

**EFFECT OF FORENSIC ACCOUNTING ON FRAUD DETECTION IN
THE NIGERIAN DEPOSIT MONEY BANKS**

BY

**IBRAHIM, KAMALUDEEN FUNSHO ADISA
(NSU/ADM/PhD/008/11/12)**

**A THESIS SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES,
NASARAWA STATE UNIVERSITY, KEFFI, IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE AWARD OF DEGREE OF
DOCTOR OF PHILOSOPHY IN
ACCOUNTING AND FINANCE**

**DEPARTMENT OF ACCOUNTING,
FACULTY OF ADMINISTRATION,
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OCTOBER, 2018

DECLARATION

I hereby declare that this thesis has been written by me and it is a report of my research work. It has not been presented in any previous application for PhD Accounting and Finance or any other degree to the best of my knowledge. All quotations are indicated and sources of information specifically acknowledged by means of references.

IBRAHIM, Kamaluddeen Funsho Adisa
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Date

CERTIFICATION

This thesis entitled the “Effect of Forensic Accounting on Fraud Detection in the Nigerian Deposit Money Banks” meets the regulations governing the award of Doctor of Philosophy (Ph.D.) Degree in Accounting and Finance of the School of Postgraduate Studies, Nasarawa State University, Keffi for its contribution to knowledge and literary presentation.

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DEDICATION

This thesis is dedicated to Almighty ALLAH, The Giver of Knowledge and Wisdom, and to the loving memory of my late parents, Alhaji Ibrahim Salahudeen and Alhaja Halimat Sadiyyat Abebi Ibrahim.

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ABSTRACT

The complex nature of fraud in the global economy remains an inexplicable and fundamental issue of great concern, not only to the regulatory authorities, but also to the policy analysts and the investing public. The paradigm shift in the accounting profession assumes roles in forensic accounting as a new specialty due to upsurge of fraud. Despite the perception that there is a steady growth in the supply of forensic accountants in Nigeria, the rate of fraud across all banks continues to climb exponentially. This study examines the effect of forensic accounting on fraud detection in the Nigerian deposit money banks. The study is based on ex post facto and survey research designs. Data were collected through primary and secondary sources. Analysis of secondary data was done using Ordinary Least Square (OLS) regression technique which further necessitated correction of the problem of autocorrelation via Generalized Least Square regression. Bootstrapping estimation procedure was also carried out to confirm the regression results from the tested hypotheses. Analysis of primary data was undertaken, using One-way ANOVA. The results from the findings based on the bootstrapping estimation method, clearly suggest that an increase in the engagement of forensic accountants, forensic litigation support skill acquired by qualified accountants and forensic investigation skills acquired by non-qualified accountants has significantly reduced the incidence of fraud in deposit money banks in Nigeria. The results further reveal that forensic accounting expert consultation is yet to have a significant impact on fraud detection in deposit money banks. Also, forensic accounting professional certification significantly contributes to fraud detection by meeting such criteria as body of knowledge, ethical code of conduct and protection of public interest but fails to adequately fulfill the control of entry requirements. Consequently, the study recommends among other policy options for more awareness campaign by professional bodies to educate bank regulatory authorities on constant utilization of forensic accounting services, the need for more training and retraining of professional accountants on the relevance of forensic litigation support engagement and forensic investigative mentality on bank fraud cases, the need for minimization of forensic expert consultancy expenditure owing to its insignificant impact on fraud reduction and the need to restructure and standardize the control of entry procedure in order to adequately regulate entrance into the profession.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Banking sector is the life wire of any economy. Perpetual escalation of fraud in Nigerian banks for over a decade has continued to induce loss of public confidence, threaten the going concern of deposit money banks and cause adverse effect on shareholders' wealth, requiring improved statutory and regulatory frameworks governing both the industry and the accounting practice.

Today, the integrity and functional roles of Nigerian banks have been impaired due to pervasive increase in fraud and other deviant behaviours. According to Ibor (2016), fraud not only incapacitates Nigerian banks' effective delivery of their economic functions, but also piles pressure on the nation's scarce foreign exchange resources with no visible economic benefits being transmitted to the productive sector and the general public.

The paradigm shift in the accounting profession has put a focus on the need for forensic accounting. Developed economies such as the United States, Australia, United Kingdom, Malaysia among others, have witnessed rapid growth in the demand for this service which continues to create expanding opportunities and increasing professionalism of forensic accounting practice. The current prominence of forensic accounting masks the fact that the discipline's emergence can be traced back to over 5000 years.

Ocansey (2017) ascribes the origination of forensic accounting to Kautilya, the first economist to proclaim the imperative for forensic accounting. His treatise on accounting concepts mentioned forty different ways of misappropriation and the consequential penalty for accountants liable to fraud, incompetence or negligence.

The establishment of the chartered accounting professional body in Scotland in nineteenth century under which both lawyers and accountants worked together as members of the same association, legalized lawyers to offer client accounting services while accountants too incorporated the duties of expert witnesses in their audit function. The implication is that during this period, legal duties encompassed a significant aspect of the auditor's responsibilities. In the early part of the twentieth century, auditor's duties had increased while court appearances reduced, indicating that modern-day forensic accounting marks a return to accounting root.

The phrase 'forensic accounting' was first coined in print by Maurice E. Peloubet in 1946 when he was a partner in a public accounting firm called Pogson, Peloubet & Co., New York City, U.S.A.. He emphasized that during the war, both the public and industrial accountants had been and are now engaged in the practice of forensic accounting.

Forensic accounting is a new specialty area in accounting profession that involves intellectual application of accounting, auditing and investigative expertise to collect, analyze and report financial information for the purpose of finding reliable evidences suitable for use at the law court or in administrative proceedings. Forensic accounting

services are often provided in the areas of litigation support engagement, fraud investigation, expert witnessing, forensic expert consultation, dispute resolution and a host of other services, using an intuition approach. Imoniana, Antunes and Formigoni (2013) also identify prominent areas of forensic accounting service to include: economic damages calculations (whether suffered through tort or breach of contract); litigation support, business/employee fraud investigations, financial/securities frauds, business interruptions/business failures, computer forensics/e-discovery, discovery of hidden assets, professional negligence, matrimonial disputes.

The field is undoubtedly attracting attention as a result of persistent occurrence of frauds but it remains inexplicable why it is under-utilized in banking environment. There is also some debate in relation to the role of forensic accountants and questions relating to what qualifications, skills and experience they should hold (Chen & Akkeren, 2012). While developed economies such as United States, United Kingdom, Australia and others have been able to minimize the occurrence of financial fraud across all sectors, the menace is rather on the increase in Nigeria, despite the establishment of anti-corruption agencies (Independent Corrupt Practices and Other Related Offences Commission (ICPC) and the Economic and Financial Crimes Commission (EFCC).

Qualified forensic accountants are in short supply, and the demand for their services is projected to remain strong, given a tenuous economic climate, an ever-changing regulatory environment and projected increases in fraud (Tysiac, 2012; Huber, 2012; Schiavone, 2012; Valenti, 2014; Domino, Giordano and Webinger, 2017). The

consensus is that the growing demand for forensic accountants is expected to continue. As a rapidly growing area within the accounting profession, forensic accounting has emerged to investigate incidents of financial reporting fraud (Rezace, Lo, Ha & Suen, 2016).

Experts agree that the demand for forensic accounting is rapidly growing in developed economies, creating opportunities for large and medium-sized audit firms that are willing to start or expand its practice. In developing economies, particularly Nigeria, there is a serious mismatch between the demand for, and supply of forensic accountants. There is immense regulatory and public pressure to rise up to the challenge. The response to this situation includes a dramatic increasing need for more forensic accountants, their expanded role as well as the enhancement of the accounting curricula to improve the fraud detection skills of statutory auditors.

It is intended that this research study will contribute to the development and strengthening of the forensic accounting practice in view of its pressing need to support the effort at reducing fraud in the banking industry in Nigeria.

1.2 Statement of the Problem

Due to persistent fraud in the global economy, forensic accounting has become an emerging topic of great importance in the academic parlance in view of its growing demand which is a known characteristic of most companies in the world. This is because there is a general expectation that forensic accounting may be able to mitigate the outrages of financial malfeasance.

Unfortunately, Nigeria has been bedeviled with corruption in all facets of her polity and economy with the banking sector as a major victim from the late 1980s till today (Dike, Ene & Ene, 2016). For instance, the Nigerian Deposit Insurance Corporation (NDIC) annual reports for various years revealed colossal frauds and forgeries in the banking sector soaring to billions of Naira. The contending issue is that despite the perception that there is a steady growth in the number of forensic accountants in the country, the rate of fraud across all banks continues to climb exponentially.

In an attempt to address this problem, prior empirical studies (Emeh & Obi, 2013; Enofe, Utomwen & Danjuma, 2015) report that effectiveness of forensic accounting and the presence of forensic accountants can reduce the occurrence of fraud. Their engagement by the Federal Government in 2009 to investigate the case of the nine collapsed banks in Nigeria was noticeable, which led to detection of about one trillion naira reported to have been lost through different financial malpractices. It is perturbing to note that this intervention does not seem to have yielded any positive result as fraud has continued to cripple the expected growth of banks prompting curiosity for further investigation.

However, it is not a subject for debating whether there is a demand for forensic accountants in Nigeria, as observed in the light of persistent increase in fraud and corruption, but rather a question of how the growing need for forensic accounting in banking industry could be fulfilled in order to forestall this ugly trend. Research on forensic accounting and fraud detection in banks has received a lot of scholarly attention. For instance, a thread of studies (Njanike, Dube & Mashayanye, 2009);

Onuorah & Appah, 2012), (Emeh & Obi, 2013; Adebisi, Matthew & Agbo, 2016; Dike et al, 2016; Abaje & Adeniran, 2017; Oseni, 2017) among others, focused on the effect of forensic accounting services on fraud detection in deposit money banks and were carried out in African countries but with a scanty emphasis on how the growing importance of forensic certification affects fraud detection in banking environment.

Interested professionals in forensic accounting skill acquisition have agitated avenues to market and distinguish themselves as experts in the field through certification. Certification adds value to career advancement, improve career prospects and enhance earning power among the holders (Robert, 2015). In the accounting industry, it is obvious that employers pay unflinching attention to specialization and certification in order to differentiate expertise.

Although, some professional bodies such as the Association of National Accountants (ANAN), Institute of Chartered Accountants of Nigeria (ICAN), institute of Forensic Accountants of Nigeria (IFAN), Institute of Certified Forensic Accountants (ICFA), Association of Certified Fraud Examiners (ACFE), International Institute of Certified Forensic Investigation Professionals (IICFIP) and others, are providing more forensic certifications in Nigeria, there is scanty research that had attempted to investigate the quality of forensic certifications or explored the attributes that are required to make a certification be considered adequate. There is a need for more research in forensic accounting in order to advance the understanding of the current state of the industry in terms of its ability to fulfil the relevant conditionalities that are characteristic of a profession.

Due to variety of services that forensic accountants render, a wide range of skills are required, especially in the areas of litigation support engagement, fraud investigation, expert witnessing, forensic expert consultation among others. Commonalities that subsist between different descriptions of forensic accounting as a profession stem from these areas, all of which require a reasonable level of educational and professional expertise. However, there are scanty empirical evidences that clarify if forensic accountants in Nigeria satisfy four basic elements (body of knowledge, control of entry, ethical code of conduct and protection of public interest) of professions theory, which provide a useful framework for identifying the functions and attributes that contribute to forensic accounting professionalism.

Apparently, this study attempts to probe further the findings of Chen and Akkeren (2012), Emeh and Obi (2013) and Dike et. al (2016). Previous empirical studies focused exclusively on the perceptions of practitioners, academia, students and accountants, but this study presents a fresh and distinctive evidence from practitioners, in view of the fact that empirical evidences appear scanty on the application of the theory of professions in forensic accounting research, especially in developing economies. This means that there is a major gap in the relevant literature in developing countries, particularly Nigeria.

Utilization of forensic accounting is expected to impact greatly on fraud detection to safeguard the financial health of the banking industry of any economy. In fact, it is an important prerequisite for economic stability and growth. As a consequence, the assessment and improvement of banks' financial condition constitute a fundamental

goal for regulators and investors. The study therefore contributes towards filling the gaps inherent in the deficiencies x-rayed above by establishing whether forensic accounting could be considered a profession capable of detecting persistent fraudulent activities in DMBs.

1.3 Research Questions

The study seeks to provide answers to the following pertinent research questions:

- i. What is the extent of relationship between engagement of forensic accountants and fraud detection in DMBs?
- ii. To what extent does the litigation support skill acquired by qualified accountants affect fraud detection in DMBs?
- iii. How does forensic investigative skill acquired by non-qualified accountants impact on fraud detection in DMBs?
- iv. To what extent does the forensic accounting expert consultation affect fraud detection in the Nigerian DMBs?
- v. How does forensic accounting professional certification contribute to fraud detection in the Nigerian DMBs?

1.4 Objectives of the Study

The main objective of this study is to examine the effect of forensic accounting on fraud detection in the Nigerian DMBs.

The specific objectives of the study are to:

- i) Investigate the extent of relationship between engagement of forensic accountants and fraud detection in DMBs.

- ii) evaluate the extent to which litigation support skill acquired by qualified accountants enhances fraud detection in DMBs.
- iii) examine how forensic investigative professional skill acquired by non-qualified accountants impacts on fraud detection in DMBs.
- iv) investigate the extent to which forensic accounting expert consultation affects fraud detection in DMBs ?
- v) examine how forensic accounting professional certification contributes to fraud detection in the Nigerian DMBs.

1.5 Statement of the Hypotheses

The following research hypotheses stated in null form are formulated to guide the conduct of this research:

H₀₁: There is no significant relationship between engagement of forensic accountants and fraud detection in DMBs.

H₀₂: Litigation support skill acquired by qualified accountants does not significantly enhance fraud detection in DMBs.

H₀₃: Forensic investigative professional skill acquired by non-qualified accountants does not have any significant impact on fraud detection in DMBs.

H₀₄: Forensic accounting expert consultation does not significantly affect fraud detection in DMBs.

H₀₅: Forensic accounting professional certification does not significantly contribute to fraud detection in DMBs.

1.6 Significance of the Study

This study is justified from the following theoretical and practical perspectives on a premise that it will be beneficial to experts and major stakeholders in the banking industry:

The results of this research study will provide much-needed guidance that will further assist educators in Nigeria with the development of forensic accounting curriculum. It will also add to the existing body of knowledge and create a point of reference for further empirical studies into the theory and practice of forensic accounting and fraud.

The study will greatly contribute to the development, expansion and proliferation of forensic accounting training and certification in Nigeria and how its service quality could be further enhanced and regulated in order to prepare the accounting profession to deal effectively with the problem of exposing ingenious fraud schemes emanating from audit failure in Nigerian banks. The outcomes of data analysis in this study will undoubtedly provide insights into the development mechanisms of the various fraud schemes and requisite qualifications, skills and professional experience that forensic accountants must hold relative to the adequacy or otherwise of their currently held certifications and qualifications.

In view of the emerging role of the forensic accounting investigator in bridging the expectation gap between users of financial statements and the statutory auditors

concerning fraud detection, it is intended that the policy options advanced based on the research findings will be of immense relevance to all bank stakeholders and regulators.

Regulatory authorities, i.e., NDIC and the Central Bank of Nigeria (CBN), as well as the anti-corruption agencies, i.e., Economic and Financial Crimes Commission (EFCC) and independent Corrupt Practices and Related Offences Commission (ICPC) will find the study relevant in the area of manpower development in modern forensic accounting techniques so as to imbue the spirit of expertise and prepare the accounting profession to effectively address the problem of unearthing ingenious fraud schemes arising from audit failure in Nigeria.

Other users of forensic .accounting information for the purpose of this study comprise of the investors, government and financial institutions. The study will give better understanding to investors (both potential and existing) about the relevance of forensic accountants and their services and further advice on the risks associated with their exclusion in the banking activities. The existing investors will be empowered to make informed judgment on whether to dispose their shares or to buy more so as to benefit in future from their chosen banks. Potential investors will also be instilled with a better sense of direction in the pursuance of investments in financial institutions that have low rate of fraudulent activities due to sound policies, best practice and incorporation of forensic accounting services in their day-to-day operations.

Stakeholders of financial institutions will be kept abreast of the risk factors associated with attendant refusal to seek for the professional advisory services and assistance of forensic accountants in developing policies and procedures needed to thoroughly monitor and issue red-flag in a wake to detect and prevent further fraud occurrence in banking industry. Bank Management will be exposed to various options on how best to implement and strengthen the internal controls in order to reduce the likelihood of fraud for the survival of banks in Nigeria.

The government through the regulatory agencies (i.e. Central Bank of Nigeria and the Nigeria Deposit Insurance Corporation), will find the study useful in formulating guidelines towards enhancing the effectiveness of forensic accounting services to reduce the extent of financial fraud happening in banks. The government will be motivated to lobby and actively engage the Nigerian forensic accounting practitioners in the events leading to the creation, modification and sustenance of various accounting practices and thus enable them to be more applicable and relevant in the banking industry. The study will add to the existing body of knowledge in forensic accounting and fraud detection in banking industry with the general expectation that it may induce some respite to the attendant vulnerability of conventional auditing and accounting systems to financial fraud.

1.7 Scope of the Study

The study focuses mainly on the forensic accounting and fraud detection in the Nigeria's DMBs. Due to the risk inherent in setting broad parameter for this research, its extent of coverage had been narrowed such that it cannot comprehensively address all areas of forensic accounting. The study specifically examines relevant issues

bordering on bank fraud vis-à-vis the process of exploring accounting, auditing and investigation skills to establish the reality of fraud occurrence in banks.

However, it also addresses various fraud schemes in banking environment and x-rays the extent of forensic accounting certification in Nigeria. Due to the events of the recent years which have contributed to the growing demand for forensic accounting, this study covers periods between 1986 and 2016 as Nigeria has witnessed many failed banks and finance houses since late 1980s, resulting in the prosecution of many bank chief executives due to their involvements (Dike et al, 2016).

The year 1986 was chosen, as it characterizes the beginning of deregulation policy in the banking industry (Nzotta, 2004) while year 2016 was the most recent period in terms of data availability. This period also marks the commencement era of a few number of forensic accounting professional institutions in Nigeria which consequently triggered the beginning of training and certification of forensic accountants by professional bodies.

Consequently, statistical breakdowns of the number of certified forensic accountants by ICAN, ANAN and other professional bodies in Nigeria in conjunction with bank fraud figures published by the NDIC covering a thirty one (31) year period (1986 — 2016) were extracted to provide a robust estimate of fraud data of DMBs in Nigeria while clearly highlighting the gaps in the identified and hidden frauds. The period was considered adequate for data viability as it also marks the period within which the

Federal Government engaged the services of three audit firms with forensic accounting specialty to investigate the activities of the banking industry.

Fraud detection and forensic accounting constitute an expansive area of accounting owing to the multi-dimensional nature of the discipline. For this reason, the research study was limited to only banks with fraud cases as disclosed in the annual reports of the NDIC.

1.8 Definition of Operational Terms

The following relevant operational terms are briefly defined with the aim of providing better understanding:

Deposit Money Banks: All commercial banks in Nigeria (that accept deposits and lend out funds in addition to other banking services) whose fraud statistics are furnished on yearly basis in the annual report and accounts of the NDIC.

Forensic accounting: As conceptualized in the study, it involves requisite skills acquired in the areas of fraud investigation, litigation support, expert consultancy/expert witnessing and other related services by (both qualified and non-qualified accountants) to be able to detect fraud in a bank and any other entity.

Forensic Accountant: As conceptualized in this study, this is a member of ANAN, ICAN and/or any other forensic accounting body in Nigeria who possesses accounting, auditing and investigative skills relevant to fraud detection in banks and any other entities.

Fraud Detection: Fund lost by an entity (bank) as a result of financial irregularities which is measured in terms of Naira or frequency/incidence/number of detected cases.

Engagement of Forensic Accountant: Availability or presence of professionals in Nigeria who possess accounting, auditing and investigative credentials relevant to fraud detection in banks and any other entities.

Qualified Accountants with Forensic Litigation support Skill: Members of ANAN and ICAN who were trained in forensic litigation support engagement in addition to other specialized areas and hold forensic accounting credentials.

Non—Qualified Accountants with Forensic investigative Skills: Non—members of ANAN and ICAN who were trained in forensic investigation in addition to other specialized areas and hold forensic accounting credentials from other professional bodies in Nigeria.

CHAPTER TWO

LITERATURE REVIEW

The essence of this chapter is to examine the already existing related literature that will provide this study a guidance. The literature review provides critical analysis and helps improve the methodology to be used.

This Chapter therefore, reviews conceptual literature on issues bordering on forensic accounting and fraud detection in DMBs. A review of empirical studies was also carried out which provides the context of this study. Lastly, theoretical literature review was undertaken, in which case, theories of professions, demand and supply as well as deterrence were explored. Relevance of these theories to the present study and their underpinning justification were also emphasized.

2.1 Conceptual Framework

2.1.1 Concept of Forensic accounting

Siyanbola (2012) defines accounting as the language of business and as the basic tool for recording, reporting and evaluating economic events and transactions that affect business enterprises. Izedonmi (2000) sees auditing as an independent examination of the financial statements of an enterprise prepared by the management of that enterprise by an appointed person called auditor, in order to express a professional opinion whether or not those financial statements show a true and fair view position of the enterprise as at the end of the financial period, in accordance with the auditor's term of engagement as well as other relevant statutory and professional regulations.

Also, Oladipupo (2005) defines investigation as an examination of the records and accounts of an organization for a special purpose. The integration of accounting, auditing and investigation yields the specialty known as forensic accounting.

According to Dada, Owolabi and Olaoye (2013), forensic accounting is the use of skills in potential or real civil or criminal disputes, including generally accepted accounting and auditing principles, 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. Ezejiofor, Nwakoby and Okoye (2016) define forensic accounting as the application of financial skills and investigative mentality to unresolved issues, conducted within the context of the rules of evidence.

Olola (2016) also refers it as a tripartite practice of utilizing accounting, auditing and investigative skills to assist in legal matters. Forensic accounting is the specialty area of the accountancy profession which describes engagements that result from actual or anticipated disputes or litigation. Dhar and Sarkar (2010) defined Forensic accounting as the application of accounting concepts and techniques to legal problems. It demands reporting, where accountability of the fraud is established and the report is considered as evidence in the court of law or in administrative proceedings.

A forensic investigation may be grounded in accounting, medicine, engineering or some other discipline. Forensic accounting is an examination of evidence regarding an assertion to determine its correspondence to established criteria carried out in a manner suitable to the court. This allows Gray (2008) to analyze forensic accountants

as a combination of an auditor and private investigators with knowledge and skills which include investigative skills, research, law, quantitative methods, finance, auditing, accounting and law enforcement officer insights. He confirmed that forensic accountants have been employed by the Federal Bureau of investigation (FBI), Central Intelligence Agency (CIA), Internal Revenue Service (IRS). Federal Trade Commission (FTC) and other government agencies to deal with fraudulent practices.

A forensic accountant's primary duty is to analyze, interpret, summarize and present complex financial and business-related issues in a manner that is both readily understandable by the layman and properly supported by evidence (Ozkul & Pamukcu, 2012). They further expatiate that forensic accountants' activities are relevant to various types of business and personal legal disputes. Much of the work is connected with an evaluation of past and projected profits as well as appraising and preparing business valuations. Forensic accounting expertise is useful in litigation involving loss of profits, breaches of contract, fraud, tax investigations and professional negligence.

A forensic accountant is expected to be a 'specialist' in accounting and financial systems. Yet, as companies continue to grow in size and complexity, uncovering fraud requires a forensic accountant to become 'proficient' in an ever-increasing number of professional skills and competencies (Silverstone & Sheetz, 2008). They also highlight some of the broad areas of useful expertise for a forensic accountant to include an in-depth knowledge of financial statements and the ability to critically analyze them.

Rumaswamy (2005) and Bhasin (2013) allege that these skills help forensic accountants to uncover abnormal patterns in accounting information and recognize their source; A thorough understanding of fraud schemes including but not limited to asset misappropriations, money laundering, bribery, and corruption; the ability to comprehend the internal control systems of corporations and to set up a control system that assesses risks, achieves management objectives, inform employees of their control responsibilities and monitors the quality of the program so that corrections and changes can be made; proficiency in computer and knowledge of network systems.

Oyewole, Abba, Gambo and Abam (2013) assert that the skills help forensic accountants to conduct investigations in the area of e-banking and computerized accounting systems; knowledge of psychology in order to understand the impulses behind criminal behavior and to set up fraud prevention programs that motivate and encourage employees; interpersonal and communication skills which aid in disseminating information about the company's ethical policies and help forensic accountants to conduct interviews and obtain crucially needed information; thorough knowledge of company's governance policies and the laws that regulate these policies and command of criminal and civil law, as well as, of the legal system and court procedures.

In summary, all the definitions provided above among several others emphasize on the fact that forensic accounting is a new specialty area of accounting that combines accounting, auditing, and investigative skills to conduct investigations into theft and fraud suitable for use in a court of law.

2.1.2 Forensic Accounting and Accounting Profession

Forensic accounting has been pivotal in the corporate agenda after the financial reporting problems which took place in some companies around the world (Shanikat and Khan, 2013). Those companies involved in the accounting scandals such as Enron, WorldCom, Global Crossing have put accountants in the public spotlight as never before in their history.

These accounting scandals seriously undermined public confidence in the accounting profession. However, the scandals have created business for forensic accountants and developed opportunities for forensic and investigative accounting. New laws and regulations resulting from these scandals make the role of forensic accountants more important than ever before in the business world (DiGabriele, 2009).

All of the larger accounting firms as well as many medium-sized firms have specialized forensic accounting departments. Within these groups, there may be some further sub-specializations: some forensic accountants may for example, just specialize in insurance claims or personal injury claims, fraud construction, or royalty audits (Crumbley, Heitger & Smith, 2005).

Forensic accountants utilize an understanding of business information and financial reporting systems, accounting and auditing standards and procedures, evidence gathering and investigative techniques, litigation processes and procedures to perform their work. Forensic accountants are also increasingly playing more proactive risk reduction roles by designing and performing extended procedures as part of statutory

audit, acting as advisers to audit committees, fraud deterrence engagements and assisting in investment analyst research (Bhusin. 2016).

The skeptical mindset is something that has long been inherent in forensic accountants and other internal investigators when looking for evidence of fraud (Silverstone & Sheetz, 2007). Fraud auditing, forensic accounting and/or fraud investigation (forensic accounting) put things together rather than take them apart, as is the case in financial classical auditing or modern method of systems analysis. The process of forensic accounting is also sometimes more intuitive than deductive, although both intuition and deduction play important parts. Financial auditing is more procedural in many regards and is not intended to work as effectively as the tenets of fraud auditing and forensic accounting (Singleton, Singleton, Bologna & Lindquist, 2006).

Forensic accounting profession has some requirements. Certified Fraud Examiner (CFE) is a designation awarded by the Association of Certified Fraud Examiner (ACFE). The ACFE is a 41,000 member-based global association dedicated to providing antifraud education and training. In order to become a CFE, one must meet the following requirements: be an associate member of the ACFE in good standing; meet minimum academic and professional requirements; be of high moral character and agree to abide by laws and code of professional ethics of the ACFE.

At the time of certification, at least 2 years of professional experience in a field either directly or indirectly related to the detection or deterrence of fraud is required. The ACFE recognizes the following areas as qualified professional experience: accounting

and auditing; criminology and sociology (sociology is acceptable only if it relates to fraud); fraud investigation; loss prevention (experience as a security guard or equivalent is not acceptable) and law relating to fraud.

Globally, accounting scandals and frauds are perennial and innumerable instances of these scandals and frauds have plagued the business environment since before the industrial revolution. They occurred in all eras and in all countries. During the last few decades, there have been numerous financial frauds and scandals, which were milestones with historical significance (Bhasin, 2013). However, what is not so well known is that almost every country had its own accounting scandals and frauds. The media has fortunately reported scandals and bankruptcies in companies from time to time, both from the developed' and 'developing' countries.

Bhasin (2012) highlights some of these accounting scandals to include HIH Insurance, Harris Scarfe and One Tel (Australia), Global Crossing (Bermuda), Nortel Networks (Canada), Zhengzhou Baiwen, Shandong Bohai, Jinzhou Port, Kelon (China), Vivendi Universal (France), ComRoad, Phenomedia, MLP, Hugo Boss, Nici, Zapf Creation (Germany), Dynamic Life, Ipirotiki Software (Greece), Parmalat, Freedomland, Finmatica (Italy), Elan (ireland), JVG Group of companies, UTI, Global Trust Bank, Citibank, Wipro, Satyam (India), IHI, Sanyo Electric (Japan), Baan Company, Ahold NV, LCI Computer, Landis (Netherlands), Gescartera, Bafisa, Afinsa and Forum Filatelico (Spain), ABB, Skandia. Prosolvvia (Sweden), Adecco International (Switzerland), Barings Bank Equitable Life, Wiggins, Versailles (UK)

and Adelphia Communication, IBM, Enron, Xerox. Madoff Securities, Lehman Brothers (U.S.).

In addition, he added that some of the Asian countries have also experienced similar fraud/scam cases, such as, PT Bank Bali, Sinar Mas Group (Indonesia), Bangkok Bank of Commerce (Thailand), United Engineers Bhd (Malaysia), Samsung Electronics, Hyundai (Korea). Surprisingly, this list is rapidly growing every year. The corporate collapses of recent times culminating with massive collapses has suggested that “there are major systemic problems facing the way in which corporations and corporate governance systems operate” (Bhasin, 2007; 2013).

Ozkul and Pamukcu, (2012) assert that accounting scandals have put the accountants under public spotlights as never before in their history. As a result of this, forensic accounting profession has gained increasing importance due to the increasing level of practice in the world. They highlight the practice of forensic accounting in four developed economies around the globe as follows:

United Kingdom

Over 160 cases of serious fraud with charges in excess of £100,000 came to the UK courts in the first half of the year, the highest number of cases in a 6-month period in the 21-year history of its Fraud Barometer. The main victim in terms of number of cases was the financial sector. Over a quarter of fraud cases (44) were against financial institutions, with a value of £111 million. Commenting on the figures, Hitesh Patel, partner at KPMG Forensic, said: these figures are bad, but the worst is

yet to come. It will be a number of years before the impact of the recession fully feeds through into the fraud statistics. Hard times mean more people driven to fraud by personal pressures and more investors willing to believe in cooked up investment schemes. Companies too remain vulnerable to the threat within—their staff—as evidenced by the £150 million of fraud that managers have been tried for in the last 6 months alone.

Canada

In Canada, forensic accounting is accepted as a profession. The Certified General Accountants Association of Canada (CGA) comments that they recognize that the profession of fraud investigation is relatively new and that such a duplication of effort by the CICA in developing standards for its IFA specialty is inefficient and may be confusing to the public and to fraud examiners designated by the ACFE. As such, CGA Canada supports efforts at establishing a national or international joint effort which promotes inclusion. Above all, the exposure draft process of the CICA should not be a vehicle by which to embody these CA-IFA standards in the CICA Handbook.

Choosing such an administrative method to approve these CAIFA standards as part of the handbook circumvents the authority of the Accounting Standards Board and the Auditing and Assurance Standards Board to consider and approve applicable standards.

Australia

As noted by Detlaportas and Gibson (2005), the forensic accountant works within an environment that also includes government, industry and professional regulators. The

forensic accountant's work may be in conjunction with these entities or with consideration to the rules, regulations, and guidelines enforced by them. The regulator depends on the nature of the engagement.

Some of the most relevant and commonly encountered regulatory bodies in Australia include Australian Securities and Investments Commission (ASIC), Australian Tax Office (ATO), Financial Action Task Force (FATF) and other notable regulators interacting with the forensic accountant's work which include professional organizations such as CPA and ICAA, as well as specialist bodies such as Australian Prudential Regulation Authority (APRA) and Australian Transaction Reports and Analysis Centre (AUSTRAC), to name but a few. Whenever the forensic expert undertakes an assignment, he or she needs to consider if there is a regulator relevant to this work and the impact of that relationship in the work to be performed.

The United States of America

On 30th July 2002, the landmark legislation known as the Sarbanes-Oxley Act (SOXLaw) was enacted into the United States Law. The Act was named after its principal authors, Senator Paul D. Sarbanes (D-Md) and Rep. Michael G Oxley. The Act seeks to restore investor confidence in the US financial markets, corporate governance and financial reporting. The Sarbanes-Oxley Act was passed by the US legislature in the wake of accounting scandals such as Enron, WorldCom, and Xerox, all of which seriously undermined investor confidence, although strictly United States legislation, its impact is far reaching on the accounting and financial markets globally. The Act applies to all Securities and Exchange Commission (SEC)-listed companies.

and so extends to subsidiary and associated entities of SEC-listed companies outside the USA.

The impact of the requirements of Sarbanes-Oxley is that forensic accounting practice must seek work outside such traditional sources as existing audit clients, although this potentially opens up avenues into other clients. In turn, clients may lose benefits of the inherent in-house knowledge and experience obtained from the audit engagement, but they may also benefit from a different expert, as perspective.

However, in so far as the nature and performance of the audit engagement were seen to threaten the forensic accountant as independence, the Sarbanes-Oxley provisions go some way to enforcing and promoting objectivity and restoring the accounting profession's reputation (Dellaportas & Gibson 2005). Forensic accountants have a number of organizations that support their work. Below is the list of key organizations that support forensic accountants' work:

ACFE; American College of Forensic Examiners; Association of Certified Fraud Specialists; National Litigation Support Services Association; National Association of Certified Valuation Analysts; American institute of Certified Public Accountants and The Institute of Business Appraisers (Gray, 2008).

Therefore, the nexus between forensic accounting and accounting profession is a symbiotic one in the sense that the former can best be described as a central nervous system for the latter. The growing interest and need for forensic accounting has

imbued a respite and added a substantial value to the accounting profession in an attempt to bridge the audit expectation gap problem.

2.1.3 Forensic Accounting as a Profession in Nigeria

In view of the importance of the concept, it is surprising that there is no agreed definition of profession in the extensive literature found in both social and management sciences. The UK Inter-professional Group (2012) defines a profession as an occupation in which an individual uses an intellectual skill based on an established body of knowledge and practice to provide a specialized service in a defined area, exercising independent judgment in accordance with a code of ethics and in the public interest. Akinduyo (2014) posits profession as an occupation which renders services useful for the survival of individuals and the society, of which these valuable services are vital to survival and it is knowledge based, problem-solving, rare, managerial and full of expertise.

Australian Competition and Consumer Commission [ACCC] (2011) also describes a profession as a disciplined group of individuals who adhere to high ethical standards and uphold themselves to, and are accepted by, the public as possessing special knowledge and skills in a widely recognised, organized body of learning derived from education and training at a high level, and who are prepared to exercise this knowledge and these skills in the interest of others. Inherent in this definition is the concept that the responsibility for the welfare, health and safety of the community shall take precedence over other considerations

The foregoing definitions reveal that there are many attributes which can be used for judging profession and they vary based on the perceptions of different scholars. In other words, there have been widely differing interpretations as to how best to describe professions, with some authors analyzing the professional—client relationship or classifying a series of “traits” as being characteristic of professions.

Accounting is generally recognized as a profession within the Nigerian society, which conforms with the attributes embedded in the definitions of a profession. For this reason, it is necessary to further confirm if forensic accounting exhibits many of the same characteristics of a profession (Huber, 2012).

There are many categories of traditional professions such as doctors, pharmacists, lawyers, architects and engineers. It would be fair to say that ‘Accountancy’ is generally accepted within any society as a profession and in applying the above definition, meets the various concepts outlined in the definition. For instance, Abbott (1988), a prominent researcher on the Theory of Professions, identified three potential rights for a profession to claim jurisdiction, namely: within the legal framework, through public opinion and in the workplace. According to him, social structure of a profession encompasses groups, controls and worksites that function cohesively to create an improved professional model.

Chen and Akkeren (2012) interpret this social structure as influencing a profession such that: the more organized a profession, the more effective the claim of jurisdiction; organization into a single, identifiable association is a pre-requisite to any public/legal claim of jurisdiction; level of formality of organizational structure

may provide an advantage or flexibility in workplace competition; and it has highly organized, resilient internal structures.

In addition to the above criteria, Pollock and Amernic (1981) accentuate that professions are expected to commit their services to the interest of the public rather than the interests of their clients or self-interest. Specifically, accounting professionals are regarded as a mechanism to protect public interest as they are required to be acting above and beyond material incentives (Larson, 1977).

A further review of recent studies indicate that forensic accounting profession has an impact on the world's economies (Ocansey, 2017; Association of Certified Fraud Examiners, 2006). As at today, championing a crusade on fight against economic and financial crime has become one of the topmost growth and development agenda necessitating collaboration with both anti-corruption agencies and accounting professional bodies of which Nigeria is not an exception.

Since forensic accounting arose in America, it has become a very important issue by the researchers and scholars in several countries in the whole world (Alabdullah, Alfadhi, Yahya & Rahi, 2014). The outgrowth of the increase in fraud and corruption birthed forensic accounting and made it an embryonic topic of importance for academic and industrial research (Ocansey, 2017). Therefore, the place of forensic accounting profession in today's economy cannot be overemphasized as it helps to strengthen the economic growth and development by eliminating leakages in form of fraud and corrupt practices by either private or public officers (E nofe, Idemudia & Emmanuel, 2015).

The complex nature of forensic accounting practice in Nigeria remains an inexplicable and fundamental issue that requires imminent attention in view of the variety of services that a forensic accountant may be asked to render, especially in banking industry. Kranacher, Morris, Pearson and Riley (2008) observe the complex nature of forensic accounting as part of the appeal for many accountants and others to enter the field. According to Oyier (2013), this development may be due to the common nature of the various definitions which reside in the areas of litigation services, accounting investigation and preparing court ready evidence, all of which are of great importance to the banking industry.

Forensic accounting may be one of the most effective and efficient ways to reduce and prevent fraudulent activities as it is concerned with the evidentiary nature of accounting data, and as a practical field concerned with accounting fraud and forensic auditing; compliance, due diligence and risk assessment; detection of financial misrepresentation and financial statement fraud (Kranacher, Riley & Wells, 2011; Skousen & Wright, 2008).

Forensic accounting in its present state can be said to evolve from three broad categories, encompassing fraud investigation, litigation support and expert witness services. Zachariah et al (2014) accentuate that these major categories form the core around which other supporting services that traditionally come within the sphere of investigative services revolve - including corporate intelligence and fraud investigation services.

Conceptually, it remains an issue of debate in academic parlance on whether forensic accounting in Nigeria exhibits and fulfills the relevant sociological criteria to be accepted as a profession.

2.1.4 Engagement/Presence of Forensic Accountants in Nigeria

The high increase in cases of fraud and fraudulent activities in Nigeria is alarming and requires the visible presence of forensic accountants (Ozuomba, Ofor & Okoye, 2016). Currently, a thread of studies confirm the need for presence (engagement) of forensic accountants and the fact that demand for, and supply of forensic accountants is very poor in Nigeria, which is expected to increase in the future (Dhar & Sarkar, 2010; Umar, Samsudin & Mohamed, 2016; Jugurnath, Bissessur, Ramjattan, Soondrum & Seedoyal, 2017).

In a bid to expound on how presence of forensic accountants is impactful on the economic growth, Ocansey (2017) posits that economic and financial crimes have plagued every corner of the economies of the world. These crimes according to him, affect all firms and the economies of nations (developed, developing and under-developed).

However, there is no doubt that previous and continuous research studies evident a strong demand for the imperative of forensic accountants by all sectors of any economy. For instance, (The American Institute of Certified Public Accountants (AICPA) (2010) indicated that fraud accounting professionals would be in high

demand in few years to come and developed Certified Financial Forensics (CFF) to increase the expertise of Certified Public Accountants.

Mayungbe (2012) identifies the following professional trainers as the leading forensic accounting certificate awarding organizations in Nigeria:

i) Association of Certified Fraud Examiners (ACFE):

Founded in 1988 by Joseph T. Wells, ACFE is a professional organization for practitioners in the accounting, legal, and law enforcement fields who investigate white-collar crime and other financial fraud. The Association which grants the professional designation of Certified Fraud Examiner (CFE) has grown rapidly over 25 years and now boasts more than 70,000 members in more than 150 countries around the world including more than 40,000 who have earned the CFE credential.

The CFE designation is sought by professionals in the accounting, legal, and law enforcement fields to demonstrate their qualification for a variety of job positions and contract opportunities related to fraud investigation (LivePerson, 2014). The designation covers four major areas namely: fraud investigation, financial transactions, criminology and ethics as well as legal elements of fraud.

To be awarded CFE, one must meet such requirements as: being an Associate Member of the ACFE in good standing, attain minimum academic and professional requirements (undergraduate degree plus master's degree or professional designation(s) and professional experience); be of high moral character; agree to abide by the Bylaws and code of professional ethics of the ACFE. To be awarded

CFE, an individual must pass a rigorous test on the four major disciplines that comprise the fraud examination body of knowledge, namely: fraud prevention and deterrence, financial transactions and fraud schemes, investigation and law.

The CFE credential is recognized in the hiring and promotion of leading organizations, including the Central Bank of Nigeria, commercial banks in Nigeria, Big 4 Audit Firms, indigenous accounting/audit firms, multinationals in various sectors, legal firms, government anti-corruption agencies (EFCC, ICPC, etc), police, forensic audits, internal audits, financial control, compliance, risk management, investigation units of companies.

ii) Institute of Chartered Accountants of Nigeria (ICAN):

ICAN was established by Act of Parliament No. 15 of 1965 with a mission to produce world-class chartered accountants, regulate and continually enhance their ethical standards and technical competence in the public interest. As part of its efforts to enhance the skills of members, the Council approved the recommendation of the Board of Audit, Investigations and Forensic Accounting Faculty that a 7-module forensic accounting certification programme be introduced for members. To give effect to this, the Council signed an agreement with Forensic Compliance Institute-USA, managed by Mr. Nathaniel Cole, FCA, an erstwhile staff of Ernst and Young who is now a USA-based forensic expert. Under the agreement, he was designated as Technical Director and charged with the responsibilities of designing the curriculum and lecture materials as well as coordinating the training programme.

The 7-Module forensic accounting certification programme commenced in February 2009 with the establishment of Audit, Investigations and Forensic Accounting Faculty. The training session has been designed to provide interested members of the institute with accounting, auditing and investigative skills to uncover money laundering, terrorism financing and other related crimes, document findings and become expert witness whose testimony can be relied upon by the court.

The Faculty held various training sessions for a total of thirty-three (33) members who had undertaken the entire seven modules out of which twenty-nine (29) appeared for the viva (oral examination) organized by the Faculty to affirm the knowledge acquired by them during the training period. The interview panel constituted by the Board of the Faculty comprised experts drawn from Akintola Williams Deloitte, KPMG Professional Services and Pricewater House Coopers, Ghana. The Board recommended and the Council approved that the 16 successful candidates be conferred with the Certified Forensic Accountant (CFA) qualification at an induction ceremony. The colourful inaugural induction ceremony was held on March 22, 2010 at the Coral Continental Hall, Eko Hotel and Suites, Victoria Island, Lagos.

iii) Institute of Certified Forensic Accountants (ICFA):

The ICFA is a non-profit professional body chartered under Letters of Patent granted by the Federal Government of Canada. The institute is also registered under the Laws of the State of Delaware, USA. It has a growing global presence with members in over 18 countries. The Institute secured the approval to run forensic accounting

certification programme in Nigeria with the objective of producing a crop of well trained forensic accountants ready for deployment across all sectors of the economy in combating financial crimes.

The CPFA designation is registered with the National Certification Commission, USA. The Institute offers an educational programme leading to the designation of Certified Professional Forensic Accountant – CPF Acct - issued to qualified graduates. Diploma in Forensic Accounting must be successfully completed in order to be awarded the Certified Professional Forensic Accountant (CPF Acct) designation. This is the premier designation of the Institute of Certified Forensic Accountants. This designation is ideal for those working in the accounting arena who would like a forensic accounting designation or for those who would like to upgrade their skills.

The institute offers forensic accounting training in specialized service areas such as: fraud and economic loss quantification, investigating and analyzing financial evidence; testifying as an expert witness; becoming involved in criminal investigations and uncovering financial evidence in employee or insurance fraud cases; investigating in the rapidly evolving area of computer and internet fraud, business valuations, assets valuation for matrimonial cases, royalty audits, damage computation, determination of compliance, financial surveillance, anti- money laundering programmes, among others.

iv) Association of National Accountants of Nigeria (ANAN):

The Association, formed on 1st January, 1979, incorporated on 28th September, 1983 and finally chartered by Act 76 of 1993 on 25th August, 1993 was established with a mission of making its members premium brands of choice in professional accounting practice in Nigeria, and to impact on accounting education and practice in a profound and comprehensive manner. The Association established the Society for Forensic Accounting and Fraud Prevention (SFAFP) on 2nd February, 2016.

The Society is currently using a part of the Liaison Office in Gwarimpa, Abuja as its Secretariat to provide machinery for training, supervision and regulation of the practice of forensic accounting and fraud prevention and the combat of corruption in Nigeria. Partnering with the Government of Nigeria in June, 2016, the Association in collaboration with the Federal Government, participated actively in the programme of Presidential Advisory Committee against Corruption (ANAN, 2016).

The Society for Forensic Accounting and Fraud Prevention (SFAFP), on Wednesday February 15th, 2017 inducted the first one hundred and thirty five (135) accountants as associates of the Society for Forensic Accounting and Fraud Prevention which was held at Anti-Corruption Academy of Nigeria (ACAN) in Keffi, Nasarawa State.

v) Institute of Forensic Accountants of Nigeria (IFAN):

The institute was set up in 2007 under the Corporate Affairs Commission (CAC). The establishment process of the institute started in 2006, but because of the complex nature of forensic accounting, on 28th November, 2006 the CAC sought for written permission for the establishment of the Institute from the Nigerian Federal Ministry of

Education and the Nigerian Federal Ministry of Justice. These approvals were granted by the two ministries in November 2006 and February 2007 respectively. On 9th March 2007, the certificate of establishment of the institute was issued, thereby making it a forensic accounting professional institute in Nigeria.

The Institute provides professional certification for forensic accountants in Nigeria. As at September 2015, it had 4,300 members. The membership of the Institute consists of two grades, namely: the Associate Member [which bears ‘Certified Forensic Accountant’ (CFA)] and Fellow Member [which bears ‘Fellow of Forensic Accountant’ (FFA)].

To be admitted as an Associate, a candidate must have completed a period of qualifying practice of at least three years and passed the Institute’s qualifying examinations. To be a Fellow, a candidate must have CFA and in addition with post-qualification experience of not less than five years.

Training and certification provided by the Institute cover: economic damages calculations, whether suffered through tort or breach of contract; litigation support; business/employee fraud investigations; financial/securities frauds; business interruptions/business failures; computer forensics/e-discovery; discovery of hidden assets; professional negligence; matrimonial disputes.

vi) International Institute of Certified Forensic Investigation Professionals (IICFIP):

IICFIP is an international professional membership organization that not only brings together forensic investigators but also provides forensic investigation skills training to all that are interested in forensic investigations across business organizations, governments and other situations requiring forensic investigation skills. The Institute confers a general professional accreditation in forensic investigation i.e. Certified Forensic Investigation Professional (CFIP) and also specialized accreditations in anti-corruption consultancy, digital forensics and medical investigations.

Where those who specialize in digital forensic are awarded with Certified Digital Forensics Professional (CDFP) designation, other specialists in anti-corruption consultancy or medical investigation are conferred with Certified Anti-Corruption Consultant (CACC) or Certified Medical Investigation Professional (CMIP) respectively. The Institute has CFIPs and student members representing 124 countries, across Africa, Asia, Australia & Oceania, North America, Europe and South America.

The Board Chairman of IICFIP, Chief Godwin Oyedokun, disclosed during the third Global Forensic Conference and Exhibition held in Ahuja between 9th and 11th August, 2016 that the Institute was working towards training additional 40,000 students in the next two years, adding that the aim of the conference was to introduce forensic knowledge in Nigeria. He added that about 6,300 students have been trained in 120 countries so far. The Institute commenced training and certification to interested Nigerians in 2013.

2.1.5 Forensic Litigation Support Skill Acquired by Qualified Accountants:

In spite of proliferation of professional bodies in Nigeria providing training in modern skills of forensic accounting procedures, the number of qualified ANAN and ICAN members with this investigative expertise is relatively low. As at 2016, ANAN commenced training for only 135 members as forensic trainees while ICAN produced 401 forensic accountants. Among other specialized knowledge areas, forensic accounting skills represent an exceptional skill sets and techniques developed for the purpose of detecting the evidence of fraud (Di Gabriele, 2008; Davis, Farrell & Ogilby, 2009).

Oyedokun (2012) defines litigation support as a process of providing consultation and support services to attorneys in regard to current and pending cases. He clarifies that the type of support services offered will depend on the needs of the attorney and may range from research and documentation of facts and precedents before a case comes to trial, or assisting in the determination of damages once a case has been tried.

Owojori and Asaolu (2009) also define forensic litigation support as the provision of assistance of an accounting nature in a manner involving existing or pending litigations in the areas of quantification of economic damages, calculating economic loss resulting from a breach of contract. Aribaba (2013) describes litigation support services as part of the work of a forensic accountant involving quantification of losses in the context of fraud, disputed business valuation, loss of profits, insurance claims, intellectual property disputes and in many other situations.

When any of the aforementioned situations occurs, a forensic accountant may be appointed as an advisor, providing professional assistance to layers in the litigation process (Reinstein & Lander 2004). Unfortunately, non-availability of the appropriate litigation support services in the court has led to misjudgment or incorrect submissions by lawyers and judges. It has been discovered that offenders are not given appropriate punishment because the gravity or extent of economic loss or damages cannot be adequately determined (Adegbe & Fakile, 2012).

The range of skills required for litigation advisory services is very broad, and forensic accountants may require a level of professional training (Chen & Akkeren, 2012). In their remarks from the context of developed economies, firms offering these services may need to provide adequate supervision for forensic accountants/investigators who are assigned to litigation services as it is the firms that are responsible for the consequences resulting from a forensic accountants' work

In Nigeria, forensic litigation support in commercial banks provides assistance of a nature in a matter involving existing or pending litigation or represents the factual presentation of economic issue related to existing or pending litigation (Akintoye, 2008). The Nigerian forensic accounting practitioners offering services at this time is undoubtedly very few.

2.1.6 Forensic Investigative Skills Acquired by Non-Qualified Accountants

Chen and Akkeren (2012) assert that the core role of a forensic accountant in fraud investigation concentrates on the identification, explanation and communication of

the clues hiding behind economic and reporting events. For any successful conduct of fraud investigation, a forensic accountant needs to be highly meticulous, have focus on the investigation objectives to be achieved and plan his work in that direction. Adamu (2015) identifies the objectives of fraud investigation to include: identifying the type of fraud that has been operating, how long it has been operating for, how the fraud has been concealed, identifying the fraudster involved, quantifying the financial loss suffered by the client and gathering evidence to be used in court proceeding.

In Nigeria, in spite of the banking regulation and bank examination by the Central Bank of Nigeria (CBN), the supervisory role of the Nigeria Deposit Insurance Corporation (NDIC), and The Chartered Institute of Bankers of Nigeria (CIBN), there is still a growing concern about fraud and other unethical practices in the banking industry (Chiezey & Onu, 2013). Fraud has a rich variety and can be categorized in different ways. The type that has the greatest relevance to forensic accounting in banking industry upon which this study rests is the employee fraud, although according to Gottschalk (2011), the most common categories of crime requiring investigation by forensic accountants globally include money laundering, manipulating balance sheets and bribing public officials to achieve their purpose.

Consequently, the employee fraud in banks has become one of the essential parts requiring forensic accounting investigative skill in Nigeria. Previous analysis of the categories of employee fraud perpetrated in DMBs show that the most common types are: ATM fraud, fraudulent transfers/withdrawals, internet banking, lodgement of stolen warrant, presentation of forged cheques, suppression of customer deposit

(Zachariah et al., 2014). Undertaking employee fraud investigation in all of these may require substantial knowledge of both accounting and law as obtained for other types of white-collar crime and occupational fraud. For this reason, it requires persons who are skilled in the application of investigative and analytical skills related to the areas of accounting records, gathering and evaluating financial statement evidence, interviewing all parties related to an alleged fraud situation and serving as an expert witness in a fraud case (Popoola, Che-Ahmad & Samsudin, 2013).

Apparently, there is a significant difference between an accountant with forensic accounting skills and an auditor. Brooks, Riley and Thomas (2005) and DiGabriele (2008) concur that a forensic accountant's skills differ from an auditor's skills in terms of identifying crime because the perpetrators have concealed their activities through a series of complex transactions which may not be easy for the auditor to unravel.

Bhasin (2013) advocates that auditors and professional accountants should have investigative skills in performing their jobs. According to him, there is no doubt that qualified, trained and mature accounting professionals possessing forensic skills can prove to be a valuable asset to the corporate sector and gradually help to improve their corporate governance systems (Bhasin, 2013).

Therefore, with the prevalence of fraud in DMBs coupled with the increasing need for forensic accounting in Nigeria, establishing whether non-qualified accountants with

forensic investigative skill possess adequate credentials to detect fraud constitutes one of the areas this study seeks to empirically clarify.

2.1.7 Forensic Accounting Expert Consultation

Forensic accountants are expected to be experts in accounting and financial systems. Lakshmi and Ganesh (2016) aver that as companies continue to grow in size and complexity, uncovering fraud requires a forensic accountant to become proficient in an ever increasing number of professional skills and competencies.

They outlined some of the broad areas of useful expertise for a forensic accountant, which are also of a great relevance to fraud detection in banking sector to include: an in-depth knowledge of financial statements and the ability to critically analyze them. These skills help forensic accountants to uncover abnormal patterns in accounting information and recognize their source; a thorough understanding of fraud schemes, including but not limited to asset misappropriations, money laundering, bribery, and corruption; ability to comprehend the internal control systems of corporations, and to set up a control system that assesses risks, achieves management objectives, informs employees of their control responsibilities, and monitors the quality of the programme so that corrections and changes can be made; proficiency in computer and knowledge of network systems.

Lakshmi and Ganesh (2016) argue that these skills help forensic accountants to conduct investigations in the area of e-banking and computerized accounting systems, knowledge of psychology in order to understand the impulses behind criminal

behavior and to set up fraud prevention programmes and to motivate employees to strictly follow the legal and ethical accounting system; interpersonal and communication skills, which aid in disseminating information about the company's ethical policies and help forensic accountants to conduct interviews and obtain crucially vital information; thorough knowledge of company's governance policies and the laws that regulate these policies; and command of criminal and civil law as well as, of the legal system and court procedures.

Holders of forensic certifications may be viewed as having more expertise and offer higher quality of skills and knowledge needed for forensic accounting engagements (Domino, Giordano & Webinger, 2017). The forensic experts noted that audit partners may not recognize the need to involve fraud specialists on the engagement, and where they do, they may be reluctant to use them because of cost considerations (Asare, Wright & Zimbelinan, 2015).

In a more recent study, Asare and Wright (2014) concur that audits in developed economies are increasingly including the involvement of forensic specialists to address the forensic expertise deficit in engagement teams. Forensic accountants often testify in civil and criminal court hearings. In this capacity, they serve as expert witnesses (Ozkul & Pamukeu, 2012). For this reason, many forensic accountants are asked to testify' in court cases' as expert witnesses for either the prosecution or the defense (Mukoro, Yamusa & Faboyede, 2013).

As a matter of fact, an expert witness can make or break a case, which heavily depends on the preparation made by a forensic accountant (Reinstein & Lander, 2004). Significant complexities may arise in any forensic accounting work performed during the course of an engagement; if an expert is unable to successfully defend and explain this work and its inferences to a judge or jury, the expert's work may be for naught (Mayungbe, 2012; Mukoro, Faboyede & Eziamaka, 2014).

With respect to qualification, an expert witness can only be as effective as academic education, professional training, years of experience and charisma will allow. Given the large pool of potential experts, it can be difficult to differentiate between them (Mayungbe, 2012).

In a developed country such as the United States of America, the educational background pertaining to accounting, auditing and the legal system, the professional certificates acquired in the forensic accounting realm and the work experience of court expert testimony will all be considered as vital indicators for judges and juries to determine the qualification of an expert witness (Heitger & Heitger, 2008). Although, in Nigeria, this type of professional qualifications and/or training is expected of a forensic accountant to be considered as an expert witness, it is safe to affirm that majority of forensic accounting experts possess a significant amount of formal training.

Typically, Mayungbe (2012) posits that, a forensic accountant will have an undergraduate degree as well as an advanced or post-graduate degree. While academic training provides a forensic accountant with solid foundational skills, such

training should be considered only as an entry point for further credentialing. In addition to qualifications, DiGabricle (2010) advocates that a forensic accountant should essentially be guided with objectivity and transparency when offering his expert witness services. This is imperative because when testifying in the court of law, accreditation is established, although the most applicable accreditations dependent on the type of engagement for which the expert witness is being retained.

The consensus is that the growth in demand for forensic accountants is expected to continue (Crumbley 2009; DiGabriele, 2009; Kasum, 2009; Davis, Farrell, & Ogilby, 2010; McMullen & Sanchez, 2010). As emphasized earlier, in less than a decade was when new forensic accounting certifications have emerged as well as some professional institutions training and issuing forensic accounting certifications. The emergence of these professional institutions, coupled with the attendant slow growth of the number of forensic accountants raise a poser on how all of these collectively may form the foundation of forensic accounting as a profession in Nigeria.

This development is yet to be frequently experienced in developing countries like Nigeria, although the bank regulatory agencies such as NDIC often explore forensic expert consultation in specialized areas like management functions which include prompt identification of potential significant risks that might impact the achievement of NDIC's mandate, benchmarking strategies as well as other tasks that are considered vulnerable to fraud risks.

2.1.8 Forensic Accounting Professional Certification in Nigeria

Forensic accounting certification is still in its infancy in Nigeria despite the alarming increase in complex financial crimes and lack of adequately trained professionals to investigate them. Previous studies on forensic accounting practice indicate that it is a rapidly growing accounting discipline (Ramadhan. 2015).

In Nigeria, increased awareness of fraud along with recent financial catastrophes, including the collapse of commercial banks and major turmoil on Wall Street and in Nigeria Broad Street, Union Dicon Salt, Lever Brothers (now Unilever), Cadbury, the sack of the management and board members of five banks by the Central Bank of Nigeria (CBN) due to financial abuses and more recently startling revelation of gross impropriety in the oil subsidy scheme and Police Pension Fund fraud has made the need for forensic accountants even greater in recent months (Solnik, 2008).

Also, recent forensic audit of the Nigeria Stock Exchange (NSE) by commissioned group of independent auditors has revealed shady deals in the expenses of the exchange which were not discovered during statutory audits (Olukowade & Balogun, 2015). However, while most other countries have been able to reduce the occurrence of financial fraud in both the private and public sectors, the menace is rather on the increase in Nigeria, despite the establishment of the Independent Corrupt Practices and Other Related Offences Commission (ICPC) and the Economic and Financial Crimes Commission (EFCC) (Efiog, 2013).

Adama (2015) reports that under the auspices of Chukwudifu Oputa Center for Forensic Studies, the Nigerian Institute of Advanced Legal Studies organized a successful and thought provoking round table meeting on the 19th July, 2010 on the

pressing need for forensic and investigative accounting to support the effort at reducing criminality in the banking industry.

He further gathers that the round table discussions were led by experts in the area of accounting, law and banking. Representations were made from the ICAN, the banking industry, the legal profession, the academia, the press and the civil society. A communiqué was issued at the conclusion of the discussions, signed by Professor Epiphany Azingé (SAN), which recommended that the subject of forensic and investigative accounting should be professionalized by the academia and professional accounting bodies.

As part of the efforts to enhance the skills of professional accountants in Nigeria, the ICAN established a Forensic Accounting Faculty and commenced a forensic accounting certification programme in February, 2009 to kick-start the training of its members to become specialists in this inter-disciplinary field. In 2016, ANAN also registered a special body called Society for Forensic Accounting and Fraud Prevention (SFAFP) to train and strengthen its members and interested security officers both in Nigeria and other West African countries in the practice of fraud detection and forensic accounting. In an attempt to combat financial crimes and corruption in both private and public sectors, ICAN has partnered with ANAN to ensure that a Whistle Blower and Protection of Whistle Blower Acts were put forth before the National Assembly by the former and the latter respectively.

The extent to which forensic accounting is gaining relevance in Nigeria in the fight against corruption precipitates the emergence of the aforementioned professional institutions. Only a very few proportion of the Nigerian professional accountants have shown unflinching interest in acquiring investigative skills, which Augustine and Uagbale-Ekatah (2014) concur to be a major cause of a steadily growing demand for sophisticated accounting and auditing techniques as provided by forensic accounting. In terms of certification, research provides evidences that forensic accounting education has evolved from being limited to continuing professional education sessions for practicing accountants, to a current state of being offered as a credit course by many universities (Rezaee, Reinstein & Lander, 1996; Rezaee & Burton, 1997; Peterson & Reider, 1999, 2001; Crumbley, 2001; Rezaee 2002; Ramadhan, 2015).

Thus the need for forensic accounting training and skills in Nigeria is currently an issue of concern (Emeh & Obi, 2013). In developed countries, the practice of forensic accounting appears to be growing due to demand for forensic accounting to investigate fraud (Ramadhan, 2015). Nigeria is not an exception in terms of growing forensic accounting certification, although the demand for forensic investigation across all sectors of the economy is very low. This is in addition to the growth of forensic accounting certification which evidences the expanding opportunities for and increasing professionalism of forensic accounting practice (Huber, 2011; 2012).

With the increase in financial accounting fraud in the current economic scenario experienced, forensic accounting and fraud detection has become an emerging issue

of great importance for academic, research and industries (Ehioghiren & Atu, 2016). An important challenge to the practice of forensic accounting in Nigeria is that the law is not always up to date with the latest advancements in technology (Degboro & Olofinsola, 2007).

Forensic accounting is seen as an expensive service that only big companies can afford (Modugu & Anyaduba, 2013). Thus, most companies prefer to settle the issue outside the court to avoid the expensive cost and the risk of bad publicity on their corporate image. In addition, forensic accounting is a new trend particularly in developing economies. Hence, accountants with adequate technical know-how on forensic issue are hardly available (Olukowade & Balogun, 2015).

Forensic accounting in developing economies like Nigeria is a challenging task, as it is faced with so many bottlenecks (Okoye & Akenbor, 2009; Modugu & Anyaduba, 2013). Crumbley (2001), Grippo and Ibex (2003) identified the challenges facing forensic accounting as: the task of gathering information that is admissible in a court of law; the admissibility of evidence in compliance with the laws of evidence is crucial to successful prosecutions of criminal and civil claims; globalization of the economy and the fact that a fraudster can be based anywhere in the world which has led to the problem of inter-jurisdiction.

The accounting professional bodies and the Federal Government have an important role to play in stimulating interest in forensic accounting practice for monitoring. Investigating and curbing fraudulent acts in Nigeria.

2.1.9 Fraud Detection

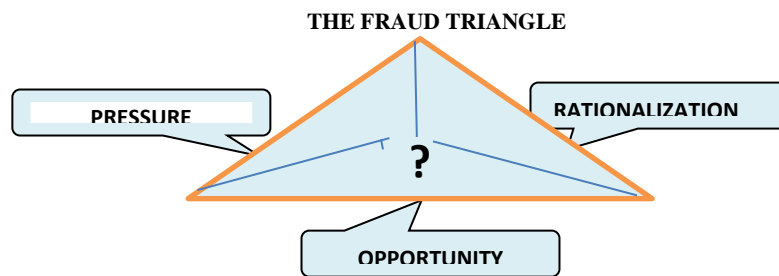
From the variety of definitions availed in academic literature, no single one seems to be adequate as fraud from one organization to the other varies widely in character, nature as well as mode of operation. For instance, Modugu and Anyaduba (2013) classify fraud into two broad ways: nature of fraudsters and method employed in carrying out the fraud. On the basis of the nature of the fraudsters, fraud may be categorized into three, namely; internal, external and mixed frauds. They describe internal frauds as those committed by members of staff and directors of the organizations. While external fraud is committed by persons not connected with the organization, mixed fraud involves outsiders colluding with the staff and directors of the organization.

Where most other countries have been able to reduce the occurrence of financial fraud in both the private and public sectors, the menace up till today is rather on the increase in Nigeria, despite the establishment of the Independent Corrupt Practices and Other Related Offences Commission (ICPC) and the Economic and Financial Crimes Commission (EFCC) (Efiong, 2013). Perpetration of financial fraud is basically premised on selfish economic gains not only in Nigeria but all over the world, hence, its detection is expected to essentially avert militating factors endangering bank survival. Wei, Li, Cao, Ou and Chen (2012) advocate that detection of financial fraud needs to be instant because it is very difficult to recover the loss if a fraud is undiscovered during the detection period.

Okoye and Gbegi (2013) identify five elements to a fraud in legal terms: scienter or knowledge of facts; events or circumstances by one party; misrepresentations (including non-disclosure) of that knowledge of the party in dealing with another; reliance on those misrepresentations by the second party: an agreement, contract, or transaction between the parties which a reasonable person would not have entered into if privy to the first party's knowledge; and harm or damage to the second party as a result. The causal factors that should be removed to deter fraud are best described as fraud triangle. For a holistic risk assessment and fraud prevention and detection, it is imperative to identify what motivates people to commit fraud. However, Turner, Mock and Srivastava (2002) itemize three basic elements that cause fraud occurrence, namely: pressure, rationalization and opportunity.

The fraud triangle as displayed in Figure 2.1 explains three factors that are present in every situation of fraud.

Figure 2:1 Analysis of Fraud Triangle



Source: Turner, Mock and Srivastava (2002)

Figure 2.1 however, describes three basic elements that cause fraud occurrence, namely: pressure. rationalization and opportunity (Turner, Mock & Srivastava 2002).

Okoye and Gbegi (2013) further illustrate that Motive (or pressure) refers to the need for committing fraud (need for money). Rationalization is the mindset of the fraudsters that justifies them to commit fraud while Opportunity is the situation that enables fraud to occur (often when internal controls are weak or non-existent).

Breaking the fraud triangle is the key to fraud deterrence. Breaking the fraud triangle implies that an organization must remove one of the elements in the fraud triangle in order to reduce the likelihood of fraudulent activities. Of the three elements, removal of opportunity is most directly affected by the system of internal controls and generally provides the most achievable route to deterrence of fraud (Kassem & Higson, 2012).

Common personality traits of fraudsters include the following: wheeler and dealer, domineering/controlling, do not like people reviewing their work, strong desire for personal gain, have a “beat the system attitude”, live beyond their means, close relationship with customers or vendors, unable to relax, often have a “two good to be true” work performance, do not take vacation or sick time or only take leave in small amount, often work excessive overtime, outwardly appear to be very trustworthy, often display some sort of drastic change in personality or behavior (Turner, Mock & Srivastava, 2002).

Fraud management is a system of policies and procedures implemented by a corporation to detect and mitigate its internal risk of employees committing illegal acts against the company’s interests to enrich themselves. Although each corporation establishes its own specific procedures, fraud risk management will ordinarily entail

assessment, prevention, detection, investigation, mitigation, and corrective action. The process is often handled by internal auditors or a fraud department with occasional help from outside auditors and other business consultants (Terry, 2014).

He added that majority of corporations employ dedicated staff members who are responsible for internal fraud management. These types of internal controls are distinct from the procedures a company might adopt to detect external fraud committed by customers or other third parties because the internal process is only concerned with illegal behavior by employees. A corporation's fraud team establishes policies and procedures to set an atmosphere of vigilance and zero tolerance within the company. After conducting an assessment, the team will initially be concerned with deterrence and prevention. This could take the form of enhanced security systems, redundant authorizations for high risk transactions, employee education or written policies to make expectations clear.

Detection is the next line of action which might include the company hiring an outside accounting firm to conduct a fraud audit of financial transactions. Investigation takes the steps necessary to determine the culpable parties. Once the involved parties have been identified, the team would move to mitigation of the damage and prosecution of the guilty (Terry, 2014).

Uchenna and Agbo (2013) opine that after the investigation has been completed, the organization will need to determine what action to take in response to the findings. Any findings of actual or potential material impact may need to be reported to the

board, the audit committee and the external auditor if they are not receiving investigation reports directly. Notification may also be required to legal and regulatory agencies and the organization's insurers. They added that those responsible for such decisions should ensure there is a sufficient basis for those actions. Any action taken should be appropriate under the circumstances, applied consistently to all levels of employees, including senior management and should be taken only after consultation with individuals responsible for such decisions.

Management consultation with legal counsel is strongly recommended before taking any possible actions on such insurance claim, extended investigation, business process remediation, internal control remediation, disciplinary, civil, or criminal action (Wilhelm, 2004). This will be followed by analysis and policy. Analyzing why fraud occurs in the confines of a particular company is as important as detecting and stopping it. This analysis drives the establishment of the correct corporate policies to make internal fraud an unthinkable option (Uchenna & Agbo, 2013).

There is a clarion call for statutory auditors to acquire forensic skills to detect and prevent fraud in addition to their audit function. This call has been corroborated by Enyi (2009), Olukowade and Balogun (2015) who advocate that all normal statutory audits should embed 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.

Using forensic accounting techniques will help in exposing and identifying the culprits, because this accounting presents the process of interpreting, summarizing and providing complicated financial issues clearly, i.e., using the accounting literature to help draw facts in the litigation (Chi-Chi & Ebimobowei, 2012; Onodi, Okafor & Onyali, 2015).

Fraud in Banking Sector

Fraud and forgeries have serious effect on the growth and survival of banks in any country. Fraud increases loss contingencies which affects the growth of bank incomes (Ahmed, Madawaki and Usman, 2014). It means fraud and forgeries have adverse implication on banks' capital adequacy, profitability and liquidity position, particularly in the event of such acts constituting cash defalcation and near cash asset items in colossal values.

For long-term survival and growth of any organization to be accomplished, Archibong (1993) accentuates that the issue of fraud and fraudulent practices must be properly handled. Before a bank can become a permanent source of competition and credit, it must first survive long enough to become financially viable.

The Nigerian banking system today is fragile and marginal. Our vision is a banking system that is part of the global change, and which is strong, competitive and reliable. It is a banking system which depositors can trust and investors can rely upon. Evolving such a banking system is a collective responsibility of all agents in the Nigerian economy (Soludo, 2004). He further identified such factor as persistent illiquidity, weak corporate governance, poor assets quality, insider abuses, weak

capital base, unprofitable operations, and over-dependency on public sector funds, among others, which impregnated the 2004 reform.

The NDIC reports of various years speculate that fraud and forgeries account for the major causes of capital inadequacy in banks. Fraudulent credit leads to large bad debt provisions which impair the capital adequacy. In every extreme case, fraud could lead to bank failures and eventual liquidation as bank fraud and forgeries occur at all levels of banking operations in varying degrees. The magnitude however depends on the fraud prevention measures put in place by the bank management (Ahmed, Madawaki and Usman, 2014).

When a financial crisis occurs, we would expect banks with more capital and more stable financing to perform better. Increased competition in the banking industry has become an important factor in shaping the success of management, making efficiency indispensable to the survival of banks following deregulation (Ikhide & Alawode, 2001).

Consequently, the survival of any bank is beyond the size of the bank even though survival of the banks is a vital ingredient for the general growth of the economy. According to Sobodu and Akiode (1998), policy makers, economists and monetary authorities recognize that the ability of banks to achieve the desired results of continuous profitability and long term stability and to continue to play the role earmarked for them depends not only on the existence of an enabling regulatory environment and the number of operating banks but more importantly on their performance from one financial year to the other..

Although it is generally accepted that the Sarbanes-Oxley (SOX) Act of 2002 has improved 'corporate governance' (henceforth, CG) and decreased the incidence of fraud, recent studies and surveys indicate that investors and management continue to have concerns about financial statement fraud. In Nigerian banking system, high degree of co-movement of commercial banks' total loan and advances, total deposit liabilities, total amount involved in fraud, actual amount loss to fraud and number of fraud cases were reported overtime (Osuala, Opara & Okoro, 2016).

No doubt, economic crime and fraud remain an intractable problem for companies globally. Corporate accounting scandals are political and business scandals which arise with the disclosure of misdeeds by trusted executives of large public corporations. Such misdeeds typically involve complex methods for misusing or misdirecting funds, overstating revenues, understating expenses, overstating the value of corporate assets or underreporting the existence of liabilities, sometimes with the cooperation of officials in other corporations or affiliates (Okoye & Gbegi, 2013). In public companies, this type of "creative accounting" can amount to fraud and investigations are typically launched by the government oversight agencies, such as the Securities and Exchange Commission (SEC) in the United States.

Pai and Tolleson (2012) report that the Enron scandal resulted in the indictment and criminal conviction of the big five auditor Arthur Andersen on June 15, 2002. Although the conviction was overturned on May 31, 2005 by the Supreme Court of the United States, the firm ceased performing audits and is currently unwinding its business operations.

In July, 2002, WorldCorn filed for bankruptcy protection in what was considered the largest corporate insolvency ever at the time. These scandals re-ignited the debate over the relative merits of United States GAAP, which takes a “rules-based” approach to accounting versus International Accounting Standards (IAS) and United Kingdom GAAP, which takes a “principles-based” approach.

The financial accounting standard Board announced that it intends to introduce more principles based standards. More radical means of accounting reform have been proposed, but so far have very little support. The debate itself, however overlooks the difficulties of classifying any system of knowledge, including accounting, as rules-based or principles-based.

In 2005, after a scandal of insurance and mutual funds the year before, AIG was under investigation for accounting fraud. The company already lost over 45 billion US dollars worth of market capitalization because of the scandal. This was the fastest decrease since the WorldCom Enron scandals. Investigations also discovered over a billion US dollars made of errors in accounting transactions

Since 2008, the financial institutions of the leading world economies-USA, Germany, Britain, France, China, Japan, Italy and Brazil have experienced great difficulties resulting in a huge cash crunch. Whereas Lehman Brothers was liquidated, American international Group (AIG) was too interconnected with world economies outside the United States to be left to die, but were rescued with American treasury funds. In the wake of this serious financial crisis, many mortgages could not be serviced, credit

dried up for many consumers in the leading world economies. There were cases of bankruptcies, jobs were lost, and suicides were recorded (Okoye & Gbegi, 2013).

The economies in the developing countries like Nigeria were particularly vulnerable because of the dependence of many 'of them on western economic and financial systems. In Nigeria for example, the drop in the price of crude oil and its reduced production due to the conflict in the Niger Delta had a telling effect on the country's revenues and budget. The demand for goods and services was generally depressed leading to factory closures and lay-offs.

The financial crisis in Nigeria is more complex to decipher. It is however, well established now that the Nigeria banking system is both corrupt and inefficient (Jibo, 2009). The highly commendable work of the former Governor of the Central Bank of Nigeria (CBN) - His Royal Highness Sanusi Lainido Sanusi, has exposed the stench in the country's banking industry. Huge unsecured loans were given by the banks; their CEOs allegedly manipulated bank books and helped themselves to customer funds. Above all, bank shares were manipulated to deceive.

Things were presented from a public relation perspective and many were led to purchase bank shares which were almost worthless. While this alleged scam was on, the banks presented a polished image by maintaining an elaborate scheme of deceit. Many Nigerians were ruined by a number of banks who loaned them money to purchase their worthless shares. Bank CEOs in a number of instances criminally used

their customers' accounts to borrow money from banks under their charge (Enwegbara, 2009).

2.2 Review of Empirical Studies

2.2.1 Presence of Forensic Accountants and Fraud Detection

Enofe, et al (2015) examined the role of forensic accounting in curbing financial crimes. The study adopts a survey research design. The population of the study comprises of staff of selected banks. Primary data were collected via the instrumentality and administration of structured questionnaire in eliciting the required data needed to test the formulated hypotheses. Multiple regression technique was utilized for data analysis. the study findings revealed that effectiveness of forensic accounting and the presence of forensic accountants can reduce the occurrence of financial crimes. Conversely, the result is not in consonance with the findings of Emeh and Ohi (2013) who carried out an empirical analysis of forensic accounting and fraud detection in Nigeria. It rather agrees with the general position on the need for forensic accounting in banking industry. The study employed primary data while the present study used secondary data to probe further since only a very few studies confirmed if the presence of forensic accountants actually helps to reduce fraud in banking sector. This particularly makes the fraud situation in Nigerian banks to increase and requires an effective approach to tackle it.

Emeh and Obi (2013) conducted an empirical study on forensic accounting and fraud detection in Nigeria, using a survey research design with a population comprising management staff of selected financial institutions in Nigeria. A sample of one

hundred and five (105) respondents was identified with the aid of simple random sampling technique. The study employed the Spearman Rank correlation for data analysis which is a non-parametric component of the Pearson correlation method. The study consequently found evidence of significant negative correlations between presence of forensic accountants, number of accountants with forensic accounting skills and the extent of forensic accounting practices with the extent of financial fraud among financial institutions. From the above empirical review, no regression technique was employed. Also, the study adopted survey research design which is in line with other studies on forensic accounting and fraud detection. Surprisingly, their research findings appear inconsistent with Enofe et al (2015) despite that the two studies surveyed bank management staff. This therefore calls for more research in forensic accounting and bank fraud to further prove empirically that the impact of engaging forensic accounting is germane in combating fraudulent act in banking environment.

Onuorah and Appah (2012) examine fraudulent activities and forensic accounting services of banks in Port Harcourt, Nigeria. The main objective was to examine the effect of forensic accounting on fraud detection in Nigerian banks. To achieve this objective, data were collected from primary and secondary sources. The primary data were collected with the help of a well-structured questionnaire of three sections administered to twenty four banks in Port Harcourt. Data collected were analyzed using ordinary least square regression technique. The result of the study found that the application of forensic accounting services affects the level of fraudulent activities of

banks. On the basis of this findings, the study concludes that presence of forensic accounting provides banks with the necessary tools to deter fraudulent activities. The study suggests among others, that banks should invest on human capital development of their personnel, government and regulatory authorities should also ensure the provision of standards and guidelines to regulate forensic activities and above all Nigerians should embrace integrity, objectivity, fairness and accountability in their day-to-day activities. While their result agrees with the findings of Okunbor and Obaretin (2010) who investigated the effectiveness of the application of forensic accounting services in Nigerian corporate organizations, it is also consistent with the general belief on the relevance of forensic accounting for fraud detection and prevention. They employed survey research design with bank management staff as the target population which does not modify the position of Enofe et al (2015) that there is significant relationship between presence of forensic accountants and fraud detection.

Enofe, Okpako and Atube. (2013) examine the effect of forensic accounting on fraud detection in Nigerian firms. The aim is to determine the relationship between fraud detection and forensic accounting. Primary data were collected with the help of a well-structured questionnaire of three sections administered to fifteen firms in Benin City, Edo State. Data collected were analyzed with descriptive statistics using ordinary least square (OLS) regression and Chi-square. The study reveals that the application of forensic accounting services on firms affects the level of fraudulent activities. From their findings, it is clear that forensic accounting is a panacea to

unravel and prevent fraudulent practices. It helps in minimizing fraud occurrence if effectively applied in developing economies as much as it is regularly utilized in developed countries. They equally adopted survey research design while their research findings agree with the general belief on the relevance of forensic accounting for fraud detection in banking industry.

2.2.2 Forensic Litigation Support Skill acquired by Qualified Accountants and Fraud Detection:

Bassey and Ahonkhai (2017) investigated the effect of forensic accounting and litigation Support on fraud detection in Nigerian companies. The objective of this study is to pre-dispose if forensic accounting and litigation support skill acquired by accountants have any significant effect on fraud detection in Nigerian companies. In order to actualize this objective, data were gathered through primary source and this was achieved with the aid of organized questionnaires of two segments administered to the employees of Zenith Bank Nigeria Plc and Union Bank Nigeria Plc in Calabar, Cross River State. The data collected were presented with the help of tables and interpreted with the aid of inferential statistics using Analysis of Variance (ANOVA). The study revealed that forensic accounting and litigation supports acquired by accountants do not have significant effect on fraud detection in Nigerian banks. From their findings, it is perturbing to find out that forensic accounting and litigation support do not significantly impact on fraud detection, probably due to some of the bank fraud cases in Nigeria ending up not properly prosecuted in law court. Their results agree with the works of Okoye and Akamobi (2009), Izedonmi and Mghame (2011), and modify the position by various researchers that forensic litigation support

skill is considered one of the specialized skills needed to detect fraud in banking industry. It was discovered in their study that bank staff were surveyed instead of forensic accountants who have the knowledge and the skill. This may have also contributed to the research outcome from the above empirical review.

Degboro and Olofinsola (2007) appraised the role of forensic accountants in the litigation support engagement as it affects fraud. Survey research design was adopted. Correlation and Ordinary Least Squares (OLS) were used to analyze the data. The findings of the study show significant relationship between forensic accountants and litigation support engagement as it affects fraud. The findings also revealed that forensic accounting litigation engagement is significant in the face of the increasing fraudulent practices in Nigeria. Their finding however, suggests that forensic litigation support is considered a reliable skill required to deter fraud in banking industry. Survey research design was similarly used which is common to other studies. The result of their findings tallied with the bulk of literature on the importance forensic accounting litigation support engagement in fraud detection.

Okafor and Agbiogwu (2016) investigated the effects of forensic accounting skills on management of bank fraud in Nigeria. Primary data were gathered with 140 copies of questionnaire administered on the staffers of the five (5) selected banks in Imo State. The statistical tool used to test the hypotheses was ANOVA (Analysis of Variance). The study revealed among other things that possession of a greater extent of basic forensic skills significantly reduces the occurrence of fraud cases in the banking sector and that acquisition of enhanced litigation/investigative skills aids the forensic

accountant in managing bank fraud. It is clear from the results of their empirical findings that litigation support skill has significant impact on fraud control. However, the study lacks substance on if qualified accountants with this specialized skill gain more expertise than the non-qualified accountants who possess same skill, which this study seeks to further investigate.

2.2.3 Forensic Investigative Skill Acquired by Non-Qualified Accountants

Onodi et al (2015) assessed the effect of forensic investigation methods in corporate fraud deterrence in Nigerian banks. This study adopted a survey research design and data from primary source were collected through interviews and administration of questionnaires, while secondary source consists of reports on fraud and forgery in the banking sector. Statistical tools used to analyze the data include percentages, mean score, frequency tables, regression analysis and Z-test. Three hypotheses were formulated and tested. The result revealed that there is a significant relationship between the forensic investigative methods and corporate fraud deterrence. Their findings also suggested that expert with forensic investigative skill are also found relevant in the prosecution of fraud, but majority of the audit and accounting personnel in Nigeria are suffering from poor perception and knowledge of forensic investigative methods. The findings from the above review are quite revealing, particularly on the discovery that they do not clearly establish if non-qualified accountants having forensic investigative credentials possess adequate skill to detect fraud in banking environment. Results from their studies tally with Mau (2015). Empirical literature on forensic investigative skill acquired by non-qualified

accountants and fraud detection in developing economies is scanty, which constitutes one of the gaps that the present study seeks to fill.

Mau (2015) conducted a study on the role of forensic investigation professionals in curbing the menace of fraud and corruption practice in developing countries using exploratory research design. Findings in the study point to the fact that forensic investigation professional plays a complimentary role to the government anti-fraud and anti-corruption agencies in strategies and policies to curb menace of corruption in the system. The research findings show that forensic investigation professionals play significant role in curbing the menace of fraud and corruption in developing countries. The result from the above empirical review tally with the works of Onodi et al (2015) and does not establish if non-qualified accountants having forensic investigative credentials possess adequate skill to detect fraud in banking environment. More importantly, the literature review reveals that one of the most effective fraud detection mechanisms is forensic investigative method which is the least employed to combat fraud, hence no comprehensive empirical investigation has been conducted, which the present study seeks to address.

Emeh and Obi (2013) conducted an empirical analysis of forensic accounting and fraud detection in Nigeria, using a survey research design with a population comprising management staff of selected financial institutions in Nigeria. A sample of one hundred and five (105) respondents was determined with the aid of simple random sampling technique. The study employed the Spearman Rank correlation for data analysis which is a non-parametric component of the Pearson correlation method.

The study consequently found evidence of significant negative correlations between presence of forensic accountants, number of accountants with forensic accounting (investigative) skills and the extent of forensic accounting practices with the extent of financial fraud among financial institutions. The findings from their studies are also clear, particularly on the fact that they only emphasized on qualified accountants with forensic investigative skills while ignoring the non-qualified accountants with same forensic investigative credentials, which is very important in order to establish if they also possess the required expertise to detect fraud in banking environment. Their result is in consonance with the works of Mau (2015) and Onodi et al (2015).

Oyedokun (2016) investigated the techniques available in forensic accounting investigation and interrogates the justification for same. The study explores the overview of forensic accounting investigation and its various available techniques. Methodology used in arriving at the conclusion in this study is content analysis which is the review of relevant books, journals, and articles on the subject of discussion. Findings from the study revealed the need for accountants to equip themselves with these techniques in order to achieve their forensic investigative engagement objectives. The result from the above empirical review is in consonance with the works of Onodi et al (2015) and other literature reviewed in the present study that do not confirm if non-qualified accountants having forensic investigative credentials have the expertise to detect fraud in Nigerian banks. In addition, the literature review reveals a gap that no comprehensive empirical investigation has been conducted which the present study seeks to clarify.

Kennedy and Anyaduba (2013) carry out an empirical approach to forensic accounting and financial fraud in Nigeria. Specifically, the study examined if there is significant agreement amongst stakeholders on the effectiveness of forensic accounting in financial fraud control, financial reporting and internal control quality. The survey design was used in the study with a sample size of 143 consisting of accountants, management staff, practicing auditors and shareholders. Binomial test was employed in the data analysis. The findings of the study indicate that there is significant agreement amongst stakeholders on the effectiveness of forensic accounting in fraud control, financial reporting and internal control quality. In line with the above findings, the study further recommends that ICAN, ANAN and the National Universities Commission (N.U.C.) should encourage formalization and specialization in the field of forensic accounting. Their study findings revealed the fact that forensic accounting is relevant in fraud control among others while they advanced a policy option of proactive collaboration among professional bodies in Nigeria, including the N.U.C. in formalization and specialization in the new specialty area. Neither does their study finding reveal any result pertaining to professionalization of forensic accounting in Nigeria, nor does it confirm the adequacy of forensic certification among professional bodies. Their study findings generally concur with other researchers whose works are reviewed in the present study.

2.2.4 Forensic Accounting Expert Consultation and Fraud Detection:

Dike et al (2016) examined the impact of forensic accounting on the prevention and control of fraud in the Nigerian banks. Ex post facto research design was used. Ordinary least square (OLS) regression technique was employed for data analysis to examine the relationship that exists among research variables in addition to the test of hypotheses. Findings from the study revealed that there is a significant relationship between the forensic accounting expert consultancy expenditures and amount of fraud uncovered in Nigerian banks. It was also found that the higher the amount spent on forensic expert consultations, the higher the amount of fraud uncovered through bank staff involvement. The result further showed that there is a significant relationship between the amount spent on forensic expert consultation and the amount lost to fraud through bank staff involvement in deposit money banks. The foregoing study is the only empirical evidence that utilized secondary data while other similar studies were exploratory in nature. Their study also covered a period of nineteen years. The present study attempts to fill these gaps by adopting the same OLS regression technique in order to confirm if forensic expert consultation has any significant role to play in minimizing fraud occurrence in banking industry. This result agrees with the bulk of literature covered in this study but fail to reconcile the discrepancy between increased forensic expert consultancy expenditure incurred and increased fraud and forgery as regularly reported by the NDIC and FITC.

Oyier (2013) examined the impact of forensic accounting services on fraud detection and prevention among commercial banks in Kenya. The study used descriptive survey research design with a sample of 47 respondents in 16 commercial banks in Kenya. Multiple regression models were employed for data analysis. The study findings

indicated that the application of forensic accounting services by banks led to increased fraud prevention in the commercial banks and the highest application was on enhancing quality of financial reporting. The study also found that a unit increase in forensic expert consultation results in a decrease in fraud in commercial banks. The most prevalent type of fraud in the banking sector was fraudulent expense claims. From the foregoing, it is explicit that more forensic expert consultation brings about increase in fraud detection. The results from the study do not seem to hold in perpetuity because of increase in fraud and forgeries reported on regular basis by the NDIC and FITC, hence it necessitates further empirical research, the gap of which the present study seeks to also fill.

Ogundana, Okere, Ogunleye and Oladapo (2018) investigated the role of the forensic accountant in the detection of fraud in the Nigeria banking sector. The study adopted the Survey research design while the data were primarily sourced which were gleaned from copies of the questionnaire administered to selected banks. Three (3) hypotheses were formulated and tested using Simple Regression at a significant level of 5%, independent t-test and one-way ANOVA. Findings revealed that an increase in forensic accounting expert consultation leads to a decrease in fraud; an increase in fraud investigation leads to decrease in fraud; and an increase in litigation support service results to decrease in fraud. Their results are also significant and tally with the works of other researchers whose studies are covered in the present study. Their study is also exploratory in nature which also failed to clarify why the increased forensic expert consultancy expenditure incurred only brings about increase in fraud detection

but does not reduce fraud and forgery as evidenced from the NDIC and FITC annual reports.

2.2.5 Forensic Accounting Professional Certification and Fraud Detection:

Domino, Giordano and Wehinger (2017) investigated Factors that impact the perceived value of forensic accounting certifications. Sixteen commonly held forensic certifications were selected for analysis, evaluation, and ranking of perceived value. The selection of the certifications included in the study was based upon prior literature that identifies certifications widely held by accountants who perform forensic services. Additionally, a survey of 217 practicing accountants also provided information on widely held forensic certifications. To compare the forensic accounting certifications, data were gathered from each granting organization's website. The factors deemed to be relevant to the perceived value of the certifications were then identified. Results show three certifications perceived to be of most value to accountants for forensic support services by both the attorney and academic experts: Certified Financial Forensics (CFF), Certified Forensic Accountant (CRFAC), and Accredited in Business Valuation (ABV). Their study focused on the perceived value of certifications which was achieved by ranking different certifications issued by professional bodies in the United States. Findings from their study failed to empirically examine if such certifications fulfilled the core conditionalities required of a profession, probably because few prior studies already addressed it. Their study was conducted in a developed economy while the present

study attempts to ascertain the relationship between forensic certification and fraud detection in a developing economy, particularly in Nigeria.

Huber (2012) examined if forensic accounting in the United States is becoming a profession by measuring significant growth in the number of certifications in forensic accounting and also the number of corporations issuing certifications in forensic accounting. The study is purely exploratory and attribute model was used which revealed that forensic accounting fulfilled most of the attributes of a profession. Training, the existence of an organization, certification as symbol, specialized knowledge, examinations and a code of ethics are fragmented and dispersed among several organizations. The study however, explores the possibility of forensic accounting as a profession in its own right. In their study, attribute model otherwise called taxonomy model was utilized which is a model that attempts to identify attributes, traits, categories, characteristics, or dimensions of professions. Huber (2012) cross-examined these core attributes as identified by leading researchers in attribute modeling and came up with comparative breakdowns to measure the level of fulfillment of criteria of professions. Because altruism as one of the components of attribute model seems to be waning as one of the criteria of a profession in the 21st century, it renders the criterion impracticable if not impossible to apply an altruistic worldview in a post-industrial society. The present study however, considers it imperative to fill this gap by applying theory of professions to provide a more analytical lens in order to forestall parochial judgment.

Enofe. Olorunnuho and Eboigbe (2015) empirically investigated accountants' perceptions of forensic accounting and fraud investigation. To achieve the objective of this study, research questions were raised, hypotheses formulated and a review of related literature was made. The population of the study comprises the accounting staff of commercial banks and academic accountants currently operating in Nigeria. Quota sampling technique was adopted in the sampling process. Using the sample size of two hundred (200) professional accountants practicing in firms, from which middle level employees and senior accountants with academic accountants were drawn from the population of the professional accountants in Edo State, data were elicited from respondents with the aid of the research instrument adopted in this study. The major instrument used for generating the primary data was the questionnaire, which was designed in five- response option of Likert-scale and administered on sampled respondents. The data generated for the study were analyzed through mean scores while the stated hypotheses were statistically tested with chi-square. Their findings revealed a general opinion for the need of forensic accountants in Nigerian economy and their services are more required for fraud and corruption related issues. The study findings also confirmed that accountants in Nigeria have an in-depth knowledge of forensic accounting practice and is neither new to the practicing accountant nor professional accountants. Their study findings revealed that more accountants are required to fight against fraud and corruption and this is achievable through forensic certifications of professional accountants as proclaimed by other empirical works reviewed in the present study. Their findings do not

consider the need for adequacy of forensic qualification, hence the need to fill the gap.

Chen and Akkeren (2010) carried out an exploratory study on the current structure of the forensic accounting industry in Australia and modalities for forensic certification. Extant literature identifies the complex nature and role of forensic accountants, and identifies the broad areas of expertise that may be required of a forensic accountant due to many services they offer. Using the Theory of Professions to guide data collection and analysis from archival research, Australian forensic accounting websites were analyzed using qualitative content analysis to determine whether this relatively new career path can be considered a profession in its own right. Findings demonstrate that there is a lack of consistency within the industry in regard to formal qualifications, skills and experience. The study identified substantial disparity within the industry with regard to the three characteristics of the Theory of Professions with a plethora of qualifications, skills, certifications and experience amongst the 87 forensic accountants analyzed. Their study adopted archival research and employed qualitative content analysis to determine whether forensic accounting should be considered a profession in its own right in a developed economy. The present study utilizes survey research design and one-way ANOVA to achieve the same research objective in a developing economy, particularly Nigeria. Their study findings concur with other researchers whose works were reviewed in the present study. There has been no study yet that ever employed professions theory to provide a better understanding on whether forensic accounting fulfils most of the attributes of a

profession and contributes significantly to fraud detection in banking industry, hence the need to fill the gap.

2.3 Theoretical Framework

This section reviews relevant theories underpinning the study. Each of the theories has its strength and weaknesses with different theoretical conclusions.

Forensic accounting as a relatively new specialty rests on the existing theories from other related disciplines such as sociology, law, economics, psychology, criminology and anthropology, among others. Theory of Professions and Theory of Demand and Supply are specifically chosen and reviewed in this study which are meant to guide in the search to understand the relationship between forensic accounting and fraud detection in DMBs.

2.3.1 Theory of Professions

Pollock and Amernic (1981) define Theory of Professions as the power and reputation granted by society to the profession in terms of protecting public interest where professionals acquire a body of knowledge, which is connected to the major needs and values of the social and accounting system. The theory which emanated primarily from the field of sociology, sought to understand the essential elements of professions and to explain their functional role in society. Management scholars in organization studies and accounting, found this theory useful since 1990s in order to understand large professional organizations and how they differed from corporations. Talcott Parsons is the father of the studies of professions. Early studies of the professions attempted to describe how these occupational groups differed from other

forms of work while concerted effort was also made to cataloguing the unique attributes or traits of professionals. For instance, Greenwood (1957) discovered five key traits consisting of a systematic body of theory, professional authority, sanction of the community, a regulative code of ethics and a professional culture. Also, in a bid to clarify why librarians were not recognized as professionals, Goode (1961) identified four traits, namely: absence of prolonged special training, a formal body of abstract knowledge, a collective orientation to public service and the absence of collective self-control.

Other additional traits were consequently found relevant which include: fiduciary relationship with clients (Lewis & Maude, 1949), loyalty to colleagues (Drinker, 1954), a sense of social duty or “calling” in which the performance of work is somehow subordinated to the economic rewards attached to it (Greenwood, 1957) and rewards based on work achievement (Barber, 1963).

Accounting is undoubtedly a generally accepted profession in Nigeria, just like professions such as medicine, law, engineering, architecture, teaching, among others. Apparently, various concepts encompassed in the definitions provided above are applicable. For instance, the certified national accountants (CNA) and chartered accountants (CA) are expected to possess tertiary educational qualifications, acquire special knowledge and skills and be found useful for the upliftment of both individuals and society. Control of entry is also duly exercised by ICAN and ANAN, hence it is inexplicable that forensic accountants are required to meet professional

standards set for other qualified accountants from the two aforementioned professional bodies (ANAN and ICAN).

In order to confirm if forensic accountants are adequately qualified to undertake forensic accounting work and if the industry protects public interests, an adapted model by Chen and Akkeren (2011) from work by Canning and O'Dwyer (2001) and Candilis (2009) represented the Theory of Professions for forensic accounting. Therefore, since accounting professionals are regarded as a mechanism to protect public interest as they are required to act above and beyond material incentives (Larson, 1977), the Theory of Professions appears to be capable of providing some useful lens for better understanding of the role and characteristics of forensic accounting profession. This is in consonance with the conditionalities and qualifications to work in the profession of forensic accounting.

2.3.2 Theory of Demand and Supply

Theory of Demand and Supply is an economic model of price determination in a market which postulates that an increase in the price of a commodity leads to a decrease in the aggregate demand for this commodity and an increase in aggregate supply (Philipp, 1994). The partial equilibrium supply and demand economic model was originally developed by Antoine Augustin Cournot (published in a book in 1838) and thirty years later broadly publicized by Alfred Marshall.

The economic theory of demand and supply is generally considered as one of the fundamental principles governing any economy such that when supply and demand are equal, the economy is said to be at equilibrium between price and quantity. In

summary, the theory simply states that an increase in supply will tend to cause a drop in price or vice versa, while an increase in demand will tend to lead to price increase or vice versa. Efiog (2013) clarifies that the unit price for a particular commodity will vary until it settles at a point where the quantity demanded by consumers equals the quantity supplied by the producers which results in an economic equilibrium of price and quantity.

Equilibrium as also described by Gale (1955) is achieved when the quantity demanded is equal to the quantity supplied. It is interesting to note that in developed countries, especially the United States of America (US) and United Kingdom (UK), there has been an increase in the demand for forensic accountants which Huber (2012) confirms to have resulted in a significant growth in the number of certifications in forensic accounting and also the number of corporations issuing certifications in forensic accounting.

The situation is inverse in developing countries, particularly Nigeria as it appears there is a wide gap between the demand for, and supply of forensic accountants through professional training and certification. For instance, low demand for forensic accounting is a function of high fee charged by its provider. High cost of providing forensic accounting service in banks results in low demand for it. To validate this fact, Modugu and Anyaduba (2013) posit that most companies prefer to settle the issue outside the court to avoid the expensive cost and the risk of bad publicity on their corporate image. Qualified forensic accountants are in short supply and the demand for their services is projected to remain strong, given a tenuous economic

climate, an ever-changing regulatory environment and projected increases in fraud (Tysiac, 2012; Huber, 2012; Schiavone, 2012; Efiog, 2013; Valenti, 2014).

Therefore, the concept of demand and supply of goods and services is comparable to the demand for, and supply of forensic accountants. The same theory was adopted by Carnes and Gierlasinski (2001) to investigate the mismatch between demand and supply of forensic accountants in the US. In their study, it was gathered that there was a weak response to course development to improve the US university students' awareness of fraud and how it can be detected. They concluded that accounting curriculum revised in many colleges and universities to incorporate forensic accounting courses as electives in US imbued confidence that supply of forensic accounting skill will soon catch up with demand.

Presently, academia has become more aware of the demand for trained forensic accountants as a number of US colleges and universities now offer specific courses and degrees in forensic accounting (Huber, 2012). The demand for forensic accountants is expected to continue to grow as there are more accounting professionals in forensic accounting engagements in US (Valenti, 2014).

Forensic accountant are no doubt in very high demand to help in dealing with issues of fraud which have ravaged the Nigerian society (Efiog, 2013). The professional bodies/organizations providing training and certification in Nigeria could be regarded here as the firms that supply these goods (forensic accountants) to the society. But, what is not clear is whether the professional bodies/organizations have lived up to this

expectation or intend to do so in the near future, hence the theory of demand and supply has utmost relevance in this research study.

2.3.3 Deterrence Theory

The deterrence theory can be traced to the early works of classical philosophers such as Thomas Hobbes (1588-1678), Cesare Beccaria (1738-1794) and Jeremy Bentham (1748-1832). Together, these theorists protested against the legal policies that had dominated European thought for more than a thousand years and against the spiritualistic explanations of crime on which they were founded.

Hobbes (1651) described men as neither good nor bad. He assumed that men are creatures of their own volition who want certain things and who fight when their desires are in conflict. Since people are determined to achieve their self-interests, the result is often conflict and resistance without a fitting government to maintain safety. To avoid war, conflict, and crime, people enter into a social contract with the government so that it will protect them from human predicaments.

The role of the state is to enforce the social contract. In this case, Hobbes (1950) argued that the punishment for crime must be greater than the benefit that comes from committing the crime. Deterrence is the reason individuals are punished for violating the social contract, and it serves to maintain the agreement between the state and the people in the form of a workable social contract (Vold, Bernard & Snipes, 2002).

Beccaria followed Hobbes and other 18th-century enlightenment writers that laws should be judged by their propensity to afford the 'greatest happiness shared by the

greatest number” (Beccaria, 1963). Since people are rationally self-controlled, they will not commit crimes if the costs of committing crimes prevail over the benefits of engaging in undesirable acts. If the sole purpose of punishment is to prevent crime in society, Beccaria (1963) argued, ‘punishments are unjust when their severity exceeds what is necessary to achieve deterrence’. Excessive severity may not reduce crime, in other words, it will only increase crime.

In Beccaria’s view, swift and certain punishment are the best means of preventing and controlling crime; punishment for any other reason is capricious, superfluous and repressive. Finally, Beccaria argued that the seriousness of crimes should be based on the extent of harm done to society. As an advocate of the pleasure-pain principle or hedonistic calculus, Beccaria maintained that pleasure and pain are the motives of rational people and that to prevent crime, the pain of punishment must outweigh the pleasure received from committing crime.

Bentham, a contemporary of Beccaria, was one of the most prominent 18th-century intellectuals on crime. In 1780, he published *An introduction to the Principles of Morals and Legislation*, whereby he proclaimed his famous principle of utility, he argued that ‘nature has placed mankind under the governance of two sovereign masters, pain and pleasure’ (Bernham, 1948).

Bentham believed that morality is that which promotes the greatest happiness of the greatest number (Moyer, 2001). This phrase was also common to Beccaria. The duty

of the slate in Bentham's view was "to promote the happiness of the society, by punishing and rewarding" (Bentham, 1948).

The theory of deterrence, following the work of Hobbes, Beccaria, and Bentham, relies on three individual components: severity, certainty, and celerity (Nagin, 1998). The more severe a punishment, it is thought, the more likely that a rationally calculating human being will desist from criminal acts. To prevent crime, therefore, criminal law must emphasize penalties to encourage citizens to obey the law. Certainty of punishment simply means making sure that punishment takes place whenever a criminal act is committed.

Classical theorists such as Beccaria believe that if individuals know that their undesirable acts will be punished, they will refrain from offending in the future. Moreover, their punishment must be swift in order to deter crime. The closer the application of punishment is to the commission of the offense, the greater the likelihood that offenders will realize that crime does not pay.

In short, deterrence theorists believe that if punishment is severe, certain, and swift, a rational person will measure the gains and losses before engaging in any form of crime and will be deterred from violating the law if the loss is greater than the gain (Akers, 2000). The commission of financial crime that leads to bank failure is as a result of lack of severe, certain and swift punishment to hinder such actions.

Although Sherizen (1995) called for criminologists to specifically test the contemporary form of deterrence theory using forms of computer crime that include

software piracy, the only tests of deterrence theory and software piracy are found in the information technology literature (Higgins, Wilson & Fell, 2005). More importantly, Peace. Galletta and Thong (2003) adopted deterrence theory to examine the mediating effect attitudes and subjective norms (i.e., the favorable perception that significant others would encourage the behavior) would have for perceived certainty and severity on intentions to pirate software. The study confirmed that perceived certainty and severity were indeed mediated by attitudes and subjective norms.

Albeit, these studies are of utmost relevance, they provide limited knowledge about how deterrence theory could be applied to computer crimes, financial crimes, software piracy and other related studies. Specifically, these studies did not explicitly use the classical parts of deterrence theory and only fragmentally used parts of contemporary deterrence theory.

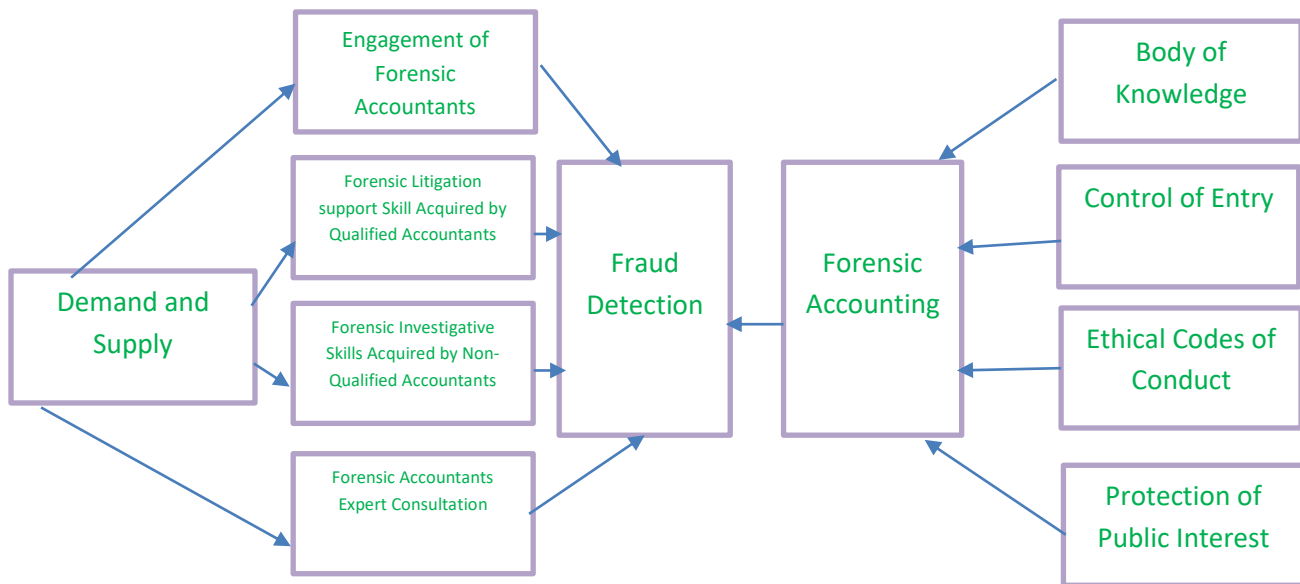
Studies that attempted to explicitly make use of the classical parts of deterrence theory and bring together its contemporary parts in explaining the mediating effect that attitudes and subjective norms would have for perceived certainty and severity on intentions to use forensic accounting services in detect and prevent fraud occurrence are very few.

2.3.4 Conceptual Framework of the Effect of Forensic Accounting on Fraud Detection

The Theory of Demand and Supply and the Theory of Professions framework were adapted from the works of Efiog (2013) and Chen and Akkeren (2012) respectively.

Each of the attributes from the two theories as presented below is used as the benchmark to appraise the effect of forensic accounting on fraud detection in DMBs.

Figure 2.2: Conceptual Framework of the Effect of Forensic Accounting on Fraud Detection



Source: Modified Framework adapted from works of Ffiong (2013), Chen & Akkren (2012).

The Theory of Demand and Supply and the Theory of Professions therefore, provide support for the final model that was developed for this study as presented in figure 2.2. This model is the best for this study as it captures the essence and the research objectives that link the demand for, and supply of forensic accountants with the required criteria that lead to the ultimate description of profession. By and large, in the forensic accounting industry in Nigeria, empirical evidence is scanty on whether forensic accounting meets the standards required to be considered a profession.

This study intends to follow positivism as research philosophy because it depends entirely on application of various statistical techniques to a large set of quantitative

data to test certain designated hypotheses to achieve the research objectives. As Efiog (2013) accentuates, this view was first encapsulated by the French philosopher, Auguste Comte in 1853 and contains two assumptions namely: ontological and epistemological assumptions. Where ontological assumption states that reality is external and objective, epistemological assumption considers that knowledge is only of significance if it is based on observations of this external reality (Easterby-Smith, Thorpe and Jackson, 2008). This is obvious in the sense that they adopt the natural scientist method of investigation which is characterized by expressing their research questions in the form of hypotheses and formulating appropriate equations to test the validity of the hypothesized phenomena (Bryman and Bell, 2003).

2.4 Summary

This chapter reviewed already existing relevant literature on issues bordering on the forensic accounting and fraud detection in the Nigeria DMBs within the contexts of conceptual, empirical and theoretical underpinnings which form the bases of the study. Majority of studies reviewed in this chapter unanimously agree that the very integrity and survivability of Nigerian banks have been deteriorated and had recorded significant bank failures or banking crises during the past 30 years.

Though, majority of researchers believe that forensic accounting is effective in prevention of fraud, others proclaim that there is no such impact, hence its applicability fails to prevent fraudsters from committing the crime. Forensic accounting is perceived to have evolved in response to certain emerging fraud related cases. This implies a dramatic increasing need for more forensic accountants, their expanded role as well as the enhancement of the accounting curricula to improve the fraud detection skills of statutory auditors. Extant theoretical literature also revealed the relevance of some theories that have utmost relevance to the study, such as: Theory of Professions, Theory of Demand and Supply as well as Deterrence Theory.

The Theory of Deterrence, following the work of Hobbes, Bcccaria, and Bentham, relies on three individual components: severity, certainty, and celerity. The more severe a punishment, it is thought, the more likely that a rationally calculating human being will desist from criminal acts. To prevent crime, therefore, criminal law must emphasize penalties to encourage citizens to obey the law. Theory of Professions and Theory of Demand and Supply are chosen for this study. The theories are appropriate in explaining the current state of forensic accounting practice in Nigeria and its impact on fraud detection in DMBs. Therefore, combining theories incorporate the best feature from different theories and appears to be a constructive approach. The study takes an integrative approach by combining individual variables from the two aforementioned theories.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

The study is based on time series non-experimental research design (which is a widely used research design in ex post facto research) and survey research design. According to Simon and Goes (2013), ex post facto research is ideal for conducting social research when it is not possible or acceptable to manipulate the characteristics of human participants. It is a substitute for true experimental research and can be used to test hypotheses about cause-and-effect or correlational relationship where it is not practical or ethical to apply a true experimental or even a quasi-experimental design.

Aggarwal (2008) refers a survey as a research design devoted to the gathering of information about prevailing conditions or situations for the purpose of description and interpretation and to provide information useful to the solutions of local issues (Neeru, 2012). Survey is a type of descriptive research that may either use questionnaire or interview to collect data and its purpose is to describe the association or relationship between two or more variables (Spiller & Harris, 2013). The survey research employs applications of scientific method by critically examining sourced materials, analyzing and interpreting data to arrive at generalization and prediction (Neeru, 2012). Specifically, a cross-sectional research technique is adopted in gathering the data used. This is because the data gathered are obtained from different

samples which are drawn at a particular point in time, common to all the elements of the sample.

3.2 Population, Sample and Sampling Techniques

For secondary data collection purpose, the study population comprised of the CBN's updated list of DMBs in Nigeria as at December, 2017, totaling twenty-one (21). For the purpose of gathering primary data required for this research study, the entire population of the inductees of the forensic accounting professional bodies whose membership status was published as at the time this research survey was conducted stood at 5,644 respondents as shown in Table 3.1.

Table 3.1: Distribution of Study Population for Primary Data Collection

S/No	Forensic Accounting Trainers	Population
1	Association of Certified Forensic Accountants (ACFA)***	217
2	Association of National Accountants of Nigeria(ANAN)**	135
3	Institute of Chartered Accountants of Nigeria (ICAN)*	405
4	Institute of Certified Fraud Examiners (ICFE)***	60
5	Institute of Ior.fIS1 Accountants of Nigeria (IFAN)***	4,767
6	International Institute of Certified Forensic Investigation Professionals (IICFIP)***	60
	Total	5,644

Sources: * ICAN Annual Report and financial Statements as at 31 December, 2016.
 **ANAN Practicing Members: <http://anan.org.ng/wp-content/uploads/2016/02/List>.
 ***Official websites of ACFA, ICFE and IFAN as at December, 2017.

For many practical purposes, sampling from a finite population that is large can be considered to be sampling from an infinite population (Spiegel & Stephens, 2011).

The research sample was therefore, drawn by calculating the needed sample size using a model developed by Cochran in 1963 as cited by Kasiulevicius , Sapoka and Filipaviciute (2006), and Singh and Masuku (2014).

In line with Cochran's position, to calculate the required sample size in a descriptive study, the knowledge of three criteria involved in the formula must be certain. Kasiulevicius et al, (2006), and Singh and Masuku (2014) identified these three criteria as: level of precision (which is also known as margin of error), confidence level or risk level and the degree of variability which is also known as standard deviation. It is usually expressed in percentage e.g. +/- 5%. The confidence level determines how confident the researcher wants to be that the actual mean falls within the margin of error.

The three common confidence levels are at 90%, 95% and 99%. The third criterion is the standard deviation and it explains the extent of variance expected from the responses. 50% is usually considered the most forgiving level to choose as it provides for neither too low nor too high variation (Singh & Masuku, 2014).

The cited Cochran formula as given by Kasiulevicius et al, (2006) is

$$n = \frac{z^2 \times p(1-p)}{e^2}$$

The formula was simplified by Smith (2013) as corresponding to z-score behavior.

$$\text{Necessary Sample Size} = \frac{(\text{Z-score})^2 * \text{Standard Deviation} * (1 - \text{Standard Deviation})}{(\text{Margin of Error})^2}$$

$$90\% - Z - \text{Score} = 1.645$$

$$95\% - Z - \text{Score} = 1.96$$

$$99\% - Z - \text{Score} = 2.326$$

The study chose 95% confidence level which has a Z-score of 1.96, a standard deviation as 50% (.5) and a margin of error as +/-5% (.05). This choice is due to the safety associated with midpoint standard deviation. Thus, the sample size of three hundred and eighty-four (384) was derived in line with this model.

Alternatively, Taro Yamane formula was used to determine the sample size for the study which is calculated below:

$$n = \frac{N}{1 + N(e)^2} \text{ (Yamane, 1967).}$$

Where;

N= the study population (5,644)

e = the degree of error expected (0.05)

n = the needed sample size (?)

1 is the constant.

$$n = \frac{5,644}{1 + 5,644(0.05)^2}$$

$$n = 374$$

The sample size of 374 respondents was therefore, approximated to 400. The above computations of sample size, using both Cochran and Taro Yamane formulae produced nearly similar results, which invariably suggest that a minimum of three hundred and seventy four (384) or three hundred and eighty nine (374) respondents respectively, are required to carry out this study. Therefore, the sample size for

primary data purpose could be rounded up to four hundred (400) respondents distributed proportionately below:

Table 3.2: Distribution of Sample Size for Primary Data Collection

S/No	Forensic Accounting Bodies	Sample Estimation	Sample Size
1	ACFA	217/5644 x 400	15
2	ANAN	135/5644 x 400	10
3	ICAN	405/5644 x 400	29
4	ICFE	60/5644 x 400	4
5	IFAN	4767/5644 x 400	338
6	IICFIP	60/5644 x 400	4
	Total		400

Source: Field Survey (2017)

The population size for secondary data is relatively small, hence the entire DMBs represent the sample size. A researcher can opt to study the entire population when the population is well defined (complete sampling frame) and small (Alvi, 2014).

Convenience sampling which is a non-probabilistic sampling method was considered appropriate for quantitative data collection technique of this nature. According to Showkat and Parveen (2017), in this type of sampling, researchers prefer participants as per their own convenience. The researcher selects the closest live persons as respondents. In convenience sampling, subjects who are readily accessible or available to the researcher are selected.

Lagos, Abuja Kaduna metropolitan cities were selected since the three Cities dominated the highest population of members supplied by forensic accounting professional bodies in Nigeria. Majority of the sampled respondents work with audit

firms while others are from different occupational jurisdictions across both private and public sectors. Since audit firms in the aforementioned three cities were surveyed, convenience sampling technique was used for selection.

The choice of audit firms in Abuja, Lagos and Kaduna is purposive on the basis of their over 40% dominance among other states of the federation as gathered through internet source. For instance, Commonwealth Network (2017) confirms that out of many accountancy firms in Nigeria, some of them represent a large proportion of the international accountancy networks, particularly in Abuja and Lagos.

3.3 Methods of Data Collection

In order to effectively conduct the proposed research investigation and test the research framework, quantitative research approach was employed, which allows primary and secondary data to be sourced. The quantitative research method relies on the collection of data based on numbers. The data are usually obtained by the means of survey questionnaires and then analyzed statistically. The quantitative research quantifies the results of people's words, actions and records - the meaning given to the words, behaviours and documents as interpreted through quantitative analysis or statistical analysis (Maykut & Morehouse, 1994).

Numerical results are important in this approach because they are normally used to test hypotheses and draw conclusions from the phenomena. The primary data used in this study were sourced through questionnaire administration on a total number of 400 respondents. The questionnaire is divided into different sections with respect to demographic information and the relevant variables to the study. Quantitative

approach is characterized by certain ‘preoccupations’ such as measurement, replicability, causality and generalizations, hence, it is preferable because it maintains the distance between the researcher and participants and thus ensuring the objectivity of data (Bryman, 2001).

Design and Administration of the Research Instrument

Closed-ended questionnaire was used to obtain the needed data from the participating respondents. In the questionnaire, the practitioners and bank regulators are required to rank each item in terms of a designated scale. The scale is based on the level of importance that they attach to each of the items listed.

In order to generate a well-designed research instrument to capture the respondents’ perceptions regarding forensic accounting and fraud detection in the Nigerian DMBs, a five-point Likert Attitudinal Scale which allows respondents to indicate a degree of agreement or disagreement in a multiple choice type format is adopted. Many researchers criticize the rationale behind awarding 3 points to the level of ‘undecided’ or ‘no opinion’ and conclude that zero (0) be assigned for it (Uzoagulu, 1998).

Five point Likert-scale has been suggested by some other researchers to be reduced to four, discarding absolutely with the ‘no opinion’ or ‘undecided’ (Efiong, 2013). The researcher does not support the advocacy for the assignment of zero (0) to ‘no opinion’, hence responses from the statements are keyed using the four point Likert statement with strongly agree-4, Agree-3, Disagree-2 and Strongly Disagree- 1, which are logically employed to quantitatively reflect this order of ranking.

The questionnaire has been divided into two (2) main sections. Section A elicits information relating to the participants' bio-data while Section B comprises of thirty five (35) questions. A total of four hundred copies of questionnaire were distributed and administered on the participating respondents.

Preliminary test was conducted, the purpose of which is to gather data which would assist to improve clarity, removing ambiguity, confirming interpretations and checking that respondents could easily answer the questions. It was also desirous to run a pilot test on the instrument in order to assess the questions/items, the entirety of the questionnaire as well as the process proposed for its administration.

Validity and Reliability of the Research Instruments

Saunders, Lewis and Thornhill (2012) advocate that a researcher has to make sure that the possibility of getting wrong answers to the questions are reduced and the conclusion can stand the closest scrutiny. This can be accomplished through good research design. The two fundamental goals in the design of a questionnaire are to obtain the required data in the course of the survey and to do that with high reliability and validity (Yan, Lee, Liu & Hu, 2016).

Validity is the amount of systematic or built-in error in measurement and it is established using a panel of experts and a field test. (Radhakrishna, 2007). It is the extent to which any measuring instrument measures what it is intended to measure (Thatcher, 2010). It is possible for a measurement to be reliable but invalid; however, if a measurement is unreliable, then it cannot be valid (Thatcher, 2010; Twycross &

Shields, 2004). There are several different ways to measure the validity of the questionnaire, including internal and external validity.

Internal validity relates to the extent to which the design of a research study is a good test of hypothesis or is appropriate for the search question (Thatcher, 2010). This implies that internal validity measures whether or not a tool assesses what it is meant to assess and may include measures of face validity, content validity and criterion-related validity. In other words, it asks whether the questions we pose can really explain the outcome we want to research.

External validity relates to whether or not research findings can be generalized beyond the immediate study sample and setting (Twycross & Shields, 2004). This connotes that external validity refers to the extent to which results from a study are generalizable to other populations (that is, the extent in which the results can be generalized to the target population that the survey sample is representing).

To ensure validity of the questionnaire used for the survey research, it was considered important to be presented to two (2) experts (i.e., a practitioner and a professor of accounting and finance, for their independent review. Necessary corrections were made on the questionnaire based on their comments.

Reliability refers to random error in measurement. It indicates the accuracy or precision of the measuring instrument (Norland-Tilburg, 1990). Twycross and Shields (2004) also define reliability as consistency, stability and repeatability of results. This means that the result of a researcher is considered reliable if consistent

results have been obtained in identical situations but different circumstances. Therefore, reliability and validity are important concepts in research as they are used for enhancing the accuracy of the assessment and evaluation of a research work (Tavakol & Dennick, 2011). Subject to the foregoing, much needed attention was given to the development of the research instruments for the quantitative data employed in this study. However, the instrument is found reliable and will generate similar data over time and within a given period. The pilot test seeks to answer the question: does the questionnaire consistently measure whatever it measures? To confirm the reliability of the measuring instrument developed for the study, it was pre-tested and re-tested using two audit firms situated outside the three metropolitan study areas surveyed and their responses were scored using correlation.

The test for reliability refers to testing the stability and consistency of an instrument across different times. It is a measure that indicates the extent to which a research instrument is without bias (error free) and hence ensures consistent measurement across times and across the various items in the instrument (Tariq, 2009). Cronbach's Alpha can be used to test the level of consistency and the reliability of a dataset (Tavakol and Dennick, 2011). To attain this, a Cronbach's Alpha test was conducted with the aid of Stata 13 statistical software package. The reliability statistic for all the variables is not expected to be significantly different from the 0.7 minimum level recommended by Nunnally (1978).

3.5 Techniques of Data Analysis and Model Specification

Descriptive and inferential statistical techniques were used to analyze the data collected. The descriptive statistics are used to provide a snap shot of the variables. These include mean, median, minimum, maximum and standard deviation, while kurtosis and skewness were used to determine the normality of the data. They compare the scores in the sample to a normally distributed set of scores with the same mean and standard deviation. If the test is non-significant ($p > 0.05$), it implies that the distribution of the sample is not significantly different from a normal distribution (i.e. it is probably normal). If, however, the test is significant ($p < 0.05$), then, the distribution in question is significantly different from a normal distribution (i.e. it is non-normal) (Field, 2009).

In addition, the skewness value provides an indication of the symmetry of the distribution. Kurtosis on the other hand, provides information about the 'peakedness' of the distribution. If the distribution is perfectly normal, a skewness and kurtosis value of zero (0) would be obtained which is rather an uncommon occurrence in the management and social sciences but most of the scores obtained for skewness and kurtosis are not far from value of 0.

Positive skewness values indicate positive skew (scores clustered to the left at the low values). Negative skewness values indicate a clustering of scores at the high end (right-hand side of a graph). Positive kurtosis value indicates that the distribution is rather peaked (clustered in the centre) with long thin tails. Kurtosis value below 0 indicates a distribution that is relatively flat (too many cases in the extremes) (Tabachnick & Fidell 2007).

The inferential statistics involve the use of one sample t test, correlation analysis, Analysis of Variance (ANOVA) and regression analysis to examine the difference/relationship between the independent variable(s) and the dependent variable as the case may be. The inferential statistics selected for this study are described below with respect to their associated research questions.

Quantitative data to be analyzed using both descriptive and inferential statistics were made possible with the aid of Statistics and Data (STATA) software package-version 13.0. This step was followed in order to achieve the research objectives and test the formulated hypotheses as appropriate.

Research Questions 1, 2 and 3

In an attempt to address questions 1, 2 and 3 for the purpose of achieving the research objectives of establishing the exact nature of the existing relationship between the dependent and independent variables, ordinary least square (OLS) regression was employed while generalized least square (GLS) regression was presented for the OLS results when the problem of autocorrelation was corrected. The bootstrapped regression was also used to show the results after resampling the observation. Application of this model is in consonance with the work of Odelabu, Willy and Tabitha (2016) who employed same bootstrapping procedure but with structural equation model to examine the relationship between forensic Accountant's responsibility competency and audit expectation gap among Nigerian Money Deposit Banks.

Bootstrapping is a general approach to statistical inference based on building a sampling distribution for a statistic by resampling from the data at hand (Fox & Weisberg, 2012). The term ‘bootstrapping.’ was introduced by Efron (1979) who defines it as an allusion to the expression ‘pulling oneself up by one’s bootstraps’ - in this case, using the sample data as a population from which repeated samples are drawn.

According to Efron, the idea behind bootstrapping is to use the data of a sample study at hand as a “surrogate population” for the purpose of approximating the sampling distribution of a statistic; i.e., to resample (with replacement) from the sample data at hand and create a large number of “phantom samples” known as bootstrap samples. In other words, the sample data are treated as a population from which smaller samples (called bootstrap samples) are taken (putting each score back before a new one is drawn) from the sample. Bootstrapping regression analysis increases the sample time period from 10 to 100 to allow for reliable statistical generalization and hypothesis testing.

Justification for using bootstrapping regression procedure stems from the fact that, the number of observations seems not adequate. Bootstrapping estimation helps to transform data to generate more observations within the available runs. More importantly, unlike other conventional statistical procedures (e.g., chi-square, goodness of fit test or the Nigrini distortion factor index 1996), bootstrapping estimation can be inexpensively applied to large disaggregated financial data sets without requiring any initial suspicions about potential misstatements or fraud in

specific account balances or classes of transactions. It also mitigates the excessive power problem by making use of exact bootstrap confidence intervals that are based on the specific sample size of any given financial data set subject to audit (Suh, Headrick & Minaburo, 2011).

Operationalization of the variables

For estimation purpose, the regression model is given as;

$$FRD = \alpha_0 + \alpha_1 FAC + \epsilon$$

Where:

FRD = Fraud Detection (Dependent Variable).

FAC = Forensic Accounting (Independent Variable).

α_0 = Intercept of Regression.

α_1 = Slope of the Regression.

ϵ_i = Error term.

The regression models for the study's hypotheses are presented below on an assumption that based on industrial experience, most forensic accounting certifications do not have immediate effect in banking environment, hence it is expected that certifications would have impact in the succeeding year.

Regression Models for Research Questions 1, 2, 3 and 4:

$$FRD_t = \alpha_0 + \alpha_1 ENFA_t + \alpha_2 FLSQA_t + \alpha_3 FISNA_t + \epsilon \dots \dots \dots \text{Model 1}$$

$$FRD_t = \alpha_0 + \alpha_1 ENFA_t + \alpha_2 ENFA_{(t-1)} + \alpha_3 FLSQA_t + \alpha_4 FLSQA_{(t-1)} + \alpha_5 FISNA_t + \alpha_6 FISNA_{(t-1)} + \epsilon \dots \dots \dots \text{Model 2}$$

$$FRD_t = \alpha_0 + \alpha_1 FAECE_t + \epsilon \dots \dots \dots \text{Model 3}$$

$$FRD_t = \alpha_0 + \alpha_1 FAECE_t + \alpha_2 FAECE_{(t-1)} + \varepsilon \dots \dots \dots \text{Model 3}$$

Where:

FRD is Fraud Detection

ENFA_t is current year engagement of forensic accounting certifications.

ENFA_(t-1) is immediate year engagement of forensic accounting certifications.

Where; Y = Dependent variable, i.e., Fraud Detection (FRD)

X = independent variables, which are:

Engagement of Nigerian Forensic Accountants (ENFA);

Forensic Litigation Support Skills Acquired by Qualified Accountants (FLSQA)

Forensic investigative Skill Acquired by Non-Qualified Accountants (FISNA).

Forensic Accounting Expert Consultancy Expenditure (FAECE)

α_0 = Intercept of Regression.

α_1 = Slope of the Regression.

ε = Error term.

A priori expectations

For hypothesis one:

$\beta_0, \beta_1 > 0$ which means that the engagement of Nigerian forensic accountants (enfa) could be attributed to high frequency of fraud detection (frd) in DMBs. Hence, there is a significant relationship between the engagement of Nigerian forensic accountants and frequency of fraud detection in DMBs. Reject Ho (null hypothesis) if $P < 0.05$, accept if otherwise.

For hypothesis 2:

$\beta_0, \beta_1 > 0$ which means that an increase in forensic litigation support skill acquired by qualified accountants (fisqa) could be associated with high rate of fraud detection (frd) in DMBs. Hence, if there exists a significant relationship between forensic litigation support skill acquired by qualified accountants and fraud detection in DMBs, reject H_0 (null hypothesis), meaning that $P < 0.05$, and accept if otherwise.

For hypothesis 3:

$\beta_0, \beta_1 > 0$ which means that the higher the forensic investigative skill acquired by non-qualified accountants (fisna), the lower the incidences of fraud (frd) in DMBs. Hence, if there is a significant relationship between forensic investigative skill acquired by non-qualified accountants (fisna) and incidences of fraud in DMBs (frd), reject H_0 (null hypothesis), meaning that $P < 0.05$, and accept if otherwise.

For hypothesis 4:

$\beta_0, \beta_1 > 0$ which means that forensic accounting expert consultancy expenditure (faece) could be significantly associated with the total amount uncovered through fraud detection (frd) in DMBs. Hence, if there is a significant relationship between the amount spent on Forensic accounting expert consultation and the total amount uncovered through fraud detection in DMBs, reject H_0 (null hypothesis) if $P < 0.05$, accept if otherwise.

Research Question 5

Research question 5 which examines practitioners' perceptions on the contribution of forensic accounting professional certification to fraud detection in DMBs, employs One-way ANOVA. The choice of one-way ANOVA for this research is based on the

fact that it determines the extent of variance in dependent variables that are caused by independent variables, also used in comparing the variation in more than two independent samples that are drawn just once from population with the same variance (Okafor & Agbiogwu, 2016).

An adapted model from work by Chen and Akkeren (2012) represents the theory of professions for forensic accounting due to scanty existing empirical evidences on how the theory is applied. Four underpinning elements that describe the theory of professions framework, namely: - body of knowledge (bok), control of entry (coc), ethical codes of conduct (ecc) and protection of public interest (ppi) were considered.

Decision Rule:

The One-way ANOVA result was obtained with the aid of Statistical Packages for Social Science (SPSS) software version. The calculated significance value was compared to the alpha level of 0.05. If it is lower than 0.05 alpha level, null hypothesis is rejected. Otherwise, if it is greater, null hypothesis is accepted.

3.5 Justification for Methods

The choice of ex post facto research design for this study is justified by the fact that the data are already collected, obtaining permission to conduct the study is less involved than enrolling participants and less time is involved in conducting the study than by creating new set of data (Simon & Goes, 2013). The survey research design was also considered justifiable for this study because it is an appropriate means of gathering information under three conditions: when the goals of the research call for quantitative and qualitative data, when the information sought is specific and familiar

to the respondents and the researcher has prior knowledge of the responses likely to emerge (Ronald, 2005).

The OLS regression was adopted which Enofe et al (2015) describe as the appropriate technique for examining the relationship between variables especially when the dependent variable is not limited in nature. Bootstrapping regression technique adopted helps to check the significance of each method in regression model validation. In regression model validation analysis, fewer reports have shown how bootstrapping regression can be used in estimating the distribution of any validation statistic in random simulation with replicated runs (Oredein, Olatayo & Loyinmi, 2011). ANOVA statistical technique which was also applied to analyze the responses was considered to be a suitable statistical technique since it measures and establishes whether the differences in mean samples result occurs by chance or are a result of the treatment on each of the samples (Bassey & Ahonkhai, 2017).

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Data Presentation

In this chapter, analysis of the data collected and presentation of results are made in a bid to answer the research questions and test the formulated hypotheses. The results and analyses in this chapter are presented in a logical manner, following the objectives of the study. Secondary data for research objectives 1, 2, 3 and 4 were provided from the NDIC anti FITC annual reports for various years as well as from the websites of the forensic accounting training institutions (i.e., ANAN, ICAN, IFAN, ICFA, ACFE and IICFIP).

The study investigates the effect of forensic accounting on fraud detection in Nigerian deposit money banks in Nigeria. In this study, fraud detection (frd) was measured by the frequency of fraud detection cases reported in bank regulators publications while forensic accounting was measured by the engagement of Nigerian forensic accountants(enfa), forensic litigation support skill acquired by qualified accountants (fisqa), forensic investigative skill acquired by non-qualified accountants (fisna) and forensic accounting expert consultancy expenditure (faece). In testing for the formulated hypotheses in this study, time series linear regression was employed which is the most suitable techniques for analyzing the extent of relationship between dependent and independent variables. Preliminary pre-regression analysis such as descriptive statistics and correlation matrix were also carried out. The results are presented as follows:

4.2 Data Analysis and Results

Under this section, both descriptive and inferential statistical analyses were carried out and results obtained therefrom, were presented in order to provide relevant answers to the research questions.

4.2.1 Descriptive Statistics

The table below shows the descriptive statistics of the conglomerates that make up our sample of study.

Table 4.1: Descriptive Statistics

	Mean	Median	Max	Min	Std Dev	N
frd	1678.839	796	12,279	41	2,764.7	31
Enfa	153.4	6	772	4	253.7	31
Fisqa	20.3	4	140	4	37.7	31
Fisna	2462.1	1584	7,427	0	2,136.2	31
Faece	3,042,391	392,478	1,75 ^e	0	5,012,196	31

Source: STATA 13.0 Output, (2018)

The mean value of frequency of fraud detection (frd) cases reported in bank regulators publications over the period of study was 1,678 while its median value was 796. The maximum value of frequency of fraud detection was 12,279 while the minimum was 41. This means that there is a high level of fraud cases reported to the bank regulators in Nigeria and this high level clearly justifies the need for more trained forensic accountants in Nigeria.

The mean value of the engagement of Nigerian forensic accountants (enfa) was 153 and the median was 6. The maximum value was 772 while the minimum was 4. In the table above, forensic accounting expert consultancy expenditure (faece) mean value was 3,042,391 while the median value was 392,478.

The mean value of forensic litigation support skill acquired by qualified accountants (flsqa) was 20 while its median value was 6. The average values when compared to the frequency of fraud cases reported above shows that there is shortage of forensic litigation support skill acquired by qualified accountants in Nigeria who can tackle fraud in DMBs. The maximum value was 140 while the minimum was 4. This extreme large difference in the values of the maximum and minimum values implies that there has been increase in forensic accounting skill acquired by qualified accountants in Nigeria but this is still not adequate to meet the demand.

The mean value for forensic investigative skill acquired by non-qualified accountants (fisna) was 2,462, the median is 1,584, the maximum is 7,427 and the minimum is 0. This means that on the average, forensic investigative skill is acquired by non-qualified accountants more than the qualified accountants with same credential in Nigeria. This extreme large difference in the values of the maximum and minimum values implies that there has been increase in forensic investigative skill acquired by non-qualified accountants but this is still not adequate to meet the demand for forensic services in DMBs.

4.2.2 Pearson’s Product-Moment Correlation Matrix

Table 4.2 reveals the direction of association of the variables of the study.

Table 4.2: Correlation Matrix

	Enfa	Fisqa	Fisna	Faece	frd
Enfa	1				
Fisqa	0.27	1			
Fisna	0.81	0.34	1		
Faece	0.43	0.82	0.46	1	
frd	0.28	0.59	0.39	0.87	1

Source: STATA 13.0 Output, (2018)

The above results shows that then exists a **(0.28)** positive but weak association between the frequency of fraud detection (frd) and the engagement of Nigerian forensic accountants (enfa). This means that increase in the presence of Nigerian forensic accountants is associated with increase in the frequency of fraud detection (frd).

This finding clearly shows that the increase in fraud cases is associated with increase in the demand for forensic accountants in Nigeria. The results also show that there exists a **(0.59)** positive but moderate association between the frequency of fraud detection (frd) and forensic litigation support skill acquired by qualified accountants (flsqa). The study findings reveal that an increase in fraud cases is associated with increase in forensic litigation support skill acquired by qualified accountants in Nigeria. In the same results, it was observed that there exists a **(0.39)** positive but weak association between the frequency of fraud detection (frd) and forensic investigative skill acquired by non-qualified accountants (fisna).

The findings also suggest that an increase in fraud cases is associated with increase in the number of non-qualified accountants with forensic investigative skill in Nigeria. Lastly, forensic accounting expert consultation (faece) and the frequency of fraud detection (frd) was positively and strongly correlated **(0.87)**. This finding clearly shows that the increase in fraud cases is associated with increase in the number of forensic accounting expert consultation in Nigeria. The conclusion from the correlation analysis results is that the need for forensic accounting services and personnel in Nigeria may be largely associated with the increasing cases of fraud.

4.2.3 Regression Analysis

In testing the hypotheses for this study, ordinary least square regression (OLS) was initially employed while generalized least square (GLS) regression was presented for the regression results when the problem of autocorrelation was corrected for. The bootstrapped regression was also presented to show the results after resampling the observation by 100. Table 4.3 presents the results:

Models 1 and 2

These models focus on estimating the relationship between the independent variables (i.e., engagement of Nigerian forensic accountants, forensic litigation support skill acquired by qualified accountants as well as forensic investigative skill acquired by non-qualified accountants) and fraud detection as the dependent variable.

Table 4.3: Regression Models land 2

<i>VARIABLES</i>	<i>OLS</i>	<i>GLS</i>	<i>Bootstrapped</i>
<i>C</i>	141.9(0.83)	353.08(0.35)	668.7(0.01)*
<i>Enfa</i>	-1.02(0.71)	-0.62(0.38)	2.77(0.02)**
<i>Enfa (-1)</i>		0.73(0.36)	
<i>Flsqa</i>	38,56(0.00)*	-17.77(0.00)*	11.65(0.02)
<i>Flsqa (-1)</i>		7.60(0.19)	
<i>Fisna</i>	0.36(0.28)	-0.115(0.34)	0.33(0.02)**
<i>Fisna(-1)</i>		-0.27(0.02)*	
<i>R-Squared</i>	0.40	0.69	
<i>F-Statistic</i>	6.01 (000)*	8.52(0.00)*	
<i>VIF Test</i>	2.38		
<i>DW Statistics</i>	0.90	2.18	
<i>Observation</i>	31	31	31(100)

Source: STATA 13.0 Output (2018); **Note:** * is 1% level of significance and ** is at 5%. Values in () are the *p*-values.

In the table above, the study findings reveal from the OLS regression that the R-squared value of 0.40 shows that about 40% of the systematic variations in the dependent variable was jointly explained by the independent variables. This implies

that fraud detection in Nigerian deposit money banks which is the dependent variable cannot be 100 percent explained by all the forensic variables used in this study. The unexplained part of the dependent variable can be attributed to exclusion of very important independent variables that can explain the dependent variable but are outside the scope of this study.

The F-statistic value of 6.01 and its associated P-value of 0.000 shows that the OLS regression model on the overall is statistically significant at 1% level. This means that the regression model is valid and can be used for statistical inference. The table above also shows a mean VIF value of 2.38 which is less than the benchmark value of 10. This indicates the absence of multicollinearity and it means no independent variable was dropped from the model. Also from Table 4.3, it can be observed that the OLS regression results had autocorrelation (0.90 which is less than 2) but this was corrected using generalized least square (GLS) regression.

Bootstrapping regression technique was used which is a general approach to statistical inference by utilizing the data set from the study sample as a surrogate population for the purpose of re-sampling (with replacement) and generate within the available run, a large number of phantom samples. This process necessitated increase of the observation to 100. In testing the formulated hypotheses, specific analysis for each of the independent variables are provided below.

4.2.4 Engagement of Nigerian Forensic Accountants:

The engagement of Nigerian forensic accountants ($\text{Enfã} - \text{GLS} = -0.62(0.38)$) as an independent variable to frequency of fraud detection in Nigerian deposit money banks (Frd) appears to have a negative and insignificant influence at 5% level.

Consequently, bootstrapping regression result gives a p-value of 0.02. This means there is 95% confidence that increase in the engagement of Nigerian forensic accountants can help to significantly reduce frauds in Nigerian DMBs. This necessitates rejection of hypothesis 1 (H₁: There is no significant relationship between engagement of Nigerian forensic accountants and frequency of fraud detection in DMBs).

This result agrees with prior empirical studies by Enofe et al (205) but disagrees with Emeh and Obi (2013) that revealed that presence (engagement) of forensic accountants has no significant relationship with the frequency of fraud detection.

4.2.5 Forensic Litigation Support Skill Acquired by Qualified Accountants

Forensic litigation support skill acquired by qualified accountants (*flsqa*) as an independent variable to frequency of fraud detection in Nigeria deposit money banks (*frd*) appears to have a negative and significant influence at 5% level. Bootstrapping regression result consequently reveals a p-value of 0.02 which has positive significant influence at 5%. This means there is 95% confidence that forensic litigation support skill acquired by qualified accountants can help to significantly reduce fraud in Nigerian deposit money banks.

This therefore means that hypothesis 2 is rejected (**H₂**: There is no significant relationship between forensic litigation support skill acquired by qualified accountants and frequency of fraud detection in DMBs). This result disagrees with prior empirical studies by Bassey and Ahonkhai (2017) which found evidence of significant negative relationship between forensic litigation support skill acquired by

accountants and the frequency of fraud detection in DMBs. Most specifically, the results tally with previous findings of various researchers that report that forensic litigation support skill has a significant relationship with the frequency of fraud detection (Okafor & Agbiogwu, 2016; Odelabu, 2014).

4.2.6 Forensic investigative Skill Acquired by Non-Qualified Accountants (Fisna):

Forensic investigative skill acquired by non-qualified accountants (fisna - GLS = - 0.115 (0.34) as an independent variable to frequency of fraud detection in deposit money banks (frd) appears to have a negative and significant influence at 5% level. Its bootstrapping result consequently reveals a p-value of 0.02, which is significant at 5%. This suggests 95% confidence that increase in the lag of forensic investigative skill acquired by non-qualified accountants can help to significantly reduce frauds in DMBs.

This suggests that hypothesis 3 (H_3 : There is no significant relationship between the forensic investigative skill acquired by non-qualified accountants and frequency of fraud detection in DMBs) should be rejected. This result disagrees with prior empirical studies which show that forensic investigative skill acquired by non-qualified accountants has no significant relationship with the frequency of fraud detection (Emeh & Obi, 2013).

Specifically, the results concur with previous findings of various researchers that report that forensic investigative skill has a significant relationship with the frequency of fraud detection (Oyedokun, 2016; Mau, 2015; Onodi et al., 2015).

Models 3 and 4

In testing the hypotheses for this study, ordinary least square (OLS) regression was employed while generalized least square (GLS) regression was subsequently run for the OLS results when the problem of autocorrelation was corrected for. The bootstrapping regression analysis was also carried to show the results after resampling our observation by 100. Table 4.4 shows the results:

Table 4.4: Regression Models 3 and 4

<i>VARIABLES</i>	<i>OLS</i>	<i>GLS</i>	<i>Bootstrapped</i>
<i>C</i>	205.3(0.47)	-74.17(0.93)	284.01(0.01)*
<i>Faece</i>	0.0004(0.00)*	0.0008(0.82)	0.0004(0.00)*
<i>Faece(-1,)</i>		0.005(0.21)	
<i>R-Squared</i>	0.77	0.59	
<i>F-Statistic</i>	97.61(0.00)*	19.06(0.00)*	
<i>DW Statistics</i>	0.76	1.61	
<i>Observation</i>	31	31	

Source: STATA 13.0 Output, (2018). **Note:** * is 5% level of significance. Values in () are the *p*-values.

From the table above, we observed from the OLS regression that the R-squared value of 0.77 shows that about 77% of the systematic variations in the dependent variable was jointly explained by the independent variables. This implies that fraud detection in Nigerian deposit money banks which is the dependent variable cannot be 100 percent explained by all the forensic variables used in this study.

The unexplained part of the dependent variable can be attributed to exclusion of very important independent variables that can explain the dependent variable but are

outside the scope of this study. The F-statistic value of 97.61 and its associated P-value of 0.000 shows that the OLS regression model on the overall is statistically significant at 1% level. This means that the regression model is valid and can be used for statistical inference.

Also from Table 4.4, it can be observed that the OLS results had autocorrelation (0.76 which is less than 2) but this was corrected using generalized least square (GLS) regression. This therefore means that the hypothesis based on the results was further tested with generalized least square (GLS) regression. In testing the hypothesis, specific analysis for the independent variable is provided below.

4.2.7 Forensic Accounting Expert Consultation:

Forensic accounting expert consultancy expenditure (faece) with $GLS=0.0008(0.82)$ as an independent variable to frequency of fraud detection in Nigerian deposit money banks (Frd) appears to have a positive and insignificant influence at 5% level. This means there is 95% confidence that increase in forensic accounting expert consultation does not significantly reduce fraud in Nigerian deposit money banks.

This implies that hypothesis 3 (H3: There is no significant relationship between Forensic accounting expert consultation and frequency of fraud detection in DMBs) is rejected. This result is not in consonance with prior empirical studies by Oyier (2013); Dike et al (2016) as well as Ogundana et al (2018) which revealed that there is a significant relationship between the forensic expert consultancy expenditures and amount of fraud uncovered in Nigerian banks. It means that the higher the amount spent on forensic expert consultation, the higher the frequency of fraud in DMBs.

In summary our regression results from models 1 and 2 based on the bootstrapping estimation method, clearly show that an increase in the engagement of Nigerian forensic accountants, number of qualified accountants with forensic litigation support skill and the number of non-qualified accountants with forensic investigative skill would significant reduce the incidence of fraud in deposit money banks in Nigeria.

The results from models 3 and 4 also suggest that forensic accounting expert consultation is yet to have a significant impact on fraud detection in deposit money banks in Nigeria. This means a robust or new approach to forensic accounting expert consultation would be needed to address the new challenges of increasing bank fraud.

4.2.8 One-way ANOVA Result

In testing whether forensic accounting professional certification contributes to fraud detection in DMBs, One-way ANOVA was employed which reveals the following results;

Table 4.5: One way ANOVA Result on Contribution of Forensic Accounting Professional Certificate to Fraud Detection.

		Sum of squares	Df	Mean Square	F	Sig. Figure
BOK	Between Groups	52.693	1	52.693	9.792	.002
	Within Groups	2131.026	396	5.381		
	Total	2183.719	397			
COE	Between Groups	2.215	1	2.215	2.269	.133
	Within Groups	386.609	396	.976		
	Total	388.824	397			
ECC	Between Groups	548.223	1	548.223	18.081	.000
	Within Groups	12006.913	396	30.320		
	Total	12555.136	397			
PPI	Between Groups	20005.814	1	20005.814	36,111	.000
	Within Groups	219389.864	396	554.015		
	Total	239395.678	397			

Source: STATA 13.0 Output, (2018).

Table 4.6 Cronbach Reliability Statistics

Cronbach's Alpha	Number of Items
0.7137	4

Source: STATA 13.0 Output, (2018).

4.2.9 Forensic Accounting Professional Certification

Table 4.5 presents the result of One-way ANOVA on the contribution of forensic accounting professional certification to fraud detection in DMB's. The result reveals that *BOK*, *ECC*, and *PPI* are significant at 0.002, 0.000 and 0.000 respectively, indicating that they have positive contribution towards fraud detection while *COE* remains insignificant at 0.133. The results concur with previous findings of various researchers that report that the number of forensic accounting professional certification has a significant relationship with the frequency of fraud detection (Chen & Akkeren, 2010; Huber, 2012; Domino et al, 2017).

The possible explanation for COE revealing insignificant result might be due to certification of certain individuals without a robust qualifying examination system conducted by some forensic accounting professional bodies to test the competency of persons who wish to enter into the profession.

Table 4.6 also presents the result for the descriptive statistics and Cronbach reliability test for internal consistency of the research instrument. As observed, the reliability statistic for all the variables is not significantly different from the 0.7 minimum level recommended by Nunnally (1978); hence it was concluded that the questions are able to measure the research variables. In other words, Cronbach's alpha of 0.7137 indicates a high level of internal consistency of the study scale. Hence, the items of the research instrument have a high level of internal consistency.

4.3 Discussion of Findings

Of particular interest to the study is the relationship between engagement (presence) of Nigerian forensic accountants (*enfa*), forensic litigation support skill acquired by qualified accountants (*flsqa*), forensic investigative skills acquired non-qualified accountants (*fisna*) and forensic accounting expert consultation (*faece*). As observed from the regression results in Section 4.2.3 of this chapter, increase in *enfa* can help to significantly reduce fraud. This result agrees with Emeh and Obi (2013).

The bootstrapping regression results on the relationship between forensic litigation support skills acquired by qualified accountants (*flsqa*) and frequency of

fraud detection in Nigerian deposit money banks (*frd* also appears to have a positive and significant influence. This result is in disagreement with the study of Bassey and Ahonkhai (2017) which indicates negative and significant correlation of the number of qualified accountants with forensic litigation skills and the extent of top management fraud. The result thus concurs with previous findings of various researchers that report that the number of qualified accountants with forensic litigation support skills has a significant relationship with the frequency of fraud detection (Okafor & Agbiogwu, 2016; Odelabu, 2014).

In the same vein, the bootstrapping regression results from models 2 and 3 reveal a positive and significant influence of *flsqa* on *frd* which disagrees with prior empirical studies by Emeh and Obi (2013). Most specifically, the results tally with previous findings of various researchers that report that forensic investigative skills acquired by non-qualified accountants has a significant relationship with the frequency of fraud detection (Oyedokun, 2016; Mau, 2015; Onodi et al, 2015).

Empirical result from models 3 and 4 also reveals that increase in forensic accounting expert consultation cannot significantly reduce frauds in deposit money banks. This result did not tally with Oyier (2013); Dike et al (2016) as well as Ogundana et al (2018) that report that forensic accounting expert consultation has a significant relationship with the frequency of fraud detection in the Nigerian DMBs.

Findings from Section 4.5 also demonstrate that based on practitioners' perceptions, forensic accounting professional certification significantly contributes to fraud

detection by meeting three out of four identified criteria of the Theory of Professions (body of knowledge, ethical code of conduct and protection of public interest) that may be needed to undertake many complex forensic accounting services to reduce fraud in DMBs.

Body of knowledge which is the first criterion of the Theory of Professions comprises of formal qualifications, skills and experience. In terms of formal qualifications, research findings reveal that attainment of higher educational degree in a related discipline is peculiar to majority of forensic accountants in Nigeria.

The degrees acquired by forensic accountants, comprising of BSc. or H.N.D. differ considerably and cover such disciplines as Accounting, Banking and Finance, Business Administration, Law, Economics and other behavioural sciences. Some of them do not possess higher educational degree but hold professional accounting qualification either from ANAN, ICAN or ACCA. It was discovered that there are very few holders of a specialized foreign university degree in forensic accounting in Nigeria in addition to professional certification. This modifies the position of Chen and Akkeren (2012), DiGabriele (2010) and Razaee & Burton (1997) who suggest that there is lack of properly qualified forensic accountants.

The findings also demonstrate that professional forensic accounting bodies in Nigeria offer mandatory educational preparation and training for their members, including but not limited to court experience to testify as an expert witness, fraud investigation and auditing experience, skills in providing litigation advice or in the preparation of court documentation on bank fraud cases, computer forensic training, undertaking research and publishing articles on forensic accounting related topics, analytical,

communication and business valuation skills and expert testimony skills/experience. Other aspects of training offered cover litigation support, quantification of loss, forensic investigation, risk assessment, e-discovery, due diligence as well as dispute advisory service skills.

The second criterion from the Theory of Professions framework (control of entry) which Devonport (2009) describes as using a robust qualifying examination system to test the competence of members and registering of those qualified members within the profession. However, the study findings demonstrate that forensic accounting professional certification does not seem to meet control of entry criterion which Huber (2012) posits that it may be highly detrimental to the professionalization of forensic accounting in Nigeria. The study findings however, agree with Chen and Akkeren (2010).

With particular reference to issues bothering on the control of entry criterion, the research findings also reveal that there is no mandatory requirement for basic professional accounting qualifications such as ANAN, ICAN or ACCA imposed on forensic accounting certificate holders. Forensic accounting special interest group is yet to be established by professional bodies in Nigeria to help forensic accountants to maintain high professional standards and promote a better understanding of the value of forensic accounting services to the interested clients. Findings from the study also indicates that some level of standards governing admission and competency of forensic accountants is ensured by examinations across all the forensic accounting professional bodies in Nigeria.

These aspects of control of entry criterion are sometimes ignored by some of these professional bodies who freely award certificate to some individuals after attending a seminar/workshop training without putting them into a robust qualifying examination system to test the competence of persons who wish to enter into the profession. The research findings demonstrate that forensic accounting professional certification meets ethical code of conduct criterion which disagrees with the position of Chen and Akkeren (2012) that posit that there is little evidence of consistency in promoting ethics within the industry. The study findings indicate that forensic accounting professional bodies in Nigeria emphasize their core values to members to ensure professional integrity while specific requirement is set for achieving their codes or core value.

Lastly, findings from the study suggest that forensic accounting professional certification satisfies the criterion of protecting public interest. This is in consonance with Chen and Akkeren (2012) that protecting public interest is also an important attribute of the Theory of Professions. Practitioners sampled, unanimously agree that protection of public interest is embedded in the work that forensic accountants perform. They also believe that public recognition of forensic accounting as a profession for fraud detection would be beneficial to the Nigerian society. Therefore, this study has contributed to accounting academic literature by adapting previous literature on professions into a framework to aid in clarifying whether the forensic accounting industry could be considered a profession capable of fraud detection in DMBs.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The study examined the effect of forensic accounting on fraud detection in the Nigerian DMBs. Forensic accounting is a field that is attracting attention as a result of persistent occurrence of frauds. However, little or no attention has been given to its possible application in Nigerian banks, especially taking into cognizance the factors that may hamper its application, and acceptance (Zachariah et al, 2014).

The specific objectives were stated from the outset to guide the conduct of the study in achieving its primary objective. The specific objectives are to: investigate the extent of relationship between engagement (presence) of Nigerian forensic accountants and fraud detection in DMBs, evaluate the extent forensic litigation support skill acquired by qualified accountants enhances fraud detection in DMBs, examine how forensic investigative skills acquired by non-qualified accountants impacts on fraud detection in DMBs, investigate the extent at which forensic accounting expert consultation affects fraud detection in DMBs and to examine the contribution of forensic accounting professional certification to fraud detection in the Nigerian DMBs.

To achieve the above stated objectives, conceptual, empirical and theoretical literatures on the effect of forensic accounting on fraud detection in the Nigerian DMBs were reviewed. A detailed conceptual model was also formulated to guide the conduct of the research study.

Based on the conceptual model and the research objectives, primary and secondary data were sourced since the study adopted the ex post facto and survey research designs. Primary data were collected via instrumentality of questionnaire while secondary data were obtained from both published and unpublished sources, including those extracted from the annual reports of Nigeria Deposit Insurance Corporation (NDIC), quarterly fraud and forgeries report of the Financial Institutions Training Centre (FITC) as well as from the websites of forensic accounting professional trainers in Nigeria for the period covering 1986-2016.

The independent variables were tested for multicollinearity. Descriptive and inferential statistical techniques were used to analyze the data collected. The descriptive statistics were used to provide a snap shot of the variables. To test the combined effect of all the independent variables, multiple linear regression was employed.

In summary, the hypotheses for the study were tested using ordinary least square (OLS) regression which was followed by presentation of generalized least square (GLS) regression for the OLS results when the problem of autocorrelation was addressed. Consequently, the bootstrapping regression was also presented to show the results after resampling the observation by 100.

The regression results based on the bootstrapping estimation method, clearly shows that increase in the engagement (presence) of Nigerian Forensic accountants, forensic litigation support skills acquired by qualified accountants and forensic investigative skills acquired by non-qualified accountants would significantly reduce the incidence of fraud in deposit money banks in Nigeria. The results from models 3 and 4 shows

that forensic accounting expert consultation is yet to have a significant impact on fraud detection on deposit money banks in Nigeria.

The ANOVA results also indicate that forensic accounting certification in Nigeria fulfils three out of four criteria of the Theory of Professions (namely: body of knowledge, ethical codes of conduct and protection of public interest) while the fourth criterion (control of entry) revealed an insignificant result.

5.2 Conclusion

The importance of forensic accounting cannot be underestimated because it is growing worldwide as rising rate of fraud and corruption continues to signify the increasing need for forensic accounting experts. Developed economies such as United States of America, United Kingdom, Malaysia and others, have been achieving success in their anti-corruption crusade through regular adoption of various forensic accounting services ranging from litigation support, fraud investigation, business advisory, dispute resolution and expert consultation.

Application of forensic accounting to tackle fraud and corruption in Nigeria is still at the infant stage and needs to be urgently embraced with avidity. The trajectory and development of forensic accounting is relatively very low in developing economies like Nigeria, which apparently contributes to dearth of professionally qualified forensic accountants.

In conclusion, the regression results based on the bootstrapping estimation method, clearly show that increase in the engagement (presence) of Nigerian forensic

accountants, forensic litigation support skill acquired by qualified accountants and forensic investigative skill acquired by non-qualified accountants would significantly reduce the incidence of fraud in deposit money banks in Nigeria. The results from the study also showed that forensic accounting expert consultation is yet to have a significant impact on fraud detection on deposit money banks in Nigeria. This means a robust or new approach to forensic accounting expert consultation may be needed to address the new challenges of increasing bank frauds.

More importantly, the result that emerges from the analysis of perceptions from practitioners suggests that forensic accounting is a profession and has significant effect of reducing financial fraud in the banking industry. The study has identified the existence of the four characteristics of the Theory of Professions with a plethora of qualifications, skills, certifications and experience amongst forensic accountants in Nigeria. The study has also identified the current state of forensic accounting certification in Nigeria, providing a clearer bird-eye perception of how it is currently structured at this time.

4.3 Recommendations

Based on the findings from the study, the following policy options are therefore advanced:

The result that emerges from the study suggests that the engagement of forensic accountants in deposit money banks has significant effect on fraud detection hence more awareness campaign by professional bodies will go a long way to motivate bank

stakeholders to employ forensic accounting services on regular basis to effectively tackle fraud.

More professional accountants should be trained and retrained on the relevance of forensic litigation support engagement on bank fraud cases in Nigeria, since findings from the study suggest that the number of qualified accountants with this forensic skill is unimpressive. They need to be aware that they might be summoned by the law court one day to defend any opinion given in their reports.

The study findings indicate that only one professional body among others has been able to produce a huge number of forensic investigators at the moment. Other professional bodies, especially ANAN and ICAN should provide more training on the investigative skills of forensic expert needed to checkmate the activities of fraudsters in banking industry.

It has also been confirmed from the study's empirical findings that forensic expert consultation does not have any significant relationship with increased fraud detection. There is an urgent need for minimization of cost incurred in employing forensic expert consultancy service since it does not have any positive impact on fraud reduction and a clarion call for providers of this service to lower consultancy fee to signify solidarity and support for fight against fraud and corruption in banking sector.

Professional bodies providing training and certification in forensic accounting need to restructure and standardize the control of entry procedure in order to adequately

regulate entrance into the profession. This would go a long way to regulate and monitor certification in the Nigerian forensic accounting industry.

5.4 Limitation of the Study

A study of this magnitude cannot be without certain limitations with regards to the method which is employed (Denscombe, 2010; Efiog, 2013). First and foremost, practitioners may not have provided appropriate responses when asked if their bank clients have witnessed cases of fraud in order not to endanger their image. Also, the study is limited to cover all forensic accounting professional bodies whose list of certified members are availed in their official websites, including those who supplied needed statistics as at the time this study was conducted.

Secondly, the cultural, institutional, economic and political environment, which is distinctive and unique in Nigeria, may restrict the generalization of the results (Muthusamy, 2011). However, these limitations may not be intense since some foreign forensic accounting professional bodies were represented in the study sample. Nevertheless, further efforts could be made to conduct cross-country studies to provide further information on the applicability of this model under different cultural, institutional, economic and political conditions.

Thirdly, the study is limited to banking industry because of difficulty in obtaining fraud statistics in other sectors of the economy. More importantly, the available fraud statistics published by the NDIC and FITC are not provided on bank-by-bank basis, which made it extremely untraceable. There is evidence that the occurrence of fraud is

ubiquitous regardless of company size, hence there is still a need to investigate the lack of constant utilization of forensic accounting by banking industry in Nigeria.

5.5 Suggestions for Further Studies

Forensic accounting is a new specialty area in accounting profession that has taken the center stage in academic discourse across the globe. The limitations of the study imply the need for further research, hence the following suggestions are made to take the present research further:

Further research in this area should adopt a comparative cross-country approach, especially between developing and developed economies to enhance the generalizability of the research findings and for a more robust result. Fresh studies could be conducted to include enlarged samples to accommodate the perceptions of legal practitioners, bank regulators and forensic accounting practitioners. This could provide further insight into how practice of forensic accounting can assist to fight financial crime in Nigerian banking industry. Lastly, the bootstrapping estimation employed in the regression models developed for this study could be further tested on the effect of forensic accounting profession on Fraud detection that ensued from this study which could be more explored to cover other sectors of the economy.

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APPENDICES

APPENDIX I

RESEARCH QUESTIONNAIRE FOR PRACTITIONERS

Letter of Introduction

Department of Accounting,
Faculty of Administration,
Nasarawa State University,
Keffi.
Nigeria.
6th June, 2014

Dear respondent,

REF: COLLECTION OF' SURVEY DATA

I am a post-graduate student of the Nasarawa State University, Keffi, pursuing Ph.D. Degree in Accounting. As part of the requirements for the award of the Doctor of Philosophy (Ph.D.) Degree, I am undertaking an empirical study on the **Effect of Forensic Accounting on Fraud Detection in the Nigerian Deposit Money Banks.**

The purpose of this letter is to request you further to fill the attached questionnaire in order to be able to analyze the research findings. All responses obtained for each question in the Questionnaire will be used exclusively for academic purposes and will be treated with utmost strict confidentiality. The findings of this research study can however be availed to you upon request.

Thank you in advance for your corporation.

Yours faithfully,

KAMALUDDEEN F. A. IBRAHIM
(NSUK/ADM/PhD/008/11/12)

QUESTIONNAIRE FOR PRACTITIONERS

A: DEMOGRAPHIC ATTRIBUTES

Instruction: Kindly tick the appropriate box or column for the option that best explains your answer

- I. Gender: Male Female
2. Age (years): 18 - 30 31-40 41-50 51-60 Above 60
3. Education (highest qualification): SSCE/OND BSc . M.Sc./ MBA/MA/MPhil Ph.D
4. Membership of Professional Forensic Accounting Bodies: AN ANAN JACF ICF IFAN IICFIP
5. Number of years of being in the present service as an audit employee: 1-3 4-6 7-10 11-13 14-16 17 and above
6. Your job description: Audit General Accountant Chartered accountant Forensic accountant Others please specify _____
7. Does your firm currently provide, or had your company offered forensic accounting services (FAS) in the past for fraud detection? Yes No

If your answer to question 7 is yes, please answer the following question and then proceed to the next section. Otherwise, you can proceed to the next section.

8. Please indicate the regularity of your use of the following fraud detection and prevention mechanisms. You may tick as many boxes as possible.

S/ N	Forensic Accounting Services	Very Effective	Effective	Ineffective	Very Ineffective	Neutral
a)	Fraud Investigation					
b)	Litigation support & expert witness					
c)	Computer forensics					
d)	Fraud Prevention System					
e)	Fraud risk management					
f)	Developing regulatory compliance strategies					
g)	Asset tracing & recovery					
h)	Assessing and strengthening internal control					
i)	Damage or loss quantification					
j)	Business valuation					
k)	Anti-Money Laundering programs					

SECTION B:

You are required to provide a response to each of the statements in this Section by indicating your level of agreement or otherwise, with a tick (√) in the appropriate box. The responses from the statements are rated as: Strongly agree-4, Agree-3, Undecided-0, Disagree-2 and Strongly Disagree-1,

i) Forensic Accounting Professional Certification*Body of Knowledge*

S/N	STATEMENT	SA	A	U	D	SD
1.	Do you have university qualifications?					
2.	Do you major an accounting related discipline?					
3.	Do you major in law related disciplines?					
4.	Do you major in science (computer) related disciplines?					
5.	Do you hold a specialized forensic accounting degree?					
6.	Mandatory educational preparation and training for forensic accountants in Nigeria?					
7.	Forensic accountants have specialized body of knowledge					
8.	There is education and training in forensic accounting skills					
9.	Do you have court experience to testify as an expert witness?					
10.	Do you have fraud investigation and auditing experience?					
11.	Do you have experience in providing litigation advice or in the preparation of court documentation on bank fraud cases?					
12.	Do you have computer forensic experience?					
13.	Do you undertake research and publish articles on forensic accounting related topics					
14.	Do you have analytical skills?					
15.	Do you have communication skills?					
16.	Do you have skills acquired from relevant disciplines and work experience?					
17.	Do you have business valuation skills					
18.	Do you have expert testimony skills/experience?					
19.	Do you have quantification of loss skills?					
20.	Do you have litigation support skills?					
21.	Do you have forensic investigation and analysis skills?					
22.	Do you have risk assessment skills					
23.	Do you have e-discovery skills					
24.	Do you have skills to provide due diligence reporting?					
25.	Do you have skills to provide dispute advisory services to DMBs?					
26.	Are Nigerian forensic accountants adequately qualified to undertake fraud investigation?					

Control of Entry

S/N	STATEMENT	SA	A	U	D	SD
28.	Do forensic accountants have accounting certification, such as Certified National Accountant (CNA) or Chartered Accountant (ACA/FCA)?					
29.	Do forensic accountants have a specialized forensic accounting certification, such as Certified Forensic Accountant & Fraud Examiner (CFFE) from the Institute of Qualified Forensic Accountants & Fraud Examiners (IQFFE) and Certified Forensic Accountant (CPA) from the Institute of Forensic Accountants of Nigeria (IFA)?					
30.	Are forensic accountants members of any Forensic Accounting Special Interest Group in Nigeria?					
31.	Recognized status indicated by a license or special designation by forensic accounting organizations in Nigeria					
32.	There are Standards governing admission					
33.	Competence of forensic accounting professionals is ensured by examinations.					

Ethical Codes of Conduct

S/N	STATEMENT	SA	A	U	D	SD
34.	Does your institute have ethical codes of conduct to instruct its members' behaviour in order to ensure professional integrity?					
35.	Does your professional body emphasize its core values to the members?					
36.	Is there any specific requirement set up by your professional body for achieving its codes or core value?.					

Protection of Public Interest

S/N	STATEMENT	SA	A	U	D	SD
37.	Is Protection of public interest embedded in the work that Nigerian forensic accounting practitioners form?'					
38.	Public recognition of forensic accounting as a profession for fraud detection would be beneficial to society.					

ii) Fraud Detection

S/N	STATEMENT	SA	A	U	D	SD
39.	Forensic accounting as a profession is capable of fraud detection in the Nigerian DMBs					
40.	Forensic accounting is regularly employed for fraud detection in the Nigerian DMBs					

APPENDIX II

LIST OF DEPOSIT MONEY BANKS AND FINANCIAL HOLDING COMPANIES IN NIGERIA OPERATING IN NIGERIA AS AT MAY 25, 2016

Money Deposit Banks:

1. Access Bank - Acquired intercontinental Bank
2. Citibank
3. Diamond Bank
4. Ecobank Nigeria - Acquired Oceanic Bank
5. Fidelity Bank Nigeria
6. First Bank of Nigeria
7. First City Monument Bank - Acquired FinBank
8. Guaranty Trust Bank
9. heritage Bank Plc. - Acquired Enterprise Bank (formerly Spring Bank)
10. Keystone Bank Limited - Formerly Bank PHB
11. Providus Bank Pie
12. Skye Bank - Acquired Mainstreet Bank Limited
13. Stanbic IBTC Bank Nigeria Limited
14. Standard Chartered Bank
15. Sterling Bank - Acquired Equitorial Trust Bank
16. Suntrust Bank Nigeria Limited
17. Union Bank of Nigeria.
18. IS. United Bank for Africa
19. 19. Unity Rank Plc.
20. 20. Wema Bank
21. 21. Zenith Bank

Non-interest Banks:

1. Jaiz Bunk

Merchant Banks:

1. Coronation Merchant Bank
2. Rand Merchant Bank
3. FBN Merchant Bank Limited
4. FSDH Merchant Bank

Foreign Bank Representatives:

- Barclays Bank Plc
- Deutsche Bank
- JPMorgan

Source : CBN Official Website as at 30th September. 2016

APPENDIX III

FRAUD STATISTICS OF DEPOSIT MONEY BANKS IN NIGERIA, FORENSIC ACCOUNTING EXPERT CONSULTANCY EXPENDITURE AND SUPPLY OF FORENSIC ACCOUNTANTS ACROSS PROFESSIONAL BODIES IN NIGERIA (1986 – 2016)

Year	ENFA	FLSQA	FISNA	FAECE	FRD (INCIDENCE)	FRD (N'000,000)
1986	4	4	478	0	41	0
1987	4	4	0	0	50	0
1988	4	4	629	0	66	0
1989	4	4	519	0	141	392
1990	4	4	0	0	417	804
1991	4	4	1081	0	514	360
1992	4	4	811	0	436	352
1993	4	4	0	0	516	1,419
1994	4	4	1197	0	737	3,399
1995	4	4	1074	0	625	1,011
1996	4	4	782	144972	606	1,600
1997	4	4	1145	177374	487	3,778
1998	4	4	1051	210946	573	3,196
1999	4	4	1267	258968	195	7,404
2000	4	4	1584	314186	403	2,851
2001	15	4	2386	392478	908	11,244
2002	6	4	1986	569799	796	12,920
2003	9	4	1574	838592	850	9,384
2004	12	4	2826	1017196	981	11,754
2005	14	4	4231	1226624	1036	10,606
2006	30	4	4926	1415786	1229	4,832
2007	717	4	5356	1814745	1193	10,006
2008	772	4	7427	2469070	1553	53,522
2009	746	4	6181	3412273	2007	41,266
2010	604	16	6268	5337174	1764	21,291
2011	233	90	4213	8702996	1532	28,401
2012	429	125	3357	9989843	2352	18,045
2013	120	83	2054	10837144	3380	21,795
2014	509	67	3677	12721342	3756	25,608
2015	227	13	2120	14933136	10621	14,627
2016	255	140	6125	17529483	12279	21,900

Sources: (i) Official website of ICAN, ANAN, ACFE, (ii) Annual reports of NDIC and FITC:

ENFA = Engagement of Nigerian Forensic Accountants

FSLQA = Forensic Litigation Support Skill Acquired by qualified accountants

FISNA = Non-qualified professionals with Forensic Accounting Skills

FRD = Fraud cases detected

APPENDIX IV

STATISTICS ON ENGAGEMENT (PRESENCE) OF NIGERIAN FORENSIC ACCOUNTANTS (ENFA)

Year	ACFE	ANAN	ICAN	ICFA	IFAN	IICFIP	Total	Cumulative Total
1986	4	0	0	0	0	0	4	4
1987	0	0	0	0	0	0	0	4
1988	0	0	0	0	0	0	0	4
1989	0	0	0	0	0	0	0	4
1990	0	0	0	0	0	0	0	4
1991	0	0	0	0	0	0	0	4
1992	0	0	0	0	0	0	0	4
1993	0	0	0	0	0	0	0	4
1994	0	0	0	0	0	0	0	4
1995	0	0	0	0	0	0	0	4
1996	0	0	0	0	0	0	0	4
1997	0	0	0	0	0	0	0	4
1998	0	0	0	0	0	0	0	4
1999	0	0	0	0	0	0	0	4
2000	0	0	0	0	0	0	0	4
2001	15	0	0	0	0	0	15	19
2002	6	0	0	0	0	0	6	25
2003	9	0	0	0	0	0	9	34
2004	12	0	0	0	0	0	12	46
2005	14	0	0	0	0	0	14	60
2006	30	0	0	0	0	0	30	90
2007	27	0	0	10	580	0	617	707
2008	15	0	0	7	750	0	772	1479
2009	10	0	0	3	733	0	746	2225
2010	8	0	16	7	573	0	604	2829
2011	10	0	90	4	529	0	633	3462
2012	14	0	125	5	385	0	529	3991
2013	7	0	83	3	323	4	420	4411
2014	4	0	67	8	426	42	547	4958
2015	17	0	15	4	380	11	427	5385
2016	15	135	5	9	88	3	255	5644
TOTAL	217	135	401	60	4767	60	5640	

Sources: ANAN and ICAN Official website:

APPENDIX V

QUALIFIED ACCOUNTANTS WITH FORENSIC LITIGATION SUPPORT SKILLS (FLSQA)

Year	ANAN	ICAN	TOTAL	CUMULATIVE
1986	0	0	0	4
1987	0	0	0	4
1988	0	0	0	4
1989	0	0	0	4
1990	0	0	0	4
1991	0	0	0	4
1992	0	0	0	4
1993	0	0	0	4
1994	0	0	0	4
1995	0	0	0	4
1996	0	0	0	4
1997	0	0	0	4
1998	0	0	0	4
1999	0	0	0	4
2000	0	0	0	4
2001	0	0	0	4
2002	0	0	0	4
2003	0	0	0	4
2004	0	0	0	4
2005	0	0	0	4
2006	0	0	0	4
2007	0	0	0	4
2008	0	0	0	4
2009	0	0	0	4
2010	0	16	16	20
2011	0	90	90	110
2012	0	125	125	235
2013	0	83	83	318
2014	0	67	67	385
2015	0	15	15	400
2016	135	5	140	540
Total	135	405	540	

Sources: ANAN and ICAN websites

APPENDIX III

NON QUALIFIED ACCOUNTANTS WITH FORENSIC INVESTIGATIVE SKILL

Year	ICFA	IFAN	IICFIP	TOTAL	CUMULATIVE
1986	0	0	0	0	4
1987	0	0	0	0	4
1988	0	0	0	0	4
1989	0	0	0	4	4
1990	0	0	0	0	4
1991	0	0	0	0	4
1992	0	0	0	0	4
1993	0	0	0	0	4
1994	0	0	0	0	4
1995	0	0	0	0	4
1996	0	0	0	0	4
1997	0	0	0	0	4
1998	0	0	0	0	4
1999	0	0	0	0	4
2000	0	0	0	0	4
2001	0	0	0	15	19
2002	0	0	0	6	25
2003	0	0	0	9	34
2004	0	0	0	12	46
2005	0	0	0	14	60
2006	0	0	0	30	90
2007	10	580	0	617	707
2008	7	750	0	772	1479
2009	3	733	0	746	2225
2010	7	573	0	588	2813
2011	4	529	0	543	3356
2012	5	385	0	404	3760
2013	3	323	4	337	4097
2014	8	426	42	480	4577
2015	4	380	11	412	4989
2016	9	88	3	115	5104
Total	60	4767	60	5104	

Sources: websites of ACFA, ICFA, IFAN & IICFIP

APPENDIX VII: OUTPUT OF OLS, GLS, BOOTSTRAPPING REGRESSION ANALYSIS AND ONE WAY ANOVA

TABLE 1: DESCRIPTIVE STAATISTICS

stats	enfa	pqaafs	ppqa	faece	frd
mean	153.4839	20.3871	2462.097	3042391	1678.839
p50	6	4	1584	392478	796
max	772	140	7327	1.75e+07	12279
min	4	4	0	0	41
sd	253.7266	37.71974	2136.224	5012196	2764.707
n	31	31	31	31	31

TABLE 2: CORRELATION ANALYSIS

	Pnfa	Pqaafs	Ppqa	faece	frd
enfa	1.0000				
flsqa	0.2785	1.0000			
fisna	0.8111	0.3488	1.0000		
faece	0.4336	0.8254	0.4621	1.0000	
frd	0.2835	0.5994	0.3922	0.8780	1.0000

TABLE 1: DESCRIPTIVE STATISTICS GENERATED FROM SPSS

	Frd	Enfa	Flsqa	Fisna	Faece
Mean	1678.839	153.4839	20.38710	2462.097	304239.1
Median	796.0000	6.000000	4.000000	1584.000	392478.0
Std Dev.	2764.707	253.7266	37.71974	2136.224	5012196
Skewness	3.018534	1.486060	2.168443	0.833129	1.660842
Kurtosis	11.25939	3.684553	6.291833	2.488709	4.432317
Jarque-Bera	135.1906	12.01522	3829113	3.923869	16.90161
Probability	0.000000	0.002460	0.0000000	0.140586	0.000214
Observation	31	31	31	31	31

To check for normality or to be sure that the values are normally distributed for each quantitative variable, skewness and kurtosis are used (Saunders, Lewis & Thornhill, 2012). According to Kline (2005), range for skewness test should be between +3 and result of Kurtosis should be within +10.0. From the above table, flsqa has the highest skewness value, which is 2.168443 while fisna has the lowest value, which is 0.833129. This implies that all the items are falling under acceptable range, which is from -3 to +3 as recommended by Kline (2005).

fisna	.337895	.1150322	2.18	0.029	.0340376	.6417525
TABLE 5: MULTICOLLINEARITY TEST						
_cons	668.7222	260.1084	2.57	0.010	158.9191	1178.525

Variable	VIF	1/VIF
Fisna	3.07	0.325774
Enfa	2.92	0.342146
Flsqa	1.14	0.878264
Mean VIF	2.38	30

TABLE 6: TEST FOR AUTOCORRELATION

Durbin-Watson d-statistic (4, 31) = .9035131

Source	SS	df	MS	Number of obs =	29
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TABLE 7: CORRECTION AFTER AUTOCORRELATION

Cochrane-Orcutt AR(1) regression - iterated estimate

Model	35697989.8	6	5949664.96	F(3, 27) =	8.52
Residual	15358391.2	22	698108.693	Prob > F =	0.0001
Total	51056381	28	1823442.18	R - squared =	0.6992
				Adj R-squared =	0.6171
				Root MSE =	835.53
Frd	Coef	Std. Err	t	p> t	[95% Conf.Interval
Enfa					
--.	-.6283804	.7153196	-0.88	0.839	-2.111863 .8551018
L1	.7388759	.8014726	0.92	0.367	-.9232766 2.401028
Flsqa					
--.	-17.77836	4.785497	-3.72	0.001	-27.70287 -7.853846
L1	7.600464	5.631487	1.35	0.191	-4.078525 19.27945
Fisna					
--.	-.1151486	.1200107	-0.96	0.348	-3640355 .1337382
L1	.2720981	.1160329	2.35	0.028	.0314606 .5127356
_cons	353.0808	376.0609	0.94	0.358	-426.8217 1132.983

TABLE 11: CORRECTION AFTER AUTOCORRELATION
 Cochrane-Orcutt AR(1) regression -- iterated estimates

Source	SS	df	MS			
Model	46650811.8	2	23325405.9	Number of obs = 29		
Residual	31819697.1	26	1223834.51	F(3, 27) = 19.06		
Total	78470508.9	28	2802518.18	Prob > F = 0.0000		
				R - squared = 0.5945		
				Adj R-squared = 0.5633		
				Root MSE = 1106.3		
frd	Coef	Std. Err	t	p> t	[95% Conf.Interval]	
Faece						
--.	.0000897	.0003976	0.23	0.823	-.0007277	.000907
L1.	.0005913	.000461	1.28	0.211	-.0003563	.0015389
_cons	74.17002	797.5726	0.09	0.927	-1565.264	1713.604
rho	.6895561					
Durbin-Watson statistic (original)			1.260124			
Durbin-Watson statistic (transformed)			2.182627			

TABLE 12: OUTPUT OF ONE-WAY ANOVA GENERATED FROM STATA 13.0 VERSION

		Sum of squares	Df	Mean Square	F	Sig. Figure
BOK	Between Groups	52.693	1	52.693	9.792	.002
	Within Groups	2131.026	396	5.381		
	Total	2183.719	397			
COE	Between Groups	2.215	1	2.215	2.269	.133
	Within Groups	386.609	396	.976		
	Total	388.824	397			
ECC	Between Groups	548.223	1	548.223	18.081	.000
	Within Groups	12006.913	396	30.320		

	Total	12555.136	397			
PPI	Between Groups	20005.814	1	20005.814	36,111	.000
	Within Groups	219389.864	396	554.015		
	Total	239395.678	397			