

UNIVERSITY OF CAPE COAST

FACTORS THAT INFLUENCE INTERNAL AUDITORS FRAUD
DETECTION CAPABILITIES IN GHANA

BY

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DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Name: Seidu Yakubu

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Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

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ABSTRACT

With an upsurge of fraud in the current economic scenario experienced, fraud detection have received considerable attention from the investors, academic researchers, media, the financial community and regulators (Sharma & Panigrahi, 2012). This study therefore examines the factors that influence internal auditors' fraud detection capabilities in Ghana. To sample the respondents for the study, stratified random sampling technique was adopted and questionnaire was used to solicit information from the 200 internal auditors selected. The study employed binary logistic regression model to examine the factors that influence probability of an internal auditor detecting fraud. The binary logit regression model was used because the dependent variable which is fraud detection is binary. The study found out that experience of the respondent, educational attainment of the respondent, in service training, respondent knowledge of information and technology, organization in which the respondent works and control environment are key predictors of probability of internal auditor detecting fraud. This study strongly recommends that Institute of internal Auditors, Ghana and management of various organizations should increase the number of in-service program they organize and also encourage internal auditors to participate. Also, internal Auditors should be encouraged to enrol on professional courses like certified internal auditor and certified fraud examiner programs. Last but not least, management of various organizations should give maximum support to internal auditors in carrying out their duties

KEY WORDS

Binary logit

Demographic factors

Fraud detection

Internal audit

Internal auditor

Knowledge factors

Organizational factors

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DEDICATION

To my parents, Mr. Moses Manu and Mrs. Hannah Manu.

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LIST OF ACRONYMS

AT	Agency Theory
ACFE	Association of Certified Fraud Examiners
AICPA	American Institute of Chartered Public Accountants
CAT	Cognitive Approach Theory
ETE	Erickson Theory of Expert
IIA	Institute of Internal Auditors
IIAG	Institute of Internal Auditors Ghana
TCE	Transaction Cost Economy Theory

CHAPTER ONE

INTRODUCTION

Background to the Study

All organizations are subject to fraud risks. Large frauds have led to the downfall of entire organizations, massive investment losses, significant legal costs, incarceration of key individuals, and erosion of confidence in capital markets. Publicized fraudulent behaviour by key executives has negatively impacted the reputations, brands, and images of many organizations around the globe (Institute of Internal Auditors Examiners [IIA], American Institute of Certified Public Accountant [AICPA], and Association of Certified Fraud Examiners [ACFE], 2008). Ability to detect and manage fraud will help firms and nations to attain their goals and promote accountability of fiduciaries for resources entrusted them.

With an increase in fraud cases in recent years, fraud detection has received considerable attention from investors, academic researchers, media, the financial community and regulators (Sharma & Panigrahi, 2012). This does not only place responsibility on auditors but also presents opportunities for the audit profession.

Audit is a technique that has been recognized to provide management with a general situation regarding resources utilization and other services within the organization (Botha & Boon, 2003). It can also be seen as an independent assessment of accounting records with a view to ascertain their accuracy and their compliance with relevant rules and regulations and also with the organizational policies and procedures.

The nature and form of audit is determined by how it is appointed. If the appointment is driven by the needs of government regulation, to keep shareholders informed, then the appointment is considered to be that of an external audit www.asic.gov.au (as cited in Ronald, 2009). There are, however, other influences on organizations that may lead to the appointment of internal auditors by the organization.

Internal audit is seen as effective tool available for organisations to address the threat of fraud (ACFE, 2008). Abbott, Parker, and Peter (2012), Burnaby, Howe, and Muehlmann (2009) have argued that audit departments have a critical role in fraud prevention

Literature makes it clear that the responsibility of internal controls, proper reporting, and the adoption of sound accounting policies rests solely with management, not the auditors (Gramling & Myers, 2003; Chau & Yuen, 2011; Lin, Pizzini, Vargus, & Bardhan, 2011). Chau and Yuen (2011) pointed out that the primary responsibility for the prevention and detection of fraud rests with those charged with governance of the entity and with management. This agrees with Institute of Internal Auditors (IIA, 2009a) which recognises that risk management is a key responsibility of senior management and the board. The role of the internal audit is to assist management in examining, evaluating, reporting, and/or recommending improvements to the adequacy and effectiveness of those risk management processes (IIA, 2009a). However, International Professional Practice Framework (IPPF) standard 2120.A2 and 2210.A2 require internal auditors to evaluate the potential for fraud occurrence as well as considering the probability of fraud exposures.

Internal auditors are therefore required to possess knowledge, skills and other competences to perform their individual responsibilities (IPPF attribute standard 1210 Proficiency). The IIA's Code of Ethics further requires that internal auditors engage in those services for which they have the necessary knowledge, skills, and experience; perform duties in accordance with the standards; and continually improve their proficiency and effectiveness. Competent and professional internal audit staff, in particular those that adhere to the standards, can help ensure the internal audit activity's success.

Mui (2010) developed a model of auditor expert performance in fraud detection. Mui's model posits that the determinants of auditor expert performance in fraud detection include practical experience, mentoring, certification, continuous learning, technical skills, data analysis skills, analytical reasoning, ability to work within a team, communication skills, and an effective control environment. The model further asserts that there is a positive relationship between each of these determinants and expert performance in fraud detection. Possessing these skills help internal auditors to perform their responsibilities in an effective and efficient manner.

There are various theories that are used to explain the existence and the role of audit fraud management. Among these are the Agency Theory (AT), the Transaction Cost Economy Theory (TCE) and Cognitive Approach Theory (CAT) and Erickson Theory of Expert (ETE).

Most literature links the existence of internal audit to the agency theory (Adams, 1994; Carcello, Hermanson, & Raghunandan, 2005; Goodwin-Stewart & Kent, 2006b; Wallace & Kreutzfeldt, 1991). Agency theory deals

with the relationship between principals and agents. In relation to internal audit, the firm's chief executive officer is viewed as the principal who attributes decision rights to its lower level management (agents). Adams (1994) described internal audit (together with other mechanisms such as the Audit Committee) as a monitoring tool to overcome information asymmetry problems. The assumptions behind the agency theory are primarily related to human behaviour (Eisenhardt, 1989; Jensen & Meckling, 1976). As a result of asymmetry of information and possible goal conflict, the Management Board may lose control of the firm. Therefore, internal audit can be the monitoring mechanism to make the possible asymmetry visible. This asymmetry is more likely to occur in large and/or more complex organizations (Adams, 1994; Carcello et al., 2005)

Transaction Cost Economics provides a basis for describing a contractual or transactional relationship between parties, in which each party expects something from the other (Speklé, 2001). TCE tries to identify, explain and mitigate contractual hazards. TCE postulates that transactions are costly and consist of the cost of running an economic system. It is therefore necessary to be as efficient as possible in order to be able to economize.

Williamson (1975) argues that an internal auditor has an advantage over external auditors, as he has greater freedom of action, a wider scope, understands the language of the firm and can rely on less formal evidence. With that TCE seems to imply an advantage of the internal auditor over the external auditor.

How does the internal auditor detect fraud? The ability of the internal auditor to successfully detect fraud is addressed by the Cognitive Approach

Theory (CAT) and Erickson Theory of Expert (ETE). CAT is a psychological theory developed to enable auditors detect fraud. The tenet of this theory bothers on how cognitive processes can be adopted by auditors in their quest to detect fraud. Thus, the theory seeks to shift auditors' attention from information cues that signal the presence of fraud and moves them towards a deeper understanding of the cognitive processes by which individuals identify, interpret, and evaluate information that may be indicative of a misrepresentation (O'Sullivan, 2003). The principle of this theory dwells on how auditors can improve on the accuracy at detecting fraud, in particular, financial statements fraud.

ETE identifies the various components that are necessary for the attainment of expert performance. Ericsson (1996) identified the various constructs that define expert as deliberate practice, parental influence, motivation, coach/teacher role, feedback and age of initiation. It is believed that an auditor could gain a lot of experience through continuous or deliberate practice which could help him or her to detect fraud. Again, the presence of a coach or a mentor will help the auditor learn and gain enough knowledge to help detect fraud.

Statement of the Problem

With an upsurge of fraud in recent years, fraud detection has received considerable attention from investors, academic researchers, media, the financial community and regulators (Sharma & Panigrahi, 2012). Ability to detect and manage fraud will help firms and nations to attain their goals and promote accountability of fiduciaries for resources entrusted them.

Internal audit is the most effective corporate control available to management to address the threat of fraud (ACFE, 2008). This is due to the unique role internal audit play in assisting management and the board in identifying, evaluating, and implementing risk management processes and controls to address risks (IIA, 2009a).

Although the responsibility of fraud management is that of those charged with governance and management, the IPPF standard 2120.A2 and 2210.A2 require internal auditors to evaluate the potential for fraud occurrence and its management as well as considering the probability of fraud exposures. As such, the internal auditors are required to possess certain knowledge, skills, abilities and other competencies which will help their fraud detection capabilities. The question is what are the knowledge, skills and other competencies that internal auditors require as experts in fraud detection in this turbulence, complex and ever changing business environment?

This has led to increasing number of researchers trying to assess the determinants of internal auditors' ability to detect fraud (Bonner & Lewis, 1990; Libby & Luft, 1993; Libby & Tan, 1994; Mui, 2010; Owusu, Moyes, Oyele & Hay, 2002). Libby and Tan (1994) concentrated on knowledge, experience and ability with expert performance in general audit tasks whereas Bonner and Lewi, 1990 also considered knowledge and problem solving abilities such as the ability to recognize relationships, interpret data and analytical reasoning. Owusu et al. (2002) also conducted an empirical analysis of the likelihood of detecting fraud in inventory cycle among 400 public accountants in New Zealand. Their study revealed factors like the size of audit firm; position tenure of auditor; years of experience of auditor; success and

practice review experience of auditor's firm. These studies are limited in scope because they considered only few variables and limited to only inventory cycles. This makes their findings not comprehensive for decision making process. Mui (2010) conducted a comprehensive study in Australia on the determinant of internal auditor expert performance in fraud detection. This study revealed ten determinants that help build internal auditors' fraud detection capabilities. Though various researches have been conducted to ascertain the factors that influence internal auditors' fraud detection capabilities, none can be attributed to Ghana. The extensive findings regarding developed nations may not be applicable in developing nation like Ghana because of differences in economic, culture, social, legal, and institutional settings. Furthermore Mui (2010) used Agency theory which does not have a link with the determinants of fraud detection but only show the reason for establishing internal audit unit in an organisation.

Objective of the Study

The general objective of the study is to examine the factors that influence internal auditors' fraud detection capabilities in Ghana. This general objective is broken down into four specific objectives. The four specific objectives formulated for the study are to:

1. assess internal auditors' perception of interpersonal skills and problem solving ability on fraud detection;
2. examine the influence of demographic factors on fraud detection;
3. examine the effect of knowledge factors on fraud detection;
4. assess the effect of organisational factor on fraud detection.

Research Question

The following research question was formulated to achieve objective one of the study.

1. What are internal auditors' perception of interpersonal skills and problem solving ability on fraud detection?

Hypothesis

The following null and alternative hypotheses were formulated to achieve the objectives stated above. Hypotheses 1, 2, 3 and 4 relate to objectives 2. Hypotheses 5, 6, and 7 relate to objective 3 while hypotheses 8 relate to objective 4.

1. H_0 : level of education has no effect on fraud detection;
 H_1 : Level of education has effect on fraud detection;
2. H_0 : Experience of the internal auditor has no effect on fraud detection;
 H_1 : Experience of the internal auditor has effect on fraud detection;
3. H_0 : Age of the internal auditor has no effect on fraud detection;
 H_1 : Age of the internal auditor has effect on fraud detection;
4. H_0 : Organisation type of the internal auditor has no effect on fraud detection;
 H_1 : Organisation type of the internal auditor has effect on fraud detection;
5. H_0 : In-service training does not affect fraud detection;
 H_1 : In-service training affects fraud detection;
6. H_0 : Mentoring does not affect fraud detection;
 H_1 : Mentoring affect fraud detection;

7. H₀ Knowledge about information technology has no effect on fraud detection;

H₁: Knowledge about information technology effect on fraud detection.

8. H₀: Control environment does not affect fraud detection;

H₁: Control environment affect fraud detection;

Significance of the Study

The resulting model of fraud detection provides the internal audit profession, organisations, and the individual internal auditor with an understanding of the factors that impact on the individual internal auditor's fraud detection capabilities. Therefore, this practical understanding of internal auditors' fraud detection capabilities has the potential to: (1) contribute to the development and improvement of an organisation's fraud risk management strategy; (2) inform the policy debate regarding the promulgation of professional and mandatory standards; and (3) contribute to auditing practice and the audit profession through the identification of strategies to educate the audit profession about fraud detection.

To the internal auditors, it is hoped that the outcome of the study will help them sharpen their fraud detection skills, quicken their efforts at solving client needs and stay competitive in the ever changing and complex business world.

Being a pioneering study on auditor fraud detection capabilities in Ghana (a developing country), will enable later comparison with other studies to identify developmental and possibly, cultural influences on the variables of study.

Delimitation

This study intends to examine empirically the factors that influence internal auditors' fraud detection abilities in Ghana. The study seeks to cover demographic, organisational and knowledge factors from internal auditor's perspective. Geographically this study will be carried out in Ghana. Additionally, the study will be limited only to the internal auditors who are members of the Institute of Internal Auditors Ghana and work in various organisations throughout the country.

Limitations of the Study

This study is limited by some factors. The first limitation is that this study did not examine all the possible factors influencing probability of internal auditor detecting fraud. It is believed that other variables excluded from the model could have influence on the decision under investigation. Communication skills, Data analysis skills and team work as determining factors were some of the variables omitted from the model. Omitting variables that influence probability of an internal auditor detecting fraud can lead to possible omitted variable bias and may slightly overestimate the magnitude of the effect of all the other determinants.

Also, the study focused on individual auditor's fraud detection capabilities instead of the organisation's initiatives for fraud and fraud detection. The main concern voiced by organizational gatekeepers related to the confidentiality of proprietary information. Due to that, about 69 questionnaires were not returned to the researcher.

Organisation of the Study

This thesis has five chapters. Following is the organisation of the remaining four. Chapter two reviews the theoretical, conceptual and empirical literature on expert performance, fraud and fraud detection. Based on the reviews, a conceptual framework for the study is deduced. Chapter three focuses on the methodology of the study. It discusses among others, the population, sampling procedures, data collection, measurement instrument, pre-test and data analysis techniques.

In chapter four, data obtained from the field is analysed and results discussed in accordance with the objectives of the study. Descriptive statistics are employed in analysing business and demographic characteristics whiles mainly advanced statistical techniques are employed in analysing relationships between and among the study's main variables. Chapter five summarizes the findings and conclusions, based on which recommendations are made.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Introduction

Literature review is the selection of available documents on the topic under study which contain information, ideas, and evidence written from a particular standpoint to fulfil certain aims on the nature of the topic and how it is to be investigated and the effective evaluation of these documents in relation to the research topic. It describes, summarises, clarifies and provides evaluative report of empirical studies (Boote & Beile, 2005). Cano (2013) added that literature review identifies areas of consensus and significant debates on relevant issues, helping articulate the knowledge gap while avoiding the replication of errors.

This chapter reviews literature on the theoretical foundations of the study as well as conceptual issues raised in prior empirical studies. The chapter begins with a review of Agency Theory (AT), Transaction Cost Economy Theory (TCET), Cognitive Approach Theory (CAT) and Erickson Erickson Theory of Expert (ETE).

A review of conceptual issues emanating from theories and captured in prior empirical studies follows. Issues and lessons emanating from the reviews are then discussed, based on which the conceptual framework for the study is constructed.

Theoretical Framework of the Study

The theoretical framework of this study comprises agency theory, transaction cost economies theory, cognitive approach theory, and Erickson theory of expert. The AT and TCET are used in this study to show the basis of establishing internal audit in an organisation whereas the CAT and ETE have been adused to provide determinants of fraud detection.

Agency theory (AT)

Agency theory is used to describe a relationship in which one or more principals engage another person or persons as their agent(s) to perform some service on their behalf. To enable this performance, delegation of some decision making authority to the agent is needed (Jensen & Meckling, 1976). In an agent principal relationship, the agent is being employed by the principal to undertake a task or some tasks which the principal can or cannot do due to lack of time or knowledge of the task to be carried out. This relationship can take place between shareholders/owners and management and also between managers and employees.

The assumptions behind the agency theory primarily relate to the separation of ownership and management, and motives and preferences behind human behaviour (Eisenhardt, 1989; Jensen & Meckling, 1976). Principals and agents each may be seen as utility maximizers, chasing self-interest and maximizing their own personal economic gain, which will not be necessarily aligned. Zeckhauser and Pratt (1985) posited that different people can strive for different goals which may lead to possible goal conflicts between a principal and an agent. Information asymmetry between a principal and an

agent arises when the principal is uncertain of the alignment of the agent's behaviour with the firm's goals, and because it may be prohibitive and expensive either to measure effort, performance, the relation between effort and performance or all of these three. This is the so-called issue of hidden information and hidden action

Within a large organization, the principal wants to ensure that agents use their attributed decision rights in a way that contributes to the organizational objectives in a most efficient way and does not impair the integrity of the firm. As a somewhat free and self-interested individual, however, the agent will almost by definition have another agenda and can shirk or misstate what he is doing which results in hidden information and hidden action (Jensen 1978). In either case, Jensen indicated that the principal needs to "monitor" the reported hidden information and the hidden action of the agent. He further indicated that if the agent was able to do that and satisfy everyone's needs, it wouldn't be necessary to have someone else do the job. Unfortunately, that is generally not the case especially in a large organization. Therefore, the principal needs a third party for the monitoring task. This provides opportunity for the auditing profession particularly internal auditing.

In relation to internal audit, the firm's chief executive officer is viewed as the principal who attributes decision rights to its lower level management (agents). Adams (1994) described internal audit as a monitoring tool to overcome information asymmetry problems.

The traditional nature of internal audit relates to the verification of the accuracy, timeliness and completeness of the accounting information (Courtemanche, 1991) or in a broader sense, to evaluating evidence on

accounting information in order to determine and report on how well this accounting information complies with established criteria (Arens & Loebbecke, 2000). Traditionally, the annual statement is based on historical information and is conceptually based on accounting profit.

As economic profit is increasingly used to determine the value of a firm, management and external stakeholders are more interested in a firm's future cash flows, and assurance that these future cash flows will materialize (Strikwerda, 2012). As a result of asymmetry of information and possible goal conflict, the Management Board may lose control of the firm. As a consequence, it is to be expected that the economic *raison d'être* of an internal audit function is to reduce information asymmetry, complementary to other measures the Management Board takes. The Audit Committee is also expected to require an internal audit function for this reason, as researched by Goodwin-Stewart and Kent (2006).

Transaction cost economy theory (TCE).

TCE provides a basis for describing a contractual or transactional relationship between parties, in which each party expects something from the other (Speklé, 2001). This can be a relationship within the organization, but also between organizations. The objective of TCE is to explain different forms of organization based on the differences in transaction costs. TCE tries to identify, explain and mitigate contractual hazards. A transaction occurs when a good or service is transferred across a technologically separable interface. Transactions are dear and refer to the costs of running the economic system (Arrow, 1969)

According to Paape (2007), in an ideal world, there would be a perfect market in which all transactions that take place and all information would be conveyed in the price of the good or the service rendered. Then one only needs to survey the market and make a selection. Unfortunately, we live in an imperfect world where scarcity of resources is the order of the day. Goods need to be manufactured according to customers' specifications. Goods and services are in many cases neither homogeneous nor transparent.

In order to conclude any transaction, a number of activities need to be undertaken (Paape, 2007). These include searching for parties to contract with, collecting information, performing negotiations, drafting contracts, and monitoring the adherence of contractual and other obligations. It is therefore necessary to be as efficient as possible in order to be able to economize.

The first assumption under TCE relates to bounded rationality (Simon, 1991), the notion that decision makers' capabilities are bounded in terms of formulating and solving problems and processing all information during the decision-making process. The second assumption deals with opportunism, example possible conflicts because individuals are promoting their own self-interest, and is explained by Williamson (1979) as a variety of self-interest seeking, but extends simple self-interest seeking to include self-interest seeking with guile. It is not necessary that all agents be regarded as opportunistic in identical degree. It suffices that those who are less opportunistic than others are difficult to ascertain *ex ante* and that, even among the less opportunistic, most have their price.

These behavioural assumptions lead to incomplete *ex ante* contracting and as a consequence, *ex post* monitoring of the contract is required to prevent

or to handle conflicts. Williamson argues that an internal auditor has an advantage over external auditors, as he has greater freedom of action, a wider scope, understands the language of the firm and can rely on less formal evidence (Williamson, 1975). With that TCE seems to imply an advantage of the internal auditor over the external auditor. This concurs with the findings of a study by Carcello et al. (2008) that organisations with an in-house internal audit function are more likely than those without an internal audit function to detect and self-report fraud.

Though the TCE Theory provides the basis of the establishment of IA, it has received various critiques on the assumption of bounded rationality, and the notion of opportunism and trust. The assumption that the internal monitor is rational is questioned in terms of such person's ability to make same rational decisions in a complex situation. Dow (as cited in Paape, 2007) espoused that it is doubtful for an agent to select in advance an efficient decision making procedure to use in adapting to future circumstances if such agent cannot cope with contracts featuring complex contingencies.

The most important criticism seems to focus on the concept of opportunism and trust. Williamson has a strong point of view on this subject. The general effect of presuming the absence of opportunism is that we enter the world of "utopian fantasies" (Williamson, 1999).

Nooteboom (2000) posited the preoccupation with opportunism, and the neglect or even rejection of the notion of trust is misguided and theoretically inconsistent. He further espoused that the passage of time will provide both parties insights into the degree of opportunism that the other is engaging in. Nooteboom further argued that if one party believes that because

he is being monitored and therefore, not trusted, the other party will then assume that he is also not trusted and start behaving opportunistically.

Paape (2007) based his critique on the fact that Williamson did not distinguish between attitude and behaviour. While opportunism might be an inherent characteristic of human behaviour and an ongoing attitude, it is not necessarily an ongoing activity. Following are theories that provide factors that help internal auditors in detecting fraud.

Cognitive approach theory (CAT)

CAT is a psychological theory developed to enable auditors detect fraud. The tenet of this theory bothers on how cognitive processes can be adopted by auditors in their quest to detecting fraud. Thus, the theory seeks to shift auditors' attention from information cues that signal the presence of fraud and moves them towards a deeper understanding of the cognitive processes by which individuals identify, interpret, and evaluate information that may be indicative of a misrepresentation (O'Sullivan, 2003). The tenet of this theory dwells on how auditors can improve on the accuracy at detecting fraud.

The theory posits that auditors solve the problem of detecting frauds by using deception-detection knowledge from their experiences with deception in everyday life. This knowledge takes the form of general heuristics or detection tactics that guide the auditors' understanding of the misrepresentations created by other agents (Gigerenzer & Todd, 2000). For auditors to apply the detection tactics to a specialised domain such as financial statement analysis, they must also possess knowledge of that domain (in this case, auditing and accounting), which is developed through education and work experience. Learning how to

connect these two types of knowledge requires cognitive processes since an individual auditor's career offers relatively few opportunities to make this connection explicitly (Loebbecke, Eining & Willingham 1989). Besides, this connection can be made through the continuous exercise of auditors' knowledge.

Thus, for auditors to successfully detect fraud, auditors must apply the same intentional stance strategy that deceivers use. Just as the deceiver solves the problem of creating a deception by using knowledge of how the victim thinks and acts, the detector needs to solve the inverse problem of detecting the deception that has been created by using knowledge of how the deceiver thinks and acts (Wilks & Zimelman, 2004). Cognitive theory of fraud detection then assumes that both deceiving and detecting deception are accomplished by thinking about the other agent goals, knowledge, and possible actions, i.e. by adopting the intentional stance. The deceiver uses the intentional stance to manipulate information cues and mislead its intended victim. The detector uses the intentional stance to "reverse engineer" the cues left behind by the deceiver and identify them as symptoms of attempts to mislead.

Knowledge of the detection tactics comes from experience. Not necessarily from specific experience with fraud per se, which is scant, but from experience with deception in general, which is more abundant. Auditors, as any other social agent, have frequent and varied exposure to instances of deception, both as a deceiver and/or victim or intended victim of deception (Ceci, Leichtman & Putnick 1992; Ekman 1992). As a way to cope with potentially deceiving adversaries, social agents such as auditors develop

knowledge for detecting the deceptions created by others (Vasek, 1986). This general detection knowledge is specific to the task of detecting deceptions, but is not expressed in terms of domain content (Cosmides 1989; Cosmides & Tooby 1992). In the specific case of fraud detection, auditors interpret cues found in financial statements in the light of goals ascribed to management, as well as tactics they believe management may potentially have used to manipulate the information they are attempting to evaluate.

The detection tactics are heuristics that are activated in the presence of three conditions: 1) the discovery of an anomaly, 2) the belief that the anomaly is functional to the goal ascribed to the potential deceiver (e.g., management) and 3) the belief that the anomaly could be the result of the deceiver's intentional manipulation. For example, the conditions for applying an anti-masking tactic are that the auditor 1) notices that something (e.g., an expense or a liability) is unexpectedly missing, 2) concludes that this absence contributes to the goals that have been ascribed to management, and 3) believes that management has the capability of manipulating the reporting process so that the expense (liability) does not get recorded. When these conditions are met, the auditor hypothesizes that the deceiver has masked the unexpectedly missing item and takes corrective action (e.g., searches for evidence, or assumes that the item was maliciously removed).

Applying the above discussion to auditing, an auditor must develop expectations about the value of expenditures, he or she must be able to ascribe goals to management, and whether management could manipulate the accounting process so as to fail to record the expense or liability in the financial statements (Albrecht, Wernz, & Williams, 1995). These abilities are

enabled by a type of knowledge called mediating knowledge of auditing. Mediating knowledge maps the general conditions of the tactics into entities and relationships in a particular situation. Absence of this mediating knowledge also becomes a source of errors and thus ultimately the failure to detect deception. The reason is that the detection tactics are likely to be quite refined because of the repeated exposure that individuals have with deception in the world, both as a deceiver and as a target. By contrast, the knowledge necessary to connect a specific situation to a tactic is more likely to be lacking because in most specific domains, the experience of a deception is relatively rare.

From the CAT the following knowledge variables were obtained experience and level of education, and analytical reasoning.

Erickson theory of expert (ETE)

ETE identifies the various components that are necessary for the attainment of expert performance. According to Ericsson, Krampe, and Tesch-Romer (1993), expert performance reflects the mastery of the available knowledge or current performance standards and relates to skills that masters, teachers and coaches know how to train.

Ericsson (1996) identified the various constructs that defines expert as deliberate practice, parental influence, motivation, coach/teacher role, feedback and age of initiation. The component primarily focused upon by Ericsson is that of deliberate practice, though additional factors, all intrinsically related to deliberate practice, are also involved.

Touching on deliberate practice, Erickson identified that it must be intense, effortful and total concentration must be used to make it deliberate. The quantity of a quality deliberate practice accumulated by a person in a particular domain leads to attainment of expert performance (Erickson, 1996). According to Gobet & Campitelli (2007), deliberate practice is a framework proposing that the efficient acquisition of domain-related knowledge and skills, and thus exceptional performance is primarily due to goal-directed, effortful and inherently not enjoyable practice. With continued practice, performance improves, and cognitive structures adjust due to acquired knowledge and skills while certain physical structure may adjust in order to adapt to the increased levels of performance (Theiler, 2003). As this continues, quantities of deliberate practice slowly increase (Ericsson, 1996).

According to Erickson, the age at which one starts deliberate act influence his expert performance. Considering this, one can imply that if practice begins late, it is impossible to reach the level of performance demonstrated by those of the same age group. It could be argued that those that start the practice earlier will have acquired more deliberate practice and as a result, will present more advanced levels of performance. Those that start later will not be able to achieve the same level of performance as their peers since they are bound by the demands of deliberate practice and cannot accumulate quantities equal to that of their earlier starting peers

Another important factor of expert performance according to Erickson is the influence of a coach. A coach ensures effective training by establishing practice schedules appropriate for the learner's development (Ericsson & Charness, 1994). Coaches provide explicit instruction about the best and

current methodologies available, they monitor and compare current performance to that of other individuals of the same age in the domain, diagnose errors, offer informative feedback and are able to offer correctional training when necessary (Ericsson, 1996).

To improve upon performance, one constantly needs feedback on how well or how poor he has been on such assignment. Erickson espoused that without feedback, there would be no information offering guidance for an individual hoping to improve performance. Feedback, undoubtedly, drives an individual's practice. It informs one of whether or not a goal is being achieved, and if this goal is not achieved, the feedback offers insight as to what errors need to be corrected in order to strive to reach that goal.

Gobet & Campitelli (2007) pointed that deliberate-practice framework has generated much research but also much controversy. It has been argued that the existence of individual difference evidenced from personality trait that may affect the attainment of higher expert performance and not necessarily continuous practice.

From the forgoing, it is clear that continuous practice will help internal auditors develop experience needed to attain expert performance which is fraud detection. The work of a coach as posited in Erickson's theory could be likened to that of mentor. An internal auditor who has a coach or mentor could help him or her to develop the requisite skill necessary to detect fraud.

This theory provides three constructs used in the study, namely, experience on the job and mentoring. Following is the nature of fraud, its causes and effects.

Nature of fraud

Researchers have defined fraud from various perspectives. Duffield and Grabosky (2001) defined fraud from a legal point of view as unlawful and intentional making of a misrepresentation which causes actual prejudice or which is potential prejudicial to another. They posited that, to prove a fraud has been committed: the elements of misrepresentation prejudice or potential prejudice, unlawfulness and intention must be present. Wells (2011) espoused that misrepresentation is a wide concept and can include acts such as concealment, non-disclosure, false representation, deceit, pervasion or distortion of truth or trickery. For instance, fraud in relation to business transaction would be intentional and deliberate concealment of the true nature of the transaction (Vona, 2008). Duffield and Grabosky posited that misrepresentation can be implied or expressed through a positive act or omission, and can be about the past or present events, or even false promises about the future.

From auditing perspective, Duffield and Grabosky (2001) defined fraud as an act involving deceit such as intentional distortion of the truth or misrepresentation or concealment of a material fact to gain an unfair advantage over another in order to secure something of value or deprive another of a right. It occurs when a perpetrator communicates false statements with the intent of defrauding a victim out of property or something of value (Vasiu & Vasiu, 2004). Louwers, Ramsay, Sinason, and Strawser (2008) added that fraud consists of knowingly making material misrepresentation of fact, with the intent of inducing someone to believe the falsehood and act on it and suffer a loss or damage.

From the forgoing definitions, fraud can be said to be the use of one's occupation for personal enrichment through the deliberate misuse or misapplication or the employment of organisation's resources or assets.

Types of fraud

For an internal auditor to successfully detect fraud, he needs to know the various types of fraud committed by fraudsters. Following are the various types of fraud that may occur in an organisation.

Pan, Seow, Suwardy & Gay (2011) noted that fraud can be examined from various forms. This could be whether a fraud perpetrator is external or internal to an organisation. Fraud perpetrated by insiders is increasingly common. Haugen and Selin (1999) found that 85 to 90 percent of Information Technology (IT) frauds are committed by perpetrators internal to the organization, including management and employee. Within internal fraud, three different classifications occur. According to Davia, Coggins, Wideman, and Kastantin (2000), the first distinction can be made between statement fraud and transaction fraud, as well as financial statement balance fraud and asset-theft fraud. A second distinction is based upon the occupation level of the fraudulent employee: management versus non-management fraud (Jans, Lybaert, & Vanhoof, 2009). The last classification is fraud for versus fraud against the company (Bologna & Lindquist, 1995).

In a study by ACFE (2014), fraud was grouped under three broad headings. These were financial statement fraud, asset misappropriation and corruption. Of the three primary categories of occupational fraud, asset misappropriation is by far the most common, occurring in more than 85% of

cases analysed for that report; however, it is also typically the least costly of the three types, causing a median loss of \$130,000. In contrast, financial statement fraud occurs much less frequently, accounting for 9% of the cases in our latest survey, but it causes the greatest financial impact of the three categories by far, with a median loss of \$1 million. Corruption tends to fall in the middle in terms of both frequency and median loss.

Others may categorize fraud into victim sector and subsectors (Levi, 2008). For instance, within the financial services sector, fraud may include cheque fraud, insurance fraud, lending fraud and procurement fraud. Whereas in the public sector, fraud may include benefit fraud, procurement fraud and other types of fraud.

Albrecht (2003) grouped fraud into occupational fraud and management fraud. He further classifies fraud into six types: firstly, there is occupational fraud, where employees of an organisation are involved. Secondly is the management fraud. Thirdly, investment scams which are closely related to management fraud, and where individuals trick investors into investing in fraudulent investments. Fourthly, there are vendor frauds where organisations that sell goods and or services overcharge or fail to ship the goods. Fifthly, there is also customer fraud and lastly, he classified fraud as miscellaneous- where fraud other than financial gains does not fall under any of the other categories.

Causes of fraud

Fraud investigators often point to model when fraud occurs. The model, the Fraud Triangle, created by criminologist Donald R. Cressey,

represents the three factors that push an ordinary person to commit fraud. This model suggests that an individual becomes involved in fraud due to the fraud triangle, explained as pressure, opportunity and rationalization (Cressey, 1953).

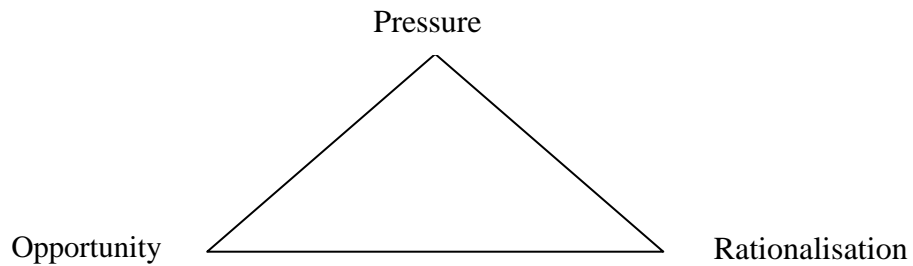


Figure 1: The Fraud Triangle

Source: Cressey (1953).

The apex of the triangle represents pressure; at the base of the triangle is opportunity and rationalization.

Pressure or incentive is a need one attempts to satisfy by committing fraud (IIA, 2009a). According to IIA (2009a), it may include the need to gain bonus or keep one's job. Pressure can include almost anything including medical bills, expensive tastes, addiction problems, etc. Often, this need or problem is non-sharable in the eyes of the fraudster (Cressey, 1953). Lister (2007) identified personal pressure to pay lifestyle, employment pressure from continuous compensation structure, or management financial interest that cause one and external factors such as threat of financial stability and market expectation as the factors that motivates fraudsters. Albrecht, Turnbull, Zhang, and Skousen (2010), however posited that pressure can be financial or non-financial. They cited personal financial losses, falling sales, inability to compete with other companies, greed, living beyond one's means, personal

debt, poor credit, the need to meet short term credit crises, inability to meet financial forecasts, and unexpected financial needs are examples of financial pressures that can motivate one to commit fraud. The need to report results better than actual performance, frustration with work, or even a challenge to beat the system were also given as non-financial pressures. Murdock (2008) agrees with Albecht et al on financial and non-financial but also added political and social pressure. Murdock attributed political and social pressure to the notion of people that they cannot appear to fail due to their status or reputation.

Opportunity is the ability to commit fraud. Because fraudsters don't wish to be caught, they must also believe that their activities will not be detected. The IIA (2009a) attributes opportunity to: 1) weak internal controls, 2) poor management oversight, and 3) through use of one's position and authority. Failure to establish adequate procedures to detect fraudulent activity also increases the opportunities for fraud to occur (Cressey, 1953). Opportunity always occurs because fraudsters know the audit procedures (IIA, 2009a). Lister (2007) attributed perceived opportunity to weak board of directors, lack of access to information, and the lack of an audit trail.

Rationalisation is more of a psychological factor, which arises from within the individual person. By rationalising the fraudulent behaviour, the person committing the fraud assures him or herself that it is acceptable to be doing so (Harrison, Thomas & Suwardy, 2011). To give an example, a person could rationalise stealing money, as "I have always worked so hard, therefore I deserve it". This way, a person makes the act feel as if it was justified. Harrison et al. (2011) posit that if a person has all the three ingredients:

pressure, opportunity and rationalization, a high possibility to commit fraud exists.

Impact of fraud

All organizations are subject to fraud risks. Large frauds have led to the downfall of entire organizations and governments worldwide, massive investment losses, significant legal costs, incarceration of key individuals, and erosion of confidence in capital markets. Publicized fraudulent behaviour by key executives and government officials has negatively impacted the reputations, brands, and images of many organizations and governments around the globe (IIA, 2009a).

Fraud is a million dollar business and presents large cost to firms and nations worldwide. The value of public resources lost each year due of fraud cannot be quantified, but almost certainly runs to many millions of dollars (IIA, 2009a). According to ACFE (2014), the cost of fraud is the equivalent of a financial iceberg; some of the direct losses are plainly visible, however there is a huge mass of hidden harm that we cannot see.

It had been estimated that six percent of US company revenues in 2002 were lost through fraud committed by employees (Holtfreter, 2004). In an ACFE global survey (2014), participants estimated that the typical organization loses 5% of revenues each year to fraud. This translates to a potential projected global fraud loss of nearly \$3.7 trillion when applied to the 2013 estimated Gross World Product.

From the Ghanaian perspective, the incidence of fraud is not different. Fraud has been on the increase. Year after year, millions of Ghanaian

taxpayers' money goes down the drain. Summary of the irregularities from the Auditor General's department from 2009 to 2012 are summarized below:

Table 1: *Fraud Related Issues from Auditor General's Report-Ghana*

Irregularity	2009	2010	2011	2012
Tax irregularity	7,392,358	72,414,244	52,838,612	340,146,162
Cash Irregularities	14,315,000	94,545,872	33,972,751	6,776,365
Outstanding Loans	1,270,295	684,375	5,709,276	45,147,617
Payroll	28,984,710	4,665,375	1,021,063	1,161,316
Stores and Procurement	787,855	498,259	780,028	866,452
Contracts	229,685	283,578	24,946,637	1,620,642
Rent Arrears	45,083	82,838	220,388.66	-
Totals	53,024,986	173,174,541	119,488,756	395,718,552

Source: Auditor General's Report (2009, 2010, 2011 & 2012).

Difficulty in detecting fraud

Corporate failure literature suggests various reasons for difficulty in fraud detection. Fraud, as suggested by corporate fraud literature, is difficult to detect for several reasons. Krambia-Kapardis (2001) posited that perpetrators of fraud may be familiar with accounting procedures, and hence they have the ability to cover up the fraud. Other researcher argue that auditors lack adequate training in the nature of fraud and investigative methodologies, and hence they have reduced capability in fraud detection (Bayou & Reinstein, 2001; Grazioli, Jamal, & Johnson, 2006). Gavius (2007) attributed this to the

agency problem of inherent conflict of interest. This agency conflict for external auditors and internal auditors may contribute towards an unconscious bias (Bazerman, Loewenstein & Moore, 2002) to engage in shirking in their responsibility towards fraud detection. Auditors have relatively infrequent experience of fraud in their career due to the low base-rate of fraud detection (Loebbecke et al., 1989) which results in the lack of opportunity for auditors to develop fraud detection expertise (Johnson, Grazioli & Jamal, 1993).

With an upsurge of fraud in the current economic scenario, fraud detection has received considerable attention from investors, academic researchers, media, the financial community and regulators (Sharma & Panigrahi, 2012). Ability to detect fraud and manage fraud will help firms and nations to attain their goals and promote accountability of fiduciaries for resources entrusted them. Understanding the unique nature of fraud and the difficulty in detecting fraud is fundamental to understanding the fraud detection task (Mui, 2010).

Fraud detection task

Fraud detection is the identification of actual or potential fraud within an organisation. It relies upon the implementation of appropriate systems and processes to spot the early warning signs of fraud. Fraud detection task is an unstructured task that has an impoverished learning environment (Libby & Luft, 1993; Libby & Tan, 1994; Mui, 2010). Libby and Tan (1994), Libby and Luft (1993) posited that fraud detection has an impoverished learning environment because: (1) auditors generally have minimal experience with the fraud detection task compared to other audit tasks; and (2) auditors have

minimal opportunity to acquire fraud detection knowledge through structured sources. As an unstructured task, fraud detection requires the auditor to: (1) develop alternative methods to detect fraud; (2) obtain information from disparate sources and (3) think outside the box in selecting from alternative methods of detecting fraud.

Internal auditor and fraud detection responsibility

The responsibility of internal controls, proper reporting, and the adoption of sound accounting policies rests solely with management, not the auditors (Gramling & Myers, 2003; Lin, Pizzini, Vargus, M & Bardhan (2011). Lin et al. (2011) pointed out that the primary responsibility for the prevention and detection of fraud rests with those charged with governance of the entity and with management. Internal auditors support management's efforts to establish a culture that embraces ethics, honesty, and integrity. They assist management with the evaluation of internal controls used to detect or mitigate fraud, evaluate the organization's assessment of fraud risk, and are involved in any fraud investigations. Although it is management's responsibility to design internal controls to prevent, detect, and mitigate fraud, the internal auditors are the appropriate resource for assessing the effectiveness of what management has implemented.

This concurs with Institute of Internal Auditors (IIA 2009a) which recognises that risk management is a key responsibility of senior management and the board. The internal audit function's role is to assist management in examining, evaluating, reporting, and/or recommending improvements to the adequacy and effectiveness of those risk management processes (IIA, 2009b:

practice advisory 2120-1(1)). However, International Professional Practice Framework (IPPF) standard 2120.A2 and 2210.A2 require internal auditors to evaluate the potential for fraud occurrence and its management as well as considering the probability of fraud exposures. Therefore, depending on directives from management, the board, audit committee, or other governing body, the internal auditors might play a variety of consulting, assurance, collaborative, advisory, oversight, and investigative roles in an organization's fraud management process. Competent professional internal auditors are highly proficient in techniques used to evaluate internal controls. That proficiency, coupled with their understanding of the indicators of fraud, enables them to assess an organization's fraud risks and advise management of the necessary steps to take when indicators are present.

Internal audit is the most effective corporate control available to management to address the threat of fraud (ACFE, 2008). This stems from internal audit's unique role in assisting management and the board in identifying, evaluating, and implementing risk management methodologies and controls to address risks (IIA, 2009a). The growing reliance by management and the audit committee on the IA as an effective tool to 'fight fraud' (Hillison, Pacini, & Sinason, 1999; Norman, Rose, & Rose, 2010) makes the understanding of the role of the IA in the context of fraud management an important area of research and practice. Writing on the topic 'Prevention and Detection of Fraud as a Task of Internal Audit', Coram, Ferguson and Moroney (2006) identified that firms with an internal audit are more likely to detect and report fraud. The importance of internal audit for outside stakeholders is mostly related to the prevention of fraud and or the

detection of fraudulent activity (Norman et al., 2010) based on internal audits' perceived intimate knowledge of the organization and processes.

Abbott et al. (2012), and Burnaby et al. (2009) have argued that internal audit departments have a critical role in fraud prevention and play the most important role in uncovering or limiting asset misappropriation and corruption schemes. Herdman (as cited in Carcello et al., 2005), added that effective internal auditing is “crucial to the success of a company in stemming fraud and abuse and in the preparation of accurate financial statements.” Perry and Bryan (1997) and Carpenter and Mahony (2001) support the idea that internal auditors who understand the various types of fraud and their relative rates of occurrence will be in a better position to recognize fraud-risk indicators and consequently be prepared to confront them.

The increasing focus on effectiveness of internal audit in fraud and risk management practices has led to the changing scope and size of internal audit and the establishment of internal audit function in a growing number of organisations (Soh & Martinov-Bennie, 2011) and the enactment of laws worldwide. The introduction of the Sarbanes-Oxley Act 2002 in the United States of America for instance refers explicitly to the controls relating to the prevention, detection and identification of fraud in an organisation.

As a result of the corporate failures (like Enron, WorldCom) in the U.S., the New York Stock Exchange (NYSE) responded with new corporate governance and disclosure standards to enhance investor protection (NYSE, 2004). One of the standard's rules was the requirement for all publicly listed firms to have an internal audit function (section 303A).

Following the unexpected failure of some major firms in the U.K (e.g. Maxwell and Polly Peck), The Cadbury Committee recommended that firms establish an internal audit function to monitor the control system including procedures. The internal audit function is described as complementary to, but different from that of outside auditors (paragraph 4.39 of the Cadbury Code). The Government of Ghana also recognises the importance of IA in fraud management in the various sectors and has therefore instituted mechanisms and enactment of the Internal Audit Agency Act, 2003 (Act 658) to ensure that the public service agencies including the Ghana Health Service use acceptable procedure in managing funds.

The modern organisation's internal auditor is a key participant in antifraud activities supporting management approach to mitigating the threat of fraud. KPMG's 2003 fraud survey noted that 65% of the respondents indicated that fraud was uncovered by through the work of the internal auditors. Such responsibilities represent a change from the more traditional role of the internal auditor examining the effectiveness of internal controls to fraud risk management.

Determinant of Fraud Detection

The determinants of auditors' ability to detect fraud are theorised in the model of auditor expert performance in fraud detection proposed by Mui (2010). This model is composed of: (1) the determinants of auditor expert performance in audit tasks other than fraud detection established in literature (Bédard & Chi, 1993; Bonner & Lewis, 1990; Libby & Luft, 1993; Moyes & Anandarajan, 2002; Moyes & Hasan, 1996; Shanteau, 1992; Shanteau, Weiss,

Thomas, & Pounds, 2002); (2) the determinant's unique to the fraud detection task identified in an interview study by Mui (2010).

Mui (2010) established that the determinants of auditor expertise for audit tasks other than fraud detection that were established in the abovementioned literature - namely, certification, continuous learning, practical experience, analytical reasoning, data analysis skills, communication skills are also applicable to the fraud detection task. Further, the fraud detection task requires the internal auditor to possess unique capabilities in addition to the determinants established in the literature, namely: mentoring, technical skills, and the ability to work within a team (Mui, 2009). In addition to these determinants that are inherent to the individual internal auditor, the Mui (2010) study also identified that the ethical or unethical atmosphere in the organisation in which the internal auditor performs audit work impacts on the internal auditor's fraud detection capabilities. Following is the description of the various determinants of fraud detection.

Knowledge

The knowledge category refers to strategies auditors can adopt to develop their knowledge of fraud and fraud detection. The determinants in the knowledge category comprise certification, and continuous learning practical on-the-job experience, mentoring (Mui, 2009). Abdolmohammadi, Searfoss, and Shanteau (2004) posited that possessing current knowledge is the principal attribute of top industry audit specialists. In the context of fraud detection, the question in relation to possessing current knowledge is 'How can the auditor learn about fraud detection (Mui 2010)?' Bonner and Lewis (1990) established

that knowledge about audit tasks can be established through direct experience and indirect experience with the audit task. In the context of auditor expertise, technical knowledge of audit tasks can refer to learning processes, i.e. how the auditor learns about the audit task. The individual internal auditor can develop their technical knowledge of the fraud detection task directly through practical experience and mentoring and indirect experience with audit tasks including the fraud detection task can be developed through certification and continuous learning. IPPF practice advisory 1210-1 requires internal auditors to possess the proficiency to effectively carry out their professional responsibilities, which includes the knowledge to identify indicators of fraud.

Certification

Certification refers to professional certification obtained from a formal education process that demonstrates an individual auditor's minimal level of competency (Mui, 2010). According to Moyes and Hasan (1996) and Moyes and Anandarajan (2002), auditors who possess certifications in addition to the *Certified Public Accountants* (CPA) certification are highly associated with fraud detection. Moyes and Anandarajan opined that possessing professional certification such as the Certified Management Accountant, Certified Internal Auditor, Certified Information Systems Auditor, and Certified Fraud Examiner, in addition to the US-based CPA certification increased the auditor's propensity to detect fraud. A possible reason for this increased propensity to detect fraud was that these certifications provide a specific focus on a function, such as internal audit, or on an activity, such as fraud investigation (Mui, 2010).

Continuous learning

Continuous learning refers to developing experience through methods such as training, case studies, and simulations to keep updated with fraud detection knowledge. Continuous learning in the fraud detection task is an important activity as it enables internal auditors to stay abreast of: (1) changes in the technical aspects of how fraud can be perpetrated and (2) changes in the environment in which fraud can be perpetrated (Mui, 2010). Mui added that being willing to learn and keeping updated is more beneficial than relying solely on formal certification. This agreed with Abdolmohammadi et al. (2004) study reported that the principal attribute of top industry audit specialists is possessing current knowledge (i.e. keeping up with facts, trends, and developments). The Institute of Internal Auditors offer continuing professional education programs to assist their members in staying abreast of current developments in auditing and related fields such as fraud (CPA Australia, 2009a). This continuous learning requirement is also reflected in the requirements of non-mandatory guideline IES 8 paragraph 61 and mandatory auditing standard IPPF 1230-1 Continuing Professional Development.

Experience

Moyes and Hasan (1996) and Moyes and Anandarajan (2002) identified that auditors' rank and the number of years of audit experience contribute to auditors' fraud detection capabilities. However, auditor type has no bearing on auditors' fraud detection capabilities (i.e. both internal auditors and external auditors have equal capability to detect fraud). Auditors with greater experience in a managerial or supervisory capacity are more likely to

detect fraud because the longer the auditing experience, the higher the likelihood of exposure to fraud, and hence the greater the opportunities to discover fraud. However, Bédard (1989) found that the number of years of auditing experience is not a determinant of auditor expert performance because expert performance is domain-specific. Auditors' experience may not encompass fraud detection.

Therefore, the implication is that the auditor has not had the opportunity to develop expert performance in fraud detection. In accounting, Ashton and Brown (1980) and others found no differences between experienced and inexperienced auditors in consensus on internal control evaluation. Hamilton and Wright (1982) found a negative correlation between years of experience and consensus on internal control evaluation. Ashton (1989) found that months of general audit experience are not correlated with how accurately auditors judge the frequency of specific financial statement errors. These results may be due in part to the nature of the task and whether the knowledge required to perform these tasks is gained early in auditors' careers and decays over time (Bonner, 1990).

Results from both accounting and other fields imply that general experience is an incomplete measure of task-specific expertise. In accounting in particular, different audit tasks require varying types of knowledge. Thus, researchers should specify the knowledge needed to complete tasks and not assume that all persons at a given level of experience equally possess task-specific knowledge. Further, Bonner and Lewis (1990) explained that knowledge and ability are better explanatory variables of performance as opposed to auditors' rank and years of audit experience because: (1) auditors

acquire different types of knowledge through different specific experiences and training; and (2) problem-solving ability is partially innate, and hence cannot always be developed by training; and (3) knowledge is partially refined through experience in problem-solving. Therefore, auditors' rank and the number of years of experience are not appropriate measures of auditors' fraud detection capabilities.

The internal auditor can develop their technical knowledge of the fraud detection task through practical experience with the fraud detection task through repeated exposure to the fraud detection task (Mui, 2010). However, the paucity of incidences of fraud detection makes it difficult for auditors to learn predominantly from practical experience with the fraud detection task (Johnson et al., 1993; Loebbecke et al., 1989).

Mentoring

Mentorship is a personal developmental relationship in which a more experienced or more knowledgeable person helps to guide a less experienced or less knowledgeable person (Wikipedia, 2015). Mentoring is a powerful personal development and empowerment tool. It is an effective way of helping people to progress in their careers and it is becoming increasingly popular as its potential is realized. It is a partnership between two people (mentor and mentee) normally working in a similar field or sharing similar experiences. It is a helpful relationship based upon mutual trust and respect (Wikipedia, 2015). Mui (2010) defined a mentor as an experienced person who could bring a less experienced person through the investigation process and demonstrate the capabilities required to detect fraud. A good mentor enables a less

experienced person to use their current mindset to further develop their skills (Mui, 2010). Although mentoring is a determinant of auditor expertise that is unique to the fraud detection task, mentoring is not a new concept to the auditing profession, which has profession-based mentoring for its associate members. The auditing profession has incorporated a profession-level mentoring program for their associate members (IIA, 2009b). Mentoring is also not a new concept to organisations and has been applied to different degrees in larger organisations. The size of the workforce, especially staff with more experience, makes mentoring more viable in larger firms.

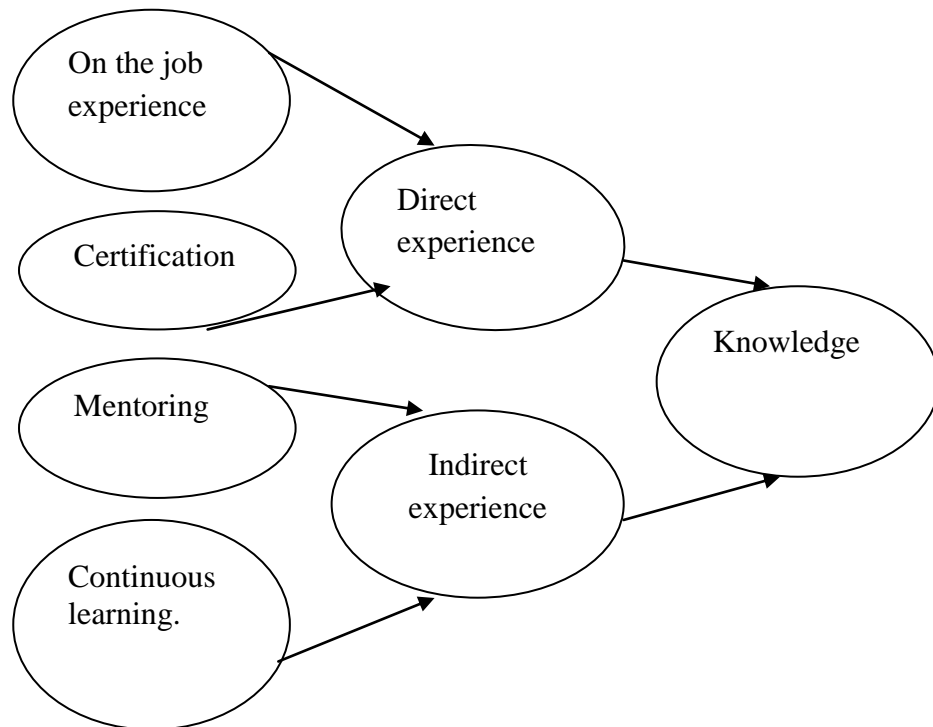


Figure 2: Components of Knowledge.

Source: Mui (2010)

The figure above shows the components of knowledge as a determinant of auditor expert performance in fraud detection. Knowledge is a composite of direct experience and indirect experience. Thus, knowledge

could be obtained directly through experience and certification while it can be obtained indirectly through mentoring and continuously.

Problem Solving Ability

Knowledge in fraud detection is insufficient in developing expert performance in fraud detection. Problem-solving ability is another important determinant in developing expert performance in fraud detection. This category of determinants comprises the ability to exercise analytical reasoning, competency in technical skills, and competency in data analysis skills (Mui, 2010).

Bonner and Lewis (1990) commented that ‘problem-solving is partially an innate’ characteristic of an auditor. Psychology literature confirms that the different aspects of analytical reasoning identified in Mui (2010) are the attributes of top industry audit specialists (Abdolmohammadi, et al., 2004) and are psychological attributes that contribute to expertise in auditor judgement (Kent, Munro, & Gambling, 2006). These specific characteristics include being adaptive in their decision-making strategy; possessing the ability to identify relevant facts; being inquisitive about all aspects of an issue; and having the ability to make exceptions (i.e. being creative in solving problems). Literature corresponds with IPPF attribute standards 1210.A1 and 1210.A3, which require internal auditors to be competent in auditing and in information technology.

Standards such as IPPF attribute standard 1210.A3 specify the extent of information technology skills that an internal auditor should possess. Specifically, this standard requires internal auditors to have sufficient

knowledge of 'key information technology risks and controls and available technology-based audit techniques to perform their audit work.' However, this standard does not require internal auditors to have the level of expertise of an information technology auditor. Further, practitioners have found that few individuals possess a combination of specialised information technology skills and auditing skills (Mui, 2010). Following is the composition of problem solving skills.

Data analysis skills

Data analysis skills encompass both the ability to recognise relationships in data and the ability to interpret data (Bonner & Lewi, 1990). However, Mui (2010) posited that the data analysis skills determinant was a composite of the ability to recognise relationships in data and the ability to interpret data. Interview data suggested that the combination of these two capabilities contributes to auditors' performance in detecting irregularities Mui (2010). The ability to analyse data requires perceptual ability and configural processing (Mui, 2010). Kent et al (2006) defined perceptual ability as the ability to extract information others overlook or cannot see and configural processing according to Abdolmohammadi et al. (2004) is recognising the interrelationships between various types of evidence or information. Exercising data analysis skills is evident in a practitioner using a variety of methods to identify cues that could indicate that fraud has been perpetrated (Mui, 2010). These methods include using well-founded auditing practices such as auditing standards and guidelines; analysing databases; looking for trends; and assessing internal controls to determine if there are cues that fraud

has been perpetrated. In-house internal auditors are well positioned to detect fraud because they are aware of trends within their own organisations.

Analytical reasoning

Bonner and Lewis (1990) define analytical reasoning as the ability to analyse a given structure of relationships and to deduce new information from that structure. All interview participants in Mui (2010) study affirmed that analytical reasoning is an important problem-solving ability in the context of fraud detection. This finding concurs with Bonner and Lewis's (1990) comment that problem-solving is partially an innate characteristic of an auditor.

Psychology literature confirms that the different aspects of analytical reasoning are the attributes of top industry audit specialists (Abdolmohammadi et al., 2004) and are psychological characteristics that contribute to expertise in auditor judgment (Kent et al., 2006). These specific characteristics include being adaptive in their decision-making strategy; possessing the ability to identify relevant facts; being inquisitive about all aspects of an issue; and having the ability to make exceptions (i.e. being creative in solving problems). Mui (2010) described analytical reasoning as, possessing an inquiring mind; being observant; keeping one step ahead in terms of thinking about the pressures for someone to perpetrate fraud; having a cynical mind-set; taking a subjective view and following the facts; having the ability to observe and question; possessing a creative mind; being able to think out of the box; having a big-picture perspective; possessing the diligence to

follow through. Further, auditors are required to ensure professional skepticism- having a questioning mind and making a critical assessment of evidence.

Technical skills

Salem (2012) observed that due to developing computer technology, the activities of accountants and auditors must indicate an understanding of computers so that computer security systems do not lack direction and focus. This observation corresponds with IPPF attribute standards 1210.A1, which relates to competency in auditing; and 1210.A3, which relates to competency in information technology. A practitioner is expected to be competent in different fields of expertise such as information technology and investigative skills. IPPF practice advisory 1210-1 highlights that internal auditors must have knowledge of key information technology risks and controls and available technology-based audit techniques. The information technology focus reflects the increased use of information technology by organisations, specifically for their accounting systems and internal control systems (PricewaterhouseCoopers (PWC), 2007); and the rise in the adoption of technology-based audit techniques, which the IPPF Glossary defines as any automated audit tool. The identification of this determinant corresponds with technology being projected as the business trend with the greatest impact on internal audit roles, responsibilities, and functions (PWC, 2007).

The caption of the heading as technical skills by Mui (2010) looks a bit ambiguous. Information technology (IT) skills would have been appropriate. Figure 3 shows the composition of problem solving ability.

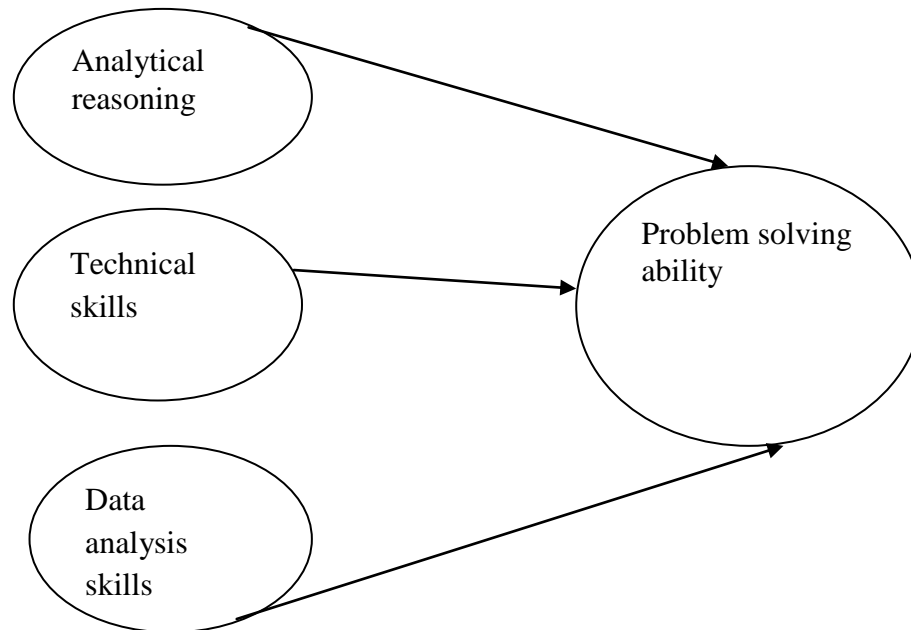


Figure 3: Components of Problem Solving Abilities

Source: Mui (2010)

Figure 3 depicts that problem solving abilities of internal auditors' expert performance in fraud detection is a function of analytical reasoning, technical skills, and data analysis skills.

Interpersonal Skills

Interpersonal skills are the set of abilities enabling a person to positively interact and work effectively with others. According to Mui (2010), interpersonal skills are composed of the ability to communicate and the ability to work within a team.

Communication is the sending and receiving of verbal and nonverbal messages within the organizational context (Murphy, Hildebrandt, & Thomas, 1997 & Roebuck, 2001). Hynes (2005) stated that effective business communication is the key to planning, leading, organizing, and controlling the resources of the organizations to achieve objectives, and may be formal or informal in nature. Argenti (2015) discussed business communication

functional aspects and found that over half of the heads of corporate communication departments oversee business communications functions that include media relations, online communications, marketing, special events, product/brand communications, crisis management, employee/internal communications, community relations, and product/brand advertising. The expanse and importance of business communication underscores the need for business education and business to collaborate in preparing business majors for the workplace.

It is widely accepted that business management and business educators perceive communication skills as highly valuable to employees and organizations alike. In business organizations, numerous sources have reported that communication skills are critical to career success and a significant contributor to organizational success (Certo, 2000; Dilenschneider, 1992; Du-Babcock, 2006; Roebuck, 2001).

The nature of internal audit work requires an internal auditor to possess good communication skills to interact with the other organisational guardians. The IPPF attribute standards 2020 Communication and approval, 2060 Reporting to senior management and the board, and 2400 Communicating results require internal auditors to communicate with senior management and the board of directors about their audit work and audit findings. Internal auditors interact with external auditors because of external audit's reliance on the work of internal audit (Baker & Owsen, 2002; Morrill & Morrill, 2003). Abdolmohammadi et al. (2004) identified that top industry audit specialists possess the ability to communicate expertise. They define communicating expertise as convincing others that he/she has specialised knowledge.

Effectively communicates his/her ability to make decisions to others. This interpersonal skill is a form of non-technical knowledge (Libby & Tan, 1994). Good communication skills foster openness in contrast to fraud fostering concealment (Hooks, Kaplan, & Schultz, 1994). IPPF practice advisory 1210 Proficiency requires internal auditors to be skilled in dealing with people, understanding human relations, and maintaining satisfactory relationships with engagement clients. In addition, internal auditors are required possess oral and written communication skills to communicate clearly and effectively. Mui (2010) interview study revealed that communication has the potential to improve auditors' investigative skills.

Ability to work within a team

A complementary determinant is the ability to work within a team. The ability to work within a team is reflected in the acceptance of each other's strengths, ideas, knowledge and skills, enhanced by good communication and open-mindedness (Mui, 2010). The outcome of working in a team is an enhanced investigation process through open discussion.

Teamwork in the context of fraud detection is audit team brainstorming. SAS No. 99 Consideration of Fraud in a Financial Statement Audit (hereafter, SAS No. 99) requires auditors to brainstorm about the possibilities of fraud in every audit (AICPA, 2002). Audit team brainstorming for fraud risk assessment generates more quality ideas compared with those generated by individual auditors. Further, audit teams are able to eliminate poor quality ideas (Carpenter, 2007).

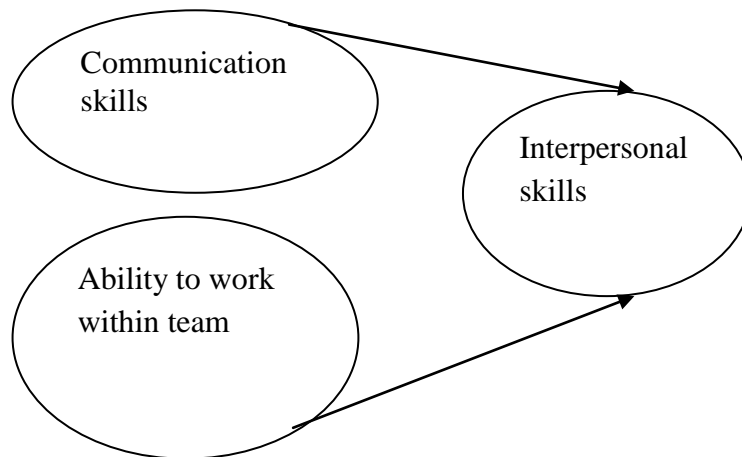


Figure 4: Components of Interpersonal Skills

Source: Mui (2010)

The figure above shows the components of interpersonal skills as a determinant of internal auditor expert performance in fraud detection. It reveals that an interpersonal skill is a composite of communication skills and ability to work within teams

Organisational Factors

Another determinant of auditors' fraud detection capabilities is organisational factors of the outsourced auditors' client and the in-house auditors' organisation. The Association of Certified Fraud Examiners recognises the importance of the 'tone at the top' in creating an ethical workplace in the organisation (Mahadeo, 2006). The tone at the top refers to the support an organisation's leadership provides towards creating an ethical or unethical atmosphere in the workplace (Mahadeo, 2006). The inclusion of this determinant implies that auditor expert performance in fraud detection is

not completely inherent to the individual but is partially determined by environmental factors.

The concept of organisational factors creating an ethical workplace is reflected in the fraud prevention strategies employed by respondents of the KPMG (2008) fraud survey. These strategies include: (1) reviewing and or improving internal controls; (2) developing a corporate code of conduct and ethics; (3) performing fraud risk assessments; (4) developing a fraud control strategy; and (5) conducting fraud awareness training. These strategies reflect that an effective control environment contributes towards auditors' fraud detection capabilities. The Moyes and Hasan (1996) study of US-based CPAs identified the following organizational factors that contribute to auditors' fraud detection capabilities: (1) prior success of the organisation in detecting fraud; and (2) a larger organisation size. The difference between the organizational factors identified in the Moyes and Hasan (1996) study and the fraud prevention strategies identified in the KPMG Fraud Survey reflects an increased adoption of proactive strategies by organisations to create an effective control environment and an ethical workplace.

The move from general factors identified in the Moyes and Hasan (1996) study to specific strategies reported in the KPMG (2008) Fraud Survey could reflect the shift in the internal audit focus from internal controls to fraud risk management (Spira & Page, 2003). These highlight the role of an effective control environment in creating an ethical organisational environment that enhances auditors' fraud detection capabilities.

Demographic factors

Clara (as cited in Bujang, Zarin, & Jumadi, 2010) defined demographic as a study of human populations with emphasises on the statistical analysis of the quantities and characteristics of the people who live in a particular place, particularly in relation to their age, income and their consumption pattern. Demographic factors are socio-economic factors such as age, income, sex, occupation, education, and family size (Online Business Dictionary ((as cited in Bujang, Zarin, & Jumadi, 2010).

Yang, Moyes, Hamedian, & Rahdarian, (2010) identified a numbers of demographic factors concerning auditors and the level of effectiveness of red flags in fraud detection. These include: gender, type of auditor, age, highest degree received, and areas that auditors majored in at universities. Year of graduation, knowledge of red flags, how often auditors use red flags, have auditors used red flags previously to detect fraud, have auditors previously attended red flag conferences were also considered. Besides, have auditors previously received in-house red flag training, position or job title, type of firm employing auditors, number of years of experience were also included. Amongst these demographic variables Yang et al. found the type of auditors, the highest degrees received by auditors, areas that auditors majored in at universities, knowledge about red flags accumulated by auditors, auditors who have or have not previously used red flags to detect fraud, and auditors who have or have not previously received in-house red flag training, to influence the level of fraud-detecting effectiveness.

Empirical Review

Some of the key empirical studies examining the relationship among knowledge, interpersonal skills, data analysis skills, organizational factors and fraud detection are Bonner and Lewis (1990), Lewi and Tan (1993), Mui (2010) and Owusu et al. (2002). A summary of their studies follows, after which lessons learnt and issues emerging from the entire review are discussed.

Bonner and Lewis (1990) conducted a study to ascertain the determinants of auditor expert performance. Bonner and Lewis applied established measures from psychology literature to develop a questionnaire that captured the performance of 60 audit seniors and 191 senior managers on four separate audit tasks: internal controls, ratio analysis, manipulation of earnings, and interest rate swaps.

Bonner and Lewis (1990) suggested that knowledge in auditing consists of general domain knowledge, general business knowledge, and subspecialty knowledge. General domain knowledge can be developed through formal training and experience in auditing. General business knowledge can be developed through formal training and various personal experiences such as reading professional materials. Sub-specialty knowledge differs from the other forms of knowledge as it is developed by specialised experiences and training with certain industries and clients.

The results from multiple correlation and regression analysis indicated that there was a significant positive relationship between the independent and dependent variables. From their study, they identified knowledge and problem-solving ability as the major determinants of auditor expertise for these audit tasks. Further, their results show that more experienced auditors,

on average, did better in the tasks and had more knowledge and ability. However, the general experience variable explained less than 10% of the variance in performance scores.

These results followed a successful pre-test and validation. However, the parts of the knowledge and ability test taken from textbooks, the CPA Exam, and the Graduate Record Exam were not validated.

Bonner and Lewis define expertise as task-specific superior performance and criticize the use of experience as an operational measure of expertise in auditing research. This definition does not include any idea as to how an individual might develop his ability to attain the task-specific performance thereby making it incomplete. Definitions of expertise include the idea that expertise is the acquired-through-practice ability to perform well in a task domain thereby making experience is a prerequisite for acquiring expertise. Besides, the study adopted the multiple task approach to examine the performance of the same auditors on a number of different tasks as well as the aggregate performance of a given auditor on multiple tasks, but it failed to examine one expert's performance across several tasks. Furthermore, a multiple task approach could be used to ascertain what features distinguish expert performance from novice performance, and whether there is more variation in two experts performing the same task than there is in one expert performing two different tasks.

Owusu et al. (2002) conducted an empirical analysis of the likelihood of detecting fraud in inventory cycle 400 public accountants in New Zealand. Using stratified sampling, the authors sampled 400 public accountants on whom the research was carried out.

Following a successful pre-test of their instrument, Owusu et al. (2002) mailed questionnaire containing closed and likert-type scale questions to the respondents.

To determine the factors that influence the probability of an internal auditor to detect fraud, a binary logit regression model was used to examine determinants of fraud detection by an internal auditor. The binary logit regression model was used because the dependent variable which is fraud detection is binary. The size of audit firm; position tenure of auditor; years of experience of auditor; and practice review experience of auditor's firm on the likelihood of detecting fraud in stock and warehousing cycle were the independent variables.

Overall, the results of the regression analysis suggest that size of audit firm, measured by the number of employees, auditor's position tenure, and auditor's years of experience in auditing are significant predictors of the likelihood of detecting fraud in stock and warehousing cycle in NZ.

Analysis also indicated that auditor's position tenure, and the size of audit firm is significant at the conventional levels of 1% and 5% respectively. The study considered only fraud detection in inventory cycles. This makes the findings limited to only inventory cycles. It also captured only certain auditor- and audit firm-specific factors

Drawing on the Agency theory, Mui (2010) investigated the determinants of auditor expert performance in fraud detection among 101 Australian internal audit practitioners from government, chartered accounting firms, and other organizations. Mui grouped determinants of expert performance into ten categories namely; certification, continuous learning,

practical-on-the- job experience, mentoring, analytical reasoning, technical skills and data analysis skills. The rest were communication skills, interpersonal skills, and effective control environment. Expert performance in fraud detection was measured as the success in detecting and investigating fraud. Mui's study employed: (1) an interview study to develop a model; and (2) a survey study to capture data in order to test the model empirically. Study 1 used interviews to investigate the determinants of fraud detection capabilities of both the external auditor and internal auditor.

Following a successful pre-test of their instrument, Mui mailed questionnaires to randomly select Australian internal audit practitioners from government, chartered accounting firms, and other organizations. The scale of measurement employed in this study was a 7-point Likert scale with an additional 'no opinion' option. The 7-point Likert scale ranged from 'strongly disagree' to 'strongly agree'. The mid-point in this scale was 'neutral'. 'No opinion' was included as an option because target respondents may not have had experience with the item being measured. Mui tested for validity of her instruments using the Cronbach α . The study employed the mixed approach of data analysis.

The online survey results revealed that overall, internal auditors had a positive perception of certification, continuous learning, practical experience, analytical reasoning, technical skills, communication skills, and an effective control environment. Comparatively, internal auditors had a negative perception of the ability to work within a team, data analysis skills, and mentoring.

When the structural model of auditor expert performance was applied to all internal auditors, the R^2 value was 19.56%. The R^2 value for in-house internal auditors was 49.83%; 43.02% for outsourced internal auditors; and 26.31% for internal auditors who had reviewed suspicions of fraud in the last 5 years. With the exception of the R^2 value for all internal auditors of 19.56%, the R^2 values are classified by Cohen (1988) as a good result (i.e. above 0.26) for the behavioural sciences. The results of simple regression analysis further revealed that collectively, all the 10 determinants in the model of auditor expert performance in fraud detection were considered to be good predictors of expert performance in fraud detection.

Lessons Learnt and Issues Arising from the Review of Empirical Studies

The studies reviewed covered auditor expert performance in other audit task. However, Mui's study reveals that all the constructs used in measuring expert performance in other audit task are all applicable to internal auditor's ability and fraud detection capabilities. Most of the studies were carried out in developed countries, raising questions regarding the applicability of their findings to developing African economies such as Ghana.

The dominant study design employed was the online survey method. The reasons cited for using this method were being effective in terms of time and costs as well as to arrive at conclusions applicable to fairly representative proportions of the population involved in each case. In all cases, surveys were preceded by pre-tests to ensure easy understanding and completion of instruments by respondents. Simple random sampling was applied in selecting respondents from homogeneous populations.

Demographic related data were collected from respondents in addition to data on the key variables of each study. Likert scales, capturing categorical answers by respondents' and open ended questions, were used in data collection.

Reliability of the constructs was in all cases tested, using Cronbach's alpha coefficients (α). Validity tests were also carried out using the varimax rotation method of Principal Component Analysis (PCA).

Regression techniques were employed in assessing the effect of expert determinant on performance. However, the choice of the type of regression varied between multiple, and logit regression. Results of all the studies reviewed confirmed that the determinants of internal auditor positively influenced fraud detection.

These lessons will undoubtedly inform the direction and content of this study with specific reference to the conceptual framework of the study, operational definition of variables, data analysis, presentation and discussion of findings. Following is the conceptual framework of the study.

Conceptual Framework

The conceptual framework of this study was adapted from Mui (2010) based on similarities drawn from the purpose and constructs used in both studies. Mui (2010) sought to examine the determinant of internal auditors' expert performance in fraud detection in Australia. Though Mui (2010) covered expert performance in fraud detection, part one of her study focused on determinants of fraud detection capabilities. Similarly, this study aimed at

examining the factors that influence internal auditors' ability to detect fraud in Ghana.

Mui (2010) developed a model of expert performance in fraud detection. The model of expert performance in fraud detection consisted ten constructs namely: practical on the job experience, mentoring, certification, mentor job experience, certification, technical skills, analytical reasoning, data analysis skills, communication skills, ability to work in team and effective control environment.

There were however, differences in the constructs and the dependent variable used in both studies. Mui's (2010) constructs comprised of certification, practical experience, certification, mentoring, continuous learning, technical skills, analytical reasoning, data analysis skills, and control environment. In contrast, this study replaced technical skills with knowledge of information technology and added organisation type as well as sex. Mui (2010) dependent variable was expert performance in fraud. However, in this study, the dependent variable was fraud detection. Figure5 illustrates Mui's (2010) model.

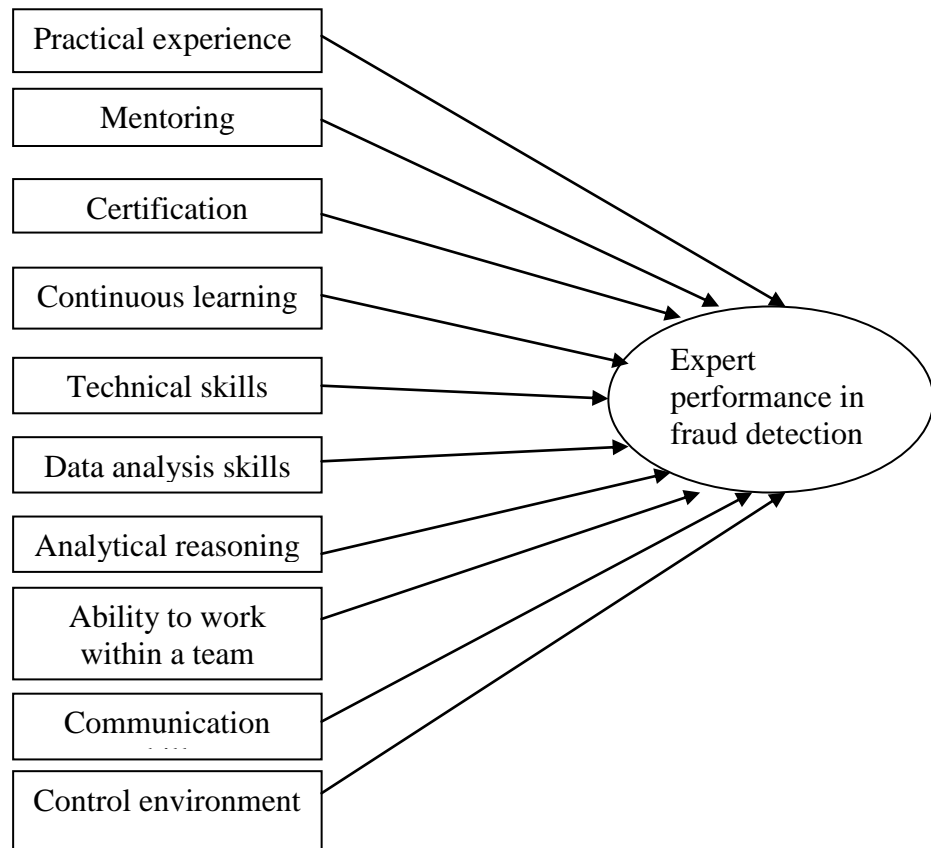


Figure 5: Internal Auditor Expert Performance in Fraud Detection

Source: Mui, (2010).

In a similar vein, the model for this study was structured to reflect the relationships illustrated in Mui’s (2010) model, with a few variations. Figure 6 depicts the constructs for the study.

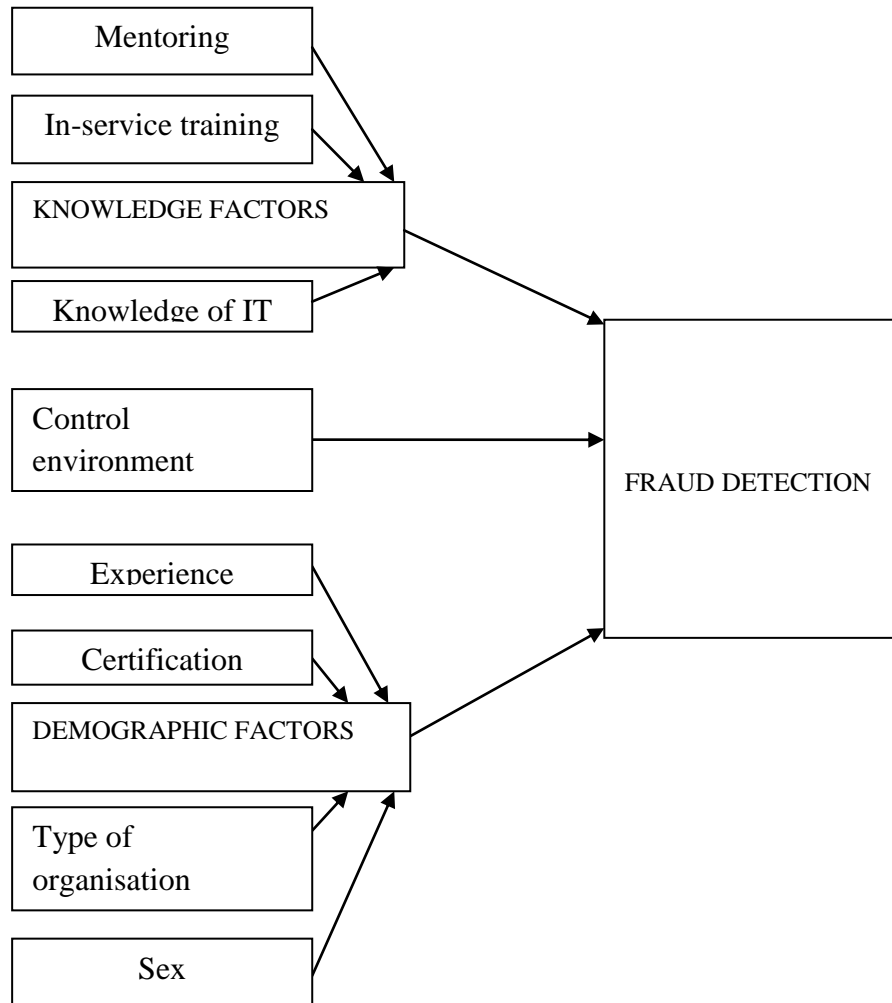


Figure 6: Factors that Influence Internal Auditors’ Ability to Detect Fraud.

Source: Seidu, 2015

Chapter summary

This chapter has reviewed literature on theoretical and conceptual issues relating to determinant of fraud detection as captured in prior studies. Key issues and lessons from the review informed the conceptual framework of the study. The review will further prove beneficial in the methodology,

analyses, presentation of findings, discussions, conclusions and recommendations. Chapter three focuses on the methodology of the study.

CHAPTER THREE

METHODOLOGY

Introduction

This chapter deals with the methodology of the study. The chapter entails discussions on the study area, approaches to research, population, sample and sampling procedure. It also discusses the instrument design, pre-test, reliability testing, ethics, validity testing, field work and data analyses.

Approaches to Research and Study Design

Quantitative approach to conducting research was adopted for the study. Quantitative approach involves a systematic scientific investigation of data and their relationships. The objective of quantitative research is to develop and employ mathematical models, theories and hypotheses pertaining to natural phenomena (Kothari, 2008). Creswell (2007) also explained that, quantitative methods are used chiefly to test or verify theories or explanations, identify variables to study, relate variables in questions or hypotheses, use statistical standards of validity and reliability, and employ statistical procedures for analysis.

Though the approach is criticized as being rigid, artificial and ineffective in gauging human behaviour (Crotty, 1998), is a scientific, fast, easier alternative, enabling statistical analyses of data, generalisation of findings, drawing of logical conclusions based on numerical values and comparability of studies (Creswell, 2003; Crotty, 1998).

Given the particular purpose of this study, the nature and interactions between the variables being examined as well as the need to test hypothesis, the quantitative approach was deemed the most appropriate and therefore adopted.

Specifically, the explanatory survey design was adopted for this study. According to Saunders, Lewis and Thornhill (2009), explanatory research goes beyond exploratory and descriptive research and the emphasis is basically on studying a situation or a problem in order to explain the relationships between variables. Explanatory study seeks to examine the causal relationship that exists between variables in a particular research context (Cooper & Schindler, 2006). Pinsonneault and Kraemer (1993) contend that the purpose of explanation survey research is to test theory and causal relations. Therefore, the explanatory design was appropriate for this study as it aims to determine the effects of factors that influence internal auditors' ability to detect fraud.

Surveys are a type of research design involving the collection and analysis of large amounts of quantitative data from a sizeable population using descriptive and inferential statistics (Tabachnick & Fidell, 2013). They are a popular and authoritative research strategy, affording researchers more control over the research process. The explanatory survey design was adopted for this study based on a number of reasons.

To start with, the vast expanse of the country necessitated the distribution of instruments to a fairly representative sample drawn from the population of internal auditors from IIAG spread across the entire country.

This necessitated the adoption of simple and cost effective measures to maximize available resources, an advantage offered by the chosen method. Again, in order to assist the explanation of results and generalisation of conclusions reached, there was the need to compare and analyse responses from the standardised questionnaires, using descriptive and inferential statistics (Saunders et al., 2009).

Study Area

The IIAG was purposively selected as the study area for this research. Ghana is a country located along the Gulf of Guinea and Atlantic Ocean, in the sub-region of West Africa. It is bordered by Ivory Coast in the west, Burkina Faso in the north, Togo in the east and the Gulf of Guinea and Atlantic Ocean in the south and has a land mass of 238,535 km².

Ghana also recognizes internal audit as a means of promoting good governance and ensuring accountability of fiduciaries for resources entrusted them. Realizing the role of internal audit in fraud management in the various sectors, the government of Ghana in 2003 enacted the Internal Audit Agency Act, 2003 (Act 658), to ensure that the public service agencies use acceptable procedure in managing funds. The increasing focus on internal audit in fraud and risk management practices has led to the changing scope and size of internal audit, and the establishment of internal audit functions in a growing number of organisation (IIA, 2015) and the establishment of various institutions such as Institute of Internal Auditors Ghana and Institute of Chartered Accountants Ghana to provide, promote, and sustain internal auditing in Ghana.

The IIAG was officially registered in April 2001 but inaugurated in May 2005. The IIAG is a member of the Institute of Internal Audit Global and also a founding member of the African Federation of Institutes of Internal Audit. It represents West Africa on its governing council. The institute provides a knowledge sharing platform for its members and also collaborates with the Internal Audit Agency of Ghana as part of its public governance programme to ensure active and mandatory development and practice of internal audit in the public service. The institute also provides strategy to assist its members to become better and effective contributors of value to corporate governance (IIAG, 2015). Full membership of the institute is open to a person holding Chartered Internal Audit certificate or similar designation; a person holding professional qualification in accounting or auditing; and persons with a minimum Bachelor's Degree or equivalent qualification in accounting with a minimum of two years working experience (IIAG, 2015).

The IIAG was chosen for the study because of its membership composition and coverage. The institute has members working in various organisations across the country. The IIAG population has homogenous groups of peculiar characteristics which will enhance more statistical precision.

Target Population

The target population for this study comprised all internal auditors of the Institute of Internal Audit Ghana (IIAG). Membership of the IIAG totalled 882, grouped into six categories based on organisations in which they work are: telecommunication, energy and petrol, professional services, education,

banking and financial services and government and local government. As shown in Table 2, the dominant and the least category were government and local governance and telecommunication respectively.

Table 2 - Population of Institute of Internal Auditors Ghana

Categories	Population
Telecommunication	21
Energy and petroleum	65
Professional services	88
Education	96
Banking and financial services	186
Government and Local Government	426
Total	882

Source: Institute of Internal Auditors Ghana, 2015.

Sampling Technique

This study used stratified random sampling technique to select the respondents. According to Groebner, Shannon, Fry and Smith (2000), stratified random sampling is a statistical sampling method in which the population is divided into homogeneous subgroups called strata so that each population item belongs to only one stratum. Stratification ensures that the sample is well spread out among the relevant subgroups. It also ensures that the sample will accurately reflect the population on the basis of the criteria used for the stratification (Zikmund, Babin, Carr & Griffin, 2010).

The sampling frame was made up of all internal auditors of the IAG and was stratified based on the type of organisation in which they work; telecommunication, energy and petrol, professional services, education, banking and financial services and government and local government. The advantage of stratified sampling is that it adds an extra ingredient to random sampling by ensuring that each stratum within the population is represented.

After the stratification, systematic random sampling method was used to select internal auditors from each stratum to be included in the study. Sample internal auditors were selected systematically, using a random start and fixed interval. Within each stratum, the first sample internal auditor was identified by the random start. The second sample internal auditor corresponded to the random start plus the interval. The remaining sample internal auditors were identified by adding successive multiples of the interval to the cumulative sum until the end of the ordered list is reached, to derive the required number of internal auditors for each stratum. The sampled internal auditors from each stratum were then pooled to form the sample for the study. The use of systematic random sampling is supported by Kothari (2008) who argues that random sampling ensures that no bias occurs in the selection of sample units.

Sample and Sampling Procedure

Sampling is the use of statistical techniques to select a representative portion of an entire population of interest (Selltiz, Wrightsman & Cook, (1976). Whereas any sample size is nearly sufficient if descriptive statistics such as mean and frequencies are to be used, a good sample size between 200

and 500 is needed for multiple regressions, analysis of covariance, or log-linear analysis, which might be performed for more rigorous impact evaluations (Israel, 2009).

Krejcie and Morgan's (1970) table for determining sample size from a given population was used to arrive at a sample size of 269. Simple proportion was then used in computing the sample size for each stratum.

According to Kombo and Tromp (2006), the selection of the sample size based on homogenous groups of certain characteristics gives more statistical accuracy. The population of the study was divided into homogenous groups based on type of organisation. This is shown in table 3 below.

Table 3 - Sample Size of Participating Membership

Categories	Membership	Sample size
Telecommunication	21	6
Energy and petroleum	65	20
Professional services	88	27
Education	96	29
Banking and financial services	186	57
Government and Local Government	426	130
Total	882	269

Source: Field data, Seidu (2015)

Data Collection

Data on a number of issues was required to successfully carry out the study. These included literature on the relevant theories, concepts and their

application in empirical studies. Data on population, and membership of IAG was also required. Besides, data on determinants of expert performance in fraud and fraud detection were also needed for the study. Another area of data requirement was demographic issues of the internal auditors.

Data on the literature was obtained from secondary sources including related published and unpublished material from the internet, journals, handbooks, reports and text books. Furthermore, data on internal auditor's expert performance in fraud detection was obtained from a primary source which was self-administered questionnaires, completed by internal auditors of the Institute of Internal Auditors Ghana.

Instrument Design

Self-administered questionnaire was used to collect the required data for the study. Saunders et al. (2009) contend that questionnaires tend to be used for descriptive or explanatory research. This is because they are the best instruments for collecting factual data and enable more economic and timely collection of data from a large, geographically dispersed population (Frazer & Lawley, 2000).

The questionnaire for the study (appendix B) is made up of five parts and the following major headings: demographic variables, fraud detection, knowledge, problem solving ability, interpersonal skills and control environment. The questions consist of mainly closed-ended questions with majority of items measured on a five-point Likert-scale.

Field Work

Following an agreement reached with the vice president of the Institute of Internal Auditors Ghana, field work was commenced in March 2015. Since the IIAG is under oath not to disclose the identity of its members, it was agreed that the field work be done by the staff of the Institute. A training session was held to brief the staff on the purpose.

Only twenty percent of respondents had completed the questionnaires within the first month. After allowing an additional one and half months, during which series of reminders were sent to respondents who had taken questionnaires home, 200 completed questionnaires were retrieved and field work was brought to an end.

Ethics

Some measures were taken to ensure compliance with accepted ethical standards and practices, trust and confidence in the integrity of the study. To achieve this, an introductory letter explaining the purpose of the study was submitted to the vice president of IIAG (See Appendix C). As required by the IIAG not to disclose the identity of its member, the questionnaires were agreed to be administered by the staff of the IIAG.

A clause, assuring respondents of anonymity and confidentiality, was also inserted in the introductory paragraph of the questionnaire. Questions touching on the identity of respondents and their respective establishments were also excluded.

Data Analysis Technique

Data collected from the field was edited to ensure coherence and consistency of the information gathered. Edited data was then inputted into the computer using the SPSS (Statistical Product for Service Solution). This was later transferred onto the stata data software for analysis. Respondents' characteristics were analysed using descriptive statistics and presented on frequency tables.

The factors that affect internal auditors' ability to detect fraud were analysed using binary logit.

Estimation Techniques

Binary logit regression model

Logistic regression is the estimation technique used when the dependent variable of interest is categorical (Pallant, 2011). The dependent variable in logistic regression may have two or more outcomes. If the dependent variable has only two outcomes, the method is called Binary Logistic Regression. On the other hand, if the dependent variable has more than two outcomes, the method is known as Multinomial Logistic Regression (Gaur & Gaur, 2009). In this study, the dependent variable, fraud detection, is binary variable so binary logistic regression was used.

It must however be noted that binary logistic regression models can be either logit or probit. Both probit and logit are similar to multiple regression but they differ mainly in terms of the transformation applied to the proportions forming the dependent variable. Besides, logit emphasizes odds ratios but probit analysis stresses effective values of predictors for various rates of response.

This implies that interpretation of logit results is simpler than probit. For this reason, logit was used for this study.

To determine the probability that *ith* internal auditor detects fraud, the logistic estimated equation can be expressed as:

$$P_{ith} = \frac{e^u}{1 + e^u} \dots\dots\dots (1)$$

Where *P_{ith}* represents the estimated probability that the *ith* auditor (*i=1.....n*) is in category of detecting fraud or category of not detecting fraud and *u* is the normal linear regression which creates the logit and is given as:

$$u = A + B_1X_1 + B_2X_2 \dots\dots B_x B_k \dots\dots\dots (2)$$

With constant *A*, coefficients *B_j* and predictor variables *X_j* for *k* predictors (*j= 1, 2, ..., k*). The predictor variables consist sex, experience, education, organisation, in-service training, mentor, control environment, knowledge of information technology, by taking the natural log of the probability of the *ith* auditor (*i=1.....n*) being in detecting fraud category divided by the probability of not being in detecting fraud category, equation (1) becomes:

$$\log it(P_i) = \ln\left\{\frac{P_i}{1-P_i}\right\} = A + \sum B_j X_{ij} \dots\dots\dots (3)$$

Therefore, the empirical binary logit model for the probability of an `auditor detecting fraud or not can be estimated as:

$$P_i = \beta_0 + \beta_1 sex + \beta_2 exper + \beta_3 educ + \beta_4 org + \beta_5 inser + \beta_6 mentor + \beta_7 contenv + \beta_8 knowle + \varepsilon_i \dots\dots (4)$$

Where:

P_{i j} = 1 if an auditor '*i*' has detected fraud (*j =1*) and is equal to zero if otherwise

($j = 0$) .

sex = sex of the auditor

exper = experience of the auditor

educ = level of education of the auditor

org = type of organisation in which the internal auditor works

inser = in-service trained acquired by the auditor

mentor = a mentor in audit profession that the internal auditor has

knowle = knowledge of IT possessed by an internal auditor

contenv = control environment

ε_i = stochastic error term

The variables in the model were grouped under demographic, knowledge, and organisational factors. Demographic factors consist of sex, years of experience, educational level and type of organisation. Knowledge factors comprise mentoring, in-service training, and knowledge about information technology. Organisational factors however consisted of only one variable thus control environment.

The stochastic error term was included in the empirical model to take care of all the variations in P_i that cannot be predicted by the included predictors. This is because there may be errors in specification of the model, omitted variable biases and errors in data measurement. Therefore, the stochastic error term caters for all those errors. The predictor variables used in the model were selected based on the theoretical and empirical review.

Post-Estimation Tests

Goodness-of-Fit of the Model

Goodness-of-fit tests measure how well the model specified fit the distribution and nature of the data. This can be tested in various ways which include McFadden's R^2 , Hosmer-Lemeshow goodness-of-fit test, and classification of cases. McFadden's R^2 was used to assess the amount of variability in the predicted variable explained by the predictors. Sonka and Hornbaker, (as cited in Mishra & Perry, 1999) indicate that a lower and upper bound R^2 for goodness of fit in favour of binary choice models range from 0.20 to 0.40. Hosmer-Lemeshow test assessed the goodness-of-fit of the model by comparing the model with a hypothetical model based on the difference between observed frequencies and expected frequencies (Tabachnick & Fidell, 2013).

Model specification error test

The underlying assumption of a logistic regression model is that the predicted variable is a linear combination of the predictor variables. Each side of the logistic regression equation has an assumption. The link function (logit) specified for the predicted variable on the left hand side of the equation was done on the assumption that the logit function is the correct function to use. On the right hand side of the equation, the assumption is that all the relevant independent variables are included, and that the model does not include variables that should not be in it. In addition, it is assumed that the logit function is a linear combination of the independent variables.

However, it could happen that the logit function specified for the logistic regression is not the correct choice or the relationship between the logit of predicted variable and the predictor variables is not linear. In either

case a specification error results. The Stata command `linktest` can be used to identify a specification error. The command is issued after the `logit` command. `Linktest` operates on the basis that if the model is correctly specified, one should not be able to find any additional predictor variables that are statistically significant except by chance.

After the `logit` command, `linktest` uses the linear predicted value (`_hat`) and linear predicted value squared (`_hatsq`) as the predictors to rebuild the model. The variable `_hat` should be a statistically significant predictor, since it is the predicted value from the model. The `hatsq` is not supposed to be significant. If `_hatsq` is significant, then the `linktest` is significant. This implies that either there has been omission of relevant variable(s) or link function for the logistic regression equation is not correctly specified (Chen, Hua, Reifman & Cheng, 2003).

Interpretation of estimated coefficients

Several approaches which include use of odd ratio and marginal effects analysis are available for the interpretation of binary logistic regression model but none of them can fully describe the relationship between an outcome and an explanatory variable (Long & Freese, 2001). This means that the use of a particular approach to the interpretation of the estimated coefficients is a matter of choice. Therefore, marginal effect analysis was used to interpret the estimated coefficients. The marginal effect shows the probability of belonging to detecting fraud category when the independent variable increases by one unit. The marginal effects of the continuous explanatory variables were

calculated while marginal effect for factor levels was the discrete change from the base level.

Table 4 - *Measurement of Variables*

Variable	Description	Measurement
Dependent: Fraud detection	Defined on the basis of whether the internal auditor has been able to detect fraud or not within the past one year	1=detected fraud 0=otherwise
Independents: Sex	 the sex of the internal auditor	 Measurement 1=male 0=female
Experience	number of years an internal auditor has spent in his/her profession	In years
Education	Measuring the level of education attained by the internal auditor	1=First Degree only 2=Masters degree only 3=First degree with professional certificate in audit 4=Masters degree with professional certificate in audit
Organisation type	Measuring the kind of organisation in which the internal auditor works	1=Professional service 2=Banking and financial service 3=Government and local government 4=Education
In-service training	Defined on the basis of whether the internal auditor has acquired in-service training within the past twelve month or not	1=acquired in-service training 0=otherwise
Mentor	Defined on the basis of whether the internal auditor has a mentor or not	1=has a mentor 0=otherwise

Table 4 continued

Variable	Description	Measurement
Control environment	Measuring how the internal auditor perceives the management to support his or her work in the organisation	1=poor 2=satisfactory 3=good 1=No
Knowledge	Measuring the level of information technology possessed by the internal auditor	information technology knowledge 2=Inadequate information technology knowledge 3=Adequate information technology knowledge

A Priori Expected Signs

To facilitate interpretation of the demand effects of empirical values of the coefficients of the variables, this section discusses their expected signs. The expected signs of the coefficients for the independent variables in equation (4) are presented in Table5

Table 5 - Priori Expectations of Estimated Coefficients

A priori expectations	
Equation (4)	$B_1 > / < 0$ $B_2 > 0$ $B_3 > 0$ $B_4 > / < 0$ $B_5 > 0$ $B_6 > 0$ $B_7 > / < 0$ $B_8 > 0$

Source: Authors construct (2015)

Analyzed data and parameter estimates from the models were presented using tables. These are depicted in table 6 below.

Table 6 - Summary of Data Analysis Technique

Research Objective	Hypothesis/ Research question	Hypothesis Testing	Statistical Approach	Statistical Model
Objective 1 Assess internal auditors perception of interpersonal skills and problem solving ability on fraud detection	what are internal auditors perception of interpersonal skills and problem solving ability on fraud detection		Descriptive	
Objective 2 Examine the influence of demographic factor on fraud detection	Hypothesis 1 There is no relationship between demographic factors of internal auditors and fraud detection	$H_0: \beta_i = 0$ $H_0: \beta_i \neq 0$ Reject H_0 if $p < 0.05$, otherwise fail to reject the H_0	Inferential Statistics	Logistic Regression
Objective 3 Examine the effect knowledge on fraud detection.	Hypothesis 2 There is no relationship between knowledge variables and fraud detection	$H_0: \beta_i = 0$ $H_0: \beta_i \neq 0$ Reject H_0 if $p < 0.05$, otherwise fail to reject the H_0	Inferential Statistics	Logistic Regression
Objective 4 assess the effect of organisational factor on fraud detection	Hypothesis 3 There is no relationship between organisation factors and fraud detection.	$H_0: \beta_i = 0$ $H_0: \beta_i \neq 0$ Reject H_0 if $p < 0.05$, otherwise fail to reject the H_0	Inferential Statistics	Logistic Regression

Source: Author's Construct, 2015

Pilot Study

Pilot study was undertaken in February 2015 as a prelude to the main study. Pilot studies are required ahead of a main survey for the following reasons (Pallant, 2011). Firstly, they ensure that instructions, questions and scale items are clear. They further help to identify and eliminate any questions or items that may offend potential respondents. They again ensure that potential respondents will be able to understand questions and respond appropriately.

The pilot study involved thirty (35) members of the Institute of Chartered Accountant Ghana (ICAG). The Institution (ICAG) was deemed appropriate due to its proximity to the main study area and also shared similarities with IAG.

The pilot study sample, selected using simple proportions as well as simple random sampling (lottery method). A questionnaire was distributed to 35 members of ICAG and 31 were retrieved after one month. A scrutiny of the responses showed that respondents understood all questions and thus had no challenges completing the questionnaire. After correcting a few spelling errors, the final instrument was ready to be administered during the main survey.

Reliability Testing

According to Pallant (2011), reliability provides an indication of how a scale is free from error and the extent to which it produces consistent results if repeated measures are taken. It further indicates quality of an instrument, its measurements and indicators. Test-retest reliability and internal consistency

are frequently used indicators of a scale's reliability (Tabachnick & Fidell, 2013). The test-retest involves the administration of instrument to a single group on two different occasions (Pallant, 2011). Though test-retest may be a good indicator of reliability, it was not carried out in this study due to cost, time and the likely reluctance of participants to repeat participation.

On the other hand, internal consistency is the degree to which all items on a scale measure an underlying construct (Pallant, 2011). Pallant further noted that Cronbach's alpha coefficient (α) with a recommended minimum value of .7 is the most common indicator for testing internal consistency and an additional requirement of a minimum item-total correlation of .3 to ensure that items included in a scale actually measure what the scale intends to. These measures were applied in testing for internal consistency reliability of the Likert-scale questions included in the pilot study questionnaire. The tests were run using Statistical Product and Service Solutions (SPSS) version 17.0.

The Cronbach's alpha coefficients obtained for each of the four (4) scaled variables namely; data analysis skills, analytical reasoning, communication, and ability to work in teams were above .7, suggesting very good internal consistency reliability. The reliability coefficients obtained are presented in Table 7.

Table 7 - *Computed Reliability Coefficients for Data Collected During Pilot Study*

Questionnaire Section	No. of Items	Sample Size	Cronbach's Alpha
Data analysis skill	3	31	0.891
Analytical reasoning	8	31	0.871
Communication	4	31	0.707
<u>Ability to work in team</u>	6	31	<u>0.831</u>

Source: Field work, Seidu (2015)

Conclusion

The methodology essential to investigating the research problem has been discussed. This included the research approach, study design, sampling techniques, method of data collection and data analyses. The next chapter presents the results and the discussion of the study.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter presents the empirical analysis of the factors influencing fraud detection by internal auditors. Expectation of the results based on the empirical review has already been discussed in chapters two and three. The first part of this chapter presents the descriptive analysis that includes the internal auditors' characteristics. This first part is captured mainly in tables. The second part discusses the estimation results on the factors influencing fraud detection by internal auditors.

Descriptive Analysis

The characteristics of the internal auditors are shown in Table 8. From Table 8, 132 (66%) internal auditors were male and 68 (34%) were female summing up to 200 internal auditors. Thus, majority of the internal auditors of Institute of Internal Auditors-Ghana were male. Also, Table 8 shows that out of 132 males, 34 representing 17% of the total number of internal auditors had obtained First Degree only, 15 of them representing about 7.5% had obtained Second Degree, 50 representing 25% had obtained First Degree and Professional Certificate, while 33 representing about 16.5% had obtained Second Degree and Professional Certificate. Among the 68 females, 22 representing 11% had obtained First Degree, 8 representing about 4% had obtained Second Degree, 17 (8.5%) had obtained First Degree and

Professional Certificate, while 21 representing 10.5% had obtained Second Degree and Professional Certificate.

Table 8 - *Level of Education Attained by Internal Auditors*

Educational level	Male		Female	
	Frequency	Percent	Frequency	Percent
First Degree	34	17	22	11
Second Degree	15	7.5	8	4
First Degree and Professional Cert.	50	25	17	8.5
Second Degree and Professional Cert.	33	16.5	21	10.5
Total	132	66	68	34

Source: Field work, Seidu (2015)

For the age variable, the maximum age of the internal auditors was fifty-seven (57) years while the minimum age was twenty-three (23) years. The mean age of the internal auditors was approximately 39.72 years with a standard deviation of 9.14933. For the age categories of the internal auditors as shown in table 8, 47 internal auditors were between 23-31 years all inclusive representing 23.50 percent.

Between the ages of 32 and 40 years all inclusive, there were 60 internal auditors representing 30 percent. Between the ages of 41 and 49 years all inclusive, there were 78 internal auditors representing about 39.0 percent of the total respondents. Those aged 50 years and above were 15 representing 7.5

percent. All the internal auditors were within the active working age population (18-59 years).

Table 9 - *Age Categories of Internal Auditors*

Age categories	Frequency	Percent
23-31	47	23.50
32-40	60	30.00
41-49	78	39.00
50+	15	7.5
Total	200	100

Source: Field work, Seidu (2015)

With regards to knowledge of information technology, 91 of the internal auditors representing 45.5% have no knowledge of Information technology. Thirty (30) internal auditors representing 15% said they have inadequate knowledge of information technology while 79 representing 39.5% said they have adequate knowledge of information technology. This shows that a relatively large number of the internal auditors in the study had no knowledge of information technology.

Out of the 91 internal auditors who have no knowledge of information technology, fifty-six (56) representing 28% were males while thirty-five (35) representing 17.5% were female. Similarly, it was found out that twenty-one (21) out of the thirty (30) internal auditors who have inadequate knowledge about information technology were male while Nine (9) representing 4.5% were female. Among the Seventy-nine (79) internal auditors who have

adequate knowledge of information technology, fifty-five (55) were males while twenty-four (24) were females.

Table 10 - *Sex of Internal Auditors by Knowledge in Information Technology (K. IT)*

Sex	No.K.IT		Inadequate K.IT		Adequate K.IT		Total
	No	%	No	%	No	%	
Male	56	28	21	10.5	55	27.5	132
Female	35	17.5	9	4.5	24	12	68
Total	91	45.5	30	15	79	39.5	200

Source: Field work, Seidu (2015)

With regards to experience possessed by the internal auditors, the maximum years of audit experience was twelve (12) years while the minimum years of audit experience was one (1) year. For the years of audit experience categories, fifty-five (55) of the internal auditors interviewed representing about 27.5% were between 1-4 years of experience all inclusive.

Between the years of experience of 5 and 8, there were Seventy (70) internal auditors representing 35 percent. Seventy-five of the internal auditors had worked for nine years and above and this represents 37.5%. This shows a relatively large number of the internal auditors with more than eight years of audit experience.

Table 11 - *Distribution of Respondents by years of experience*

Experience in years	Frequency	Percent
1 - 4 years	55	27.5
5 – 8 years	70	35
9 and above	75	37.5
Total	200	100

Source: Field work, Seidu (2015)

It was also of interest to ascertain the number of internal auditors who have detected fraud within the past twelve months. Out of the two hundred internal auditors, ninety-five of them said that they have detected fraud within the past twelve months while one hundred and five have not detected fraud within the past twelve months. It can be seen that majority of the respondents have not detected fraud within the past twelve months.

Among the ninety-five internal auditors who have detected fraud, sixty-seven of them representing about 33.5% were male while twenty-eight representing about 14% were female. Out of the one hundred and five internal auditors who said that they have not detected fraud within the past twelve months, Sixty-five representing about 32.5% were male while Forty of them representing about 20% were female. Table 12 shows the above distribution.

Table 12 - *Distribution of Respondents by Fraud Detection*

Fraud detection	Male		Female		Total
	No.	%	No	%	
No detection	65	32.5	40	20	105
Detection	67	33.5	28	14	95
Total	132	66	68	34	200

Source: Field work, Seidu (2015)

Perception of Interpersonal Skills and Problem Solving Ability

Based on the conceptual framework elucidated in chapter two, this study sought to examine the factors that influence internal auditor's ability to detect fraud. These factors elucidated in the conceptual framework among other things include ability to work in a team and interpersonal skills. These

skills are innate characteristic which were solicited using likert-type scale and therefore were not included in the logit regression model. It was therefore necessary to find the perception of internal auditors of those variables on fraud detection.

Objective one therefore sought to examine internal auditors' perception of interpersonal skills and problem solving ability on fraud detection. Interpersonal skills comprised two dimensions namely; communication and teamwork while problem solving ability was also categorised into data analysis skills and analytical reasoning. Each of these dimensions further comprised indicators established in the literature and captured on the instrument (See appendix B). Analyses were based on cross tabulation of the various indicators and fraud detection.

The perception of internal auditors on each indicators were sought for using a likert-type scale of 1 to 5 with 1 and 2 collapsed to form disagree and 4 and 5 also collapsed to form agree. Following is a discussion of the results beginning with interpersonal skills.

Interpersonal skills

The first dimension of interpersonal skills is communication. Communication composed of four indicators all of which auditors expressed their opinion on how they perceive it to influence their fraud detection ability.

From table 13, it was observed that 105 internal auditors who had not detected fraud and the 95 internal auditors who had detected fraud over the past twelve months agreed that it is of great value for them to communicate their opinions or decisions to their co-workers. On the issue of communicating

decisions and opinions to external auditors, 105 internal auditors representing 52.5% who had not detected fraud and the 95 representing 47.5% of internal auditors who had detected fraud concord that it is important for them to communicate their opinions to external auditors. The respondents also expressed their views on their ability to communicate their decision with management. It was observed from table 13 that all internal auditors who had not detected fraud and those that had detected fraud over the last twelve months representing 52.5% and 47.5 % respectively agreed that they are able to communicate their opinion with senior management of their organisation.

Table 13 - *Internal Auditors Perception of Communication on Fraud Detection*

Statement	Detected fraud or not	Agree	Neutral	Disagree	Total
It is important for me to communicate my opinions or decisions with my team members	Not detected	105			105
	Detected	95			95
It is important for me to communicate my opinions and/or decisions with the external auditors	Not detected	105			105
	Detected	95			95
My team is able to communicate decisions or opinions with my organisation's senior management	Not detected	105			105
	Detected	96			95
My team is able to communicate decisions and pinions with our external auditors	Not detected	105			105
	Detected	96			95

Source: Field work, Seidu (2015)

From table 13, it was deduced that all internal auditors who had detected fraud (95) and those who had not detected fraud (105) over the past twelve months agreed to each of the indicators under communication. It was concluded that communication influence internal auditors' ability to detect fraud.

This finding is consistence with Mui (2010) who established that possessing good communication skills enable auditors to identify organisational issues and conveying information that is meaningful to the organisation as well as improving their investigative skill.

The other dimension of interpersonal skills on which internal auditors were also asked to indicate how they perceive it to influence their fraud detection was ability to work in a team. From table 14, it was discovered that of the 105 internal auditors who had not detected fraud, 80 representing 40% disagreed that it is important for them to work alone while the remaining 25 representing 12.5% internal auditors preferred working alone. In the same vein, of the 95 internal auditors who had detected fraud, 7 are unsure whereas the remaining 88 representing 44% disagreed to working alone. From table 14, it is evidenced that those who opposed to working alone were in favour of working in a team whereas those preferred working alone also opposed working in a team.

On the issue of having good human relationship, all the 95 representing 47.5% internal auditors who have detected fraud and 75 representing 37.5% who had not detected fraud agreed that it is important for them to have a good human relationship in a team whereas the remaining 30 internal auditors representing 15% disagreed. Internal auditors stressed the importance of peer

review. Again, 75 respondents representing 37.5% internal auditors who had detected fraud and 92 respondents representing 46% agreed to the fact that their team place value on reviewing other's work. However, the other 30 respondents representing 15% of internal auditors who had not detected fraud and 7 respondents representing 3.5% who had detected fraud disagreed to that.

Lastly, on the issue of brainstorming, 60 respondents representing 30% of internal auditors who had detected fraud agreed that their team undertake brainstorming on issue, 20 auditors representing (10%) are unsure and the remaining 25 representing about 12.5% disagree. Of those who had detected fraud, 82 representing about 41% agreed that their team have brainstorming session, 6 representing 3% are unsure and the remaining 7 representing about 3.5% disagree. The agreement level expressed by the internal auditors on the indicators suggests that ability to work in a team influence their fraud detection ability.

Table 14 - *Respondents Perception of Ability to Work in a Team on Fraud Detection*

Statement	Detected fraud or not	Agree	Neutral	Disagree	Total
It is important for me to work alone on job assignments	Not detected	75		30	105
	Detected	88		7	95
It is important for me to work in a team	Not detected	105			105
	Detected	95			95
It is important to have good peer relationships within team	Not detected	75		30	105
	Detected	95			95
My team values the peer-review of each other's work	Not detected	75		30	105
	Detected	92	3		95
	Detected	95			95

Source: Field work, Seidu (2015)

The findings is consistent with Mui (2010) who espoused that ability to work within a team is reflected in the acceptance of each other's strengths, ideas, knowledge and skills, enhanced by good communication and open-mindedness. Mui (2010) further noted that the outcome of working in a team is an enhanced investigation process through open discussion. It is also supported by Carpenter (2007). According to Carpenter, audit team brainstorming for fraud risk assessment generates more quality ideas as compared to those generated by individual auditors.

Problem solving ability

The first element of problem solving ability is data analysis skills which measures auditors' ability to recognise and interpret relationships between data and ability to review other auditors' work. On the issue of recognising relationship between data, it can be observed from table 16 that 87 internal auditors who had not detected fraud representing 43.5% and 88 internal auditors representing (44%) who had detected fraud agreed that it is important for them to be able to recognise relationship between data while 18 internal auditors who had not detected fraud and 7 internal auditors who had detected fraud representing 9% and 3.5% respectively were unsure.

With respect to ability to interpret relation between data, it was observed from table 15 that 96 internal auditors who had not detected fraud representing 48% and 81 internal auditors who had detected fraud representing 40.5% agree that it is important for them to be able to interpret relation among data while the remaining 9 internal auditors who had not detected fraud

representing 4.5% were unsure and the 14 internal auditors who had detected fraud disagree.

The auditors also expressed their view on the importance of being able to evaluate another auditor's work. Of the 105 internal auditors who had not detected fraud, 90 representing 45% agreed, 5 representing 2.5% were unsure and the remaining 7 representing 3.5% disagree. 77 internal auditors who had detected fraud representing 38.5% agreed that it is important for them to be able to evaluate other auditor's work, 8 internal auditors representing 4% were unsure of such importance while the remaining 10 representing 5% disagree. The agreement level expressed by the internal auditors' means that they agree that data analysis skill influence their fraud detection skills. The levels of agreement shown indicate that internal auditors perceive data analysis to influence the ability to detect fraud.

Table 15 - Respondents perception on data analysis on fraud detection

Statement	Detected fraud or not	Agree	Neutral	Disagree	Total
It is important for me to recognise relationship between data	Not detected	87		18	105
	Detected	88		7	95
It is important for me to be able to interpret relation among data	Not detected	96		9	105
	Detected	81		14	95
My team is able to evaluate other auditor's work	Not detected	100	5	7	105
	Detected	77	8	10	95

Source: Field work, Seidu (2015)

This means that internal auditors who have practical knowledge of information technology are able to detect fraud than those who do not possess such knowledge. This finding is consistent with Mui (2010), who espoused that exercising data analysis skills is evident in a practitioner using a variety of methods to identify cues that could indicate that fraud has been perpetrated.

The other element of problem solving ability which internal auditors were also asked to indicate how they perceive it to influence their fraud detection capabilities was analytical reasoning. This element is composed of five indicators. As observed from table 17, all internal auditors (105) who had not detected fraud representing 52.5% and all (95) internal auditors representing (47.5) who had detected fraud agreed that it is important for them to possess enquiry mind.

With respect to the essence of thinking outside the box, it was observed from table 16 that 105 internal auditors who had not detected fraud representing 52.5% and the 95 internal auditors who had detected fraud representing 47.5% agree that it is important for them to be able to think outside the box.

Of the 105 internal auditors who had not detected fraud all (105) representing 52.5% agreed that it was important for them to reason analytically in their quest to detect fraud and all the respondents (95) who had detected fraud over the past twelve months representing 47.5% also agreed that it was important for them to think analytically.

Considering the other indicators, it is important for me to be diligent to further investigate irregularities and or fraud. It is important for me to be more likely to reject statements unless I have proof that they are true and it is

important for me to be able to respond to issues in the business environment. It was observed from table 16 that all respondents who had not detected fraud and those who had detected fraud over the past twelve months perceived each indicator to influence their fraud detection.

The agreement level expressed by the internal auditors' means that they agree that data analysis skill influence their fraud detection skills. The levels of agreement shown indicate that internal auditors perceive data analysis to influence the ability to detect fraud.

Table 16 - *Perception of internal auditors on analytical reasoning on fraud detection*

statement	Detected fraud or not	Agree	Neutral	Disagree	Total
It is important for me to possess an inquisitive mind.	Not detected	105			105
	Detected	95			95
It is important for me to be able to think out of the box	Not detected	105			105
	Detected	95			95
It is important for me to be able to reason analytically	Not detected	105			105
	Detected	95			95
It is important for me to be diligent to further investigate irregularities and/or fraud	Not detected	105			105
	Detected	95			95
It is important for me to be more likely to reject statements unless I have proof that they are true	Not detected	105			105
	Detected	95			95
It is important for me to be able to respond to issues in the business environment	Not detected	105			105
	Detected	95			95

Source: Field work, Seidu (2015)

This finding is consistent with Mui (2010) who posited that analytical reasoning is an important problem-solving ability in the context of fraud detection. According to Mui (2010), possessing an inquiring mind; being observant; keeping one step ahead in terms of thinking about the pressures for someone to perpetrate fraud; having a cynical mindset; taking a subjective view and following the facts; having the ability to observe and question; possessing a creative mind and being able to think out of the box help the internal auditor to uncover fraud.

Factors Influencing Fraud Detection by Internal Auditors

Equation (4) in chapter three was estimated to determine the probability of fraud detection by internal auditors. Fraud detection by internal auditors was hypothesized to depend on a number of factors. These factors included sex of the internal auditor, level of education attained by the internal auditor, experience possessed by the internal auditor, type of organisation in which the internal auditor works, in-service training received by the internal auditor, mentoring, knowledge in information technology and control environment. The logit regression model specified in chapter three was used to estimate the probability of fraud detection by internal auditors.

This section presents findings from the regression analysis on the aforementioned covariates. In order to ensure that no two covariates are linearly dependent, the multicollinearity test was done. Multicollinearity in a regression framework refers to a situation where one of the covariates in the model is linearly dependent on other covariate. The linear dependency may be caused by one covariate being exact duplicate of another covariate or by one

covariate being equal to a linear combination of other covariates. In logistic regression model, multicollinearity is a result of strong correlation between covariates. Its existence inflates the variances of the parameter estimates (Pallant, 2011). The correlation test of multicollinearity for this study shows that there is no problem of multicollinearity. This was because there is no coefficient value of up to 0.5 between any two covariates. What this implies is that the covariates are independent of each other and can be included in the model.

Table 17 - *Logit Estimation for Determinants of Fraud Detection by Internal Auditors.*

Variable	Coef.	Std. Err.	P> z
Sex	-.2488985	.385785	0.519
Experience	.6108919	.1154984	0.000
<u>Education level:</u>			
2 nd Degree	1.075451	.641244	0.094
1 st Degr. & Prof.Cert.	1.551126	.5126452	0.002
2 nd Degr.Prof. Cert.	2.167235	.5805641	0.000
<u>Organisation:</u>			
Banking & Fin. Service	.8463999	.7631921	0.267
Gov't & Local Gov't	1.212802	.551809	0.028
Education	.9153112	.6609807	0.166
Inservice	.9392784	.3912223	0.016
Mentor	.0196065	.4396873	0.964

Table 17: continued.

Variable	Coef.	Std. Err.	P> z
I T Knowledge:			
Inadequate	.5345814	.5559036	0.336
Adequate	1.31688	.4217681	0.002
Control environment:			
Satisfactory	-.8224981	.52164	0.115
Good	.9645636	.4611457	0.036
_cons	-5.466221	.134281	0.000
Number of observations			200
Wald chi2(14)			51.94
Prob>chi2			0.000
Log pseudolikelihood			-85.773747
Pseudo R2			0.3802

Source: Field work, Seidu (2015)

In all, a cross section of 200 internal auditors was used in this study and the Wald test statistic of the estimated model is significant at one (1) percent level. The implication is that the covariates taken together explain fraud detection by internal auditors. The McFadden (pseudo) R2 is an indication of the goodness of fit of the model despite that it is not as important as statistical and economical significance of the covariates (Wooldridge, 2005). A Pseudo R2 of 0.3802 for this study indicates a good fit as it falls within the range of 0.20 to 0.40 (Sonka & Hornbaker (as cited in Mishra & Perry, 1999)). Thus, 38.02 of variation in fraud detection is explained by the covariates.

Post-estimation tests like the linktest, Hosmer-Lemeshow and classification of cases were conducted to test for model specification and goodness-of-fit respectively. The scores for \hat{P} ($P > |z| = 0.000$) and \hat{P}^2

($P > |z| = 0.621$) for the linktest shows that the model was correctly specified. This implies that we can, only by chance, find additional predictors that are statistically significant. Using a group of ten, fraud detection had a Hosmer-Lemeshow chi square of 7.84 with $\text{Prob} > \chi^2 = 0.4489$. The P-value of the Hosmer-Lemeshow ($\text{Prob} > \chi^2 = 0.4489$) is greater than 0.05 so the test is passed. Thus, there is goodness-of-fit. The model also correctly classified 74.74% (sensitivity of the model) of internal auditors who had detected fraud within the past twelve months and 84.76% of internal auditors who had not detected fraud within the past twelve months (specificity of the model). Overall, the model correctly classified 80% of the cases. This also indicates a goodness-of-fit of the model as it is above the cut-off-point of 50%.

Following from the rule that the number of dummies be one less than, the number of categories of the variable for which the dummy is being created, three dummies are introduced each for level of education and type of organisation while two dummies each for knowledge in information technology and control environment. The omitted group serves as a base or reference category by which comparisons are made (Gujarati, 2002).

Findings in Table 17 suggest that experience of the internal auditor, level of education of the internal auditor, in-service training received by the internal auditor, type of organisation in which the internal auditor works, computing knowledge possessed by the internal auditor, and control environment are significant in predicting fraud detection by internal auditors. Experience of the internal auditor, in-service training, level of education and computing knowledge had positive relationship with fraud detection, thereby, meeting the expected sign.

In order to facilitate an easy interpretation of the effects of the covariate on the dependent variable, the estimated parameters were transformed into marginal effects. The computed marginal effects give the magnitude of the change in the probability of detecting fraud when the covariate increases by 1 unit

It can be observed from Table 18 that many of the marginal effects figures depict that some case-specific factors have strong and significant effects on the probability of the internal auditor detecting fraud. In depth discussion of the marginal effect of each case-specific covariate on the probability of the internal auditor detecting fraud is given below.

Table 18 - *Marginal effects of determinants fraud detection by internal auditors*

Variable	Marginal effect	St Err.	P>z
Sex	-0.035	0.053	0.514
Experience	0.085	0.011	0.000***
<u>Education:</u>			
2 nd Degree	0.149	0.092	0.105
1 st Degree & Prof. Cert.	0.220	0.071	0.002**
2 nd Degree & Prof. Cert.	0.313	0.077	0.000***
<u>Organisation:</u>			
Banking & Fin. Service	0.113	0.101	0.26
Gov't & Local gov't	0.164	0.069	0.018*
Education	0.123	0.087	0.157
In-service	0.130	0.053	0.013*
Mentor	0.003	0.061	0.964

Table 18: continued.

Variable	Marginal effect	St Error	P>z
Knowledge Information technology:			
Inadequate	0.075	0.079	0.338
Adequate	0.189	0.060	0.001**
Control environment:			
Satisfactory	-0.119	0.073	0.104
Good	0.146	0.069	0.034*

*P<0.05

**P<0.01

***P<0.001

Source: Field work, Seidu (2015)

The influence of demographic factors on fraud detection

Objective two sought to examine the influence of demographic factors on fraud detection. Demographic factors comprised four dimensions namely; sex of internal auditors; years of experience of internal auditors; educational level of internal auditors and organisation type of internal auditors. Though the influence of demographic factors on fraud detection would have been a combination of the individual influences of each of those dimensions, such analysis was not carried out in this study. The analyses therefore concentrated on the influence of each dimension of demographic factors on fraud detection. Following is the analysis of each dimension starting with level of education

Effect of Level of Education of Internal Auditor on Fraud Detection

Level of education of the internal auditor is a social factor found to be significant in explaining the probability of detecting fraud by the internal auditor. Level of education is captured by three dummies with “First Degree”

as the reference category. Two of the three dummy variables of level of education of the internal auditor were statistically significant, namely: First Degree with Professional Certificate and Second Degree with Professional Certificate. The marginal effect of the internal auditor with “First Degree and Professional Certificate” (0.220) is statistically significant at a 1 percent level ($P > Z = 0.002$) and possesses the expected (positive) sign. The marginal effect of the internal auditor with “Second Degree and Professional Certificate” (0.313) is also statistically significant at a 0.1 percent level ($P > Z = 0.000$) and possesses the expected (positive) sign.

The above statistics means that when level of education of the internal auditor is dummy coded as “Second Degree Only”, “First Degree and Professional Certificate”, “Second Degree and Professional Certificate” by setting “First Degree Only” as the reference category, there is a significant difference in fraud detection by internal auditors between internal auditors who have pursued First Degree and Professional Education and those internal auditors who have pursued only First Degree. In the same vein, significant difference in fraud detection by internal auditors is observed between internal auditors who have attained “Second Degree and Professional Certificate” and those internal auditors who have attained only “First Degree”. Therefore, this study rejected the null hypothesis that level of education has no effect on fraud detection by internal auditors.

The positive relationship between ‘First Degree and Professional Certificate’ and fraud detection implies that internal auditors with ‘First Degree and Professional Certificate’ are more likely to detect fraud as compared to internal auditors with only First Degree. The marginal effect of

0.220 shows that the probability of an internal auditor with 'First Degree and Professional Certificate' detecting fraud as compared to an internal auditor with only First Degree increases by 20.0 percent.

Similarly, those internal auditors with Second Degree and Professional Certificate are also more likely to detect fraud as compared to internal auditors with only First Degree. The marginal effect of 0.313 shows that the probability of an internal auditor with 'Second Degree and Professional Certificate' detecting fraud as compared to an internal auditor with only First Degree increases by 31.3 percent. Even though internal auditors with Second Degree only had positive relationship with fraud detection, it is not a significant dummy ($P > Z = 0.105$). Thus, there is no significant difference in fraud detection between internal auditors who had only Second Degree and First Degree.

This result is consistent with Moyes and Anandarajan (2002) who argued that auditors who possess professional certificates are highly associated with fraud detection. According to them, possessing professional certification such as the Certified Management Accountant, Certified Internal Auditor, Certified Information Systems Auditor, and Certified Fraud Examiner, in addition to the US-based CPA certification, increased the auditor's propensity to detect fraud. A possible reason for this increased propensity to detect fraud was that these certifications provide a specific focus on a function, such as internal audit, or on an activity, such as fraud investigation (Mui, 2010). The finding of the level of education variable also corroborates with the result obtained by Grazioli et al. (2001). Grazioli, et al. argued that deep

understanding of auditors' own discipline (auditing and accounting) is a prerequisite to detecting fraud.

Effect of Experience of Internal Auditor on Fraud Detection

The experience of the internal auditor is significant in explaining the probability of the internal auditor detecting fraud. It is significant at 0.01 ($P > Z = 0.000$) level and has a positive correlation with probability of detecting fraud. Hence, this study rejected the null hypothesis that the experience of the internal auditor has no effect on fraud detection by internal auditors. The positive coefficient of experience of the internal auditor implies that the probability of the internal auditor detecting fraud increases as his or her years of service in the audit profession increases. This positive relationship between experience and fraud detection can be attributed to the notion that more experienced internal auditors have higher exposure to fraud than those internal auditors with little experience. That is, the longer the number of years an internal auditor has spent in the audit profession, the higher the likelihood of exposure to fraud, and hence the greater the opportunities to discover fraud. The marginal effect of 0.085 indicates that when an auditor attains one additional year of service in the audit profession, the probability of that internal auditor detecting fraud increases by 8.5 percent.

This finding is consistent with Moyes and Anandarajan (2002) and Moyes and Hasan (1996) who noted that auditors rank and number of years of audit experience contribute to auditors' fraud detection capabilities. Auditors with greater experience in a managerial or supervisory capacity are more likely to detect fraud because the longer the auditing experience, the higher the

likelihood of exposure to fraud, and hence the greater the opportunities to discover fraud. It also corroborates with the findings of Mui (2010). According to Mui, the internal auditor can develop their technical knowledge of the fraud detection task through practical experience with repeated exposure to the fraud detection task.

This result however, contradicts with the findings of Bédard (1989) who argued that the number of years of auditing experience is not a determinant of auditor expert performance because expert performance is domain-specific. Auditors' experience may not encompass fraud detection. Therefore, the implication is that the auditor has not had the opportunity to fraud detection skills. In addition, this result is contrary to that of Ashton (1989) who also found that months of general audit experience are not correlated with how accurately auditors judge the frequency of specific financial statement errors.

Effect of Type Organisation in which the internal auditor works on Fraud Detection

Type of organisation in which the internal auditor works is another variable found to be significant in explaining the probability of detecting fraud by the internal auditor. Type of organisation is captured by three dummies with "Professional Services" as the reference category. The statistics obtained for the three dummies are as follows: Banking and Financial Services had a marginal effect of 0.113 ($P > Z = 0.26$). Government and Local government had a marginal effect of 0.164 ($P > Z = 0.018$) while Education had a marginal effect of 0.123 ($P > Z = 0.157$). From the above statistics, it can be seen that one of the

three dummy variables of the type of organisation in which the internal auditor works was statistically significant, namely: 'Government and Local government' at 5% level of significance ($P < 0.018$). The marginal effect of the internal auditor with "Government and Local government" also had positive sign. The marginal effects of the internal auditor with "Banking and Financial Service" category and 'Education Service' category are not significant as their P-values were greater than any of the specified levels of significance (1%, 5% and 10%).

The above statistics means that when the type of organisation in which the internal auditor works is dummy coded as "Banking and Financial Services", 'Government and Local government', and "Education Service" by setting "Professional Service" as the reference category, there is a significant difference in fraud detection by internal auditors between internal auditors who work in Government and Local government and those internal auditors who work in Professional Services. However, no significant difference in fraud detection by internal auditors is observed between internal auditors who work in Banking and Financial Services and those internal auditors who work in Professional Services. Similarly, there is no significant difference in fraud detection between internal auditors who work in Education Services and internal auditors who work with Professional Services.

The marginal effect of 0.164 shows that the probability of an internal auditor who work in Government and Local government organisation detecting fraud as compared to an internal auditor who work in Professional Services increases by 16.4 percent. The positive relationship between 'Government and Local government' and fraud detection implies that internal

auditors who work in Government and Local government are more likely to detect fraud as compared to internal auditors who work in professional services.

The influence of knowledge on fraud detection

The purpose of objective three was to assess the effect of knowledge on fraud detection. Knowledge comprised three dimensions namely; mentoring; in-service training; and information technology (IT). Like in objective one, the composite influence of knowledge on fraud detection was not carried out in this study. The analyses also concentrated on the influence of each dimension of knowledge on fraud detection. The following is the analysis of each dimension starting with in-service training.

Effect of In-service Training on Fraud Detection

From Table 18, the in-service training received by the internal auditor is a significant factor in explaining the probability of detecting fraud. It is significant at 5% level (marginal effect= 0.130; $P > Z = 0.013$) and had a positive relationship with the probability of detecting fraud. Therefore, the study rejected the null hypothesis that in-service training had no effect on fraud detection. The result obtained for the in-service training variable means that when in-service training is dummy coded as 'had received in-service training' by setting had not received in-service training as a reference category, there is a significant difference in fraud detection between internal auditors who have received in-service training and those internal auditors who have not received in-service training within the past twelve months.

The marginal effect of in-service training of 0.130 suggests that the probability of an internal auditor who had received in-service training detecting fraud as compared to an internal auditor who had not received in-service training increases by 13%. The positive coefficient between in-service training and fraud detection implies that internal auditors who had received in-service training are more probable to detect fraud than internal auditors who had not received in-service training. The reason is that training makes internal auditors stay abreast of: (1) changes in the technical aspects of how fraud can be perpetrated; and (2) changes in the environment in which fraud can be perpetrated.

This result confirms the findings of Mui (2010). According to Mui, continuous learning in the form of training, case studies, and simulations keep internal auditors updated with fraud detection knowledge. Continuous learning in the form of in-service training is an important activity that enables internal auditors to detect fraud.

Effect of Knowledge of information technology on Fraud Detection

Knowledge of information technology is one of the covariates found to be a significant factor in explaining the probability of fraud detection by internal auditors. Knowledge of information technology is captured by two dummies with “no knowledge about information technology” as the reference category. One of the two dummy variables of knowledge of information technology possessed by the internal auditor was statistically significant. The marginal effect of the internal auditor with “Adequate Knowledge information technology” is statistically significant at a 1 percent level

(marginal effect =0.189; $P > Z = 0.001$) and possesses the expected (positive) sign. The marginal effect of the internal auditor with “Inadequate Knowledge information technology” is however, an insignificant in explaining the probability of fraud detection by internal auditors (marginal effect = 0.075; $P > Z = 0.338$).

The above statistics means that when knowledge of Information Technology possessed by the internal auditor is dummy coded as “Inadequate knowledge about information technology ” and ‘adequate knowledge about information technology’ by setting ‘No knowledge about information technology ’ as the reference category, there is a significant difference in fraud detection between internal auditors who have adequate knowledge about computing and those internal auditors who have no knowledge in computing. However, no significant difference in fraud detection is observed between internal auditors who have inadequate computing knowledge and those internal auditors who have no knowledge in computing.

The marginal effect of 0.189 implies that the probability of an internal auditor with ‘adequate knowledge in information technology’ detecting fraud as compared to an internal auditor with no knowledge in information technology increases by 18.9 percent (18.9%). The positive relationship between ‘adequate knowledge in information technology’ and fraud detection implies that internal auditors with ‘adequate knowledge in computing’ are more likely to detect fraud as compared to internal auditors with no knowledge in information. This can be attributed to the shift from manual to computerised system accounting requiring internal auditors to possess specialised information technology skill.

This finding is in consistent with Mui (2010) who espoused that knowledge of information helps internal auditors to detect fraud. According to Mui, the uniqueness of the fraud detection task requires auditors to be competent in different types of technical skills, especially in information technology and auditing. She argued that fraud detection task requires specialised information technology skills such as computer forensics. Therefore, an auditor who possesses a combination of technical skills, specifically specialised information technology skills and auditing skills was preferred and highly sought after.

The influence of organisational factor on fraud detection

Objective four sought to examine the influence of organisational factor on fraud detection. Organisational factor was made up of only one element, thus, control environment. As done in objective two and three, this objective analysed the influence of control environment on fraud detection.

Effect of Control Environment on Fraud Detection

From Table 18, it was found to be a significant factor in explaining the probability of fraud detection by internal auditors. Control environment is captured by two dummies with “poor support from management’ as the reference category. The statistics of Control environment is as follows: ‘Satisfactory support from management’ had a marginal effect of -0.119 with a $P > Z = 0.104$. ‘Good support from management’ had a marginal effect of 0.146 with a $P > Z = 0.034$. The statistics indicates that one of the two dummy variables of control environment (good support from management) was

statistically significant. The marginal effect of the internal auditor with “good support from management” is statistically significant at a 5 percent level ($P > Z = 0.034$) and possesses the expected (positive) sign. The marginal effect of the internal auditor with “satisfactory support from management” is however, an insignificant in explaining the probability of fraud detection by internal auditors ($P > Z = 0.104$).

The above statistics means that when ‘control environment’ is dummy coded as “satisfactory support from management” and ‘good support from management’ by setting ‘poor support from management’ as the base category, there is a significant difference in fraud detection between internal auditors who receive good support from management and those internal auditors who receive poor support from management. However, no significant difference in fraud detection is observed between internal auditors who receive satisfactory support from management and those internal auditors who receive poor support from management.

The marginal effect of 0.146 implies that the probability of an internal auditor who receives good support from management detecting fraud as compared to an internal auditor who receives poor support from management increases by 14.6 percent. The positive coefficient of ‘good support from management’ suggests that internal auditors who receive good support from management are more probable to detect fraud as compared to internal auditors who receive poor support from management. This can be attributed to the fact that management have established fraud risk management program, attach importance to internal auditors report on fraud and apply appropriate sanctions to fraud perpetrators

This finding corroborate with Mui (2010). According to Mui, effective control environment relates to the environment in which the auditor performs audit work and not the individual auditor's inherent fraud detection capabilities. The study concluded that having effective control environment conforms to mandatory standards and non-mandatory guidelines that good corporate governance and support from senior management foster an environment that deters fraud.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This final chapter summarizes the major findings of the empirical study undertaken on factors influencing fraud detection by an internal auditor in Ghana. The chapter is divided into four sections. Section one has a summary of the study, section two presents the conclusions of the study while in section three we make recommendations derived from the analysis of the available data. The last section discusses the limitations of the study.

Summary

With an upsurge of fraud in the current economic scenario, fraud detection has received considerable attention from investors, academic researchers, media, the financial community and regulators (Sharma & Panigrahi, 2012). This does not only place responsibility on auditors but also presents opportunities for the audit profession.

The purpose of this study was to examine the factors that influence an internal auditor's ability to detection fraud. Specifically, it sought firstly to assess internal auditor's perception of interpersonal skills and problem solving ability on fraud detection. The second objective was to examine the influence of demographic factor on fraud detection. The third objective was to examine the influence of knowledge on fraud detection while the fourth was to assess the effect of organisation factor on fraud detection. A research question and three hypotheses were employed to aid the achievement of these objectives.

From a population of 882 internal auditors, an initial sample size of 269 was taken, based on Krejcie and Morgan's (1970) table. Sample sizes for the study based on type of organisation were then computed using simple proportions. Stratified random sampling was then used to select internal auditors from the various type of organisation for inclusion in the study. Following successful pre-test and self-administered questionnaire developed from a thorough review of the existing literature and tested for reliability and validity were distributed to respondents. The questionnaire bordered on demographic characteristics of internal auditors, knowledge, problem solving ability, interpersonal skills and organisational factors.

Data on demographic characteristics were analysed quantitatively using descriptive statistics including frequencies, percentages, and cross tabulations. To determine the factors that influence the probability of an internal auditor to detect fraud, a binary logit regression model was used to examine determinants of fraud detection by an internal auditor. The binary logit regression model was used because the dependent variable which is fraud detection is binary. Thus, the internal auditor has detected fraud or not within the past one year. Sex, experience, educational attainment, in service training, mentor, computer knowledge, control environment and organisation in which the respondent works were independent variables used for the study. Stata (version 12) was the statistical software used for all estimations in the study and SPSS version 19 was also used for other analysis. A summary of the key findings of the study follows.

Objective one focused on internal auditor's perception of problem solving ability and interpersonal skills on fraud detection. It was emerged that

internal auditors perceived communication, ability to work in a team, analytical reasoning, and data analysis skills to influence their ability to detect fraud.

The influence of demographic factors on fraud detection was the second objective. It was revealed that experience, level of education, and type of organisation in which the internal auditors work have positive influence on their ability to detect fraud. It was however revealed that sex of internal auditors' have no influence on ability to detect fraud.

The third objective examined the influence of knowledge on fraud detection. It was found that in-service training and knowledge of information technology positively influence internal auditor's ability to detect fraud whereas mentoring has no significant influence on fraud detection

The last objective sought to ascertain the effect of organisational factor on fraud detection. It was revealed that control environment positively influence internal auditors' ability to detect fraud.

Conclusions

The following conclusions are deduced from the analysis and findings of the study. For the first objective, it was concluded that innate characteristics such as communication, ability to work in a team, data analysis skills and analytical reasoning were perceived to influence internal auditors' ability to detect fraud. By possessing good interpersonal skills, internal auditors accept each other's strengths, ideas, knowledge and skills, enhanced by good communication and open-mindedness. By possessing problem solving ability,

internal auditors are able to adopt a variety of methods to identify cues that could indicate that fraud has been perpetrated.

With regards to the second objective, demographic variables, particularly level of education and organisation type, years of experience, organisation type, and level of education significantly influenced internal auditors' ability to detect fraud. Having longer years of experience exposes internal auditors to issues of fraud. Though level of education was found to positively influence internal auditors' ability to detect fraud as established by other studies, it was enhanced by internal auditors who had pursued 1st Degree and Professional Certificate as well as 2nd Degree and Professional Certificate. The influence of type of organisation on fraud detection was largely enhanced by internal auditors who work in government and local government institutions. Sex of internal auditors had no significance effect of fraud detection.

Regarding the third objective, knowledge, particularly in-service training and knowledge of information technology positively influenced internal auditors' fraud detection. Receiving in-service training by internal auditors updates them on current issues in the field of auditing, accounting and fraud management. Knowledge of information technology helps auditors to uncover computer and electronic related fraud. Mentoring however did not significantly influence internal auditors' ability to detect fraud.

With respect to the last objective, organisational factor, particularly control environment positively influence fraud detection. Reviewing and or improving internal controls; developing a corporate code of conduct and ethics; performing fraud risk assessments; developing a fraud control strategy;

and conducting fraud awareness training are various supports and strategies from top management that reflect that an effective control environment contributes towards auditors' fraud detection capabilities

Recommendations

From the results and findings of this study, a number of recommendations are made to internal auditors, management of various organisations as well as the institute of internal auditors Ghana. Firstly, internal auditors are encouraged to develop their innate characteristics such as communicative skills, ability to work in a team, analytical reasoning and data analysis skills.

Secondly, the study recommends that Institute of internal Auditors, Ghana and management of organisations should increase the number of in-service program they organise and also encourage internal auditors to participate.

Thirdly, the study recommends that internal auditors should enrol on professional courses like Certified Internal Auditor and Certified Fraud Examiner programs.

Furthermore, the study recommends that management of various organisations and Institute of Internal Auditors, Ghana, should organise programs that will teach their internal auditors auditing softwares and also how to use internet to update their knowledge in auditing. This will help them to detect computer related fraud.

Besides, this study recommends that management of various organisations should give maximum support to internal auditors in carrying out their duties.

Suggestions for future research

It is suggested that further research be carried out to examine the composite effect of demographic and knowledge on fraud detection. Also, other organisational factors should be examined. Again, the study should be extended to include other gate keeper of organisations like management, external auditors and audit committee.

REFERENCES

- Abbott, L. J., Parker, S., & Peters, G. F. (2012). Internal audit assistance and external audit timeliness. *A Journal of Practice & Theory*, 31(4), 3-20.
- Abdolmohammadi, M. J., Searfoss, D. G., & Shanteau, J. (2004). An investigation of the attributes of top industry audit specialists. *Behavioral Research in Accounting*, 16(1), 1-17.
- ACFE. (2008). Report to the Nation on Occupational Fraud and Abuse. Austin, USA: ACFE. Retrieved from <http://www.acfe.com.rtt.n.aspx>
- ACFE. (2014). *Report to The Nations on Occupational Fraud and Abuse*. Austin, USA: ACFE. Retrieved from <http://www.acfe.com.rtt.n.aspx>
- Adams, M. B. (1994). Agency theory and the internal audit. *Managerial Auditing Journal*, 9(8), 8-12.
- AICPA. (2002). Considerations of fraud in a financial statement audit, SAS No. 99. New York, NY: AICPA
- Albrecht, C. (2003). Fraud and Corporate Executives: Agency, Stewardship and Broken Trust. *Journal of Forensic Accounting*, 5(1), 109-130.
- Albrecht, C., Turnbull, C., Zhang, Y. & Skousen, C. J. (2010). "The relationship between South Korean chaebols and fraud". *Managerial Auditing Journal*, 33(3), 1-25.
- Albrecht, W. S., Wernz, G. W., & Williams, T. L. (1995). *Fraud: Bringing light to the dark side of business*. Homewood, Illinois: Irwin Inc.
- Arens, A. A., & Loebbecke, J. K. (2000). *Auditing: An integrated approach*. Upper Saddle River, NJ: Prentice Hall.

- Argenti, P. (2015). *Corporate Communication* (7th ed.). New York, NY: McGraw-Hill/Irwin.
- Arrow, K. J. (1969). Classificatory notes on the production and transmission of technological knowledge. *The American Economic Review*, 59 (2), 29 – 35.
- Ashton, A. H. (1989). Experience and error frequency knowledge as potential determinants of audit expertise. *Accounting Review*, 66(2), 218-239.
- Ashton, R. H., & Brown, P. R. (1980). Descriptive modelling of auditors' internal control judgments: replication and extension. *Journal of Accounting Research*, 18(1), 269-277.
- Baker, C. R., & Owsen, D. M. (2002). Increasing the role of auditing in corporate governance. *Critical Perspectives on Accounting*, 13(5), 783 - 795.
- Bayou, M. E., & Reinstein, A. (2001). A systemic view of fraud explaining its strategies, anatomy and process. *Critical Perspectives on Accounting*, 12(4), 383-403.
- Bazerman, M. H., Loewenstein, G., & Moore, D. A. (2002). Why good accountants do bad audits. *Harvard business review*, 80(11), 96-103.
- Bédard, J. (1989). Expertise in auditing: Myth or reality? *Accounting, Organizations and Society*, 14(1-2), 113–31.
- Bédard, J., & Chi, M. T. H. (1993). Expertise in auditing. *Auditing: A Journal of Practice & Theory*, 12, 21–45.
- Best, J. W., & Kahn, J., V. (1993). *Research in education* (8th ed.), London, England: Allyn and Bacon.

- Bologna, J., & Lindquist, R. J. (1995). *Fraud auditing and forensic accounting: new tools and techniques*. New York, NY: McGraw-Hill/Irwin
- Bonner, S. E. (1990). Experience effects in auditing: the role of task-specific knowledge. *The Accounting Review*, 65(1), 72–92.
- Bonner, S. E., & Lewis, B. L. (1990). Determinants of auditor expertise. *Journal of Accounting Research*, 28(3), 1–20.
- Boote, D. N., & Beile, P. (2005). Scholars before researchers: On the centrality of the dissertation literature review in research preparation. *Educational researcher*, 34(6), 3-15.
- Botha, H., & Boon, J. A. (2003). The information audit: principles and guidelines. *Libri*, 53(1), 23-38.
- Bujang, A. A., Zarin, H. A., & Jumadi, N. (2010). The relationship between demographic factors and housing affordability. *Malaysian Journal of Real Estate*, 5(1), 49-58.
- Burnaby P., Howe, M., & Muehlmann, B. W. (2009). Detecting Fraud in the Organization: An Internal Audit Perspective. *Journal of Forensic & Investigative Accounting*, 3(1), 195-233.
- Cano, V. (2013). *The importance of literature reviews*. Retrieved April 2015, from <http://www.ustudent.net/modules/wfsection/article.php?articleid=40>
- Carcello, J. V., Hermanson, D. R., & Raghunandan, K. (2005). Changes in internal auditing during the time of the major US accounting scandals. *International Journal of Auditing*, 9(2), 117-127.

- Carcello, J. V., Hermanson, D. R., & Raghunandan, K. (2008). Factors associated with US public companies' investment in internal auditing. *Accounting Horizons*, 19(2), 69-84.
- Carpenter, B. W., & Mahoney, D. P. (2001). Analyzing organizational fraud. *Internal auditor*, 58(2), 33-33.
- Carpenter, T. D. (2007). Audit team brainstorming, fraud risk identification, and fraud risk assessment: Implications of SAS No. 99. *The Accounting Review*, 82(5), 1119-1140.
- Ceci, S. J., Leichtman, M. D., & Putnick, M. E. (1992). *Cognitive and Social Factors in Early Deception*. Hillsdale, NJ: Lawrence Erlbaum Associates
- Certo, S. (2000). *Modern management: Diversity, quality, ethics and the global environment*. Upper Saddle River, NJ: Prentice-Hall.
- Chen, D., Hua, D., Reifman, J., & Cheng, X. (2003). *Gene Selection for Multi-Class Prediction of Microarray Data*. <https://www.jstatsoft.org/article/view/v028i09/v28i09.pdf>
- Cooper, R. & Schindler. (2006). *Business Research Methods*, (5th ed.). Boston, Massachusetts: McGraw Hill, Inc.
- Coram, P., Ferguson, C., & Moroney, R. (2007). The Importance of Internal Audit in Fraud Detection. (Working Papers No. 130). Australia: Monash University.
- Cosmides, L. (1989). The logic of social exchange: Has natural selection shaped how humans reason? Studies with the Wason selection task. *Cognition*, 31(3), 187-276.

- Cosmides, L., & Tooby, J. (1992). *Cognitive adaptations for social exchange. The adapted mind*. New York, NY: Oxford University Press
- Courtemanche, G. (1991). How has internal auditing evolved since 1941? *Internal Auditor*, 48(3), 106-110.
- Cressey, D. R. (1953). *Other people's money; a study of the social psychology of embezzlement*. Montclair, NJ: Patterson Smith
- Creswell, J.W. (2007). *Designing & Conducting Mixed Methods Research*.
- Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. United Kingdom: SAGE Publications Ltd.
- Davia, H.R., Coggins, P., Wideman, J., & Kastantin, J. (2000). *Accountant's Guide to Fraud Detection and Control (2nd ed)*. New York, NY: John Wiley & Sons.
- Dilenschneider, R. L. (1992). *A briefing for leaders: Communication as the ultimate exercise of power*. New York, NY: HarperCollins.
- Du-Babcock, B. (2006). Teaching business communication: Past, present, and future. *Journal of Business Communication*, 43 (3), 253-264.
- Duffield, G. M., & Grabosky, P. N. (2001). *The psychology of fraud*. Canberra, Australia: Australian Institute of Criminology.
- Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of management review*, 14(1), 57-74.
- Ekman P. (1992). *Telling Lies: Clues to Deceit in the Market Place, Politics, and Marriage*. New York, NY: Norton and Company.

- Ericsson, K. A. (1996). *The acquisition of expert performance: An introduction to some of the issues*. Mahwah, NJ: Erlbaum
- Ericsson, K. A., & Charness, N. (1994). Expert performance: Its structure and acquisition. *American psychologist*, 49(8), 725.
- Ericsson, K. A., Krampe, R. T., & Tesch-Römer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological review*, 100(3), 363.
- Frazer, L., & Lawley, M. (2000). *Questionnaire Design & Administration: a practical guide*. Brisbane, Australia: John Willey & Sons.
- Gaur, S. A., & Gaur, S. S. (2009). *Statistical methods for practice and research. A guide to data analysis using SPSS* (2nd ed.). New Delhi, India: Vivek Mehra.
- Gavious, I. (2007). Alternative perspectives to deal with auditor's agency problem. *Critical Perspectives on Accounting*, 18 (4), 451-467.
- Ghana Audit Service. (2009). Report of the Auditor-General on the Public Accounts of Ghana- Ministries, Departments and other Agencies. Accra, Ghana: Author. Retrieved from <http://www.ghaudit.org/gas/site/report/>
- Ghana Audit Service. (2010). Report of the Auditor-General on the Public Accounts of Ghana- Ministries, Departments and other Agencies. Accra, Ghana: Author. Retrieved from <http://www.ghaudit.org/gas/site/report/>

- Ghana Audit Service. (2011). Report of the Auditor-General on the Public Accounts of Ghana- Ministries, Departments and other Agencies. Accra, Ghana: Author. Retrieved from <http://www.ghaudit.org/gas/site/report/>
- Ghana Audit Service. (2012). Report of the Auditor-General on the Public Accounts of Ghana- Ministries, Departments and other Agencies. Accra, Ghana: Author. Retrieved from <http://www.ghaudit.org/gas/site/report/>
- Gigerenzer G., Todd P. M., & the ABC Research Group. (2000). *Simple Heuristics that Make Us Smart*. New York, NY: Oxford University Press.
- Gobet, F., & Campitelli, G. (2007). The role of domain-specific practice, handedness, and starting age in chess. *Developmental Psychology*, 43(1), 159–172
- Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The qualitative Report*, 8 (4), 597- 606.
- Goodwin-Stewart, J., & Kent, P. (2006). The use of internal audit by Australian companies. *Managerial Auditing Journal*, 21(1), 81-101.
- Gramling, A. A., & Myers, P. M. (2003). Internal auditors' assessment of fraud warning signs: Implications for external auditors. *CPA JOURNAL*, 73(6), 20-25.
- Grazioli, S., Jamal, K., & Johnson, P. E. (2006). A cognitive approach to fraud detection. *Journal of Forensic Accounting*, 45, 158 – 162

- Groebner, D., Shannon, P., Fry, P., Smith, K. (2000) *Business Statistics, A Decision-making Approach* (4th ed.). Englewood Cliffs, NJ: Prentice Hall.
- Gujarati, D. N. (2002). *Basic econometrics w/data disk* (4th ed.). New York, NY: McGrawHill.
- Hamilton, R. E., & Wright, W. F. (1982). Internal control judgments and effects of experience: Replications and extensions. *Journal of Accounting Research*, 20(2), 756-765.
- Harrison, W., Thomas, C. & Suwardy, T. (2011). *Financial Accounting. International Financial Reporting Standards*. Singapore: Pearson Education South Asia.
- Haugen, S., & Selin, J. (1999). Identifying and controlling computer crime and employee fraud. *Industrial Management & Data Systems*, 99(8), 340-344.
- Hillison, W., Pacini, C., & Sinason, D. (1999). The internal auditor as fraud buster. *Managerial Auditing Journal*, 14(7), 351-363.
- Holtfreter, K. (2004). Fraud in US organisations: an examination of control mechanisms. *Journal of Financial Crime*, 12(1), 88-95.
- Hooks, K. L., Kaplan, S. E., Schultz Jr, J. J., & Ponemon, L. A. (1994). Enhancing communication to assist in fraud prevention and detection; Comment: Whistle-blowing as an internal control mechanism: Individual and organizational considerations. *Auditing*, 13(2), 86 - 131
- Hynes, G. (2005). *Managerial communications: Strategies and applications*. New York: McGraw-Hill/Irwin.

- IIA (2009a). *Definition of Internal Auditing*. Altamonte Springs, FL: Institute of Internal Auditors
- IIA (2009b) *The International Professional Practices Framework of the Institute of Internal Auditor*. FL: Institute of Internal Auditors
- IIA, AICPA, & ACFE, (2008). *Managing Business Risk of Fraud: A Practical Guide*. Retrieved from <https://na.theiia.org>
- IIAG (2015). History, Mission and vision. <https://na.theiia.org/about-us/Pages/About-The-Institute-of-Internal-Auditors.aspx>
- Israel, K. M. (2009). The alert and creative entrepreneur: a clarification. *Small Business Economics*, 32 (2), 145-152
- Jans, M., Lybaert, N., & Vanhoof, K. (2009). *A framework for internal fraud risk reduction at it integrating business processes*. Brisbane, Australia: John Willey & Sons.
- Jensen, M. C. (1978). Paying people to lie: The truth about the budgeting process. *European Financial Management*, 9(3), 379-406.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the Firm: Managerial Behaviour, Agency Costs, and Ownership Structure. *Journal of Financial Economics*, 3(4), 305-360
- Johnson, P. E., Grazioli, S., & Jamal., K. (1993). Fraud detection: Intentionality and deception in cognition. *Accounting, Organizations and Society*, 18(5), 467-488.
- Kent, P., Munro, L., & Gambling, T. (2006). Psychological characteristics contributing to expertise in audit judgment. *International Journal of Auditing*, 10(2), 125-141.

- Kombo, D. K., & Tromp, D. L. (2006). *Proposal and thesis writing: An introduction*. Retrieved from <http://www.wagner.nyu.edu/.../whatisresearch.php>.
- Kothari, C.R (2008). *Research Methodology: Methods and Techniques* (2nd ed.). Wishira, Prakashan: New Age international (P) Ltd
- KPMG. (2003). *Fraud survey 2003*. Montvale, NJ. KPMG.
- KPMG. (2008). *Fraud and Misconduct Survey*. Montvale, New Jersey: KPMG
- Krambia-Kapardis, M. (2001). *Enhancing the auditor's fraud detection ability: An interdisciplinary approach*. Frankfurt am Main, Hesse: Peter Lang.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30, 607-610.
- Levi, M. (2008). Organized frauds and organizing frauds: unpacking the research on networks and organization. *The Journal of Criminology and Criminal Justice*, 8(4), 389-419.
- Libby, R., & Luft, J. (1993). Determinants of judgment performance in accounting settings: Ability, knowledge, motivation, and environment. *Accounting, Organizations and Society*, 18(5), 425-450.
- Libby, R., & Tan, H. T. (1994). Modeling the determinants of audit expertise. *Accounting, organizations and society*, 19(8), 701-716.
- Lin, S., Pizzini, M., Vargus, M., & Bardhan, I. R. (2011). The role of the Internal Audit Function in the Disclosure of Material Weaknesses. *The Accounting Review*, 86(1), 287-323.

- Lister, L. M. (2007). A practical approach to fraud risk: comprehensive risk assessments can enable auditors to focus antifraud efforts on areas where their organization is most vulnerable. *Internal auditor*, 64(6), 61-66.
- Loebbecke J. K., Eining M. M., & Willingham J. J. (1989). Auditors experience with material regularities: Frequency, nature and detectability. *Auditing: A Journal of Practice and Theory*, 9(5), 1-28.
- Long J. S., & Freese, J. (2001). *Regression models for categorical dependent variables using STATA*. Texas: Stata Corporation College Station. Retrieved August 20, 2014 from www.en-bookZZ.org.
- Louwers, T., Ramsay, R., Sinason, D., & Strawser, J. (2008). *Auditing & Assurance Services*. New York, NY: Mc Graw – Hill/Irwin
- Mahadeo, S. (2006). *Tone at the top: How management can prevent fraud*. Viewed on June, 2015 available from <http://www.acfe.com/resources/view.asp?ArticleID=625>
- Mishra, A. K., & Perry, J. E. (1999). Forward contracting of inputs: A farm-level analysis. *Journal of Agribusiness*, 17(2), 77-92.
- Morrill, C., & Morrill, J. (2003). Internal auditors and the external audit: a transaction cost perspective. *Managerial Auditing Journal*, 18(6/7), 490-504.
- Moyes, G. D., & Anandarajan, A. (2002). What Kind of CPA Detects Fraud? *Internal Auditing-Boston-Warren Gorham And Lamont Incorporated*, 17(5), 32-41.
- Moyes, G. D., & Hasan, I. (1996). An empirical analysis of fraud detection likelihood. *Managerial Auditing Journal*, 11(3), 41-46.

- Mui, G. Y. (2010). Auditor expert performance in fraud detection: The case of internal auditors. (Doctoral Theses). Retrieved from <http://www.library.uq.edu.au/blogs/sp>
- Murdock, H. (2008). The three dimensions of fraud: auditors should understand the needs, opportunities, and justifications that lead individuals to commit fraudulent acts. *Internal Auditor*, 65(4), 81-83.
- Murphy, H., Hildebrandt, H., & Thomas, J. (1997). *Effective Business Communications*. New York, NY: McGraw-Hill/Irwin.
- Nooteboom, B. (2000). Institutions and forms of co-ordination in innovation systems. *Organization studies*, 21(5), 915-939.
- Norman, C. S., Rose, A. M., & Rose, J. M. (2010). Internal audit reporting lines, fraud risk decomposition, and assessments of fraud risk. *Accounting, Organizations and Society*, 35(5), 546-557.
- NYSE (2003). *NYSE Listed Company Manual*, New York Stock Exchange. Viewed 21 May 2015, <<http://nysemanual.nyse.com/lcm/>>.
- O'Sullivan M. (2003). The Fundamental Attribution Error in Detecting Deception: The Boy-Who-Cried-Wolf Effect. *Personality and Social Psychology Bulletin*, 29(10), 1316-1327.
- Owusu-Ansah, S., Moyes, G. D., Babangida Oyelera, P., & Hay, D (2002). Empirical analysis of the likelihood of detecting fraud in New Zealand. *Managerial Auditing Journal*, 17(4), 192-204.
- Paape, L. (2007). *Corporate Governance: The Impact on the role, position, and scope of Services of the internal audit function*. ERIM Ph.D. Series in Management. Rotterdam: Erasmus Research Institute of Management. Retrieved from <http://hdl.handle.net/1756/10417>

- Pallant, J. (2011). *SPSS survival manual: A step by step guide to data analysis using SPSS version 15* (4th ed.). Australia: Allen & Unwin.
- Pan, G., Seow, P. S., Suwardy, T., & Gay, E. (2011). Fraud: A review and research agenda. *Journal of Accountancy Business and the Public Interest*, 10, 138-178. Retrieved: http://ink.library.smu.edu.sg/soa_research/1473
- Perry, L. M., & Bryan, B. J. (1997), 'Heightened responsibilities of the internal auditor in the detection of fraud'. *Managerial Finance*, 23(12), 38-43.
- Pinsonneault, A. & Kraemer, K.L. (1993), ``Survey research methodology in management information systems: an assessment''. *Journal of Management Information Systems*, 10(2), 75-106.
- PWC (2007). Economic Crime: People, Culture and Controls. The 4th biennial Global Economic Crime Survey.: PricewaterhouseCoopers Retrieved from May 2015, from <http://people.uscd.edu/~mbaron/edad810/Krejcie.pdf>.
- Roebuck, D. (2001). *Improving business communication skills*. Upper Saddle River, NJ: Prentice-Hall.
- Ronald, M.W. (2009) *Internal Audit, Internal Control and Organizational Culture*. Unpublished doctorate thesis, University of Victoria, Australia.
- Salem, M. S. (2012). An overview of research on auditor's responsibility to detect fraud on financial statements. *Journal of Global Business Management*, 8(2), 218.

- Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research Methods for Business Students* (4th ed.). Essex, England: Pearson Education Limited.
- Selltiz, C., Wrightsman, L. S., & Cook, S. W. (1976). *Research Methods in Social Relations* (3rd ed.). New York: Holt, Rinehart, and Winston
- Shanteau, J. (1992). Competence in experts: The role of task characteristics. *Organizational behavior and human decision processes*, 53(2), 252-266.
- Shanteau, J., Weiss, D. J., Thomas, R. P., & Pounds, J. C. (2002). Performance-based assessment of expertise: How to decide if someone is an expert or not. *European Journal of Operational Research*, 136(2), 253-263.
- Sharma, A., & Panigrahi, P. K. (2012). A Review of Financial Accounting Fraud Detection based on Data Mining Techniques. *International Journal of Computer Applications*, 12(8) 1-5.
- Simon, H. A. (1991). Bounded rationality and organizational learning. *Organization science*, 2(1), 125-134
- Soh, D. S., & Martinov-Bennie, N. (2011). The internal audit function: Perceptions of internal audit roles, effectiveness and evaluation. *Managerial Auditing Journal*, 26(7), 605-622.
- Speklé, R. F. (2001). Explaining management control structure variety: a transaction cost economics perspective. *Accounting, Organizations and Society*, 26(4), 419-441.

- Spira, L. F., & Page, M. (2003). Risk management: The reinvention of internal control and the changing role of internal audit. *Accounting, Auditing & Accountability Journal*, 16(4), 640-661.
- Strikwerda, J. (2012). An entrepreneurial model of corporate governance: devolving powers to subsidiary boards. *The international journal of business in society*, 3 (2), 38-57
- Tabachnick, B. G. & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Pearson Education, Inc. United State of America. Retrieved August 20, 2014, from www.en-bookZZ.org.
- Theiler, J. (2003). A comparative study: Ericsson's theory of expertise and Gardner's theory of multiple intelligences. (Master's Thesis, University of Nebraska, Lincoln). Retrieved April 2, 2015 from <http://dwb4.unl.edu/Diss/Theiler/EvsG.pdf> United Kingdom: SAGE Publications Inc.
- Vasek, M. E. (1986). *Lying as a skill: The development of deception in children. Deception: Perspectives on human and nonhuman deceit*. Albany, N. Y: State University of New York Press.
- Vasiu, L., & Vasiu, I. (2004, January). *Dissecting computer fraud: from definitional issues to a taxonomy*. In *System Sciences*. Paper presented at the 37th Annual Hawaii International Conference, Hawaii, 23 -25 January.
- Vona, L. W. (2008). *Fraud risk assessment: Building a fraud audit program*. Hoboken New Jersey: John Wiley and Sons

- Wallace, W. A., & Kreutzfeldt, R. W. (1991). Distinctive characteristics of entities with an internal audit department and the association of the quality of such departments with errors. *Contemporary Accounting Research*, 7(2), 485-512.
- Wells, J. T. (2011). *Corporate fraud handbook: Prevention and detection*. New York, NY: John Wiley & Sons.
- Wikipedia, (2015). Importance of mentoring. Retrieved May 2015, from https://en.wikipedia.org/wiki/importnce_of_mentoring
- Wilks, T. J., & Zimbelman, M. F. (2004). Using game theory and strategic reasoning concepts to prevent and detect fraud. *Accounting Horizons*, 18 (3), 173-184.
- Williamson, O. E. (1975). *Markets and hierarchies*. New York, NY: The Free Press.
- Williamson, O. E. (1979). Transaction-cost economics: the governance of contractual relations. *The journal of law & economics*, 22 (2), 233-261.
- Williamson, O. E. (1999). Strategy research: governance and competence perspectives. *Strategic management journal*, 20 (12), 1087-1108.
- Yang, W., Moyes, G. D., Hamedian, H., & Rahdarian, A. (2010). Professional Demographic Factors That Influence Iranian Auditors' Perceptions Of The Fraud-Detecting Effectiveness Of Red Flags. *The International Business & Economics Research Journal*, 9 (1), 83.
- Zeckhauser, R. J., & Pratt, J. W. (1985). *Principals and agents: the structure of business*. Boston, Massachusetts: Harvard Business School Press.

Zikmund, W.G., Babin, B. J., Carr, J. C., & Griffin, M. (2010). *Business Research Methods* (8th ed.). Victoria, Australia: South-Western Cengage Learning.

APPENDICE A

Krejcie and Morgan's Table for Determining Sample Size from a Given Population

N = Population Size S = Sample Size

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Source: Krejcie and Morgan, (1970; p. 608).

APPENDIX B

UNIVERSITY OF CAPE COAST

SCHOOL OF BUSINESS

DEPARTMENT OF ACCOUNTING AND FINANCE

QUESTIONNAIRE ON THE DETERMINANTS OF AUDITOR

EXPERT PERFORMANCE IN FRAUD DETECTION

Dear Sir/Madam,

This questionnaire seeks to solicit information from you to aid a research project. The project aims to evaluate how internal auditors can develop their fraud detection capabilities. Specifically, this survey aims to capture internal auditors' perceptions of the factors that impact on their fraud detection capabilities. It is in partial fulfilment of the requirements for a Master of Commerce in Accounting.

This exercise is solely for academic purposes and therefore guided by all relevant ethical standards of research. All information collected remains anonymous and confidential as **no personal identifiers such as names or addresses are recorded**. Please be reassured that the survey will not require disclosure of any information that breaches your obligation of client confidentiality. Under no circumstances will they be used for any other purpose than stated.

Thank you.

PART ONE: DEMOGRAPHY

Please read each question carefully and choose the appropriate answers by ticking {√} in the appropriate box corresponding to the chosen item and write where necessary.

- | | | |
|---------|--------------|--------------------------|
| 1. Sex; | Male | <input type="checkbox"/> |
| | Female | <input type="checkbox"/> |
| 2. Age | 20 -25 years | <input type="checkbox"/> |
| | 26-30 years | <input type="checkbox"/> |
| | 31-35years | <input type="checkbox"/> |
| | 36-40 years | <input type="checkbox"/> |

- 41 -45 years
- 46-50 years
- 50 years and above
3. Years of experience in internal audit
- 1- 4 years
- 5 – 8 years
- 9 and above
4. Role in your organisation
- Chief Auditor
- Audit director
- Audit senior manager
- Audit manager
- Risk manager
- Principal internal auditor
- Senior internal auditor
- Internal auditor
- Finance audit officer
- Others.....
5. Suspicions of fraud reviewed in the last five years: (**tick as many as possible**)
- Theft of physical assets
- Theft of fund
- Corruption
- Electronic and computer related fraud
- Tax fraud
- Financial reporting fraud
- Payroll fraud
- Other fraud
6. Level of education
- Certified internal auditor
- Certified fraud examiner
- Chartered accountants
- Masters
- Degree
- Other related certification.....
7. Which organisation do you work
- Professional services
- Energy and petroleum
- Telecommunication
- Finance and finance services
- Government and local government
- Education

PART TWO: FRAUD DETECTION

8. Please indicate whether you have been able to detect fraud or not within the past one year

- Detected fraud
- Not detected fraud

PART THREE: KNOWLEDGE VARIABLE

9. Have you received in-service training over the last twelve months?

- Yes
- No

10. Do you have a mentor?

- Yes
- No

11. Indicate the level of information technology you possess

- No information technology knowledge
- Inadequate information technology knowledge
- Adequate information technology

PART THREE: PROBLEM-SOLVING ABILITY

I. Data analysis skills

The following statements relates to how helpful Data analysis skills influence your ability to detect fraud

Please indicate your agreement or disagreement with each of the statements by **ticking** the appropriate number.

STATEMENT		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I believe that as an auditor it is important for me to:						
1	Be able to recognise relationships in data	5	4	3	2	1
2	Be able to interpret relationships in data	5	4	3	2	1

3	Be able to evaluate (peer-review) another auditor's work	5	4	3	2	1
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II. Analytical reasoning

The following statements relates to how helpful *analytical reasoning* influence your ability to detect fraud.

Please indicate your agreement or disagreement with each of the statements by ticking the appropriate number.

STATEMENT		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	It is important for me to possess an inquisitive mind	5	4	3	2	1
2	It is important for me to be able to think out of the box	5	4	3	2	1
3	It is important for me to be able to reason analytically	5	4	3	2	1
4	It is important for me to be able to think critically	5	4	3	2	1
5	It is important for me to be diligent to further investigate irregularities and/or fraud	5	4	3	2	1
6	It is important for me to be more likely to reject statements unless I have proof that they are true	5	4	3	2	1
7	It is important for me to be able to respond to issues in the business environment	5	4	3	2	1
8	It is important for me to suspend decision-making on issues where more information is required	5	4	3	2	1

PART FOUR: INTERPERSONAL SKILLS

I. Communication

The following statements will be helpful in finding the extents to which communication skills help improve your work.

Please indicate your agreement or disagreement with each of the statements by ticking the appropriate number.

STATEMENT		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	It is important for me to communicate my opinions and/or decisions with my team members	5	4	3	2	1
2	It is important for me to communicate my opinions and/or decisions with the external auditors	5	4	3	2	1
3	My team is able to communicate decisions and/or opinions with my organisation's senior management	5	4	3	2	1
4	My team is able to communicate decisions and/or opinions with our external auditors	5	4	3	2	1

II. Ability to work in teams

The following statements will be helpful in finding the extent to which teamwork ability help improve your work

Please indicate your agreement or disagreement with each of the statements by ticking the appropriate number.

STATEMENT		Strongly Agree	Agree	Neutral	disagree	strongly disagree
1	It is important for me to work alone on job assignments	5	4	3	2	1
2	It is important for me to work in a team on job assignments	5	4	3	2	1
3	It is important for me to have good peer relationships within my team	5	4	3	2	1

4	My team values the peer-review (evaluation) of each other's work	5	4	3	2	1
5	My team engages with other functions within my organisation in the course of our work	5	4	3	2	1
6	My team provides input to proposals for system changes and/or updates in the organisation	5	4	3	2	1

PART FIVE

Control environment encompasses establishing appropriate organizational culture; documenting fraud control strategy code of ethics/conduct, and hiring and promotion standards; establishing, complementing, or evaluating internal audit functions; developing a policy and methodology to investigate potential occurrences of fraud; promoting controls to prevent, deter, and detect fraud and implementing and maintaining a fraud and ethics hotline and whistleblower program.

Rate the support of the management of your organisation toward creating effective control environment

- Poor
- Satisfactory
- Good

APPENDIX C

**UNIVERSITY OF CAPE COAST
CAPE COAST, GHANA
SCHOOL OF BUSINESS
DEPARTMENT OF ACCOUNTING AND FINANCE**

29th April, 2014
The President
Institute of Internal Auditors Ghana
Dear Sir,

INTRODUCTORY LETTER

The bearer of this letter, Mr. Seidu Yakubu, is Master of Commerce (Accounting) student of the School of Business, University of Cape Coast. He is writing his thesis on the topic, "Determinants of Internal Auditors Ability to Detect Fraud".

We would be grateful if you could assist him to administer his questionnaire in your institution and also offer the necessary support he might need.

Thank you in anticipation of your co-operation.

Yours faithfully,

Signed
Siaw Frimpong (PhD)
HEAD