

**Determinants of internal audit effectiveness in fraud prevention and detection: Evidence from a Ghanaian public university**

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**Abstract**

This study examines the key factors that determine Internal Audit (IA) effectiveness in fraud prevention and detection at the University of Mines and Technology (UMaT), Ghana, and evaluates their current level of implementation. A mixed-methods research design was employed. Quantitative data were collected through structured questionnaires administered to 35 staff members, achieving an 87.5% response rate. In addition, qualitative data were obtained through in-depth interviews with 10 key informants. Quantitative data were analysed using descriptive statistics in Excel, while qualitative responses were examined through thematic analysis using NVivo. The findings indicate that critical determinants of IA effectiveness, such as management support, organizational independence, adherence to Institute of Internal Auditors (IIA) Standards, and auditor competence, are substantially present within the institution. However, to further strengthen internal audit effectiveness in fraud prevention and detection, the study recommends enhanced specialized fraud training, the formalization of whistleblower policies, and the adoption of advanced IT audit tools.

**Keywords:** Internal Audit, Fraud, Fraud Prevention, Fraud Detection, Determinants, Effectiveness, Fraud Training, Anti-Fraud Control, Whistleblower, UMaT

**JEL Classification:** M41, M42, M48

## 1. Introduction

Public universities in Ghana are semi-autonomous and substantially sub vented. They also commit resources to generate funds internally and operate in a complex corporate business and technological environment. This, among other things, makes universities susceptible to occupational fraud. Legislations such as the Public Financial Management Act, 2016 (Act 921) and the Public Procurement Act (Act 663) of Ghana as amended and related regulations were enacted appropriately to deal with public irregularities and fraud as they seek to manage the risk of fraud and irregularities to protect the public interest. These laws also place responsibility on the IA to effectively assist the institutions in managing the risk of fraud through the provision of objective assurance for prevention and detection. According to Rendon and Rendon (2016), public institutions are more exposed to fraud due to growing globalization, technological advancement in procurement, outsourcing, and the need to reduce cost. An effective IA function can make a significant contribution to the fight against fraud (Bonrath & Eulerich, 2024).

In dealing with increasing irregularities and fraud in the public procurement system, the Ghana Electronic Procurement System (GHANEPS) was introduced, to significantly reduce irregularities and fraud. However, despite GHANEPS, the 2024 Auditor-General's Report, reveals a 109.3% surge in financial irregularities within public boards and statutory institutions, from GH¢8.80 billion in 2023 to GH¢18.42 billion in 2024, highlighting that digital systems without rigorous audit analytics are insufficient. Data analytics is a key tool public sector institutions and IA can leverage effectively to fight procurement fraud, and other spectrum of fraudulent activities (Adam & Fazekas, 2019). Data analytics, combined with behavioural science and process controls, is powerful for detecting and preventing human-factor fraud and collusion. When fraudsters manipulate data pre-digitization, analytics can uncover the resulting anomalies and red flags, collusion and bid-rigging, patterns, and inconsistencies, proving that "garbage in" still leaves a trace. Public universities in Ghana can benefit from data analytics to maximize the benefits of an e-procurement system. The GHANEPS creates a dataset for data analytics to effectively operate. Effective and robust data analytics can detect anomalies and enforce compliance to enhance effectiveness. The integration of data analytics IT tools, coupled with proper training, fundamentally transforms the IAF from a reactive, sample-based process into a proactive, data-driven powerhouse for fraud detection and prevention. GHANEPS provides a data foundation, but data analytics provides the intelligence to make the data actionable against sophisticated fraud. Effectiveness is key for achieving any objectives and IA, as a strategic governance tool, must be effective in order to assist the organization, including publicly funded universities in Ghana prevent, detect and investigate fraud. It is in this direction that the Internal Audit Agency Act, 2003 demands that the establishment of IA units and the appointment of staff of IA units in the Ministries, Departments, and Agencies (MDA) or Metropolitan, Municipal and District Assemblies (MMDA) ensure effectiveness and efficiency of the auditing function to enable the Agency fulfil its function of facilitating the prevention and detection of fraud in the MMDAs

through the Internal Audit Units. The IIA Global IA Standards, effective 2024, requires the effectiveness of the IA in order to help institutions improve upon the effectiveness of control, risk management and governance processes. It indicates that internal audit effectiveness goes beyond the institutions to serve the public interest. The IIA (2009) mentioned that an effective IA activity can greatly aid in addressing fraud. Asiedu and Deffor (2017), in examining the Determinants of IA effectiveness in Ghana, stated that if the Internal Audit Function (IAF) is effective, corruption will be lowered and that the lack of quality and effective IAF have often been cited for system failures. The menace of fraud and corruption cases captured by the Reports of the Auditor-General has questioned the effectiveness of IA units in the country, including public universities. The Public Accounts Committee of the parliament of Ghana has made calls on Internal Auditors to be effective in helping the institutions prevent and detect fraud, in contrast to the outcome of external auditor's work issues.

Previous researchers have mainly focused on the identification of these determinants, and rating them in the order of importance, on the basis of their findings. This suggests that for example, if auditor competence is found to be low, the indications are that, auditors' competence is less important determining factor of IA effectiveness. However, the case is that auditor competence is an important factor whether the research shows that is significant or low. There is also limited research on IA fraud effectiveness (Othman et al., 2015). Similarly, Oyedotun et al. (2025) highlighted that while literature on IA roles is extensive, findings on effectiveness remain fragmented and context specific. They also identified a critical research gap including integration of technology into studies of IA fraud. There is adequate academic, industrial and professional evidence that has established beyond reasonable doubt that determinants such as organizational independence, management support, adequate resources, auditors' competence and training, adoption and application of IA standards, relationship between external and internal auditors, adoption and use of technological tools contribute to IA effectiveness (Oriakhi, 2020). Assessing whether these determinants are sufficiently significant is essential to identify opportunities for enhancement, optimizing their impact on the effectiveness of IA in detecting and preventing fraud. Poor organizational independence should not mean that organizational independence of the IA function is of less importance in measuring IA effectiveness but should be seen as a poor and inappropriate organizational positioning of the IA function (IIA, 2024). This study aims at contributing to fill the gap, through its main objective to investigate the key determinants of IA effectiveness in the prevention and detection of fraud at UMaT, and to assess the extent to which these determinants, including senior management and audit committee support, organizational independence, auditor competence, adoption of IIA, Global IA Standards, effective anti-fraud programs, and adoption of technology are significantly present. It is hypothesized that the internal audit function (IAF) of UMaT is not adequately equipped with the key determinants necessary to enable its effectiveness in the prevention and detection of fraud.

As a whole, this paper strengthens auditing literature by bridging qualitative and quantitative findings, highlighting key determinants that enhance IAF effectiveness in fraud prevention and detection. The principal contribution of this study is the buildup of the key determinants and the assessment of the extent to which these determinants are sufficiently present or significant, with the focus on enhancing them. The results of the study are theoretically significant, in that prior literature on the IAF lacks empirical evidence specifically related to Ghanaian public universities. Also, particularly, most prior literature has been on the influential factors for the general effectiveness of the IAF. This paper specifically, focuses on the determinants of IA effectiveness in fraud prevention and detection. The findings of the study offer significant practical, actionable insight that can support senior management, audit committees, boards and university governing bodies, and governmental agencies or policymakers and internal auditors to improve the fraud effectiveness of their IAF.

Following this introduction, the paper proceeds by evaluating relevant scholarly work and framing the research hypotheses in Section 2. The focus then shifts to the methodology and data collection processes in Section 3. Section 4 is dedicated to the analysis of the results, while the final section 5, entails a concluding discussion with recommendations for future investigations.

## 2. Literature Review Hypothesis Development

This section provides a foundation for the study by reviewing existing research and establishing the theoretical context. A thorough literature review serves two primary purposes: it highlights the relevance of the current investigation and provides a benchmark for interpreting new findings. Creswell and Creswell (2022, p.52) emphasizes that this process includes conceptual and empirical reviews, which culminate in a structured conceptual framework. Furthermore, the hypotheses presented in this section are derived directly from gaps and trends identified in prior literature.

### 2.1 Management and Audit Committee Support

Top management should support the IAF and provide it with enough resources to become useful in its fraud prevention efforts. For the IAF to be useful in its fraud prevention efforts, it should be supported and adequately resourced by top management (Alhajri, 2017 & Gupta and Gupta, 2015). Cooper (1993) indicates that the audit committee should also ensure that IA has the resources to effectively fulfil its responsibilities. Alhajri (2017) supported this position when pointed out that audit committees need to ensure that IA has adequate resources to implement its plan effectively. Effective performance of IAF in the public sector requires enough IA personnel with required competencies (Alhajri, 2017). According to Sarens and De Beelde (2006), having the support of the senior management, especially the chief executive officers, is important as well, such as for unrestricted access to staff, information and documentation. Top management has an important say in the resources committed to the IAU and are also likely to give input to the IA work plan which provides the IAU with the enablement required for the performance of its functions (Vanasco, 1998; Sarens et al., 2012). "Organizations should evaluate their internal auditors'

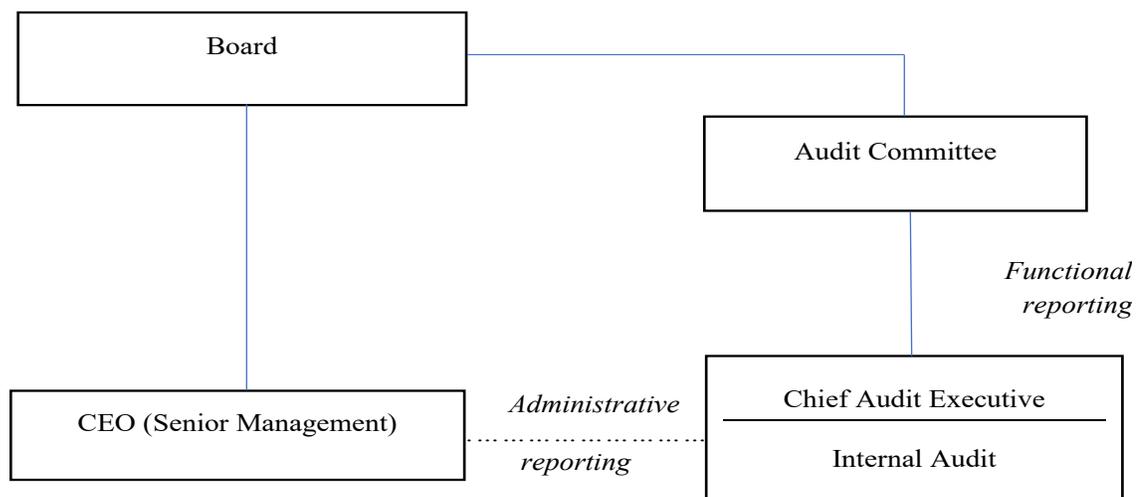
specific fraud detection role and ensure the IAF receives adequate resources" (IIA, 2009, p. 5). Sawsan et al. (2016) found that increased funding for the IA department has a significant impact on fraud prevention and detection in the United Arab Emirates (UAE) for the effectiveness of corporate governance for UAE companies. Onumah and Krah (2012), in their survey of the Ghanaian internal auditors, observed that they found the effectiveness of IA was limited by limited management support and inadequate resources for the IAF. Management support was found to be the most significant influential factor that drives IA effectiveness in the organisations of Saudi Arabian public sector (Alzeban & Gwilliam, 2014). Similarly, Mihret and Yismaw (2007) identified management support as second to IA quality among factors that enable IA effectiveness in the Ethiopian higher educational institution. Abubakari et al., (2025) in their research on IA value in addition to performance improvement in Ghana's State-Owned Enterprises, found that management commitment significantly impacts IA effectiveness. Geqeza and Dubihlela (2024) conducted a study in the South African local authority on IA effectiveness and the role of management support, underscores that management support plays an impactful role in advancing IA effectiveness, and called for enhanced support for the improvement of overall performance.

H1. Top Management and the Audit Committee do not provide significant support for the IA.

## 2.2 Organizational Independence

The independence of the IAF plays a significant role in providing a valuable IA effort in the fight against fraud (IPPF of the IIA, 2009). The organizational independence of the IA is achieved when the function reports administratively to the Chief Executive Officer (CEO) (Senior management), and functionally to the Audit Committee of the Board (IIA, 2024). Figure 1 shows the organizational status of IA (Administrative and Functional Reporting).

**Figure 1. Organizational status of IA (administrative and functional reporting)**



**Source:** Developed by the authors

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Figure 1 is a direct internal relationship that covers communications for the daily conduct of efficient and effective functioning of the IA. It mainly entails IA budget and resources allocations, such as office space, staffing needs, daily administrative and operational support and updates and access to operational systems and internal policies. While the functional reporting (solid lines) indicates CAE's direct accountability for audit findings, plan, budget, and performance evaluation. The CAE reports directly to the Audit committee/board to ensure IA independence and oversight, protecting the IAF from management interference in the determination of scope, performance of work, and communicating results. The committee/board also has the responsibility of approving the IA charter, IA plans, budget, reviewing audit reports, evaluating performance, appointing and removing CAE. Rocco (1998) identifies that if internal auditors observed a professional code of conduct to avoid conflicts of interest, this would greatly boost their independence and objectivity to prevent, detect, investigate and report fraud. Freedom from management influence or interference is not enough and should be supported by the avoidance of a personal internal auditor's conflict of interests for high independence. Law (2011) in his studies on fraud, mentioned that IA departments should be given the authority to handle their responsibilities and found it crucial that they are independent of management in order to perform their functions without 'fear or favour' in fighting fraud. Bou-Raad (2000) argued that the strength of an IA unit must be assessed regarding the level of independence it enjoys from management and operating functions. Canestrari-Soh et al. (2015) admitted that the auditor's independence is key to the quality performance of his work, though practically, it is tough for an internal auditor to have any reasonable degree of independence in mind and attitude because of management influence in terms of scope of work. Abuazza et al. (2015) identified IA independence as a key element of IA effectiveness. James (2003), in a survey that examined the perceptions of 63 US Bank Loan lending officers to ascertain the impact of the reporting structure on the independence of internal audit to be able to prevent financial statement fraud, found that the IAF that reports to senior management is perceived as being less able to prevent fraudulent reporting compared to IAF that report solely to the audit committee with higher independence. The IIA (2009) states that the exercise of professional scepticism is paramount in all audit work and that inadequate professional scepticism is frequently cited as a significant reason why material fraud has not been detected. It further indicates that the independence and objectivity of the IAF produces an impartial and unbiased attitude towards the exercise of professional scepticism, which enables internal auditors to focus on the effectiveness of internal controls and heightens the likelihood of noticing the common characteristics of fraud is high to uncover possible fraudulent activity if it exists. Independence can only be achieved by allowing the IA unit to perform its responsibilities free from interference; avoiding conflicts of interest; having direct contact with the board and senior management; having unrestricted access, appointment and removal of the head of the IA not controlled by management (IIA, 2009).

H2. The IA of the University does not have organizational independence

### 2.3 Auditor Competence

The IIA (2012), Supplemental Guidance on the role of auditing in public sector governance, states that an audit activity needs a professional staff that together has the necessary qualifications and competence to conduct the full range of audits required by its mandate. It further indicates that auditors must comply with minimum continuing education requirements established by their relevant professional organizations and standards. Petraşcu and Tîeanu (2014) states that internal auditors must have a superior level of theoretical knowledge and practical experience in order to successfully accomplish their role. IA staff competence is openly acknowledged in literature as one of the key elements of internal audit IA effectiveness. According to IIA Standard 1210. A2, internal auditors must be capable of evaluating fraud risk and mitigation strategies, but they are not expected to be expert fraud investigators (IIA, 2017). According to Popoola et al. (2015), auditors need to be fully aware of their responsibilities in fraud prevention and detection and should undertake fraud awareness training and regular refresher fraud training. According to Endaya and Hanefah, (2016) inadequately competent internal auditors resulted in low fraud detection in their organizations and that employment of internal auditors with the right qualifications was seen as the major corrective measure. Mihret and Yismaw (2007), in their case study on Ethiopian public Universities, found that lack of competent IA personnel is a challenge for internal auditors and the function as a whole. Alhajri (2017) and Endaya and Hanefah (2016) have focused on the need for audit personnel to be appropriately qualified in order that a high level of IA effectiveness can be achieved. They pointed out that IA human resources should be composed of people of the appropriate experience, expertise and skills. This appears to be one of the main challenges facing the IA function today. Continuous training is needed to ensure that auditors keep a constant level of observance on issues regarding fraud. Where there are significant changes in legal frameworks, it is imperative to arrange specific training for auditors (European Parliament & Council, 2014). Bierstaker et al. (2006) emphasized that specialized, regular fraud training for auditors acts as a critical preventive measure and is essential for effective fraud detection. Petraşcu and Tîeanu (2014) resolved that internal auditors are required to have adequate knowledge of probable fraud schemes and situations specific to the operations of their organization and note signs of a likely fraud scheme. Popoola et al., (2015) in a study on the role of IA in Fraud Prevention in Hospitals owned by the Nigerian Government, noted that IA staff lacked the fundamentals of fraud prevention, which has rendered the hospitals susceptible to perpetrators of fraud and misappropriation of resources because the auditors do not have adequate understanding required in carrying on the IAF. Sawsan et al. (2016) found that employee training programs have significant effects on preventing and detecting fraud in the UAE for the effectiveness of corporate governance for UAE companies. Nkrumah and Smith, (2025) asserted that if management can support with adequate resources and training for internal auditors and accountants, this will boost their professional effectiveness to reduce operational errors and curb fraud. Bonrath Eulerich (2024) provide empirical evidence that IA functions are crucial for both

preventing and detecting fraud, with audit independence acting as the strongest factor in high-risk environments. Their research indicates that independence is vital for enabling auditors to resist management pressure, directly contributing to more effective fraud risk management and detection capabilities. From the above discussion, we develop our third hypothesis.

H3. The Internal Auditors do not have the required Competence for fraud effectiveness

#### **2.4 Adoption of the IIA Global IA Standards, effective 2025**

The IIA Global IA Standards, effective 2025, provides worldwide professional guidance that promotes quality audit work and enables the effectiveness of the IAF. It is imperative, therefore, that to ensure effectiveness, IA conducts its work in accordance with recognized standards. The NCFRR (1987, p. 83) advised the adoption of the IIA Standards on fraud prevention and detection, stating that the standards demonstrate the utmost advanced reasoning regarding the prevention and detection of fraud, and provide outstanding professional guidance that enables effective internal auditing. Further, a study on internal auditor's perceived responsibility for fraud detection by the IIA (2008) observed a lack of clarity amongst auditors as they had varied perceptions in respect of their role in the fight against fraud because they lacked the guidance of the Standards and argued that this has the potential to affect internal auditors' effort in fraud detection in promoting good governance. The IIA (2009) on IA and fraud, and the Institute's efforts in developing fraud-related standards for the profession resolved that strong standards that clearly outline increase IAF in detecting fraud in their organization need to be adopted and be stated in the IA charter, indicating clearly IA roles and responsibilities in relation to fraud in the organization. A study conducted by Shaban et al. (2023) found that non-adherence to the IIA Standards by Jordanian communication companies negatively impacted on their operations and suggested that in order to enhance IA effectiveness and efficiency, Jordanian telecommunications companies should follow all the IIA Standards, particularly the Performance Standards. They further suggested that education on the importance of the standards as well as compliance expectations should be clarified, followed by disciplinary action for non-adherence.

H4. The IA has not adopted the IIA Global IA Standards, effective 2025.

#### **2.5 Existence of Effective Anti-Fraud Management Programs**

The American Institute of Certified Public Accountants (AICPA) et al. (2008) indicates that good governance requires executive management to put in place effective and proportionate anti-fraud measures based on fraud risk assessment to combat fraud within the organization, and auditors are to provide objective assessment of these anti-fraud measures that encompasses fraud prevention, detection, and investigation (IIA, 2009). The use of hotlines provided the opportunity for reporting tips, serving as the most common method for detecting fraud as well as promoting its early detection (ACFE, 2022). A robust anti-retaliation policy that is clear and well-communicated, prohibiting retaliation against whistleblowers is crucial to building trust and helping prevent and

deter fraud. Dyck et al. (2010) suggests that while employees possess crucial private information, the high personal cost of reporting requires stronger incentives for effective governance. Hillison, et al. (1999) indicated that organizations should support their internal auditors in the interest of management's anti-fraud efforts to make sure that preventive, detective, and reporting controls are established in order to satisfy the Sentencing Commission's mandate. Without institutionalized anti-fraud programs, the IAF monitoring and review of anti-fraud program would be hindered (IIA, 2009). Maulida and Bayunitri (2021) found that the whistleblowing system had a significant positive result on fraud prevention, contributing to a 54.3% drop, and in some circumstances, as high as 67%. A study conducted by the ACFE (2020) found that deficiency in effective internal controls contributed almost one-third of investigated fraud, highlighting the need for all organisations to put suitable anti-fraud measures in place.

H5. There are no effective anti-fraud measures within the University

## 2.6 Adoption of Information Technology (IT) and Audit Software

The age of computerization and automation of operations demands that IAF is equipped with and utilizes IT tools to enhance its efficiency and effectiveness in its crucial fraud preventive and detective activities. IT resources into IA processes have evidently enhanced detection of anomalies, better process restructure, and improvement in audit quality (Gansberghe et al., 2005; Rezaee, 2005). Deployment of IT Tools such as Data Analytics and Computer-Assisted Audit Techniques (CAAT) can significantly and positively impact internal auditing quality as it makes multitask less burdensome, including large data analysis, fraud risk assessments, continuous monitoring and auditing and proactively detecting fraud (Bradford et al. 2020). Dependence on manual performance of internal auditing in handling multifaceted fraud risks is an impediment to its efficiency and effectiveness. Budiman et al. (2021) and Hanifah and Alkautsar (2024) noted that IT-enabled audits result in accuracy, timeliness and effectiveness in fraud prevention. Thus, suggesting that implementing IT meaningfully improves IA effectiveness and reinforces prevention. De Santis and D'Onza (2021) and Islam and Stafford (2021) established that IA efficiency and effectiveness in fraud detection are enhanced by technological advancements. Caseware International Inc. (2022) asserted that, the reduction in the risk of fraud and the enhancement of effective allocation of resources are significantly enabled by vital tools such as audit analytics and data mining methodologies. Technological value for IA Effectiveness covers risk-based methods that enhance detection of anomalies and red flag detection. These aid continuous auditing and improvement in the effectiveness of planning risk-based audits, assisting audit fraud prevention and detection efforts. It goes beyond risk-based planning to improved allocation of resources, eventually leading to enhancing audit quality (Eulerich et al., 2020). From the foregoing consideration, our proposal is made for the hypothesis regarding technological tools and IA effectiveness in fraud prevention and detection: A study conducted by Krishna Moorthy et al. (2011), based on a survey of 60 internal auditors employed in diverse businesses, focusing on

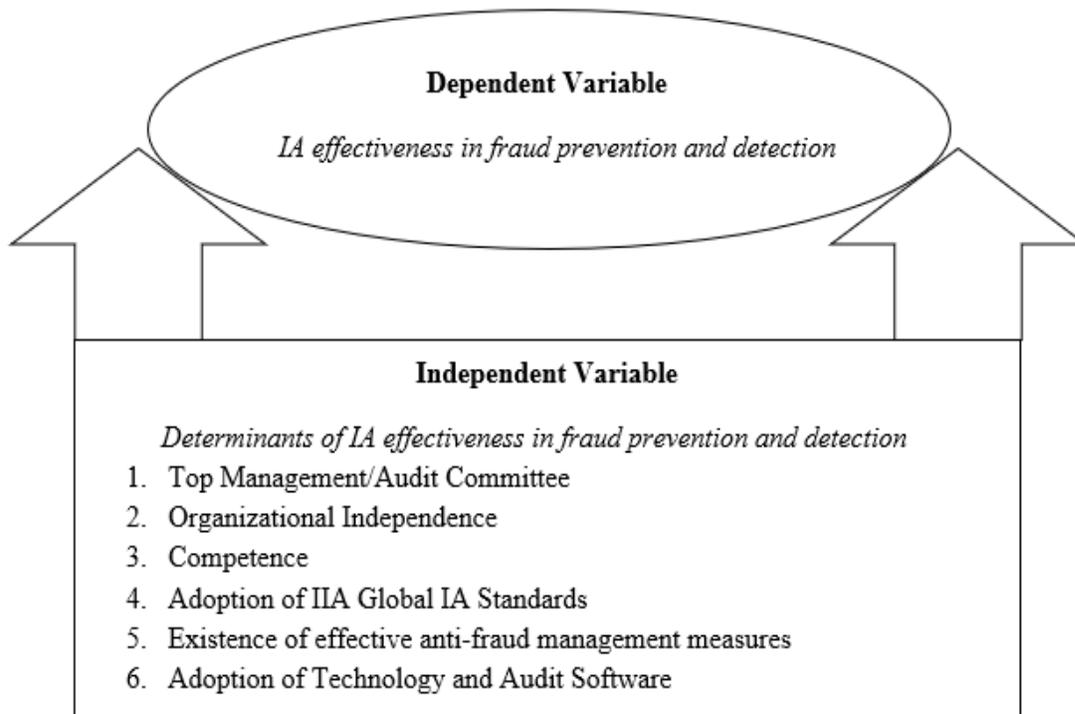
IT tools for effectiveness in organisations, stresses that adoption and dependency of IT systems is trending globally to ensure a more sustained environment for efficient and effective audit processes. Bierstaker, Burnaby, and Hass (2012) provide a critical review of the literature regarding software usage in internal auditing, highlighted that while specialized, generalized audit software (GAS) and data analytics tools improve audit effectiveness by allowing for full population testing rather than sampling, adoption rates were not yet optimal, leaving room for increased usage.

H6. The IA has not adopted IT tools/Audit Software for fraud Effectiveness.

### 2.7 Conceptual Framework

The conceptual framework explains the connection between IA effectiveness in fraud prevention and detection and determinants of IA effectiveness in fraud prevention and detection at UMaT. The framework highlights the independent variables; regular fraud training of auditors, organizational Independence, competence, top management/audit committee support, existence of effective anti-fraud management measures, information technology and audit software, adoption of the IIA Global IA Standards, and their influence on the dependent variable; IA effectiveness in fraud prevention and detection.

**Figure 2. Conceptual framework**



**Source:** Developed by the authors

### 3. Research Methodology

#### 3.1 Research Approach and Design

This study employs an explanatory sequential mixed methods design to investigate the key determinants of IA effectiveness in the prevention and detection of fraud at UMaT, and to assess the extent to which these determinants are present. Data were collected from respondents who were staff of the university, at specific job positions considered most suitable for the quality outcome of the investigation. Data were analysed and separately interpreted quantitatively and qualitatively. The qualitative and quantitative results were synthesized, merged and compared to create a single, comprehensive understanding of the research problem. Quantitatively, a structured questionnaire using Likert-type scales (1–5 Likert) was used to collect numerical data regarding the examination of key determinants of IA effectiveness in fraud prevention and detection. These data were analysed using descriptive statistics (means, frequencies, and standard deviations) to determine trends and patterns. Case studies are suitable for descriptive research (Cooper and Schindler, 2010). Qualitatively, semi-structured, open-ended interviews were conducted to gain in-depth insights and context behind the quantitative trends. These responses were analysed using thematic analysis to identify recurring themes and narratives. The quantitative and qualitative findings were integrated to see how they complement, explain, or contradict each other.

#### 3.2 Sources of Data

Primary and secondary sources of data were mainly accessed for the study. Questionnaires were used to gather the primary data. The secondary data sources included annual audit plan and programs, reports, IA charter, IA manuals, code of ethics, Public Financial Management Acts and regulations, internal auditing standards, journals, position papers, websites, textbooks, articles, UMaT Vice Chancellor' Reports, and related publications.

#### 3.3 Study Population and Sample size

The study population is the accessible population within the target population which a researcher can make conclusions (Simons, 2019). To ascertain accurate, reliable and relevant responses, purposively selected key officers who, by their job positions and responsibilities, are the main audit clients at the university, dealing with the IA function on a regular basis. As a result, the population consists of the top management (principal officers), accountants, internal auditors, deans, directors and heads of administrative and professional units. The researchers focused on forty (40) university officers purposively to obtain the most relevant and adequate responses. All the 40 targeted respondents received the distributed questionnaire. Principal officers were interviewed with questionnaires. However, 87.5% of the sample size representing 35 respondents was achieved. The total respondents are broken down in the table below, entailing the sample size that represented various key Officers who responded to questionnaires and interviews. The table clarifies the areas of roles and positions of respondents.



**Table 1. Sample Size**

SN	Roles/Positions	Number of Respondents
1	Principal Officers of the University	4
2	Deans - Heads of Faculties/Schools	9
3	Directors and Heads of Administrative Units	6
4	Internal Auditors	8
5	Accountants	5
6	Stores and Procurement Officers	2
7	Audit Committee Chairperson	1
<b>Total</b>		<b>35</b>

Source: Authors Computation

### 3.4 Sampling Technique

The purposive sampling technique was used to select respondents UMaT, who, by virtue of their positions and areas of operation, are more informed about IA than other staff due to their job positions and the fact that these are the areas the IAF has a crucial role to be effective in fraud prevention and detection. Kothari (2004) states that the use of purposive sampling assists in generating meaningful insights into gaining a deeper understanding of the research phenomena through the selection of the most informative participants. It is appropriate to obtain a typical representative of the entire universe as the samples selected have equal importance. The 35 respondents were the key stakeholders of the IAF. Therefore, their responses were the exact and most reliable to be ascertained regarding the determinants of IA effectiveness in fraud prevention and detection. The 10 informants were interviewed after the first phase of the structured questionnaire. Factors considered in selecting them included individuals whose data points were far from the norm (outliers), those with very high or very low scores (extreme cases) and participants belonging to specific subgroups that showed unique patterns in the quantitative analysis (significant predictors/group differences), and all participated. To mitigate response bias and avoid a homogeneous sample prone to systematic errors, the study selected supervisors across lower, middle, and top management. Data quality was further secured by triangulating primary findings with secondary evidence and training the research team to probe for inconsistencies. Notably, potential performance-evaluation bias was minimized by keeping focus off supervisory

performance evaluations, as only 11.4% (n=4) of respondents held direct senior management responsibility for Internal Audit (IA) effectiveness, while 88.57% (n=31) did not, thereby reducing the likelihood of biased reporting (Podsakoff et al., 2023).

### **3.5 Data Presentation and Analysis**

Following data collection, responses were transformed into variables, indicators, and scores for analysis. A mixed-methods approach was adopted, utilizing both qualitative and quantitative techniques. Interview data were analysed via Braun and Clarke's (2020) reflexive thematic analysis approach to identify patterns related to determinants of IA effectiveness in fraud prevention and detection, facilitated by NVivo for rigorous coding and organization of data, ensuring an enhanced transparent analysis process. Quantitative data, encompassing IA effectiveness in fraud prevention and detection, were processed in Excel with analysis utilizing frequencies, percentages, means, and standard deviations. Lastly, both datasets were synthesized to provide all-inclusive description of the study population, with findings presented through tables and descriptive statistics.

### **3.6 Data Collection Procedures**

There were a series of steps in the data collection which were all meant to ensure thoroughness and accuracy of data gathered. Permission and approval were sought from the university, and data collection and handling training was provided for the Research Assistants to ensure adequate understanding of ethical considerations and the instruments. The questionnaires were distributed through mails and in-person to all the 40 staff. According to participants' positions and responsibilities, three-week intervals were allowed for the completion and collection of responses from participants. The schedule of semi-structured sessions lasted closely 25 to 40 minutes interviews between the top management and other selected key staff. These were done either by video conference or face-to-face with respect to participants' availability and choice. The questionnaires were collected by hand. It took one and a half months to complete the process of collection of data, and this involved preparing and distributing data, follow-ups and interviews.

### **3.7 Data Collection Instrumentation**

Quantitative and qualitative data were collected using structured and semi-structured questions to provide both the possibility to freely express opinions and a useful framework for answers. The responses served as the main source of data for this study and provided a rich source of in-depth information and assured validation of the findings. The questionnaire comprised of sections that sought specified information necessary in line with the research hypothesis. The questionnaire as a data collection technique was selected due to the nature of the work involved and the subject matter being investigated. Questionnaires were mainly in the form of a Likert-Scale type, showing respondents agreement or disagreement on a five-point scale where strongly disagree represented the lowest scale and strongly agree as the highest scale (Likert scale options: 1 = strongly disagree,

2 = disagree, 3 = neutral, 4 = agree, and 5 = totally agree). The questionnaires were in two parts. The first part was on demographic questions, while the second part was on the determinants of IA effectiveness in fraud prevention and detection. Secondary data such as the internal audit IA Charter and manuals obtained aided the investigation. The questionnaires were designed to gather data on the determinants of IA effectiveness, including top management support for Internal Audit, existence of established effective anti-fraud measures within the University, IA competence, organizational independence of the IA function, as well as issues regarding IA effectiveness in the fight against fraud. The interviews qualitatively provided an understanding into the significant determinants of IA effectiveness in fraud prevention and detection, the extent to which these determinants impact effectiveness, why they are necessary and the need to enhance them. This process allowed for flexibility in responses and an in-depth share of experience on the subject of study.

### **3.8 Ethical Consideration**

Participants were appropriately informed of the sensitivity of the study as it relates to fraud, and the preservation of confidentiality of all information received as well as their rights as willing participants of the study. They were made to understand that any data collection shall also be used for the purpose of the study only. Participants were not required to make any disclosures regarding personal identities. This was to ensure honesty and encourage freewill participation for the ascertainment of more accurate and reliable information. The subject matter of fraud is very sensitive and its associated institutional reputation damages. All data obtained were kept secure and only accessible by the research team by password and used as intended only after which they were securely discarded in line with the university's policy. Israel and Hay (2006) and Israel (2015) noted that complying with these required ethical procedures ensures protection of participants' confidentiality and rights in achieving maximum standards of research integrity.

## **4. Result and Discussions**

### **4.1 Demographic Characteristics**

This segment includes presentations and discussions on the demographic attributes of respondents who expressed their opinion in the study. This includes their gender, age, highest educational qualification, number of years of experience in the current and equivalent job positions. Table 2 shows the investigation outcomes of the participating respondents in the study.

#### *4.1.1 Gender of Respondents*

As shown in table 2, out of the 35 respondents, 4 of them were females, representing 11.5%, while 31 respondents, representing 88.57%, were males. The vast difference in gender may, among other reasons, be due to the fact the university is purely mining, engineering and technological which, generally, women are now finding space.

**Table 2. Demographic Characteristics**

Variables	Category	Frequency	Percent (%)
Gender	Male	31	88.57
	Female	4	11.43
Age	21 – 30	0	0.00
	31 – 40	3	8.57
	41 – 50	12	34.29
	Above 50	20	57.14
Highest Education	PhD	11	31.43
	Masters and Professional Cert	23	65.71
	Master’s Only	1	2.86
	Professional Certificate Only	0	0.00
	First Degree	0	0.00
Experience	Less than 5 years	0	0.00
	5 – 10 years	3	8.57
	11 – 15 years	15	42.86
	Above 15 years	12	34.29

**Source:** Authors fieldwork

#### *4.1.2 Age of Respondents*

It can be seen from table 2 that the majority (20), representing 57.14% of the respondents, were above 50 years. The least number of respondents was 3, representing 8.57%. The high percentage of respondents above fifty (50) years stems from the fact that the nature of the research and the information required were tied to certain statuses, which are high job positions that usually require

long service and experience to attain. The purposive sampling that resulted in this suggests that the responses provided were true and of high quality.

#### *4.1.3 Educational Level of Respondents*

With respect to the educational level of respondents, table 2 shows that they were highly educated, both academically and professionally. Out of the 35 respondents, eleven (11), representing 31.43%, were PhD holders who were Deans and Principal Officers who are professors. 23 respondents, representing 65.71%, had master's and professional qualifications and 1 respondent, representing 2.86%, had master's only. The high educational level was due to the respective positions purposively selected for the responses.

#### *4.1.4 Work Experience of Respondents*

With regard to experience, table 2 shows that 30 of the respondents, representing 85.71%, were between 11–15 years of experience, and 5 of the respondents, representing 14.29%, were between 5–10 years of work experience. The researchers purposively selected respondents with job positions that required much relevant experience to attain and engaged IA work as key clients. All the respondents were very seasoned and experienced. It is important to note that their current positions may not only not entitle them to long work experience, but other equivalent positions and experience earned leading to their current positions have been factored. With these high positions, experience and a lot of engagement with the IA activities, we stand the best to provide the true and needed information to make this research highly credible.

### **4.2 Phase 1: Quantitative Results**

The study investigates determinants of IA effectiveness in the prevention and detection of fraud in the university. As a result, respondents were asked to indicate if determinants, including top Management and Audit Committee support, existence of effective anti-fraud measures within the university, internal auditors having the required fraud competence, organizational independence of the IA function, adoption of the IIA Global IA Standards and the availability of IT Resources and Audit Software for fraud effectiveness. On a scale of 1–5: "Very High" (4.5–5.0), "High" (3.5–4.4), "Moderate" (2.5–3.4), "Low" (1.5–2.4), and "Very Low" (below 1.5) a determination of whether, the IAF is well-equipped to fifth fraud is made and identify the reasons for any shortfall.

Table 3 shows an average mean of 3.9, as an indication that Top Management and Audit Committee support for IA effectiveness in fraud prevention and detection in the University is high. This collaborates with a study conducted by Mihret and Yismaw (2007) which identified management support as the second factor that influences IA effectiveness in the Ethiopian higher educational institution.

### **Table 3. Top Management and Audit Committee Support**

SN	Drivers of determinants of IA effectiveness	Mean	Standard deviation
1	Timely responses to audit findings, and implementations of agreed audit recommendations.	4.7	0.0153
2	Adequate budget for resources and logistics e.g. IT tools/audit software, vehicles, office equipment and staff.	2.7	0.192
3	Approve IA charter and make imputes into IA strategic and annual work plans	4.4	0.056
4	Resolution of audit engagement conflicts with clients	3.8	0.065
5	Enabling and conducive work environment	4.3	0.058
6	Support IA Continuous Profession Development, conferences, and regular fraud training programs	4.0	0.065
<b>Average mean</b>		<b>3.9</b>	

**Source:** Authors field research

This is consistent with a study conducted by Geqeza and Dubihlela (2024) in the South African local authority, on IA effectiveness and the role of management support. They found that management support plays an impactful role in advancing IA effectiveness and further called for enhanced support for the improvement of overall performance. However, human resources, provision and adoption of IT tools and audit software were not receiving the needed support, creating a mean of 2.7 and standard deviation of 0.192. These require attention to ensure enhanced management/audit committee support.

Table 4 shows an average mean of 4.3 for organizational independence, suggesting that there is a high level of independence. This records a mean of 4.89 and 0.001 standard deviation for IAF reporting administratively to the Vice Chancellor and Functionally to the Audit committee/university council.

#### Table 4. Organisational Independence

SN	Drivers of determinants of IA effectiveness	Mean	Standard deviation
1	IAF reports administratively to the Vice Chancellor and Functionally to the Audit Committee/University Council	4.89	0.001
2	The appointment and removal of the IA is done by the University Council, not Top Management	4.8	0.012
3	No management interference in the scope and planning of Audit Work	3.6	0.069
4	Internal Auditors observe the professional code of conduct.	3.0	0.183
5	IA Charter is approved by Management and Audit Committee.	4.87	0.031
6	Unrestricted access to records, information, personnel and auditable areas of the university	4.78	0.022
	<b>Average mean</b>	<b>4.3</b>	

Source: Authors field research

This is consistent with the IIA Global IA standards that guides that the organizational independence of the IA is achieved when the function reports administratively to the CEO / (Senior management), and functionally to the Audit Committee of the Board (IIA, 2024). The appointment and removal of the Head of Internal Audit is done by the University Council, not Management, with a mean of 4.89 and standard deviation of 0.001. Unrestricted access to records, information, personnel and auditable areas of the university was captured in the IA charter and is crucial for fraud detection and investigation.

**Table 5. Competence**

SN	Drivers of determinants of IA effectiveness	Mean	Standard deviation
1	Appropriate academic qualifications	4.5	0.055
2	Auditors have relevant Professional certifications (ACCA,CA, CIA,CFE, CISA etc.)	4.0	0.062



3	Adequate relevant work experience	4.4	0.056
4	Internal Auditors receive regular fraud training	1.5	0.711
5	Coordination and share of experience and working papers between internal auditors and external auditors	2.5	0.601
<b>Average mean</b>		<b>3.6</b>	

Source: Authors field research

Table 5 gives an average mean of 3.6 for auditors' fraud competence. This is an indication that the IA staff have a high competence to enable effective fraud prevention and detection. This collaborates with the findings of Bonrath and Eulerich (2024), who identify audit independence as the most crucial factor in high-risk environments, underscoring that it allows auditors to resist management pressure, thereby enhancing the overall effectiveness of fraud risk management. Academic qualifications, professional certifications and experience recorded means between 4.0 to 4.5 with a standard deviation of less than 0.077. However, internal auditors were not receiving regular fraud training, showing a low mean of 1.5 and a standard deviation of 0.711. This negatively affected the overall average mean of 3.6, suggesting such training is key to enhance IA fraud effectiveness. This collaborates with a study conducted by Nkrumah and Smith (2025) on the impact of financial management, practices on financial performance in a Ghanaian public funded university, asserting that if internal auditors and accountants receive training regularly, it can boost their professional effectiveness to reduce operational errors and curbing fraud. Similarly, the IIA (2024) Professional Standards requires continuous professional development for Internal Auditors to enable them to possess adequate knowledge to identify indicators of fraud.

**Table 6. Adoption and application of the IIA Global IA Standards**

SN	Drivers of determinants of IA effectiveness	Mean	Standard deviation
1	IA Charter adopts the IIA Global IA Standard spelt showed by the IA Charter and IA Manual	4.9	0.051
2	IA use Risk-Based IA Manual of the Internal Audit Agency	4.8	0.052
3	IA plans and execute audit engagements in accordance with IIA Global IA Standards.	3.5	0.071
4	IA established quality assurance and improvement program	2.8	0.089



5	There IA Risk-Based Strategic and Annual Work Plans	4.8	0.052
<b>Average Mean</b>		<b>4.3</b>	

Source: Authors field research

Table 6 shows an average mean of 4.3 for the adoption of the IIA Global IA Standards. It is evident that the IA of the University has adopted the IIA Global IA standards, effective 2025, with a mean of 4.9 with a standard deviation of 0.05. These are indications of significant/high adherence to IIA professional standards for IA fraud effectiveness. This is consistent with the position of the NCFRR (1987) that recommended the adoption of the Institute of Internal Auditors Standards on fraud prevention and detection, stating that the standards demonstrate the utmost advanced reasoning regarding the prevention and detection of fraud, and provide outstanding professional guidance that enables effective internal auditing. This is, however, inconsistent with a study conducted by Shaban et al. (2023) which found that non-adherence to the IIA standards by Jourdan communication companies negatively impacted on their operations and suggested that in order to enhance IA effectiveness and efficiency, Jordanian telecommunications companies should follow all the IIA Standards, particularly the Performance Standards.

**Table 7. Existence of effective anti-fraud measures**

SN	Drivers of determinants of IA effectiveness	Mean	Standard deviation
1	Anti-fraud policies and regulations	3.8	0.065
2	Fraud risk assessment and management programs	2.0	0.125
3	Established internal controls and regular auditing	3.6	0.069
4	Is there a confidential anonymous reporting system for fraud allegations (whistleblowing hotlines) and policies	1.8	0.138
5	Fraud awareness and training programs for all staff	1.5	0.166
6	Due diligence/pre-employment screening	3.0	0.083
7	Disciplinary and legal action against fraud	4.4	0.056
<b>Average mean</b>		<b>2.8</b>	

Source: Authors field research



Table 7 shows an average mean of 2.8, indicating that the existence of effective anti-fraud measures is moderate and require improvement to enable IA effectiveness in the fight against fraud. This collaborates with a study conducted by the ACFE (2020) which found deficiency in effective internal controls contributing to almost one-third of investigated fraud, emphasizing however, that the establishment of anti-fraud controls has improved, but several organisations have still not put suitable measures in place. This was due to the low confidential anonymous reporting system for fraud allegations. For example, whistleblowing hotlines with a mean of 1.8 and a standard deviation of 0,138. Similarly, fraud awareness and training programs had a low mean of 1.5, with a standard deviation of 0.166. This is consistent with the finding of Hillison, et. al., (1999) that there was the need for organizations to support the effectiveness of their internal auditors by institutionalizing effective anti-fraud programs for the prevention, detection, and reporting on controls in order to satisfy Sentencing Commission’s mandate.

**Table 8. Adoption of Information Technology (IT) and Audit Software**

SN	Drivers of determinants of IA effectiveness	Mean	Standard deviation
1	IA adoption of IT and Audit Software such as TeamMate analytics, IDEA etc.	1.0	0.0833
2	IA use data analytics to examine transactions, perform risk assessments etc.	0.2	0.151
3	Do Internal auditors receive specialized fraud training on IT enable fraud tools such as CISA etc.	1.1	0.112
4	IA staff have enough laptops and personal computers etc.	3.0	0.012
<b>Average Mean</b>		<b>1.3</b>	

Source: Authors field research

From table 8, the adoption of Information Technology and Audit Software gives a low average mean of 1.3. The use of data analytics had a very low mean of 0.2 and standard deviation of 0.151. Except for the provision of fundamental IT resources like laptops and personal computers that had a moderate mean of 3.0 of contribution to effectiveness, the adoption of IT and audit software, and fraud training had low means. These are indications that the IA has a low existence of IT and Audit Software for effectiveness in fraud prevention and detection. This collaborates with a study conducted by Krishna Moorthy et al. (2011), in their study on IT tools for effectiveness in

organisations, stresses that adoption and dependency of IT systems is trending globally to ensure a more sustained environment for efficient and effective audit processes.

#### 4.3 Phase 2: Thematic Analysis

Following the quantitative results, in-depth interviews were conducted to explore the underlying "how" and "why" of the most significant concerns identified. These included management and audit committee support for resources and logistics, training and capacity building for auditor competence, and the implementation of effective anti-fraud control programs. The following themes emerged from the data, supported by quotes from some participants:

##### 4.3.1 *Management support for Adequate Resources and Logistics*

Qualitative data obtained on management support for IA, adequate resources and logistics for effectiveness at the University of Mines and Technology (UMaT), was thematically analysed. Common themes that emerged and related specific suggestions from stakeholders for enhancing UMaT's management support for adequate resources and logistics, with supported direct quotes from respondents are below.

###### 4.3.1.1 *Theme: Enhanced Budget and Resources allocation*

Most respondents called for enhanced budget and resources allocation for the IA activities. This idea is held by the position of the IIA, (2024) Global IA Standards, which ensures timeliness and efficiency in the audit coverage of all high-risk thrust areas. The respondents observed that enhanced budget and resources allocation for the IA activities at UMaT need to be enhanced. One of the respondents stated,

*"To enhance early prevention and detection of mismanagement, errors and fraud, the IAF needs to be resourced adequately,"* he added, *"The university needs to seek for funding to adequately support IA Budget allocations to enable the function to deliver efficiently and effectively on its mandate in support of good governance."*

This suggests that additional or increased investment in the IA resources would enable the function to deliver efficiently and effectively on its mandate in support of good governance, ensuring early prevention and detection of mismanagement, errors and fraud. This submission aligns with the position of the IIA, Global IA Standards, effective (2025).

###### 4.3.1.2 *Theme: IA Risk-Based Plan, based on university documented risks*

Many respondents expressed the importance of the IA risk-based planning being based on documented risk of the university. This aligns with Castanheira et al. (2010) who found that the maturity of the ERM system is a crucial determinant of a productive IA plan. This is also the position of the IIA (2024) Global IA Standards. One respondent said.

*“Currently, IA budgets are not adequate due to limited funding sources, but If the university can have its established Enterprise Risk Management (ERM) process, the CAE would use that risk register as the starting point for the audit universe and prioritize high risk engagements, to be able to fight against fraud.”*

This suggestion will ensure resource optimization in the light of scarce audit resources and allow audit budget allocations to be utilized for the most pressing or riskiest issues, including fraud prevention and detection. Another respondent mentioned.

*“If the IA plans are based on the documented risk in the Risk Registers, Strategic Alignment is created, ensuring that the Internal Audit focuses on the same priorities — high risk in the register as the CEO/senior management and the Council. However, it should be ensured that dedicated founding sources are created for the budget support of the IA to enhance its effectiveness”.* This idea aligns with the initial respondents’ suggestion and ensures that dedicated founding sources are established for the budget support of the IA to enhance its effectiveness. The IA plan must be based on the documented risk assessment reviewed annually by senior management and the board (The IIA, 2024, Standard 9.4).

On the basis of the thematic analysis, the respondents’ key strategic proposals for enhancing resource planning, allocation and efficiency for the IA at UMaT include enhanced budget and resources allocation to enable the function to deliver efficiently and effectively on its mandate in support of good governance and ensures timeliness and efficiency in the audit coverage of all high-risk thrust areas. Risk-Based IA Plan, based on university documented risks is to ensure that UMaT’s develops its Enterprise Risk Management (ERM) framework to enable the IA to adequately plan on the basis of documented risks to ensure that scarce resources are utilized for the riskiest issues, including fraud prevention and detection.

The overall thematic analysis of the qualitative data on management support for IA resources and logistics for effectiveness at UMaT, identified the need to enhance budget and resource allocation for the IA Risk-Based Plan, based on university documented risks. These themes recommend that the IA of UMaT must be supported and equipped for improvement regarding resources and logistics. By embracing the proposed strategies, IA of UMaT can enhance its efficiency and effectiveness, and ensure fraud is combated to the expectations of all key stakeholders.

#### *4.3.2 Training and Capacity Building for Internal Auditors’ Competence*

Another qualitative data obtained was on training and capacity building for internal auditors’ competence at the University of Mines and Technology (UMaT), which was thematically analysed. Common themes and related suggestions from stakeholders for enhancing training and capacity building for internal auditors’ competence came with supported direct quotes from respondents as below.

*4.3.2.1 Theme: Regular Fraud and Risk management Training for Internal Auditors*  
Many respondents showed deep concerns about fraud and risk management training for internal auditors. This idea is held by the position of the IIA Global IA Standards, which ensures timeliness and efficiency in the audit coverage of all high-risk thrust areas. The respondents observed that fraud and risk management training for the internal auditor at UMaT needed to be enhanced. One of the respondents voiced out.

*“Frankly speaking, due to the changing face of fraud, and the growing nature of the university, our internal auditors must have regular fraud and risk management training to enhance their expertise in fraud risk assessment and the provision of assurance on the effectiveness of the university risk management process. This, in my view, will go a long way to enable their effectiveness in fraud prevention and detection in the university”.*

This view seeks to promote the role of IA in good governance, ensuring that key risks are managed effectively for the continuity of the university’s business. A committed audit committee to proactive fraud risk management sustains continual oversight of fraud risk assessment and depends on the IA as well as other dedicated staff to monitor fraud risks (Gupta and Gupta, 2015).

*4.3.2.2 Theme: IT adoption and Related Training*

Many respondents also articulated the relevance of IT adoption and related training to enhance the competence of the IA staff of the university for efficiency and fraud effectiveness. This is a crucial requirement of the IIA (2024) Global IA Standards. One respondent echoed.

*“Honestly, without IT-enabled audit tools integrated into the auditing processes, it would be very difficult for the IAF to achieve its very best in combatting fraud in this modern age of technological fraud.” He further emphasized that, “the CAE should assess the opportunities of using IT and suitable audit software, and the subsequent deployment of data analytics to improve fraud efficiency and effectiveness.”*

This consideration is crucial in ensuring that the university benefits from the numerous opportunities through the IA activities in ensuring that anomalies and red flags are easily identified and dealt with through the deployment of data analytics to safeguard university resources. The CAE is to ensure that the IAF essentially leverages technology effectively and efficiently to enhance audit quality (IIA, 2024, Standard 10.3). IT-enabled audits result in accuracy, timeliness and effectiveness in fraud prevention. Thus, suggesting that implementing IT meaningfully improves IA effectiveness and reinforces prevention (Budiman et al., 2021; Hanifah and Al Kautsar, 2024).

On the basis of the thematic analysis, participants’ key strategic proposals for enhancing training and capacity building for internal auditors’ competence at UMaT include fraud and risk

management capacity for the Internal Auditor to enhance their expertise in fraud risk assessment and the provision of assurance on the effectiveness of the university risk management process.

IT adoption and training will ensure that the IA leverages IT efficiently and effectively for the university to benefit from the numerous opportunities through the IA activities, encompassing accuracy, timeliness and effectiveness in fraud prevention and detection by ensuring that anomalies and red flags are easily identified and dealt with through the deployment of data analytics to safeguard university resources.

In summary, the thematic analysis of the qualitative data on training and capacity building for internal auditors' competence at UMaT, identified the need for fraud and risk management capacity for Internal Auditor and IT adoption and related training. These themes suggest that the IA of UMaT's must be supported and equipped with capacity building in fraud and risk management, and IT adoption as part of the internal auditing processes, as well as receive related training. By implementing these suggested strategies, the IA of UMaT can enhance its efficiency and effectiveness, fraud prevention and detection.

#### *4.3.3 Effective anti-fraud control programs*

The qualitative data on effective anti-fraud control programs at the University of Mines and Technology (UMaT) were thematically analysed. The common themes identified, and suggestions proposed by participants to enhance the effectiveness of the anti-fraud control programs at UMaT are below.

##### *4.3.3.1 Theme: Monitoring, Review and implementation of robust preventive controls*

The need to regularly monitor, review and implement robust preventive controls to prevent the risk of fraud and impact on IA fraud effectiveness was a common qualitative theme that emerged. The view was that the IAF uses these controls to assess risks, educate management on vulnerabilities, and strengthen internal control measures. This is in line with the IIA (2019, pp. 1-3) which points out that the core value of an IAF lies in proactive prevention, early detection, and reducing the potential for fraud occurrence by continually reviewing control and giving assurance of their effectiveness with suitable recommendations for improvement.

One respondent highlighted.

*“We must continuously monitor and proactively update our internal controls to address emerging risks and prevent irregularities and fraud. A more frequent audit will enhance oversight, mitigate mismanagement, unearth control weaknesses and improve upon existing controls. Without adequate established controls, internal audit reviews are limited and ineffective”.*

This suggests that a robust control environment at UMaT, regularly monitored by the IAF, would discourage potential perpetrators as it would create the perception of high detection and allow the IAF to discover fraud faster, significantly reducing the financial impact. Investing in effective anti-

fraud controls at UMaT is crucial for the IAF to reduce fraud by acting as a central mechanism for risk management and governance. These controls, including whistleblower hotlines and segregation of duties, enable the IAF to proactively prevent, detect, and investigate fraud, thereby enhancing organizational stability (ACFE, 2022). The IAF relies on these systems to ensure compliance, foster an ethical culture, and uphold organizational integrity. By implementing and monitoring these controls, the IAF transforms from merely detecting fraud to actively preventing it. Effective internal controls are valuable resources that help safeguard university resources (Simons, 2019). Auditors compare current fraud risk exposure against existing policies to identify where controls are missing or weak. Based on reviews, auditors recommend specific, targeted improvements to strengthen security measures, such as access restrictions or enhanced documentation standards.

#### *4.3.3.2 Theme: Establishment of effective whistleblower hotlines*

The need to establish whistleblower hotlines at UMaT emerged as a dominant theme from the qualitative analysis. Many respondents accentuated that UMaT should establish whistleblower hotlines to enhance the effectiveness of the current level of anti-fraud controls. This aligns with ACFE (2022) which reported that the use of hotlines provided the opportunity for reporting tips, serving as the most common method for detecting fraud as well as promoting its early detection. One respondent emphasized:

*“Without a whistleblower policy and hotlines to enable university staff and students to unanimously report fraud and related unethical conduct, potential whistleblowers for illegal and unethical acts would not believe that their identity would be protected. They would, therefore, keep mute and see wrongdoings go undetected until it causes significant financial or reputational damage.”*

This suggests that a robust anti-retaliation policy that is clear and well-communicated, prohibiting retaliation against whistleblowers is crucial to building trust and helping prevent and deter fraud at UMaT. Dyck et al. (2010) suggests that while employees possess crucial private information, the high personal cost of reporting requires stronger incentives for effective governance. Maulida and Bayunitri (2021) found that the whistleblowing system had a significant positive result on fraud prevention, contributing to a 54.3% drop, and in some circumstances, as high as 67%.

#### *4.3.3.3 Theme: Fraud Awareness Training for all staff*

A common and prominent qualitative theme that also emerged was the need for fraud awareness training to educate staff and students on fraud and its related sanctions and expose them to anti-fraud controls such as the unanimous whistleblower hotline to enhance fraud prevention, detection and deterrence in the university. This is in line with the 2024 report of the Association of Certified Fraud Examiners, indicating that organizations that do not provide fraud awareness training suffer

losses nearly twice as high as those that do. While organizations with training detect fraud significantly faster. One respondent emphasized.

*“I wish to emphasize that a policy on paper is useless without active promotion. Regular fraud awareness training, demonstrating action on reported issues, and publicizing a whistleblower hotline can ensure that the university has one of the greatest opportunities to discourage potential fraud and enhance reporting of same, and committed fraud”.*

This suggests that UMaT should invest in a whistleblower hotline, and pair it with fraud awareness training to ensure significant impact on the prevention, detection and deterrent of occupational fraud ACFE (2024). Investing in fraud awareness training, the university staff can be transformed from passive observers into active defenders, enabling them to detect irregularities quickly, often preventing fraud before it escalates. UMaT can use this platform to address risks such as fake qualifications, bribery for grades, admission fraud, procurement fraud, recruitment and payroll fraud to ensure maintenance of academic integrity and reputational safety.

On the basis of the thematic analysis, respondents’ key strategic proposals for enhancing the effectiveness of anti-fraud control programs at UMaT included the monitoring, review, and implementation of robust preventive controls. This enables auditors to compare current fraud risk exposure against existing policies to identify where controls are missing or weak. Based on these reviews, auditors recommend specific, targeted improvements to strengthen security measures, such as access restrictions or enhanced documentation standards. Consequently, this allows the IAF to reduce fraud by acting as a central mechanism for risk management and governance. These controls, including whistle-blower hotlines and segregation of duties, enable the IAF to proactively prevent, detect, and investigate fraud, thereby enhancing organizational stability.

The establishment of effective whistle-blower hotlines will enhance the current level of anti-fraud controls to build trust and help prevent and deter fraud in the university. This will ensure that UMaT staff who have crucial private information, but perceive a high personal cost of reporting them, have a stronger incentive to do so. The fraud awareness training should transform university staff from passive observers into active defenders, enabling them to detect irregularities quickly, often preventing fraud before it escalates. UMaT can use this platform to address risks such as fake qualifications, bribery for grades, admission fraud, procurement fraud, recruitment and payroll fraud, to ensure the maintenance of academic integrity and reputational safety.

On the whole, the thematic analysis of qualitative data on monitoring, reviewing and reporting on anti-fraud controls at UMaT, identified the need for monitoring, reviewing and reporting on anti-fraud controls, establishment of effective whistleblower hotlines and fraud awareness training. These themes suggest that the IA of UMaT must invest in a whistleblower hotline, paired with fraud awareness training to ensure significant impact on the prevention, detection and deterrent of occupational fraud. By implementing these strategies, UMaT staff can be transformed from passive observers into active defenders, enabling them to detect irregularities quickly, often

preventing fraud before it escalates, preserving academic integrity, university reputation and enabling IAF to perform its role in fraud prevention and detection as mandated.

#### 4.4 Integration of Findings

In respect of Management and audit committee support for adequate resources and logistics, the interview confirmed or explained why Likert scale results were moderate with a mean of 2.7 and standard deviation of 0.192, where human resources, adoption of IT tools and provision of audit software indicated moderate support, requiring the attention of senior management and the audit committee. From the themes, the IA budget has been inadequate, thereby calling for an effective risk-based audit plan, based on documented risk of the university. This is in acknowledgment of limited budget allocation. The dangers are that, while there is insufficient budget, if there are too many high-risk thrust areas or planned audits, some of these high risks, including fraud, may be left due to limited resources. Thereby causing ineffectiveness of the internal audit. Interview results point to the fact that the need for training and capacity building for Internal Auditors' Competence is crucial as this was lacking. Interviews and documentary evidence showed that the Internal Auditors have fraud certifications. However, they were not receiving regular fraud training to be abreast with emerging trends in fraud and new fraud schemes, as shown by a mean of 1.5 with standard deviation of 0.711 from the quantitative results. This affected the overall average mean for the auditor's competence of 3.6. Interview participants' key strategic proposals for enhancing training and capacity building for internal auditors' fraud competence at UMaT include fraud and risk management and special IT audit assisted tools to enhance their expertise in fraud risk assessment and the provision of assurance on the effectiveness of the university risk management process. By implementing these suggested strategies, the IA of UMaT can enhance its efficiency and effectiveness, fraud prevention and detection. The interview confirmed why Likert scale results were low with an average mean of 1.3, for Adoption of IT and Audit Software, suggesting that IA leverages IT efficiently and effectively for the university to benefit from the numerous opportunities through the IA activities, encompassing accuracy, timeliness and effectiveness in fraud prevention by ensuring that anomalies and red flags are easily identified and dealt with through the application of data analytics to safeguard university resources. Themes indicated that, without IT-enabled audit tools integrated into the auditing processes, it would be very difficult for the IAF to achieve its very best in combatting fraud in this modern age of technological fraud, calling the CAE to assess the opportunities of using IT and suitable audit software, and the subsequent deployment of data analytics to improve efficiency and effectiveness, leading to a very the adoption of IT and Audit software gives. These accounted for the low mean of 0.2 and standard deviation of 0.151 in the quantitative result in respect of the use of data analytics.

Regarding anti-fraud control programs, the interview confirmed why the Likert scale result was moderate with an average mean of 2.8, requiring improvement to enable IA effectiveness in the

fight against fraud. Themes, including monitoring, review and implementation of robust preventive controls, the establishment of effective whistle-blower hotlines and fraud awareness training, indicated the need for enhanced controls to enable the IAF to proactively prevent, detect, and investigate fraud. Fraud training and whistle-blowing hotlines and policies scored low means of 1.5 and 1.8 respectively. This is consistent with interview indications, explaining that these lines of action are needed to transform university staff from passive observers into active defenders, enabling them to detect irregularities quickly, often preventing fraud before it escalates. Consequently, UMaT can use this platform to address risks such as fake qualifications, bribery for grades, admission fraud, procurement fraud, recruitment and payroll fraud to ensure maintenance of academic integrity and reputational safety.

## 5. Conclusion and Recommendations

### 5.1 Conclusion

Based on the comprehensive analysis, this study concludes that the Internal Audit (IA) function at UMaT possesses significant determinants that contribute to its effectiveness in fraud prevention and detection. Key drivers include robust management and audit committee support, organizational independence, adherence to IIA Global IA Standards, effective anti-fraud programs, and high auditor competence.

This research reaffirms that effective fraud prevention and detection is fundamentally contingent upon robust fraud risk assessments, which are directly driven by the auditor's competence, specialized knowledge, and professional expertise of internal auditors. A robust fraud risk assessment, and fraud prevention and detection are functionally inseparable from the auditor's skills and expertise. Internal auditors require technical acumen to accurately identify, prioritize, and mitigate fraud risks. IA continuous professional development (CPD) in fraud risk assessment is essential to bolster the auditor's fraud prevention and detection abilities. Furthermore, the research underscores that data analytics is a key tool that public university IAF can leverage to combat procurement fraud and other fraudulent activities. While the key determinants exist, the study notes that for Hypothesis H1–H5, the results did not support the initial assumptions in each of the specific context tested. These determinants remain critical for IA fraud effectiveness and must be sustained. Notably, Hypothesis H6 was accepted, highlighting the need for technological adoption and the use of audit software for the enhancement of IA effectiveness in fraud prevention and detection.

The findings of the study offer significant practical, actionable insight that can support senior management, audit committees, boards and university governing bodies, and governmental agencies or policymakers and internal auditors to improve the fraud effectiveness of their IAF. Overall, this study complements current research by empirically validating the key determinants of IA effectiveness in fraud prevention and detection, uniquely examining these determinants within the under-researched setting of Ghanaian public universities, and assessing their practical

presence. Beyond strengthening existing literature, it provides a discrete contribution beyond the general IAF to fraud-specific effectiveness, providing actionable insights for practical improvement

## 5.2 Recommendations

To further enhance the IA's effectiveness in fraud prevention and detection, the following recommendations are made:

1. **Enhance Auditor Competence through Specialized Training:** Invest in regular, focused fraud training and Continuous Professional Development (CPD) programs, specifically targeting forensic auditing techniques and modern fraud detection methodologies.
2. **Strengthen Anti-Fraud Mechanisms and controls:** Establish formal whistleblower policies and dedicated, secure hotlines to facilitate early detection and reporting. In order to also promote ethical conduct and make fraud unpopular, mandatory ethical and fraud awareness training is crucial to enable the internal auditors to join such programs to educate staff in promoting deterrence. Robust control environment, regularly monitored by the IAF, would discourage potential fraudsters by creating the perception of high detection and allow the IAF to discover fraud faster, significantly reducing the financial impact and enhancing its effectiveness.
3. **Adopt Technology and Data Analytics:** Shift from traditional auditing to proactive approaches by adopting advanced IT audit software and data analytics tools to effectively combat procurement fraud, and other irregularities.
4. **Resource Optimization and Budgetary Support:** Management should increase the IA budget to cover adequate human resources and logistics. This ensures timely coverage of all key risk areas and prevents delays in fraud detection due to staffing constraints.
5. **Strengthen Internal Audit Risk-Based Planning** by implementing a formalized Enterprise Risk Management (ERM) framework. This process must document institutional risks to align audit engagement priorities with high-risk areas, including fraud risk, ensuring efficient resource allocation and effective oversight.

Finally, the study relied on a single-case study approach (one Ghanaian public university), meaning specific findings may not be universally applicable to other sister institutions. Therefore, it is recommended that further research be conducted across multiple Ghanaian public universities to provide a broader comparative insight into the determinants of IA effectiveness in fraud prevention and detection. Additionally, research is needed to explore the extent to which the IA currently exploits these determinants to the benefit of stakeholders.

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