- **SGAI** - Sales and general and administrative expenses index = \( \frac{\text{sales, general and administrative expenses current year/sales current year}}{\text{sales, general and administrative expenses current year/sales current year}} \).
administrative expenses prior year/sales prior year.

LVGI-Leverage index = [Long term debt + Current liabilities current year/Total assets current year]/[Long term debt + Current liabilities prior year/Total assets prior year.

TATA - Total accruals to total assets (Omar et al., 2014). = [Change in working capital – change in cash – change in current tax payable – depreciation and amortization]/Total Assets.

\[ M = -4.84 + 0.92 \times DSRI + 0.528 \times GMI + 0.404 \times AQI + 0.892 \times SGI + 0.115 \times DEPI - 0.172 \times SGAI + 4.679 \times TATA - 0.327 \times LVGI \] [9].

**ANALYTICAL TOOLS**

Days sales Receivables Index – A ratio of 1:1 shows steady relationship. If account receivable is becoming a larger % of sales, examine the situation.

Gross Margin Index – A ratio of less than 1:1 indicates declining operational efficiency and may give rise to fraudulent activity.

Asset Quality Index – When the ratio is greater than 1:1, it would indicate that costs are being capitalized and deferred. Examine such a situation.

Sales Growth Index – Ratio of current sales to previous year’s sales.

Total Accruals to Total Assets – A large result indicates that a growing percentage of the entity’s working capital is comprised of non-cash items. Examine the situation.

**FINDINGS FROM FRAUD DETECTION USING BENEISH**

The results for the above mentioned tools are as follows (Table 1): The formula for Beneish: Fraud Statement Index is

\[ M \text{-score for 2001} = -4.84 + 0.92 \times DSRI + 0.528 \times GMI + 0.404 \times AQI + 0.892 \times SGI + 0.115 \times DEPI - 0.172 \times SGAI + 4.679 \times TATA - 0.327 \times LVGI = -4.84 + 0.92 \times 0.51 + 0.528 \times 1.15 + 0.404 \times 0.90 + 0.892 \times 1.11 + 0.115 \times 0.92 - 0.172 \times 0.18 + 4.679 \times 0.13 - 0.327 \times 0.83 = -4.84 + 0.4692 + 0.6072 + 0.3636 + 0.99012 + 0.1058 - 0.18576 - 0.60827 + 0.27141 = -3.36952 \]

Means manoeuvred its earnings.

\[ M \text{-score for 2000} = -4.84 + 0.92 \times DSRI + 0.528 \times GMI + 0.404 \times AQI + 0.892 \times SGI + 0.115 \times DEPI - 0.172 \times SGAI + 4.679 \times TATA - 0.327 \times LVGI = -4.84 + 0.92 \times 0.55 + 0.528 \times 0.05 + 0.404 \times 0.85 + 0.892 \times 1.77 + 0.115 \times 3.65 - 0.172 \times 0.46 + 4.679 \times 0.18 - 0.327 \times 0.98 = -4.84 + 0.506 + 0.0264 + 0.3434 + 1.57884 + 0.41975 - 0.07912 - 0.84222 + 0.32046 = -3.20741 \] means
manoeuvred its earnings.

M-score for 1999 = -4.84 + 0.92*DSRI + 0.528*GMI + 0.404*AQI + 0.892*SGI + 0.115*DEPI – 0.172*SGAI + 4.679*TATA – 0.327*LVGI =

- 4.84 + 0.92 *1.18 + 0.528 * 6.51 + 0.404 *0.33 + 0.892 *1.04 + 0.115*1.28 – 0.172 *1.15 +4.679 *-0.12 – 0.327 * 0.91 = - 4.84 +1.0856 +3.43728 +0.13332 +0.92768 +0.1472 -0.1978 -0.56148 -0.29757 = -0.16577 means not manouvered its earnings.

M-score for 1998 = -4.84 + 0.92*DSRI + 0.528*GMI + 0.404*AQI + 0.892*SGI + 0.115*DEPI – 0.172*SGAI + 4.679*TATA – 0.327*LVGI = -4.84 + 0.92 *1.61 + 0.528 * 1.67 + 0.404 *0.37 + 0.892 *0.99 + 0.115*1.02 – 0.172 *1.29 +4.679 *-0.09 – 0.327 * 1.02 = - 4.84 + 1.4812+0.88176+0.14948+0.88308+0.1173-0.22188-0.42111-0.33354= -2.30371 means manoeuvred its earnings

**OTHER ANALYTICAL TOOLS**

The days sales Receivables Index – The ratio dropped since 2000 hence, further examination is needed. Growth margin Index – The ratio declines massively in 2000 indicating examining is needed. Sales growth Index – The ratio is increasing since 1999 hence, examining is needed.

Total accruals to Total assets – This is showing negative results throughout the period 1997-2001.

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<td>[receivables current year/sales current year]/[receivables prior year/sales prior year]</td>
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<td>[(sales prior year minus cost of goods sold prior year)/sales prior year]/[(sales current year minus cost of goods sold current year)/ sales current year]</td>
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<td>[Current assets + Property, plant and equipment]/Total assets</td>
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<td>[Depreciation current year/Depreciation + PPE current year]</td>
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### RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER STUDIES

It can be concluded from the results that between the period of 1999-2000, the fraud could be detected using the above mentioned forensic accounting tools. It needs to be noted that fraud could be handled through three (3) main strategies, preferably in the order as follows: Prevention, Detection and Control (Denteh, 2011). Notably this study recommends the followings: Certified accountants conducting fraud examination should avoid the following mistakes: (i) Conducting a fraud investigation without sufficient skill; (ii) Not engaging the services of an anti-fraud expert; (iii) Not using the fraud theory method; (iv) Not handling the evidence well; (v) Not considering the legal repercussions of fraud; and lastly (vi) Not possessing adequate interviewing skills.

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