INTERNAL AUDIT PRACTICES, MANAGEMENT CONTROLS AND FRAUD PREVENTION AMONG PUBLIC TECHNICAL VOCATIONAL EDUCATION AND TRAINING INSTITUTIONS IN NAIROBI METROPOLITAN AREA

BY

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MASTER OF SCIENCE IN COMMERCE (FINANCE OPTION)

KCA UNIVERSITY

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OCTOBER, 2025

DECLARATION AND APPROVAL

Declaration by the student

I declare that this dissertation is my original work and has not been previously published or submitted elsewhere for award of a degree. I also declare that this contains no material written or published by other people except where due reference is made and author duly acknowledged.

PAUL KING'ANG'I

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Sign: Date: **24TH October 2025**

Approval by the supervisor

I do hereby confirm I have examined that Master's dissertation of Paul King'ang'i and have approved it for examination

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ABSTRACT

This study investigated internal audit practices, management controls and their role in fraud prevention within public Technical Vocational Education and Training (TVET) institutions in the Nairobi Metropolitan area. Internal audit practices play a critical role in enhancing financial transparency, accountability, and fraud prevention within institutions. However, Public TVET institutions in Nairobi Metropolitan Area continue to experience financial mismanagement and fraudulent activities, raising concerns about the effectiveness of internal audit mechanisms. The study was guided by the following research objectives: To determine the effect of internal control systems on fraud prevention among public TVET institutions in Nairobi Metropolitan Area , To establish the effect of internal audit IT adoption on fraud prevention among public TVET institutions in Nairobi Metropolitan Area, To assess the effect of management controls on fraud prevention among public TVET institutions in Nairobi Metropolitan Area, To establish the moderating effect of Board oversight on internal audit practices and management controls on fraud prevention among public TVET institutions in Nairobi Metropolitan Area. The research was anchored on the Agency Theory, which highlights the relationship between audit committee board (institutional management) and agents (employees), the Fraud Triangle Theory, which explains the conditions that lead to fraud, and the Institutional Theory, which emphasizes the role of organizational norms and structures in shaping audit practices. The study adopted a descriptive research design to provide a comprehensive analysis of internal audit practices in TVET institutions. The target population comprised of the 141 public TVET institutions in Nairobi Metropolitan area, with 103 heads of internal audit forming the units of observation. Data was collected using structured questionnaires which were subjected to validity and reliability tests. The collected data was analyzed using both descriptive and inferential statistics. Descriptive statistics such as means, standard deviations, and percentages summarized the data, while inferential statistics, including correlation and regression analysis, were used to determine the relationship between internal audit practices and fraud prevention. The study revealed that fraud prevention had strong positive correlations with internal control systems ($r = 0.666$, $p = 0.000$), management controls ($r = 0.702$, $p = 0.000$), and internal audit IT adoption ($r = 0.753$, $p = 0.000$). The regression model explained 62.3% ($R^2 = 0.623$) of the variation in fraud prevention. Internal control systems ($B = 0.241$, $p = 0.019$) and IT adoption ($B = 0.464$, $p = 0.000$) were significant predictors, while board oversight's moderating effect was insignificant ($B = 0.054$, $p = 0.810$). The study recommended that TVET institutions enhance internal controls through continuous staff training, strong enforcement of compliance measures, and periodic review of control systems to address emerging fraud risks. Adoption of digital audit tools and capacity building in IT-based audits should be prioritized to strengthen fraud detection. Management should enforce transparent compliance procedures and establish fraud risk committees to enhance accountability. Lastly, board oversight should be reinforced through governance training, independence, and regular performance reviews to promote integrity and institutional transparency

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DEDICATION

I dedicate this work to my beloved parents, and, my supportive siblings, my dear spouse, and my cherished children

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LIST OF ABBREVIATIONS AND ACRONYMS

ACFE: Association of Certified Fraud Examiners

IIA: Institute of Internal Auditors

TVET: Technical Vocational Education and Training

PSASB: Public Sector Accounting Standards Board

OAG: Office of the Auditor General

IFRS: International Financial Reporting Standards

GDPR: General Data Protection Regulation

NMA: Nairobi Metropolitan Area

TVETA: Technical Vocational Education and Training Authority

NECS: National Ethics and Corruption Survey

OECD: Organisation for Economic Co-operation and Development

OPERATIONAL DEFINATION OF KEY TERMS

Internal Audit: A systematic and independent evaluation process within an organization designed to assess the effectiveness of risk management, control, and governance processes (International Standards for the Professional Practice of Internal Auditing, 2017).

Fraud Prevention: The proactive measures taken to deter or detect fraudulent activities within an organization, including the use of internal controls and audits ((Prawitt et al., 2021)

TVET Institutions: Educational institutions focused on equipping learners with practical and technical skills in various trades and professions (World Bank, 2020).

Nairobi Metropolitan Area: A region encompassing Nairobi and its surrounding counties, known for its diverse population and urbanized environment, which affects the operations of various institutions, including educational bodies.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Technical and Vocational Education and Training (TVET) institutions occupy a pivotal position in national development by equipping learners with market-relevant skills, fostering innovation, and contributing to socio-economic transformation (UNESCO, 2018). In Kenya, the government has elevated the role of public TVET institutions as catalysts for industrialization and youth empowerment, recognizing their capacity to address unemployment and enhance productivity (Republic of Kenya, 2019). Despite this strategic importance, persistent governance challenges particularly financial mismanagement, weak oversight, and fraudulent practices continue to erode their effectiveness and public trust. Such vulnerabilities compromise the allocation of scarce resources and jeopardize the realization of TVET's developmental mandate.

Globally, the need for robust internal audit practices and effective management controls has become increasingly critical as public sector institutions confront escalating risks of fraud and financial mismanagement. Within the education sector has come under heightened scrutiny due to rising risks of fraud, resource leakages, and weak governance, necessitating stronger internal audit practices and management controls. In the United Kingdom, Audit Scotland (2024) revealed that fraud and error in public bodies, including educational institutions, rose by nearly 50% in 2022–23, totaling £21.5 million. Likewise, in Australia, the National Audit Office (2024) found that the Australian Skills Quality Authority (ASQA), which regulates vocational education and training providers, had only partly effective fraud control arrangements, highlighting the need for more rigorous oversight. In Canada, the Office of the Auditor General (2023) also emphasized gaps in fraud risk management within federally funded education programs.

Across Africa, the education sector has struggled with governance and accountability challenges that expose institutions to fraud, resource diversion, and financial irregularities. A 2021 study by Transparency International Africa revealed that nearly 30% of education sector funds in sub-Saharan Africa are lost through fraudulent activities, including embezzlement, bribery, and ghost workers. In South Africa, the Auditor-General (2023) highlighted recurring weaknesses in internal controls within higher and technical education institutions, which contributed to persistent audit disclaimers and loss of public confidence. In Nigeria, investigations by the Independent Corrupt Practices and Other Related Offences Commission (ICPC, 2022) revealed widespread misappropriation of funds and inflated procurement in universities and polytechnics, pointing to systemic weaknesses in oversight. Similarly, Ghana's Auditor-General (2021) reported significant financial irregularities in public universities, including unaccounted expenditures and procurement violations.

In the East African region, efforts to strengthen fraud prevention in public institutions, including the education sector, reveal both progress and persistent challenges. In Tanzania, Malle (2022) found that process controls such as internal-control and cash reviews were effective in limiting fraud, yet weaknesses remained in integrated fraud-control systems and institutional policy frameworks. In Uganda, the Auditor General's 2023 report exposed ongoing payroll irregularities, procurement violations, and unaccounted expenditures in universities, highlighting systemic governance gaps. Rwanda has demonstrated improvements in audit compliance, but the Auditor General (2024) still noted recurring procurement and expenditure irregularities that undermine institutional accountability. In Sudan, Transparency International (2023) documented entrenched corruption and fragile oversight, which continue to compromise education financing. These cases indicate that despite reforms, fraud and mismanagement remain persistent problems, especially within TVET institutions.

In Kenya, and particularly within the Nairobi Metropolitan area, Technical and Vocational Education and Training (TVET) institutions are central to preparing youth with technical and entrepreneurial skills that advance the national development agenda under Vision 2030 and the Bottom-Up Economic Transformation Agenda (BETA). These institutions receive substantial public investment to support infrastructure, modern equipment, and curriculum reforms aimed at enhancing employability and industrial competitiveness. However, governance and accountability challenges persist. The Office of the Auditor General (2023) highlighted discrepancies in expenditure accountability across several Nairobi-based public TVET institutions, citing weak internal controls and lapses in financial reporting. Such inefficiencies raise concerns about the effective utilization of scarce public resources. Although internal audits are mandated to ensure that funds are used as intended, persistent irregularities indicate underutilization of these mechanisms (Walter, 2021).

Addressing these challenges necessitates a multifaceted approach. Strengthening internal audit functions by ensuring their independence, management controls, providing adequate resources, and fostering a culture of integrity within institutions is paramount (Mugambi & Kamau, 2019). Additionally, leveraging technology in audit processes and enhancing the skills of internal auditors can improve fraud detection and prevention capabilities (Chege et al., 2021). By implementing these measures, TVET institutions and the broader public sector can enhance transparency, accountability, and public trust.

1.1.1 Internal Audit Practices

Internal audits have become a cornerstone of corporate governance, ensuring that organizations comply with internal policies, legal requirements, and internationally recognized standards (OECD, 2022). Recent studies emphasize that internal audit functions are not only critical for evaluating financial integrity but also for safeguarding against fraud and mismanagement in both public and private sectors (Institute of Internal Auditors [IIA], 2023; World Bank, 2022). By systematically assessing risk management strategies and the effectiveness of internal controls, auditors enhance transparency and accountability in the use of resources. Evidence from public institutions demonstrates that where internal audits are robust, early detection of financial anomalies and compliance violations is more likely, thereby improving the efficiency and legitimacy of governance processes (KPMG, 2021).

The effectiveness of internal audits lies in their ability to independently evaluate organizational processes and report on potential vulnerabilities. Through comprehensive reviews of financial transactions, procurement systems, and compliance mechanisms, auditors identify irregularities that could compromise organizational performance (IIA, 2021; Deloitte, 2022). A growing emphasis on risk-based auditing ensures that audit resources are concentrated in high-risk areas, thereby increasing their value to management and stakeholders (Beattie & Fearnley, 2022; OECD, 2022). This approach enables institutions to proactively address systemic weaknesses before they escalate into significant financial or reputational damage. By aligning internal audit practices with strategic objectives, organizations strengthen resilience and build stakeholder confidence in the governance framework (PwC, 2023).

Beyond compliance verification, internal auditors also serve an advisory role, contributing to the continuous improvement of institutional governance. By providing recommendations on strengthening controls, optimizing processes, and enhancing operational efficiency, auditors help organizations adapt to evolving risks and regulatory changes (Deloitte, 2022). Their consultative role is particularly important in complex environments where public resources are vulnerable to mismanagement. Evidence from recent performance audits shows that when auditors collaborate with management to implement corrective measures, the incidence of repeated financial irregularities is reduced significantly (IIA, 2023). Importantly, this advisory contribution does not compromise auditor independence but rather reinforces their value by embedding a culture of accountability, ethical behavior, and continuous improvement across organizational structures (World Bank, 2022).

The contemporary role of internal audit practices is therefore multidimensional encompassing assurance, risk management, and advisory functions (Grant Thornton, 2023). By offering independent assessments, auditors safeguard resources and strengthen compliance, while their risk-based orientation ensures that the most critical vulnerabilities are addressed promptly (World Bank, 2022). As organizations confront increasingly complex governance challenges, including digital transformation and heightened stakeholder scrutiny, the internal audit function must continue to evolve, adopting innovative tools such as data analytics and continuous auditing techniques (Benazzi, 2022). These developments affirm that internal audits remain indispensable to institutional sustainability, fraud prevention, and performance improvement. For education-sector institutions such as TVETs, where public resources are substantial and accountability is paramount, strengthening internal audit practices represents both a safeguard against fraud and a driver of long-term institutional credibility (Kahiga, Kibaara & Gichohi, 2024).

1.1.2 Management Controls

Management control refers to the formal and informal processes, strategies, and mechanisms used by organizational leadership to guide employee behavior toward the achievement of institutional objectives (Anthony & Govindarajan, 2024). These systems include structured elements such as budgeting, performance appraisals, and reporting procedures, as well as informal aspects such as organizational culture, leadership influence, and motivation (Merchant & Van der Stede, 2022). Recent studies highlight that robust management controls enhance accountability, align employee actions with strategic priorities, and reduce opportunities for fraudulent behavior (Albrecht et al., 2021). In public institutions, where stewardship of resources is critical, effective management controls act as a safeguard to ensure transparency, prevent misuse of funds, and protect organizational integrity (World Bank, 2023).

The measurement of management control systems typically involves assessing the clarity of organizational goals, the communication of performance expectations, and the rigor of oversight and accountability enforcement (Simons, 2025). Common tools include surveys, key performance indicators (KPIs), balanced scorecards, and control self-assessments, which provide insights into organizational effectiveness (Macinati & Anessi-Pessina, 2022). Empirical research shows that performance audits and integrated monitoring frameworks allow institutions to identify control weaknesses early and reduce exposure to fraud (PwC, 2023). Furthermore, technology-driven mechanisms such as automated reporting, data analytics, and digital audit trails are increasingly employed to strengthen fraud prevention by ensuring continuous monitoring and timely detection of anomalies (Deloitte, 2022).

Despite the proven value of management controls, challenges persist in both private and public sector organizations. Studies identify resource limitations, inadequate capacity, and the sophistication of modern fraud schemes as significant obstacles to effective implementation (KPMG, 2022). In developing contexts, weak enforcement of accountability measures often results in oversight gaps that expose institutions to financial irregularities (Transparency International, 2023). Strengthening management controls therefore requires sustained investment in staff training, organizational commitment, and technological adoption to build resilient systems (Ernst & Young, 2024). As fraud risks continue to evolve, adaptive and technology-integrated control frameworks are critical for safeguarding assets, promoting ethical conduct, and maintaining stakeholder trust (Grant Thornton, 2023).

1.1.3 Fraud Prevention

Fraud prevention refers to the collection of strategies, processes, and mechanisms designed to deter fraudulent acts such as embezzlement, procurement fraud, financial misreporting, and forgery of credentials before they occur. These mechanisms include internal audits, both regular and forensic, robust internal controls, segregation of duties, authorization protocols, risk assessments, and oversight by regulatory bodies. Empirical research shows that strong internal control frameworks are associated with lower levels of fraud incidence in both public and private institutions (Halaku, 2024). Studies also indicate that risk assessment is central in predicting and reducing fraud vulnerability by identifying high risk areas where preventive controls need to be applied (Golicha and Onsiro, 2022). Moreover, organizational culture and ethical leadership are critical enablers because when integrity is emphasized consistently and policies are clearly enforced, preventive systems operate more effectively.

In the education sector the importance of fraud prevention is magnified because public trust, student welfare, and the credibility of qualifications depend heavily on how resources are managed and how transparent operations remain. Research on Kenyan public universities shows that weaknesses in procurement controls, limited staff rotation, and poor information and communication systems have led to recurrent cases of financial irregularities (Takai, 2023). Similarly, studies on secondary schools in Nairobi County reveal that occupational fraud is strongly influenced by pressure and opportunity, and that inadequate oversight creates conditions for fraudulent practices to thrive (Limo, Gathoni and Kimungunyi, 2025). Beyond Kenya, global research highlights that educational institutions face credential fraud, misuse of grants, and misallocation of infrastructure funds. Addressing these problems requires strong auditing practices, clear performance evaluation systems, and effective oversight by regulators (Supriadi, Tjakrawala and Suryadnyana, 2024).

Fraud prevention within Technical and Vocational Education and Training institutions presents unique challenges and opportunities, particularly in Kenya. A recent study found that forensic audit practices in these institutions improve financial accountability by ensuring transparent reporting, reducing fund misuse, and improving resource utilization (Katana and Atandi, 2025). However, the study also reported that many institutions lack fully independent audit functions and face constraints such as insufficient access to financial records. Contributing factors to fraud include unregistered or informal colleges, weak enforcement of regulatory standards, inadequate skills among auditing staff, and informal cultures that allow deviations from policy (TVETA Reports, 2023). Preventive measures include strengthening the regulatory accreditation process, enforcing transparent procurement and reporting practices, implementing forensic audits, and increasing the capacity of internal audit teams through training and resourcing (Kahiga, Kibaara and Gichohi, 2024).

1.1.4 Public TVET Institutions in Nairobi Metropolitan Area

As of 2024, Kenya boasts an estimated 2,605 accredited Technical and Vocational Education and Training (TVET) institutions spread across the country, comprising both public and private providers. These institutions include 24 national polytechnics, about 238 public technical training institutes (TTIs) and colleges, and over 1,100 vocational training centers (VTCs) managed by county governments. In addition, the private sector plays a significant role in skills development through more than 800 private technical and vocational colleges (TVCs) and over 88 private vocational training centers. Collectively, these institutions form the backbone of Kenya’s technical and vocational education landscape, equipping learners with industry-relevant skills to meet labor market demands.

TVET institutions in Kenya have experienced remarkable growth in recent years, reflecting the government's commitment to addressing the skills gap and enhancing workforce competitiveness. According to the Economic Survey 2023 by the Kenya National Bureau of Statistics (KNBS), the number of TVET institutions increased from 2,017 in 2021 to 2,103 in 2022, demonstrating the government's prioritization of technical education (KNBS, 2023). According to TVETA, the number of accredited TVET institutions rose to 2207 (TVETA,2023). This expansion aligns with Kenya's Vision 2030, which identifies TVET as a key driver of socio-economic development (Government of Kenya, 2007). In the 2024/25 national budget, the government allocated KSh30.7 billion to support TVET institutions, including KSh2.3 billion earmarked for infrastructure development (National Treasury, 2024). These investments highlight the state's recognition of technical education as a means of equipping youth with employable skills, thereby reducing unemployment and enhancing productivity.

The Nairobi Metropolitan Area has emerged as a focal point for TVET development, with institutions supplying skilled labor to industries such as manufacturing, technology, and hospitality. Nairobi County leads with 47 accredited institutions, followed by Kiambu County with 43, Machakos County with 40, and Kajiado County with 11 (TVETA, 2023). The concentration of TVET institutions in urban areas reflects the demand for technical skills in key economic sectors. To enhance training quality, the government has invested in modern equipment and industry-aligned programs to ensure that graduates remain competitive in both local and global markets. For example, the Kenya-China Technical Cooperation Program has injected KSh13 billion to equip 70 TVET institutions with advanced machinery and learning materials (Ministry of Education, 2023).

Enrollment in TVET institutions has surged significantly due to increased government support and financial incentives. Gross enrollment rose from 451,205 in 2021 to 562,499 in 2022, demonstrating the growing appeal of technical education among Kenyan youth (KNBS, 2023). Financial aid programs such as the Higher Education Loans Board (HELB) have further boosted access, with KSh6.5 billion disbursed to 166,924 trainees in the 2024/25 financial year (HELB, 2024). These efforts align with the government's ambitious plan to expand TVET enrollment to two million learners by 2025, reinforcing the role of vocational training in fostering socio-economic development (National Treasury, 2024). Furthermore, county governments have launched scholarship initiatives to support students from marginalized backgrounds, ensuring equitable access to quality technical education.

1.2 Statement of the Problem

Public Technical and Vocational Education and Training (TVET) institutions in Kenya play a pivotal role in socio economic development by equipping young people with practical skills that enhance employability and support industrial growth (Nguyen and Tran, 2022). These institutions are central to Kenya Vision 2030 and the Bottom Up Economic Transformation Agenda, as they provide training in fields such as engineering, agriculture, ICT, and hospitality. For TVETs to fulfill this mandate, governance systems must guarantee accountability and proper use of resources (Ministry of Education, 2022). Research shows, however, that weak oversight and recurring fraud threaten the sector's effectiveness and diminish public confidence (EACC, 2023). The persistence of mismanagement challenges therefore raises critical concerns about how fraud prevention mechanisms are applied in public TVET institutions (Okol, 2023).

Despite the importance of the TVET sector and the existence of legal and regulatory frameworks, financial mismanagement and fraud continue to undermine performance. The Office of the Auditor General reported that public TVET institutions in Nairobi Metropolitan Area had unaccounted funds, unsupported expenditures, and irregular procurements amounting to over Ksh 1.2 billion (Okol, 2023). Similarly, the Ministry of

Education (2022) noted that resource wastage in some TVETs reached as high as 30 percent, largely due to inefficiencies, poor oversight, and misallocation of funds. Other investigations identified fraudulent practices such as ghost workers and inflated procurement costs, which reflect systemic weaknesses in internal controls (Office of the Auditor General, 2023). Even though enforcement bodies such as the Ethics and Anti Corruption Commission have issued compliance guidelines, enforcement and monitoring remain inconsistent (EACC, 2023). Furthermore, the digitization of financial systems in TVETs has created both opportunities for efficiency and new vulnerabilities to cyber enabled fraud that are not fully addressed by current audit practices (Ndirangu and Mugo, 2021). These challenges warrant a study to look at what controls are in place and make recommendations on how to improve the fraud prevention process so as to ensure the institutions can deliver on their mandate.

Empirical studies show that internal audit practices and management controls are crucial for fraud prevention, but their effectiveness within TVET institutions is still underexplored. Takai (2023) found internal controls reduce fraud in universities, while Aluvala, Tibbs and Kiongera (2023) showed non-audit roles weaken audit effectiveness in TVETs. Kathure, Kambura and Rintari (2024) linked Accounting Information Systems to improved accountability in TVETs, but without examining fraud prevention. Other studies on state corporations (KCA, 2022) and businesses (Musyoki, 2021) confirmed controls mitigate fraud but outside the TVET sector. Despite these contributions, little is known about how internal controls, IT adoption, and management controls jointly influence fraud prevention in public TVETs within Nairobi Metropolitan Area. Moreover, the moderating role of board oversight remains unexplored. This study therefore addresses sectoral, contextual, and methodological gaps by focusing on prevention rather than detection, with emphasis on Nairobi TVET institutions.

1.3 Objective of the Study

1.3.1 General Objective

To establish the effect of internal audit practices and management controls on fraud prevention in public TVET institutions in the Nairobi Metropolitan Area.

1.3.1 Specific Objectives

i. To determine the effect of internal control systems on fraud prevention among public TVET institutions in Nairobi Metropolitan Area.
ii. To assess the effect of management controls on fraud prevention among public TVET institutions in Nairobi Metropolitan Area.
iii. To establish the effect of internal audit IT adoption on fraud prevention among public TVET institutions in Nairobi Metropolitan Area.
iv. To establish the moderating effect of Board oversight on internal audit practices and management controls on fraud prevention among public TVET institutions in Nairobi Metropolitan Area.

1.4 Research Questions

i. What is the effect of internal control systems on fraud prevention among public TVET institutions in Nairobi Metropolitan Area?
ii. What is the effect of management controls on fraud prevention among public TVET institutions in Nairobi Metropolitan Area?
iii. How does the use of internal audit IT adoption affect fraud prevention among public TVET institutions in Nairobi Metropolitan Area?

iv. Does board oversight moderate the relationship between internal audit practices and fraud prevention among public TVET institutions in Nairobi Metropolitan Area Nairobi, Kenya?

1.5 Significance of the Study

The study bears significance to the following groups;

1.5.1 Significance to the Government

The Kenyan government plays a crucial role in ensuring that public resources allocated to TVET institutions are used efficiently to achieve national development goals, such as Vision 2030 and the Bottom-Up Economic Transformation Agenda (BETA). By examining internal audit practices and fraud prevention mechanisms, this study could provide the government with valuable insights into the effectiveness of existing governance structures and financial management frameworks in TVET institutions. The findings could help identify gaps in the current audit and oversight systems, enabling the government to implement more stringent financial controls, enhance accountability, and reduce corruption within the public education sector.

1.5.2 Significance to Policy Makers

Policy makers, including regulatory bodies such as the Auditor General's Office, the Ethics and Anti-Corruption Commission (EACC), and the Ministry of Education, could benefit from this study by gaining evidence-based recommendations on strengthening fraud prevention strategies in public TVET institutions. The study could highlight the role of internal audit IT adoption and management controls in enhancing financial transparency, as well as the influence of leadership diversity on governance. These insights can assist in formulating policies that enhance the effectiveness of internal audits, reinforce compliance with financial regulations, and promote good governance practices in the education sector.

1.5.3 Significance to the General Public

The general public, particularly students, parents, and taxpayers, has a vested interest in the financial integrity and governance of public TVET institutions, as these institutions play a vital role in providing skills development and workforce training. By addressing financial mismanagement and fraud, this study seeks to enhance public trust in TVET institutions and ensure that government funds are used for their intended purpose improving education quality and expanding access to technical training. A well-governed public TVET sector can ultimately contribute to economic growth, job creation, and national development, benefiting society as a whole.

1.5.4 Significance to TVET Institutions

For public TVET institutions, this study can provide a critical assessment of their internal audit functions and fraud prevention measures, helping them identify weaknesses and areas for improvement. Strengthening internal controls can not only enhance financial accountability but also improve operational efficiency, resource utilization, and service delivery. Additionally, insights into the impact of board oversight and internal audit IT-based controls can enable public TVET institutions to adopt best practices in governance and fraud prevention, fostering a culture of transparency, accountability, and ethical leadership within the sector.

1.6 Scope of the Study

The study assessed the effect of internal audit practices and management controls on fraud prevention in public TVET institutions within the Nairobi Metropolitan Area, covering

Nairobi, Kiambu, Kajiado, and Machakos counties. The target population comprised 141 heads of internal audit from public TVET institutions, from which a sample of 103 respondents was drawn. A descriptive research design was adopted, and primary data were collected using structured questionnaires, complemented by document reviews to ensure validity. The scope focused on internal audit practices, IT adoption, and management controls, while examining the moderating role of board oversight on fraud prevention measures in these institutions. The study was conducted between February and October 2025.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews relevant literature related to internal audit practices and fraud prevention in Technical Vocational Education and Training (TVET) institutions. It includes a theoretical review that explores the key theories underpinning the study, and demonstrates how these theories relate to the internal auditing functions and fraud mitigation efforts within TVET institutions. This section provides the foundation for understanding how internal controls and audit processes contribute to fraud prevention in educational institutions.

2.2 Theoretical Review

Theoretical review forms the backbone of any empirical research. For this study, the theoretical framework draws upon four major theories: The Agency Theory, Fraud Triangle Theory, Institutional Theory, and Systems Theory. These theories help to explain how internal audit functions can act as a control mechanism to align institutional goals with actual practices, prevent fraudulent activities, and ensure good governance in TVET institutions. Each theory offers a unique lens through which internal audit and fraud prevention efforts can be understood and contextualized within public education institutions.

2.2.1 Agency Theory

Proposed by Jensen and Meckling (1976), this theory explains the contractual relationship between principals such as shareholders, boards, or governments and agents who are delegated to act on their behalf. The theory assumes that agents are rational and self-interested actors who may not always pursue the goals of their principals, creating an agency problem. To mitigate this conflict, the theory emphasizes the use of control mechanisms such as audits, performance monitoring, and incentive alignment. These mechanisms reduce information asymmetry and ensure that agents remain accountable for their decisions and actions. According to Eisenhardt (1989), Agency Theory provides a critical foundation for understanding governance structures, contractual relationships, and managerial accountability, especially in organizations that rely heavily on delegated authority and resource stewardship.

One major strength of Agency Theory lies in its ability to provide a practical framework for improving governance, accountability, and performance in institutions. It guides the design of monitoring systems that minimize risks of fraud, waste, and mismanagement (Hill & Jones, 1992). The theory is particularly valuable in financial management and auditing because it informs the creation of oversight tools that align the interests of agents with those of principals. Moreover, it promotes transparency through structured reporting and performance evaluation systems (Daily, Dalton, & Cannella, 2003). Its relevance extends beyond corporate environments to public and educational institutions, where monitoring mechanisms ensure that delegated authority is exercised responsibly and in accordance with institutional objectives.

Despite its practical importance, agency theory has been widely criticized for oversimplifying human motivation and organizational dynamics. The assumption that all agents act purely out of self-interest undermines the potential role of intrinsic motivation, ethics, and social responsibility in influencing behavior (Donaldson & Davis, 1991). Critics argue that excessive reliance on control and monitoring may foster mistrust, bureaucracy, and inefficiency. Furthermore, implementing agency control systems can be costly, particularly in public institutions with limited resources (Shapiro, 2005). The theory's mechanistic nature may also overlook cooperative and stewardship-based relationships that can enhance collective performance. Consequently, scholars recommend integrating behavioral and ethical dimensions into the agency framework to create a more comprehensive understanding of governance and accountability mechanisms.

In the context of Technical and Vocational Education and Training (TVET) institutions within the Nairobi Metropolitan Area, Agency Theory provides a relevant framework for explaining the role of internal audit practices. These institutions manage public and donor funds, making financial transparency and accountability essential. Internal audits function as monitoring tools that ensure administrators and management staff act in the best interests of their funding principals. By minimizing information asymmetry and promoting oversight, internal audits help align managerial actions with institutional objectives. This application of Agency Theory enhances trust, prevents resource mismanagement, and supports effective utilization of financial resources to achieve institutional goals in TVET institutions.

2.2.2 Fraud Triangle Theory

The Fraud Triangle Theory, developed by criminologist Donald Cressey in the 1950s, provides an analytical framework for understanding the behavioral conditions that lead individuals to commit fraud. According to Cressey (1953), three essential components; pressure, opportunity, and rationalization must coexist for fraudulent behavior to occur. Pressure refers to financial, professional, or personal stressors that drive individuals to seek unethical means of relief. Opportunity arises when internal controls are weak, allowing fraud to be committed with a low risk of detection. Rationalization involves the mental justification that enables individuals to perceive fraudulent acts as acceptable or harmless. This theoretical framework has been extensively applied in auditing, risk management, and governance studies to explain and predict fraudulent behavior within organizations (Dorminey, Fleming, Kranacher, & Riley, 2012).

A key strength of the Fraud Triangle Theory lies in its simplicity and universal applicability across diverse organizational contexts. It provides auditors and managers with a clear behavioral model for identifying and mitigating fraud risks (Wilks & Zimbelman, 2004). The theory integrates psychological and situational factors, making it particularly useful for fraud prevention programs. It also highlights the importance of effective internal controls, ethical leadership, and organizational culture in reducing fraudulent behavior (Hogan, Rezaee, Riley, & Velury, 2008). In practice, internal auditors can use the Fraud Triangle framework to assess risk exposure by examining the existence of financial pressures, system weaknesses, and justifying attitudes that may predispose employees to unethical conduct. Consequently, it serves as both a diagnostic and preventive tool for corporate and public sector institutions.

However, the theory has faced criticism for focusing predominantly on individual-level determinants of fraud while neglecting organizational and societal influences. Critics such as Free (2015) argue that the Fraud Triangle oversimplifies complex fraud dynamics by excluding factors like group pressure, corporate culture, and systemic corruption. Moreover, it assumes rational decision-making, disregarding emotional, moral, or coercive elements that may influence fraudulent behavior. The model also fails to consider the role of collusion, where multiple individuals cooperate to conceal fraud, thus weakening its explanatory power. To address these gaps, scholars have proposed expanded models such as the Fraud Diamond and the Fraud Pentagon, which introduce additional dimensions like capability and arrogance to provide a more holistic understanding of fraudulent activity (Wolfe & Hermanson, 2004).

In the context of Technical and Vocational Education and Training (TVET) institutions within the Nairobi Metropolitan Area, the Fraud Triangle Theory offers a valuable behavioral framework for understanding and mitigating financial misconduct. Employees and administrators may experience personal financial pressure or perceive opportunities for misappropriation due to weak controls and oversight gaps. Internal audit functions play a crucial role in breaking the fraud triangle by strengthening monitoring systems, enforcing compliance, and promoting ethical accountability. Regular audits, whistleblower mechanisms, and transparent reporting can reduce opportunities for fraud while reinforcing institutional integrity. Therefore, the Fraud Triangle Theory underpins the importance of internal audit practices as a proactive approach to fraud prevention and resource protection in TVET institutions.

2.2.3 Institutional Theory

Institutional Theory, initially developed by Meyer and Rowan (1977) and later expanded by DiMaggio and Powell (1983), argues that organizations are shaped not only by technical or efficiency-driven concerns but also by social expectations and legitimacy pressures. The theory suggests that organizations conform to established norms, rules, and cultural beliefs within their institutional environment to gain legitimacy, resources, and survival (Scott, 2004). This conformity often leads to institutional isomorphism, where organizations within a field adopt similar structures and practices regardless of their technical value. The theory distinguishes between coercive pressures (arising from regulations and mandates), mimetic pressures (resulting from imitation of successful peers), and normative pressures (stemming from professional norms and standards). Collectively, these forces explain why organizations adopt formalized practices such as auditing and governance frameworks even when efficiency gains are minimal.

A major strength of Institutional Theory lies in its ability to explain organizational conformity and the diffusion of practices across sectors. It acknowledges that institutional legitimacy is as vital as operational efficiency in determining organizational success (Tolbert & Zucker, 1996). This makes it particularly relevant in public administration, education, and development sectors where compliance and accountability are emphasized. The theory also provides a foundation for understanding how policy frameworks and external stakeholders influence managerial behavior. Moreover, it integrates sociological and organizational perspectives, offering a broader lens through which to interpret the institutionalization of practices such as internal audits, performance reporting, and quality assurance mechanisms (Greenwood, Oliver, Sahlin, & Suddaby, 2008).

Despite its strengths, Institutional Theory has been critiqued for underestimating the role of agency, innovation, and strategic decision-making within organizations. Critics argue that excessive focus on conformity implies that organizations are passive recipients of external pressures rather than active shapers of their environment (Oliver, 1991). Furthermore, the theory inadequately addresses how some organizations resist or reinterpret institutional demands to maintain autonomy or pursue efficiency. Its emphasis on homogeneity may also overlook contextual variations that drive different institutional responses. Additionally, while the theory explains why organizations adopt certain practices, it provides limited insight into how these practices are implemented or sustained over time. Hence, Institutional Theory may benefit from integration with contingency or resource-based perspectives to capture internal and strategic dynamics.

In the context of Technical and Vocational Education and Training (TVET) institutions in the Nairobi Metropolitan Area, Institutional Theory offers a useful framework for understanding the adoption of internal audit practices. These institutions operate under multiple external pressures, including government regulations, donor requirements, and professional auditing standards. Coercive influences from the Ministry of Education, mimetic tendencies to emulate well-performing institutions, and normative expectations from auditors collectively shape internal control systems. Even when enforcement mechanisms are weak, TVET institutions adopt internal audit functions to gain legitimacy, maintain accreditation, and demonstrate accountability to stakeholders. Therefore, Institutional Theory reinforces the importance of environmental and regulatory pressures in shaping internal audit practices as instruments for transparency, governance, and fraud prevention within TVET institutions.

2.2.4 Systems Theory

Systems Theory, developed by Ludwig von Bertalanffy in the 1950s, conceptualizes organizations as open systems made up of interrelated and interdependent components that interact with their environment (Bertalanffy, 1950). The theory posits that the functioning of one part of a system affects the whole, and organizational success depends on the coordination and integration of all subsystems. In this context, institutions must manage information, financial, human, and operational subsystems cohesively to achieve stability and adaptability (Kast & Rosenzweig, 1972). Systems Theory emphasizes the continuous exchange of information, resources, and feedback between different organizational elements to maintain equilibrium. When applied to governance and auditing, it suggests that effective oversight and control mechanisms depend on collaboration, communication, and the integration of auditing functions across all operational areas to enhance institutional efficiency and accountability.

One of the key strengths of Systems Theory is its holistic approach to analyzing organizational performance and control mechanisms. It provides a conceptual framework that encourages the integration of various functions such as finance, administration, and operations into a unified governance structure (Skyttner, 2005). This perspective helps leaders and auditors identify interdependencies and potential weaknesses that may expose institutions to inefficiencies or fraud. The theory also promotes adaptive management by incorporating feedback loops that enable continuous improvement in organizational systems (Laszlo & Krippner, 1998). By viewing organizations as dynamic entities influenced by both internal and external factors, Systems Theory encourages comprehensive decision-making, cross-functional collaboration, and resilience in addressing complex administrative challenges, including financial mismanagement and resource misuse.

Despite its comprehensive outlook, Systems Theory faces criticism for its abstract nature and limited practicality in resource-constrained environments. Its application often demands extensive coordination, data integration, and analytical capacity that may not exist in smaller or developing institutions (Flood, 2010). Furthermore, the theory assumes that all organizational subsystems are equally responsive and cooperative, which may not hold true in bureaucratic or hierarchical settings. Critics also argue that the theory can overlook the influence of individual behavior, politics, and culture in shaping institutional outcomes

(Jackson, 2003). The complexity of designing fully integrated systems can pose operational challenges, particularly where interdepartmental communication and accountability mechanisms are weak. Nevertheless, its systemic orientation remains valuable for institutions seeking sustainable and coordinated approaches to organizational governance and fraud prevention.

In the context of Technical and Vocational Education and Training (TVET) institutions within the Nairobi Metropolitan Area, Systems Theory provides a valuable framework for developing integrated internal audit mechanisms. Since these institutions consist of multiple interconnected departments such as finance, procurement, and human resources, fraud prevention requires collaboration and information sharing across all units. Systems Theory underscores the importance of continuous feedback, coordination, and systemic oversight to detect anomalies before they escalate into significant losses. By promoting interconnected audit functions, the theory enhances institutional transparency, accountability, and control. Therefore, Systems Theory supports the integration of internal audit activities into the broader governance structure of TVET institutions, ensuring that fraud prevention is not treated as an isolated activity but as a collective institutional responsibility.

2.3 Empirical Review

The empirical review provides an analysis of past studies and research findings related to the subject under investigation. It critically examines existing literature based on actual data and observed outcomes, offering insights into how different scholars have approached similar research problems.

2.3.1 Internal Control Systems and Fraud Prevention

Internal Control Systems refer to the structured processes, procedures, and mechanisms established within an organization to ensure efficiency in operations, reliability of financial reporting, and compliance with applicable laws and regulations. According to the Committee of Sponsoring Organizations of the Treadway Commission (COSO, 2013), an internal control system comprises five components: control environment, risk assessment, control activities, information and communication, and monitoring activities. These elements collectively provide reasonable assurance that resources are effectively utilized, and that errors, irregularities, and fraud are either prevented or detected promptly. As noted by Jokipii (2010), well-designed internal controls enhance accountability and operational transparency. Similarly, Mwangi and Ngugi (2019) emphasize that strong control frameworks not only safeguard organizational assets but also promote ethical conduct and good governance, which are essential for sustainable fraud prevention and institutional integrity.

The Institute of Internal Auditors (IIA) Report (2022) examined how internal audit functions in the United States adapted during the COVID-19 pandemic (2020–2021) to address emerging fraud risks. The report revealed that remote work arrangements increased opportunities for cyber-fraud, phishing, and financial manipulation, with 54% of internal auditors reporting heightened threats. To counter these risks, internal audit functions enhanced real-time monitoring, expanded the use of data analytics, and strengthened communication with management. The study, which involved a global survey of internal audit executives, concluded that audit agility and technological readiness are critical for managing dynamic risk environments. The findings demonstrated that internal audit practices extend beyond financial verification, functioning as adaptive mechanisms for organizational resilience. The report emphasized the value of continuous assurance and proactive risk assessment in reducing fraud occurrences during times of crisis.

Mbetha and Moosa (2024) explored the contribution of internal audit functions in detecting and preventing fraud within a municipality in Gauteng, South Africa. The researchers employed a qualitative case study approach using purposive sampling and semi-structured interviews conducted with 15 internal auditors and 10 municipal officials to gain in-depth insights into audit practices. Thematic analysis was applied to interpret the data and establish patterns of audit performance. Their findings revealed nine critical roles of internal auditors, including risk identification, audit planning, control evaluation, fraud awareness creation, and timely reporting to oversight committees. The study found that municipalities where internal audits adhered to professional standards recorded a 40% reduction in reported fraud incidents over three years. Furthermore, independence, auditor competence, and top management support were identified as key determinants of audit effectiveness. The researchers concluded that well-structured internal audit functions enhance transparency, accountability, and early fraud detection.

Njenga and Warui (2023) conducted a study on the impact of risk-based internal auditing on corporate governance compliance among state corporations in Kenya. Using a descriptive research design and survey data from 33 corporations, the study analyzed how audit quality, internal control, and audit risk management affect governance standards. The results revealed that high-quality internal audit processes significantly improved adherence to governance and accountability principles. However, the researchers found that audit planning had a weaker influence compared to other variables, indicating inconsistency in risk assessment procedures. The study concluded that risk-based auditing enhances transparency, minimizes financial misreporting, and promotes institutional accountability. The study recommend increased capacity building for audit staff, adoption of risk-based frameworks, and enforcement of compliance audits to align organizational practices with national corporate governance codes.

Simbiri, Musiega, and Simiyu (2023) examined the influence of risk-based internal audit planning on the financial performance of Savings and Credit Cooperative Societies (SACCOs) in Kenya's Western Region. Employing a descriptive research design and structured questionnaires across 15 SACCOs, the study analyzed the relationship between audit planning and institutional performance indicators. The results indicated that risk-based audit planning significantly enhances financial accountability, transparency, and decision-making efficiency. SACCOs with well-structured audit plans experienced reduced incidences of fraud and operational errors. Moreover, the study revealed that the integration of audit findings into management decisions positively affects performance sustainability. The study recommend that SACCOs adopt comprehensive risk-based audit strategies supported by continuous training for auditors. The findings highlight the importance of proactive planning and internal oversight in minimizing financial irregularities and improving institutional governance structures.

Murage and Theuri (2023) investigated how internal audit practices influence financial performance within the Nairobi City County Government in Kenya. The study adopted a correlational research design and targeted finance, procurement, and audit staff, obtaining responses from 120 participants selected through stratified random sampling. Data were analyzed using Pearson correlation and multiple regression techniques to establish the strength and direction of relationships. The results revealed a strong positive correlation ($r = 0.781$, $p < 0.01$) between internal audit practices and financial performance, indicating that enhanced professional competence, adherence to audit standards, and auditor independence significantly improved fiscal accountability and reduced cases of mismanagement. The study further showed that departments with consistent audit reviews recorded a 25% improvement in budget absorption and a 30% decline in audit queries. The study recommended continuous auditor training, investment in modern audit technologies, and strengthening independence frameworks to enhance financial integrity.

Kuria (2025) analyzed the effect of internal auditor independence on fraud detection among private firms in Thika Sub-County, Kenya. The study adopted a descriptive research design, using stratified sampling and questionnaires distributed to 110 internal auditors. Results revealed that only 20% of auditors report directly to an independent audit committee, while the majority report to management, compromising their objectivity. The findings demonstrated that independence was a strong predictor of effective fraud detection and risk mitigation. Firms that empowered auditors to operate autonomously recorded fewer cases of internal fraud and better adherence to compliance procedures. Kuria (2025) emphasized that organizational governance structures should be redesigned to safeguard auditor impartiality. The study recommended regular oversight training, whistleblower protections, and direct reporting lines to audit committees to enhance transparency and accountability in private sector operations.

2.3.2 Internal Audit Information Technology adoption and Fraud Prevention

Fenz et al. (2021) conducted a study in Germany to examine the application of data analytics and artificial intelligence in internal auditing for fraud prevention. The study utilized a quantitative approach through a survey of 150 internal auditors across financial institutions. Findings revealed that 72% of auditors using data analytics tools identified fraudulent patterns earlier than those using traditional sampling methods. The research also highlighted that automation improved efficiency and reduced audit fatigue. However, the study's limitation lies in its focus on large financial institutions, overlooking small and medium enterprises where IT adoption remains low. The gap identified emphasizes the need for cross-sectoral research to evaluate how digital audit tools perform in smaller or public institutions with limited technological capacity.

Owusu and Boateng (2022) examined the influence of IT adoption on internal audit effectiveness and fraud prevention in listed manufacturing firms in Ghana. Using a mixed-methods design combining questionnaires and semi-structured interviews, the study revealed that auditors who employed continuous auditing systems and forensic data analytics detected irregularities 45% faster than those using manual audits. Furthermore, IT-enabled audits enhanced accountability and minimized manipulation of financial statements. Despite these gains, inadequate technical expertise and insufficient IT budgets hindered full implementation. The authors recommended mandatory capacity building and IT infrastructure investment. The study, however, focused only on manufacturing firms, leaving a gap in understanding how IT-based internal audit practices function in public sector organizations such as educational or municipal institutions.

Abdallah and El-Sayed (2024) conducted a national survey among 230 internal auditors in Egypt to investigate the impact of continuous auditing technologies on fraud detection within state-owned enterprises. Using a quantitative correlational design, they found a strong positive relationship ($r = 0.63$) between IT adoption and fraud prevention.

Auditors who applied continuous auditing and data mining techniques reported fewer instances of procurement fraud. Nonetheless, the study identified concerns about data integrity, cyber threats, and auditor independence when management controls IT systems. The authors concluded that Egypt's internal audit departments require independent IT governance structures to safeguard audit integrity. The study's limitation lies in its focus on state-owned enterprises, leaving a gap on how private institutions integrate similar technologies to improve fraud prevention outcomes.

Mwakalobo and Mfaume (2023) examined IT adoption in internal auditing and its role in mitigating fraud in Tanzania's public sector. The study used a descriptive survey targeting 120 auditors from government ministries and agencies. Findings revealed that limited access to digital tools and poor ICT infrastructure constrained auditors' ability to perform continuous monitoring and fraud analytics. However, institutions that utilized simple computerized audit management systems experienced fewer cases of procurement irregularities. The study recommended government investment in digital capacity building and establishing integrated audit management platforms. The identified gap was that the study lacked an assessment of auditor digital literacy and how it influences technology adoption effectiveness. This leaves room for further research on capacity-based determinants of IT adoption in internal audits within developing public sectors.

Murage and Theuri (2023) investigated internal audit IT integration and financial performance within Nairobi City County Government. Using a descriptive correlational design, data were collected from 98 respondents in finance, procurement, and audit departments. Regression analysis showed a significant positive correlation ($r = 0.54$) between IT-enabled auditing and improved fraud detection rates. The study concluded that computerized audit tools enhanced transparency and accountability in fund utilization. However, the research was limited to county governments, excluding national government and educational institutions where digital auditing challenges differ. The identified gap suggests the need for studies examining how TVET institutions adopt IT in auditing to enhance fraud prevention and governance outcomes.

Simbiri, Musiega, and Simiyu (2023) analyzed the role of IT-enabled risk-based auditing on fraud prevention among 15 Savings and Credit Cooperative Societies (SACCOs) in Western Kenya. The study adopted a descriptive research design using structured questionnaires. Findings indicated that SACCOs that implemented data analytics tools for reconciliations and exception reporting experienced a 40% reduction in detected fraud cases. Furthermore, digital audits enhanced transparency and reduced manual reporting errors. However, small SACCOs lacked the financial resources to fully implement continuous auditing systems. The gap identified is that the study did not consider the impact of auditor digital skills or training on IT adoption success, suggesting the need for further research in auditor competence and technological capacity.

Kuria (2025) examined internal auditor independence and IT adoption in relation to fraud detection across 110 private firms in Thika Sub-County. Employing a stratified sampling approach and structured questionnaires, the study revealed that firms with automated internal audit systems detected fraud incidents 35% faster than those relying on manual audits. Independence was enhanced where auditors reported directly to audit committees rather than executive management. However, the study also found that many firms lacked advanced data analytics systems, limiting audit efficiency. The identified gap was that the research excluded public sector institutions, leaving open the question of how

IT adoption in internal audit could be leveraged in government-funded educational institutions like TVETs to prevent fraud and ensure accountability.

2.3.3 Management Controls and Fraud Prevention

Internal audit information technology adoption refers to the systematic integration of digital tools and analytical techniques into internal audit processes to strengthen monitoring, assurance, and fraud prevention (Adero and Otinga, 2019). It encompasses the use of data analytics, automated control testing, continuous auditing platforms, and machine learning systems that enable auditors to evaluate entire transaction populations rather than samples. The Institute of Internal Auditors (2022) emphasizes that IT adoption transforms internal audit from periodic reviews into real-time, data-driven surveillance that enhances anomaly detection and reduces fraud exposure. In Kenya's TVET sector, Kathure, Kambura, and Rintari (2024) found that adopting accounting information systems improved accountability and reporting timeliness. According to Aluvala, Tibbs, and Kiongera (2023) digital audit capabilities strengthen internal audit effectiveness.

The key is that management must first set the tone at the top, emphasizing integrity and ethical conduct. (Musila ,2021) investigated the impact of internal controls on fraud detection and prevention in Kenyan public universities. The study found a significant positive association between policy compliance and fraud detection and prevention. Their findings highlight that strengthening internal controls, particularly enforcing policy compliance, has significant benefits. Additionally, organizations that prioritize policy compliance are more likely to foster a culture of accountability and transparency, reducing the likelihood of fraudulent activities. According to a study by the Institute of Internal Auditors (IIA) (2020), organizations with a strong commitment to internal controls and compliance experienced a 30% reduction in fraud losses compared to those with weaker controls.

Micheni (2016) examined the effectiveness of internal controls on fraud detection and prevention among commercial banks listed on the Nairobi Securities Exchange. The study revealed a strong positive association between internal controls and fraud prevention ($r=0.664$, $P<0.05$). Their findings highlight the importance of control activities and monitoring in preventing fraudulent practices. The success of fraud prevention depends on having a comprehensive framework of internal controls that are proactively managed and regularly assessed. A report by Ernst & Young (2022) emphasized that control activities, such as segregation of duties and regular reconciliations, are crucial in preventing fraudulent practices in the banking sector.

A study by (Ndung'u and Kinyua ,2020) assessed financial accountability in Kenyan public training institutes and found that despite the existence of internal audit departments, their recommendations were rarely implemented. The study applied a descriptive survey design and regression analysis and concluded that management commitment and autonomy of auditors were key determinants of fraud prevention. However, it fell short of examining other enabling factors such as internal audit IT adoption infrastructure and board oversight attributes.

Kabue and Aduda (2015) explored the effect of internal controls on fraud detection and prevention among commercial banks in Kenya. Regression results indicated significant relationships between various internal controls and fraud prevention, emphasizing the need for robust financial governance controls. This study highlighted the importance of robust financial governance controls, which serve as the foundation for fraud prevention. This study emphasized the importance of robust financial governance controls, which serve as the foundation for fraud prevention. Proper governance structures provide clear lines of authority and accountability, reducing the opportunity for fraudulent behavior. A study by Deloitte (2021) found that banks with effective governance structures experienced a 40% reduction in fraud incidents compared to those with weaker governance.

2.3.4 Board oversight

Board oversight refers to the governance role played by a board of directors or its delegated subcommittees, notably the audit committee, in supervising management, internal controls, and the internal audit function to ensure accountability and reduce organizational risk. Oversight involves setting tone at the top, approving and following up on audit plans, ensuring auditor independence, reviewing audit findings, and enforcing corrective actions. Strong board oversight moderates the effectiveness of internal audit practices and management controls by ensuring that audit recommendations are implemented and that control weaknesses receive timely remediation. In public TVET institutions, board oversight is critical because these institutions manage public and donor funds; an active board or audit committee can bolster internal audit IT adoption and ensure management control reforms translate into measurable fraud prevention outcomes.

Edacherian *et al.,* (2024) studied audit committee dynamics and their effect on institutional performance across listed Indian firms. The research used panel data analysis covering 347 companies over multiple years and applied econometric models to test relationships between audit committee attributes, board oversight, audit quality, and financial misreporting. Findings show that active audit committees with financial expertise, regular meetings, and strong independence significantly reduce occurrences of financial irregularities and improve the follow-up of internal audit recommendations. The study also revealed that board oversight strengthens the impact of internal audit practices on control effectiveness. However, the focus on listed firms limits applicability to public sector institutions and TVET colleges where board composition, statutory mandates, and resource constraints differ; the gap calls for sectoral studies that test moderating effects of boards in public educational contexts.

Mbetha and Moosa (2024) investigated the role of internal audit in fraud detection at a Gauteng municipality, using a qualitative single case study design with purposive interviews and document review. The study identified nine critical audit roles and found that strong board level oversight, via audit committees and municipal councils, significantly improved the implementation of audit recommendations and facilitated forensic follow-ups. Where boards actively reviewed audit committee reports and enforced corrective actions, instances of procurement and payment fraud declined. The authors emphasized that IT-enabled analytics only reduced fraud when board oversight ensured management acted on audit warnings. The limitation is that the single case approach restricts generalizability; further comparative municipal studies are needed to quantify how board oversight moderates IT-driven audit effectiveness across diverse public entities.

A preprint study by researchers examining factors influencing internal audit effectiveness in Lemi Kura Sub City public sector (2025) used a structured survey of internal auditors and financial officers to assess determinants such as management support, independence, audit committees, and board engagement. Results indicated that board oversight and audit committee activity were positively associated with internal audit effectiveness and with stricter enforcement of control recommendations. However, weak board follow-through and limited technical capacity constrained the translation of audit findings into fraud prevention. The study's gap is its localized scope and early preprint status, signaling the need for broader, peer-reviewed, national level research that specifically tests the moderating role of board oversight on IT-enabled audit practices in Ethiopia's education and TVET sectors.

A forensic audit study on TVET institutions in Kenya (2025) assessed forensic audit practices, audit independence, and board roles across sampled TVET colleges using mixed qualitative and quantitative methods. Findings showed that institutions with active board oversight and functional audit committees demonstrated better implementation of forensic recommendations and stronger uptake of IT-based auditing tools, which reduced misuse of funds and improved accountability. Where boards demanded regular audit reports and enforced sanctions for noncompliance, management controls strengthened and fraud detection improved. The study identified a gap in standardized board charters and inconsistent audit committee skills across TVET institutions, recommending capacity building and formalizing board oversight roles to optimize the moderating effect on internal audit IT adoption and fraud prevention.

2.4 Summary and Research Gaps

TABLE 1

Summary and Research Gaps

Study	Summary of Findings	Identified Gap to Be Filled
Njenga & Warui (2023)	Demonstrated that risk-based internal auditing strengthens corporate governance and reduces fraudulent practices in Kenyan state corporations, highlighting audit quality and risk management as critical drivers.	The study is limited to state corporations; contextual differences in structure, size, and governance limit its applicability to public TVET institutions.
Mwangi & Ngugi (2019)	Found that robust internal control systems enhance ethical conduct and fraud prevention among Kenyan firms, reinforcing that governance and compliance frameworks are integral to performance.	The descriptive approach limits causal inference; future studies should employ longitudinal or mixed-method designs to establish the direction of influence within educational institutions.
Kabue & Aduda (2015)	Confirmed that effective internal controls significantly minimize fraud risk in commercial banks listed on the Nairobi Securities Exchange.	Sectoral context differs markedly from education; control environments in banks may not reflect the unique risk exposure of TVET institutions.
Fenz et al. (2021)	Reported that artificial intelligence and data analytics enhanced fraud detection efficiency among German financial institutions, enabling faster anomaly recognition.	The study focused on technologically advanced European firms; findings are not generalizable to developing public sectors with limited IT infrastructure, such as Kenyan TVET institutions.
Owusu & Boateng (2022)	Showed that adoption of continuous auditing and forensic data analytics in Ghanaian manufacturing firms accelerated irregularity detection by 45%, improving fraud management outcomes.	The focus on private-sector manufacturing limits transferability to public-sector educational settings where IT adoption and budget constraints differ.
Mwakalobo & Mfaume (2023)	Found that limited ICT infrastructure hindered IT-based internal auditing in Tanzania’s public sector, though institutions using digital tools experienced fewer procurement anomalies.	The study lacked assessment of auditor digital literacy and skill levels, a methodological gap crucial to understanding IT adoption effectiveness.

Murage & Theuri (2023)	Demonstrated that IT-integrated internal audits improved fraud detection and transparency within Nairobi City County Government.	While insightful, the study concentrated on county governments; similar investigations are lacking in the public TVET education sector where accountability and governance structures differ.
Musila (2021)	Established that strong internal control policies and compliance practices improve fraud detection in Kenyan public universities, emphasizing the role of integrity and ethical culture.	The study's context within universities does not account for operational and funding variations found in TVET institutions; comparative evaluation is needed.
Ndung'u & Kinyua (2020)	Found that management commitment and audit autonomy are significant predictors of fraud prevention in public training institutes in Kenya.	The study did not examine the influence of digital auditing or board oversight mechanisms, leaving a focus area gap in understanding integrated governance effects.
Micheni (2016)	Identified a positive correlation between strong internal controls and reduced fraud incidents in Kenyan commercial banks.	The study is contextually limited to banking and lacks relevance to educational institutions' control structures.
Deloitte (2021)	Reported that corporations with well-defined governance and monitoring controls experienced a 40% reduction in fraud cases, linking ethical leadership to fraud prevention.	Corporate sector orientation limits contextual transfer to public education systems with weaker enforcement mechanisms.
Edacherian et al. (2024)	Found that active, independent audit committees with financial expertise significantly reduced financial irregularities among Indian listed companies and enhanced follow-up on audit recommendations.	The corporate sample constrains external validity; further testing is required in public education and training institutions with differing board mandates.
Mbetha & Moosa (2024)	Established that strong board oversight in a South African municipality enhanced fraud prevention through improved audit recommendation implementation and management accountability.	Single-case design restricts generalization; broader quantitative analysis is needed to establish moderating effects across multiple entities.
Lemi Kura Study (2025)	Reported that active board engagement and audit committee activity improved internal audit effectiveness and enforcement of	Did not apply interaction or moderation models; methodological gap persists in quantifying how board oversight strengthens audit effectiveness.

	controls in Ethiopian public sector organizations.	
Forensic Audit Study (2025)	Found that active board oversight within Kenyan TVET institutions improved IT adoption in auditing and enhanced fraud detection outcomes.	Though relevant to TVETs, the study lacked standardized measures for board competence and failed to compare oversight variations across institutions, indicating methodological and contextual gaps.

2.6 Conceptual Framework

A conceptual framework illustrates the logical relationship among key study variables, offering a systematic view of how internal control systems, information technology, management controls, and audit planning and risk assessment to influence fraud prevention in TVET institutions. This study adopts a multi-variable framework anchored on agency theory and fraud triangle theory, both of which emphasize institutional governance, risk mitigation, and ethical behavior as central to fraud reduction. The conceptual framework below summarizes the expected interaction between the study variables:

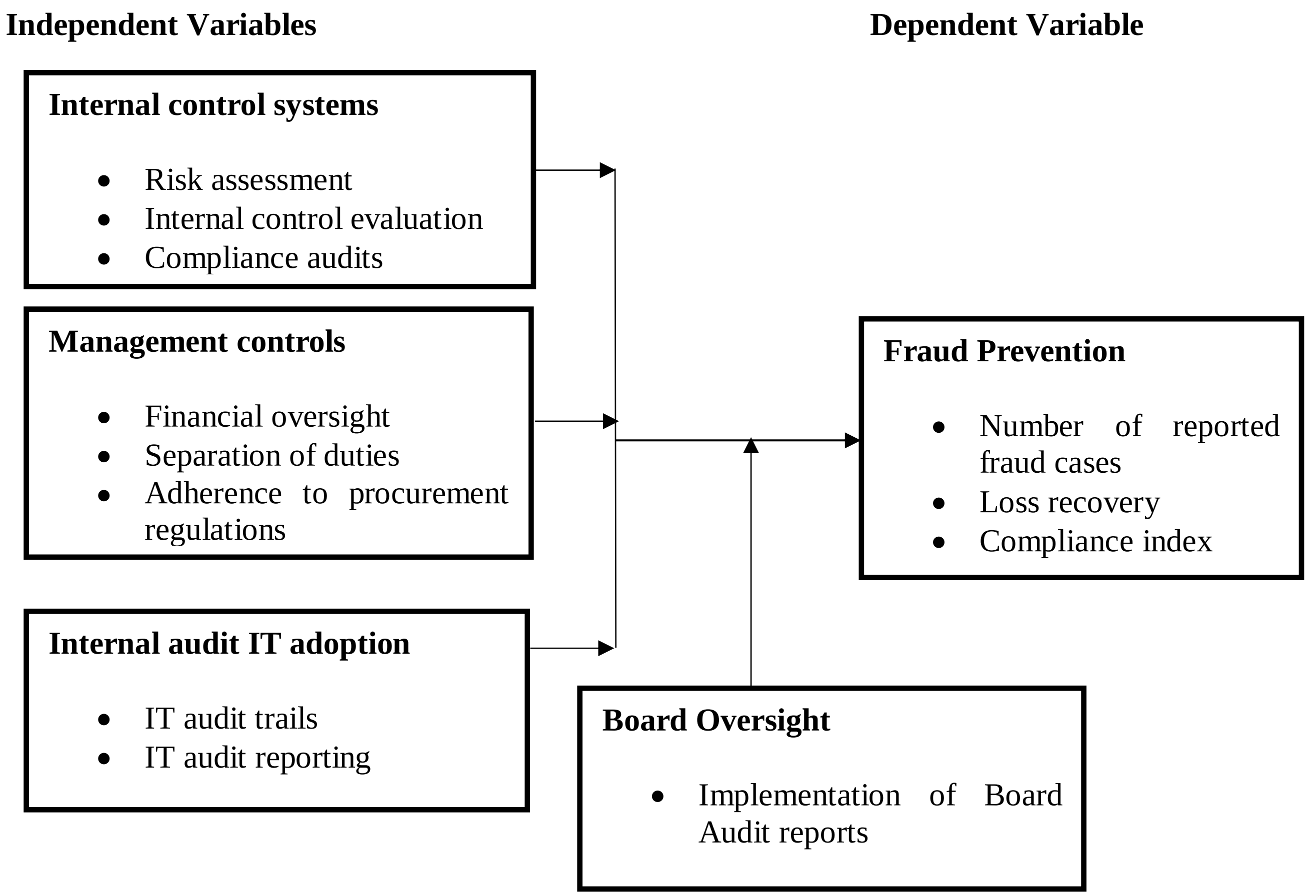

FIGURE 1

Conceptual framework

Source; (Researcher, 2025)

2.6 Operational Measurement of Variables

TABLE 2

Operational Measurement of Variables

Concept	**Variable**	**Indicator**
Internal control system	Independent	Risk assessment Internal control evaluation Compliance audits
Management Controls	Independent	Financial oversight Separation of duties Adherence to procurement regulations
Internal Audit Information Technology Adoption	Independent	IT audit trails IT audit reporting
Board Oversight	Moderating variable	Implementation of Board Audit reports
Fraud Prevention	Dependent	Number of reported fraud cases Loss recovery

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter described the methodology that guided the investigation into the relationship between internal audit practices and fraud prevention in public Technical Vocational Education and Training (TVET) institutions in Nairobi Metropolitan Area. It detailed the research design, study location, target population, sampling methods, data collection tools, and data analysis techniques. Furthermore, the chapter outlined ethical considerations and procedures for testing the validity and reliability of instruments.

3.2 Research Design

The study utilized a descriptive survey design complemented by a correlational design to examine existing conditions and explore the relationships among internal audit practices, management controls, and fraud prevention in public TVET institutions. The descriptive design was appropriate for capturing detailed data from a large institutional population, while the correlational design enabled the measurement of the strength and direction of associations between key variables (Kumar, 2022). This approach facilitated the use of inferential statistics, including regression models, to establish causal inferences and evaluate moderating effects such as board oversight (Bryman, 2023). Recent studies emphasize that combining descriptive and correlational designs enhances validity when investigating governance and fraud-related issues across multiple organizational settings (Sekaran & Bougie, 2019; Saunders et al., 2023). By integrating both approaches, the study addressed the “what” and the “why” of fraud prevention, providing a multidimensional understanding in real-world institutional contexts.

3.3 Target Population

The target population comprised public TVET institutions in Nairobi Metropolitan Area. According to the Kenya National Bureau of Statistics (KNBS, 2025), there are approximately 137 public TVET institutions in the region. The heads of internal audit and chairman of audit committee board in each of the public TVET institution was the unit of observation. This is shown in table 2

TABLE 3

Target Population

County	Frequency (n)	Percentage (%)
Nairobi	47	33%
Kiambu	43	30%
Machakos	40	28%
Kajiado	11	8%
Total	141	100.0%

Source, (TVETA, 2025)

3.4 Sampling Procedures and Techniques

The study employed purposive sampling to select participants who could provide detailed and relevant information on internal audit practices and fraud prevention in public TVET institutions within the Nairobi Metropolitan Area. Public TVET institutions were first grouped by county to ensure representation from Nairobi, Kiambu, Kajiado, and Machakos. Within each institution, heads of internal audit and chairpersons of audit committees were selected based on their strategic oversight roles, experience, and ability to offer informed responses regarding governance, internal controls, and audit practices.

This approach ensured inclusion of diverse institutional types, such as national polytechnics and technical institutes, and allowed the study to capture variations in practices across institutions. The final sample size was determined using the Krejcie and Morgan (1972) table to ensure sufficient representation of the population while maintaining practical feasibility for in-depth data collection.

TABLE 4

Sample Size

County	Sample (n)	Percentage (%)
Nairobi	32	31%
Kiambu	32	31%
Machakos	30	29%
Kajiado	9	9%
Total	103	100.0%

Source (Researcher, 2025)

3.5 Data Collection Instrument

The primary data collection instrument was a structured questionnaire designed to capture quantitative and qualitative data on internal audit practices and fraud prevention mechanisms. The questionnaire consisted of closed-ended Likert scale items to measure perceptions and practices, as well as open-ended questions to allow for elaboration on contextual factors (Mugenda & Mugenda, 2012). The instrument was developed based on a thorough review of relevant literature and validated instruments used in previous studies (Sawyer, 2013). The use of questionnaires facilitated systematic data collection across a large and dispersed population, ensuring reliability and ease of analysis.

3.6 Validity and Reliability of the Instrument

A pilot study was conducted on a sample representing 10% of the total sample size drawn from public TVET institutions outside the Nairobi Metropolitan Area to test the feasibility and clarity of the data collection instrument (Creswell, 2014). This preliminary test helped identify ambiguous items, logistical challenges, and potential respondent fatigue, thereby allowing refinement of the questionnaire prior to the main study (Bryman, 2016). The pilot study also served to preliminarily assess the reliability and validity of the instrument.

3.6.1 Reliability of Data Collection Instrument

The reliability of the questionnaire was assessed through the calculation of Cronbach's Alpha coefficient, aiming for a reliability index of 0.7 or above, which indicates acceptable internal consistency (Gliem & Gliem, 2003). This statistical test measured the degree to which items within each scale consistently reflect the underlying construct of internal audit practices and fraud prevention (Field, 2013). Where reliability indices fall below the threshold, appropriate revisions were made to improve the instrument's consistency.

3.6.2 Validity of Data Collection Instrument

Validity was ensured through both content and construct validation methods. Content validity was established by expert review from professionals in internal auditing and financial management, as well as academic supervisors, to confirm that the questionnaire items adequately cover all relevant aspects of internal audit and fraud prevention (Patton, 2002). Construct validity was enhanced by aligning questionnaire items with theoretical frameworks and previous empirical studies (Sekaran & Bougie, 2016).

3.7 Data Collection Methods and Procedures

Data collection refers to the systematic process of gathering information from relevant sources to answer research questions, test hypotheses, and evaluate outcomes (Creswell & Creswell, 2021; Saunders et al., 2019). It involves the careful design of procedures to ensure validity, reliability, and ethical compliance in capturing both primary and secondary data. In this study, the process began with the researcher obtaining a formal data collection permit from KCA University and the National Commission for Science, Technology and Innovation (NACOSTI). These permits were subsequently presented to the management of the sampled TVET institutions in Nairobi Metropolitan Area to seek authorization to conduct the research. Upon approval, questionnaires were distributed to the respondents both physically and electronically to accommodate varying levels of access and preference. Respondents were allowed two to three working days to complete the instruments, providing adequate time for reflection while maintaining efficiency. To increase response rates and reduce non-participation, follow-up phone calls were made to the respondents as reminders. This structured approach ensured comprehensive, credible, and ethically sound data collection aligned with the study objectives.

3.8 Data Analysis and Presentation

Data analysis refers to the systematic process of cleaning, transforming, and interpreting raw data to generate meaningful insights and answer research questions (Saunders et al., 2019; Creswell & Creswell, 2021). It involves applying both descriptive and inferential statistical techniques to summarize datasets, test hypotheses, and establish relationships among variables. In this study, once fieldwork was completed, all returned questionnaires were carefully inspected for completeness and consistency. The data were then coded and entered into the Statistical Package for Social Sciences (SPSS) for analysis. Descriptive statistics, including percentages, means, and standard deviations, were employed to summarize respondents' characteristics and patterns within the study variables. The results were presented using tables and charts to facilitate clarity and visual interpretation. Beyond descriptive measures, inferential statistics were applied to test the relationships outlined in the study objectives. Multiple regression analysis was conducted to determine the effect of internal audit practices and management controls on fraud prevention, while moderation analysis was performed to assess the role of board oversight. The regression model was as follows:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$……………………………………………(equation i)

Whereby the variables were identified as follows:

A second model with the moderating variable was formulated as below:

$Y = \beta o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 M + \beta_5 M^* X_1 + \beta_6 M^* X_2 + \beta_7 M^* X3 + \varepsilon$ …………(equation ii)

The moderator is factored in as an interaction effect.

Where:

Y = Fraud Prevention

X1 = Internal control Systems

X2 = Internal audit IT Adoption

X3 = Management Controls

M = Moderator

While β1…..β7 were coefficients of determination, β0 was the constant term and ε was the error term.

3.9 Diagnostic Tests

3.9.1 Linearity

Linearity was assessed using a scatterplot of standardized predicted values against standardized residuals. This diagnostic tool enabled the evaluation of whether the relationship between independent and dependent variables adhered to a linear pattern. The scatterplot's visual inspection confirmed that the assumption of linearity was met, ensuring the appropriateness of linear regression modeling. Meeting this assumption is crucial, as deviations from linearity can lead to biased estimates and undermine the validity of statistical inferences. This approach is widely recognized in regression diagnostics (Schober et al., 2018).

3.9.2 Normality

Normality was assessed using the Shapiro–Wilk test, which evaluates whether the residuals in a dataset follow a normal distribution. This test is particularly effective for small to moderate sample sizes but can also be applied to larger datasets. A non-significant result ($p > 0.05$) indicated that the assumption of normality was met, confirming that parametric statistical analyses, such as regression, could be reliably conducted. Ensuring normality was critical, as violations could lead to biased estimates, inaccurate confidence intervals, and unreliable hypothesis testing. The results supported the appropriateness of subsequent regression modeling (Mishra, 2019; Razali & Wah, 2011).

3.9.3 Multicollinearity

Multicollinearity was examined using the Variance Inflation Factor (VIF), which quantifies how much the variance of a regression coefficient is inflated due to multicollinearity. VIF values exceeding 10 suggest high multicollinearity, potentially affecting the reliability of regression coefficients. In this study, all VIF values were below this threshold, indicating that multicollinearity was not a concern. By confirming the independence of predictors, the model retained its ability to accurately estimate the unique contribution of each independent variable to fraud prevention outcomes. This method is well-documented in statistical literature (Salmerón et al., 2018).

3.9.4 Heteroscedasticity

Heteroscedasticity was tested using Levene's test, which examines whether the variance of residuals is constant across predicted values. A non-significant result ($p > 0.05$) confirmed that the assumption of homoscedasticity was satisfied, ensuring the validity of statistical tests that rely on equal variances. Levene's test is particularly useful as it is less sensitive to departures from normality compared to other tests. Meeting this assumption is essential, as violations can lead to biased standard errors and affect the reliability of statistical inferences (Zhou, 2023).

3.10 Ethical Considerations

The study adhered to rigorous ethical standards to ensure the dignity, rights, and welfare of all participants were protected throughout the research process. Prior to data collection, ethical clearance was obtained from the Institutional Review Board (IRB) of the researcher's university and approval was sought from the Kenya National Commission for Science, Technology and Innovation (NACOSTI), ensuring compliance with national research ethics guidelines. Informed consent was obtained from all participants, including heads of internal audit and chairpersons of audit committees, after providing detailed explanations of the study's purpose, objectives, procedures, and potential risks. Participants were informed of their voluntary participation, the right to withdraw at any stage without penalty, and the measures taken to protect their confidentiality. All data collected were anonymized using unique codes, and electronic and physical records were securely stored to prevent unauthorized access. The study also maintained integrity by avoiding plagiarism, ensuring that all literature, data, and analysis were properly cited and original. Ethical considerations extended to minimizing any potential psychological or professional risks, fostering a transparent and respectful interaction between the researcher and participants, and promoting trust in the research process.

CHAPTER FOUR

PRESENTATION, INTERPRETATION AND ANALYSIS OF DATA

4.1 Introduction

This section outlines the findings from the data collected from study participants, aligned with the research objectives. The results cover demographic details, along with descriptive and inferential analyses.

4.2 Questionnaire Response Rate

The researcher formulated and distributed 103 online questionnaires to the heads of internal audit and chairman of audit committee board. 98 questionnaires were fully filled and returned. The analysis is shown in Figure 2.

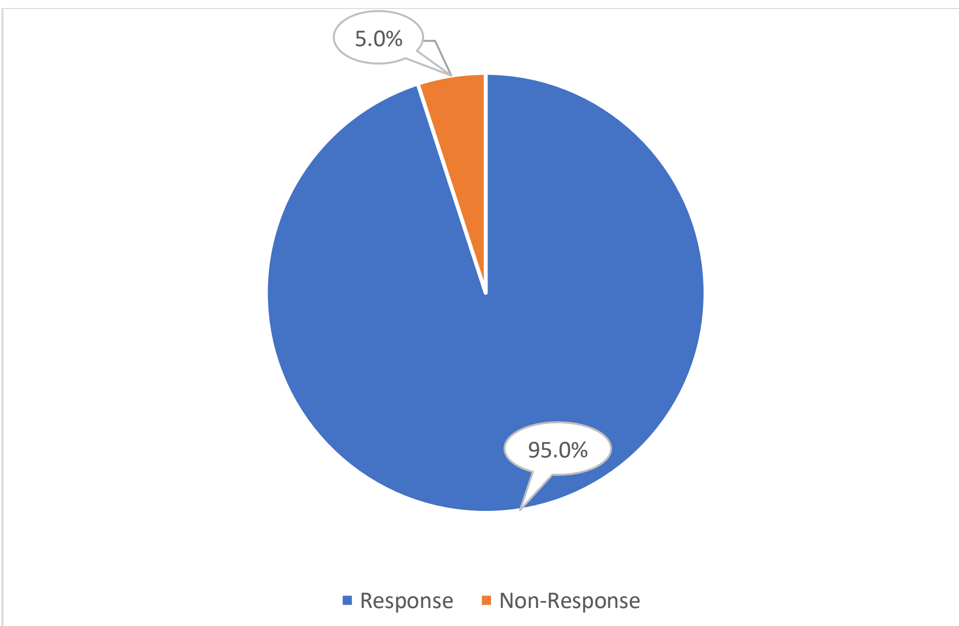

FIGURE 2

Response Rate

Source, (Researcher, 2025)

From Figure 1, the response rate was 98 (95%), while the non-response rate was 5 (5%). Out of the 103 online questionnaires distributed to the heads of internal audit and chairpersons of audit committee boards, 98 were fully completed and returned, whereas 5 were not returned. This high response rate underscores strong participation from the targeted respondents, thereby enhancing the reliability, representativeness, and validity of the study findings.

4.3 Demographic Analysis

The demographic analysis provides an overview of the key characteristics of the respondents who participated in the study. This is shown in table 5.

TABLE 5

Demographic Analysis

Category	Percentage
Bachelor's Degree	52.0%
Master's Degree	24.5%
Diploma	19.4%
PhD Level	3.1%
Continuing Undergraduate	1.0%
Total Respondents	100%

Source, (Researcher, 2025)

The demographic analysis education levels, show that most respondents held a Bachelor's degree (52.0%), followed by those with a Master's degree (24.5%), while Diploma holders represented 19.4%. A small proportion reported having attained a PhD (3.1%), and 1.0% were continuing undergraduate students. This high level of academic qualification highlights that the respondents are generally well-educated, which strengthens the credibility of their input on issues relating to internal controls, audit practices, and fraud prevention. The prevalence of bachelor's and master's degree holders also suggests that the sector values formal academic training as a prerequisite for roles in governance and auditing.

4.4 Descriptive Analysis

4.4.1 Internal Control Systems and Fraud Prevention

The respondents were presented with statements based on a five-point Likert scale to provide their level of agreement or disagreement on the effect of internal control systems on fraud prevention among public TVET institutions in Nairobi Metropolitan Area. The highest scale was very great extent while the lowest was very small extent. The findings were presented in Table 6.

TABLE 6

Internal Control Systems and Fraud Prevention

	N	Mean	Std. Deviation
The organization conducts regular risk assessments to identify areas vulnerable to fraud.	98	3.622	.990
Management demonstrates a strong commitment to internal controls	98	3.776	.880
Segregation of duties is effectively implemented to reduce the risk of fraud.	98	3.663	.952
Regular internal audits are conducted to detect potentially fraudulent activities	98	3.929	1.048
Employees are trained regularly on fraud awareness and prevention.	98	3.224	1.171
The organization takes immediate corrective actions when fraud is detected.	98	3.878	.900
Regular internal audits are conducted to monitor compliance	98	3.980	.786

Source, (Researcher, 2025)

Internal control systems play a critical role in strengthening fraud prevention mechanisms within public TVET institutions. The findings indicate a generally positive perception of internal control measures, with most of the mean scores falling above 3.5, suggesting that respondents agree internal controls are being applied to a considerable extent. The highest-rated item was the conduct of regular internal audits to monitor compliance ($\mu = 3.980$; SD = 0.786), followed closely by regular internal audits for detecting fraudulent activities ($\mu = 3.929$; SD = 1.048), and immediate corrective actions when fraud is detected ($\mu = 3.878$; SD = 0.900). These results demonstrate strong recognition of auditing practices and corrective measures as vital components of fraud prevention in the TVET institutions.

Other aspects of internal controls also scored relatively high, such as management's commitment to internal controls ($\mu = 3.776$; SD = 0.880) and the segregation of duties to reduce fraud risk ($\mu = 3.663$; SD = 0.952). These scores reveal that leadership commitment and structural safeguards are fairly well implemented, which enhances organizational resilience against fraudulent activities. Conducting regular risk assessments also received a moderately strong rating ($\mu = 3.622$; SD = 0.990), highlighting the importance of proactively identifying vulnerabilities as part of effective fraud prevention.

However, the lowest-rated aspect was employee training on fraud awareness and prevention ($\mu = 3.224$; SD = 1.171). The relatively low mean and the higher standard deviation suggest that training programs may not be consistent or sufficiently emphasized across institutions, potentially leaving gaps in fraud detection and deterrence at the employee level. This finding points to a critical area for improvement, as empowering staff through continuous training could complement the strong auditing and monitoring measures already in place. Overall, the results indicate that while internal control systems are fairly robust, enhancing employee capacity through training could further strengthen fraud prevention in TVET institutions.

4.4.2 Management Controls and Fraud Prevention

The respondents were presented with statements based on a five-point Likert scale to provide their level of agreement or disagreement on the effect of Management Controls on fraud prevention among public TVET institutions in Nairobi Metropolitan Area. The highest scale was very great extent while the lowest was very small extent. The findings were presented in Table 7.

TABLE 7

Management Controls and Fraud Prevention

	N	Mean	Std. Deviation
The organization's oversight bodies effectively oversee financial controls related to fraud prevention	98	3.633	.946
Access to financial systems and sensitive information is restricted based on job roles	98	4.133	.713
Segregation of duties is effectively implemented to reduce fraud risk.	98	3.745	.934
There are established procedures for investigating suspected fraud cases.	98	3.633	1.059
There are effective internal controls in place to detect and prevent fraudulent activities	98	3.694	.935
There are established procedures to ensure procurement activities adhere to applicable laws and regulations.	98	3.827	.885
Management ensures that corrective actions are taken promptly when fraud is detected.	98	3.847	.854

Source, (Researcher, 2025)

Management controls form a critical layer of governance aimed at safeguarding institutional resources, ensuring compliance, and minimizing opportunities for fraudulent activities. They involve systems, policies, and practices established by management to oversee financial operations, procurement processes, and corrective actions when irregularities are detected. The findings show that overall perceptions of management controls are positive, with most mean scores above 3.6, indicating that respondents generally agree these controls are practiced to a great extent. The highest-rated element was the restriction of access to financial systems and sensitive information based on job roles ($\mu = 4.133$; SD = 0.713), which reflects a strong recognition of access control as a critical mechanism for preventing unauthorized activities that could lead to fraud. Similarly, management's role in ensuring corrective actions when fraud is detected scored highly ($\mu = 3.847$; SD = 0.854), suggesting effective responsiveness and accountability in addressing fraud-related risks.

Other management practices also received strong ratings, such as the establishment of procedures to ensure procurement activities comply with regulations ($\mu = 3.827$; SD = 0.885) and the implementation of segregation of duties to reduce fraud risk ($\mu = 3.745$; SD = 0.934). These results indicate that management controls extend beyond financial oversight to include procurement integrity and structural checks, further strengthening the fraud prevention framework within TVET institutions. Additionally, effective internal controls to detect and prevent fraudulent activities were rated positively ($\mu = 3.694$; SD = 0.935), demonstrating confidence in the systems put in place by management to safeguard resources.

On the other hand, the lowest-rated aspects were the effectiveness of oversight bodies in overseeing financial controls (μ = 3.633; SD = 0.946) and the existence of clear procedures for investigating suspected fraud (μ = 3.633; SD = 1.059). The relatively lower scores, coupled with a higher standard deviation for investigation procedures, suggest variations in how consistently these measures are applied across institutions. This indicates a need for stronger and more standardized oversight mechanisms and investigation frameworks to complement existing controls. Overall, the results suggest that while management controls in TVET institutions are fairly robust, strengthening financial oversight bodies and fraud investigation processes could significantly enhance fraud prevention efforts.

4.4.3 Internal Audit IT Adoption and Fraud Prevention

The respondents were presented with statements based on a five-point Likert scale to provide their level of agreement or disagreement on the effect of internal audit IT adoption on fraud prevention among public TVET institutions in Nairobi Metropolitan Area. The highest scale was very great extent while the lowest was very small extent. The findings were presented in Table 8.

TABLE 8

Internal Audit IT Adoption and Fraud Prevention

	N	Mean	Std. Deviation
The organization maintains a comprehensive and accessible IT audit trail for all financial transactions	98	3.571	.995
IT audit reports on fraud are comprehensive and facilitate effective decision-making.	98	3.714	.931

Our audit department has access to real-time data for more accurate assessments.	98	3.571	1.025
There is a strong culture of using IT tools to monitor and prevent fraud	98	3.449	1.085
Staff receive ongoing training on fraud prevention related to IT systems.	98	3.337	1.166
The use of data analytics has improved the efficiency of internal audits.	98	3.796	.908
There is a strong integration between IT systems and internal audit procedures.	98	3.612	.991

Source, (Researcher, 2025)

Internal audit IT adoption is increasingly recognized as a critical enabler of fraud prevention, particularly in environments where financial systems are becoming more digitized. It involves leveraging IT tools, real-time data, audit trails, and analytics to enhance the effectiveness, accuracy, and timeliness of internal audit functions. The findings indicate moderate to strong support for IT adoption in internal audits, with most mean scores falling between 3.3 and 3.8. The highest-rated aspect was the use of data analytics to improve audit efficiency (μ = 3.796; SD = 0.908), highlighting the growing role of analytics in identifying anomalies and enhancing decision-making processes. Similarly, comprehensive IT audit reports (μ = 3.714; SD = 0.931) and the integration of IT systems with internal audit procedures (μ = 3.612; SD = 0.991) reflect recognition of IT tools as valuable in strengthening fraud detection and prevention mechanisms.

Moderate ratings were also recorded for maintaining comprehensive audit trails (μ = 3.571; SD = 0.995) and providing auditors with real-time data access (μ = 3.571; SD = 1.025), suggesting that while these practices are in place, their effectiveness may vary across institutions. However, the lowest-rated aspects were fostering a strong culture of IT use for fraud monitoring (μ = 3.449; SD = 1.085) and offering continuous staff training on IT-related fraud prevention (μ = 3.337; SD = 1.166). These findings reveal that the full potential of IT adoption in internal audits has not yet been realized, as cultural and capacity gaps limit its impact. Overall, while IT adoption has improved efficiency and strengthened internal audit functions, enhancing staff training and institutional culture remains essential for maximizing fraud prevention benefits.

4.4.4 Fraud Prevention Among Public TVET Institutions

The respondents were presented with statements based on a five-point Likert scale to provide their level of agreement or disagreement on fraud prevention among public TVET institutions in Nairobi Metropolitan Area. The highest scale was very great extent while the lowest was very small extent. The findings were presented in Table 9.

TABLE 9

Fraud Prevention Among Public TVET Institutions

	N	Mean	Std. Deviation
The internal control systems in our institution have significantly reduced opportunities for fraud.	98	2.898	1.079
Adoption of IT in internal audit processes has improved the accuracy and reliability of fraud detection.	98	2.959	1.148
Management controls in place are effective in deterring and minimizing fraudulent activities.	98	2.571	.931
Board oversight enhances the effectiveness of internal audit practices in preventing fraud.	98	2.867	.970
The combined effect of internal controls, IT adoption, management controls, and board oversight has strengthened fraud prevention in our institution.	98	2.908	1.141

Source, (Researcher, 2025)

Fraud prevention is a key outcome of effective governance mechanisms such as internal control systems, management controls, IT adoption in audits, and board oversight. It reflects the extent to which these measures collectively reduce opportunities for fraudulent practices and enhance accountability within institutions. The findings reveal relatively modest perceptions of fraud prevention, with mean scores clustering below 3.0, suggesting that respondents believe these measures are only being achieved to a limited extent. The highest-rated item was the adoption of IT in internal audit processes improving fraud detection accuracy ($\mu = 2.959$; SD = 1.148), followed closely by the combined effect of all controls in strengthening fraud prevention ($\mu = 2.908$; SD = 1.141). This highlights recognition that integrated approaches and technology adoption are somewhat effective in reducing fraud risks, though not fully optimized.

On the other hand, the lowest mean score was recorded for the effectiveness of management controls in deterring fraud ($\mu = 2.571$; SD = 0.931), indicating doubts about the adequacy of current management interventions. Similarly, board oversight ($\mu = 2.867$; SD = 0.970) and internal control systems ($\mu = 2.898$; SD = 1.079) were rated moderately low, reflecting concerns that these governance mechanisms may not be strong enough in practice to curb fraudulent activities. Overall, the results suggest that while some progress has been made through IT adoption and the integration of multiple controls, fraud prevention within TVET institutions remains an area requiring significant strengthening, particularly in management practices and oversight functions.

4.4.4 Board Oversight as a Moderator

The respondents were presented with statements based on a five-point Likert scale to provide their level of agreement or disagreement on the effect of Board oversight on internal audit practices and management controls on fraud prevention among public TVET institutions in Nairobi Metropolitan Area. The highest scale was very great extent while the lowest was very small extent. The findings were presented in Table 10.

TABLE 10

Board Oversight as a Moderator

	N	Mean	Std. Deviation
The board regularly reviews the institutional fraud risk management strategies	98	3.541	.986
There is sufficient resource allocation to address issues identified in the audit report	98	3.235	.993
The board's oversight activities have contributed to a measurable reduction in fraud incidents	98	3.888	.895
Management demonstrates a commitment to implementing audit recommendations	98	3.8776	.750
Follow-up procedures are in place to evaluate the effectiveness of implemented actions	98	3.7347	.856
There is an effective system for the board to monitor internal controls related to fraud prevention	98	3.5612	.975
The audit report's recommendations lead to measurable improvements in organizational performance.	98	3.8980	.902

Source, (Researcher, 2025)

Board oversight provides a critical layer of governance in strengthening the effectiveness of internal audit practices and management controls in fraud prevention. Its role includes reviewing fraud risk management strategies, ensuring proper monitoring of internal controls, and driving accountability in the implementation of audit recommendations. The results reveal strong positive perceptions of board oversight, with some of the highest mean scores recorded in this study. For instance, respondents agreed that recommendations from audit reports lead to measurable improvements in organizational performance ($\mu = 3.898$; SD = 0.902). Similarly, oversight activities were acknowledged for contributing to measurable reductions in fraud incidents ($\mu = 3.888$; SD = 0.895), while management's commitment to implementing audit recommendations was also rated highly ($\mu = 3.878$; SD = 0.750). These findings indicate that board oversight has a significant impact on aligning internal controls and audit practices with broader institutional goals, thereby enhancing organizational performance.

Moderately strong perceptions were also observed in areas such as follow-up procedures to evaluate the effectiveness of actions taken ($\mu = 3.735$; SD = 0.856), regular board review of fraud risk management strategies ($\mu = 3.541$; SD = 0.986), and monitoring of internal controls related to fraud prevention ($\mu = 3.561$; SD = 0.975). These ratings suggest that oversight practices are consistently applied and recognized as crucial for sustaining the effectiveness of internal control systems. They highlight the importance of continuous monitoring and evaluation by the board in order to ensure that adopted measures remain relevant and responsive to evolving fraud risks. Despite the overall positive perceptions, challenges remain, particularly regarding resource allocation. The lowest-rated dimension was the sufficiency of resources to address audit report issues ($\mu = 3.235$; SD = 0.993), which suggests that while the board exercises effective oversight, limited financial or human resources may hinder the implementation of corrective actions. This gap underscores the need for institutions to not only prioritize oversight but also ensure that adequate support is provided to operationalize recommendations.

4.5 Diagnostic Tests

In order to ensure the validity and reliability of regression analysis, several diagnostic tests were conducted to check whether the key statistical assumptions were met. These included tests for linearity, normality, multicollinearity, and homoscedasticity, each of which is critical for confirming that the model produces unbiased and consistent estimates.

4.5.1 Linearity Test

Linearity was tested using a scatterplot of standardized predicted values against standardized residuals, which helps to check whether the relationship between the independent and dependent variables is linear. This is shown in Figure 2.

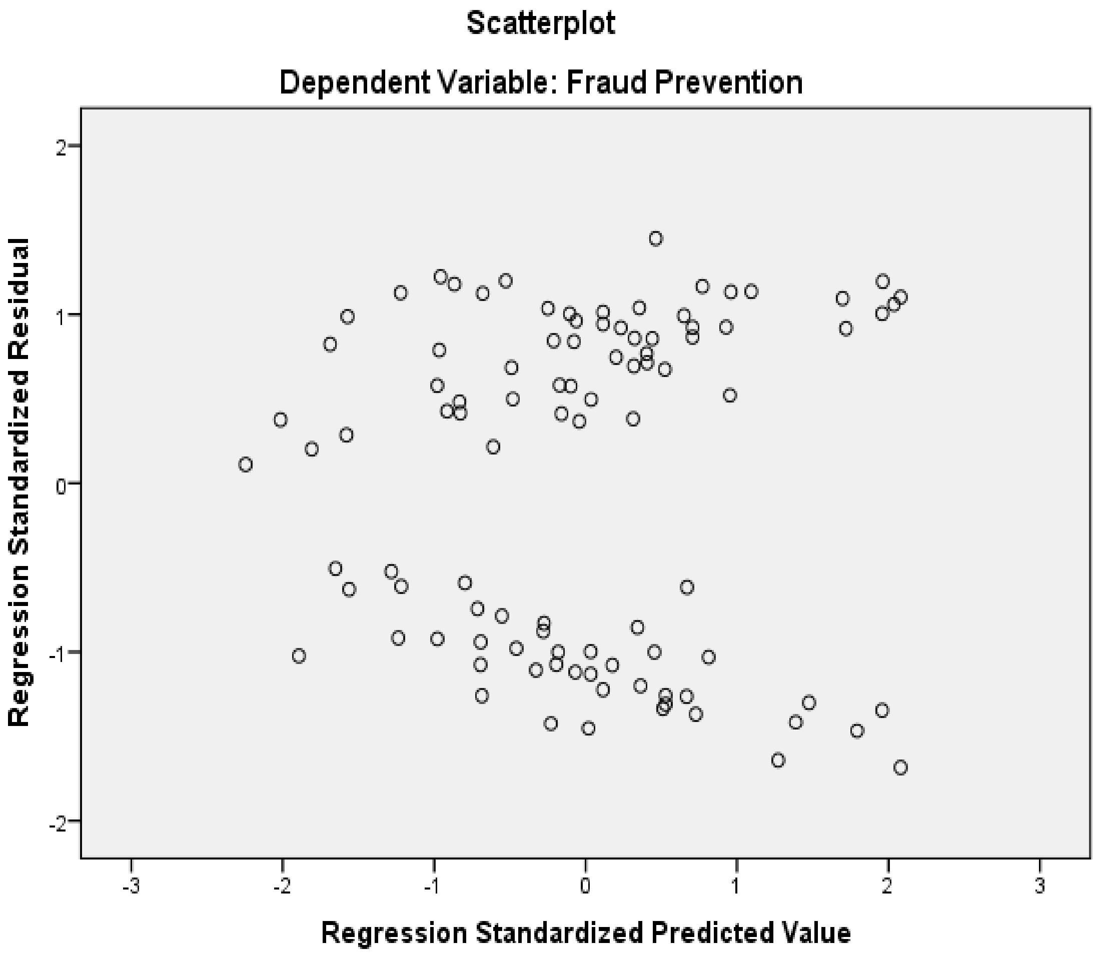

FIGURE 3

Linearity Test

Source, (Researcher, 2025)

The scatterplot of standardized residuals against standardized predicted values for the dependent variable, fraud prevention, shows that the residuals are fairly randomly distributed around the horizontal axis, with no distinct curve or systematic pattern. This suggests that the assumption of linearity in the regression model is reasonably met, as the points appear scattered without forming a clear trend.

4.5.2 Normality Test

Normality was assessed using the Shapiro–Wilk test, which evaluates whether the residuals follow a normal distribution. The results are shown in table 11.

TABLE 11

Normality Test

	Shapiro-Wilk		
	Statistic	df	Sig.
Fraud Prevention	.981	98	.052
Internal Control Systems	.980	98	.063
Management Controls	.950	98	.801
Internal Audit IT adoption	.977	98	.058
Board Oversight	.975	98	.075

Source, (Researcher, 2025)

The Shapiro–Wilk test results in Table 11 indicate that all study variables had significance values greater than the 0.05 threshold, fraud prevention ($p = .052$), internal control systems ($p = .063$), management controls ($p = .801$), internal audit IT adoption ($p = .058$), and board oversight ($p = .075$). According to the decision rule, if $p > 0.05$ the data are normally distributed, while $p < 0.05$ indicates a violation of normality. Since all the variables recorded p-values above 0.05, the null hypothesis of normality is accepted, implying that the data are approximately normally distributed. This confirms that the dataset satisfies the normality assumption and is suitable for parametric tests such as regression analysis.

4.5.3 Multicollinearity Test

Multicollinearity was tested using the Variance Inflation Factor (VIF), which measures the extent to which independent variables are correlated with each other. VIF values below 10 and tolerance values above 0.1 indicate that multicollinearity is not a concern. The results are shown in table 12.

TABLE 12

Multicollinearity Test

Coefficients			
Model		Collinearity Statistics	
		Tolerance	VIF
1	Internal Control Systems	.929	3.044
	Management Controls	.993	3.408
	Internal Audit IT adoption	.963	2.758
	Board Oversight	.961	2.168
a. Dependent Variable: Fraud Prevention			

Source, (Researcher, 2025)

The results of the multicollinearity test using the Variance Inflation Factor (VIF) and tolerance values are presented in Table 12. All the independent variables recorded VIF values well below the threshold of 10, with internal control systems (3.044), management controls (3.408), internal audit IT adoption (2.758), and board oversight (2.168). Similarly, the tolerance values for all predictors were above the minimum acceptable level of 0.1, ranging from 0.929 to 0.993. Based on the decision rule, these results indicate that multicollinearity is not a concern in the regression model. Therefore, the independent variables are sufficiently distinct, and each contributes unique information to the model predicting fraud prevention in public TVET institutions.

4.5.4 Homoscedasticity

Homoscedasticity was checked using Levene's test, which examines whether the variance of residuals is constant across predicted values. A non-significant result ($p > 0.05$) confirms that the assumption of homoscedasticity holds. The results are shown in table 13.

TABLE 13

Homoscedasticity Test

	Levene Statistic	**df1**	**df2**	**Sig.**
Internal Control Systems	1.540	16	77	.107
Management Controls	2.766	14	78	.102
Internal Audit IT adoption	2.216	17	77	.105
Board Oversight	1.571	15	78	.102

Source, (Researcher, 2025)

The results of Levene's test for homoscedasticity are presented in Table 10. All the variables reported non-significant p-values greater than 0.05, with internal control systems ($p = .107$), management controls ($p = .102$), internal audit IT adoption ($p = .105$), and board oversight ($p = .102$). According to the decision rule, these results confirm that the assumption of homoscedasticity is satisfied, meaning the variance of residuals is constant across predicted values. Therefore, the regression model meets this key assumption, ensuring the reliability of parameter estimates and the validity of inferences drawn regarding the effect of internal controls, management controls, IT adoption, and board oversight on fraud prevention in public TVET institutions.

4.6 Inferential Analysis

4.6.1 Correlation

The study conducted a correlation analysis to examine the association between internal control systems, management controls, internal audit IT adoption, board oversight, and fraud prevention in public TVET institutions. Spearman's rank-order correlation was used since the data were ordinal and did not fully meet the normality assumption. For decision-making, correlation coefficients were interpreted based on the following rule of thumb: 0.00–0.19 = very weak, 0.20–0.39 = weak, 0.40–0.59 = moderate, 0.60–0.79 = strong, and 0.80–1.0 = very strong relationship. The matrix in shown in table 14.

TABLE 14

Correlation Matrix

Correlations						
		Internal Control Systems	Management Controls	Internal Audit IT adoption	Board Oversight	Fraud Prevention
Internal Control Systems	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	98				
Management Controls	Pearson Correlation	.751**	1			
	Sig. (2-tailed)	.000				
Internal Audit IT adoption	Pearson Correlation	.666**	.781**	1		

	Sig. (2-tailed)	.000	.000			
Board Oversight	Pearson Correlation	.715**	.609**	.600**	1	
	Sig. (2-tailed)	.000	.000	.000		
Fraud Prevention	Pearson Correlation	.666**	.702**	.753**	.546**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	98	98	98	98	98

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

Source, (Researcher, 2025)

The correlation analysis presented in Table 14 indicates strong and significant associations among the independent variables, suggesting that internal control systems, management controls, internal audit IT adoption, and board oversight are closely interrelated in supporting fraud prevention frameworks within public TVET institutions. For instance, management controls were strongly correlated with internal control systems ($r = .751$, $p < .01$) and internal audit IT adoption ($r = .781$, $p < .01$), while board oversight showed substantial positive correlations with internal control systems ($r = .715$, $p < .01$) and management controls ($r = .609$, $p < .01$). These findings imply that the effectiveness of one control mechanism reinforces the strength of others, creating a complementary governance environment.

When related to the dependent variable, fraud prevention, the results revealed consistently positive and significant associations. Internal audit IT adoption recorded the strongest correlation with fraud prevention ($r = .753$, $p < .01$), emphasizing its critical role in enhancing fraud detection and monitoring. Management controls followed closely ($r = .702$, $p < .01$), reflecting the importance of oversight, financial checks, and compliance measures in reducing fraudulent activities. Internal control systems also displayed a moderate but significant correlation with fraud prevention (r = .666, p < .01), highlighting their relevance in building preventive structures against fraud. Finally, board oversight was moderately associated with fraud prevention (r = .546, p < .01), showing that governance practices, though comparatively weaker than IT adoption or management controls, still play a key role in strengthening institutional accountability and fraud risk management.

4.6.2 Regression Analysis before Moderation

Regression analysis was conducted to examine the direct effect of internal control systems, management controls, and internal audit IT adoption on fraud prevention in public TVET institutions. This analysis was essential to determine the predictive power of the independent variables and assess how effectively they explain variations in fraud prevention practices. The results provided insights into the strength and significance of each variable before introducing board oversight as a moderating factor.

TABLE 15

Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.789a	.623	.610	.44735
a. Predictors: (Constant), Internal Control Systems, Management Controls, Internal Audit IT adoption				

Source, (Researcher, 2025)

The model summary highlights the extent to which the combined effect of internal control systems, management controls, and internal audit IT adoption contribute to fraud prevention in public TVET institutions. The R Square value of 0.623 indicates that these predictors jointly explain 62.3% of the variation in fraud prevention, demonstrating the strong explanatory power of the model. However, the remaining 37.7% of the variation is not explained by the model, implying that other factors beyond the selected variables also influence fraud prevention practices.

TABLE 16

Analysis of Variance

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31.022	3	10.341	51.705	.000b
	Residual	18.811	94	.200		
	Total	49.833	97			

a. Dependent Variable: Fraud Prevention

b. Predictors: (Constant), Internal Control Systems, Management Controls, Internal Audit IT adoption,

Source, (Researcher, 2025)

The ANOVA results in Table 16 indicate that the model is statistically significant, as shown by the F-statistic of 51.673 and a corresponding significance value of .000 ($p < 0.05$). This demonstrates that the independent variables (internal control systems, management controls, and internal audit IT adoption) collectively have a meaningful effect on fraud prevention in public TVET institutions, confirming that the regression model is valid for explaining the dependent variable.

TABLE 17

Regression Coefficients

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.100	.281		.357	.722
	Internal Control Systems	.241	.101	.233	2.380	.019
	Management Controls	.173	.132	.154	1.315	.192
	Internal Audit IT adoption	.464	.100	.478	4.617	.000
a. Dependent Variable: Fraud Prevention						

Source, (Researcher, 2025)

The regression coefficients in Table 17 begin with the constant, which was found to be statistically insignificant (B = .100, p = .722). Since the p-value is greater than the 0.05 significance threshold, this result indicates that fraud prevention cannot be adequately explained by the model without the inclusion of the independent variables, underscoring the necessity of the predictors in driving meaningful outcomes. Internal control systems had a positive and statistically significant effect on fraud prevention (B = .241, p = .019). With the p-value falling below 0.05, this finding implies that enhancing the effectiveness of internal control systems significantly reduces opportunities for fraudulent activities within public TVET institutions. Management controls also recorded a positive coefficient (B = .173), but their relationship with fraud prevention was statistically insignificant (p = .192), since the p-value is greater than 0.05, suggesting a weaker influence when considered alongside other variables. In contrast, internal audit IT adoption emerged as the strongest predictor (B = .464, p = .000), with a highly significant p-value below 0.05. This confirms that integrating IT tools within audit processes substantially strengthens fraud detection and prevention mechanisms.

Fitting the Regression Model

The regression model for this study was

$$\mathbf{Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon}$$

Whereby the variables were identified as follows: -

Y = Fraud Prevention

$\mathbf{X_1}$ = Internal Control Systems

$\mathbf{X_2}$= Management Controls

$\mathbf{X_3}$ = Internal Audit IT Adoption

While $\beta_{1,}$ $\beta_{2,}$ and β_3 will be coefficients of determination, β_0 will be constant term and ε will be the error term.

Based on the study results, the fitted model becomes:

$Y = 0.100 + 0.241X_1 + 0.173X_2 + 0.464X_3 + \varepsilon$

Interpretation of the Model

The fitted regression model indicates how the independent variables contribute to fraud prevention in public TVET institutions. The constant value of 0.100 shows that when internal control systems, management controls, and internal audit IT adoption are absent, the baseline level of fraud prevention is minimal. Internal control systems contribute positively, where a one-unit increase enhances fraud prevention by 0.241 units, and this effect is statistically significant at the 0.05 threshold. Management controls also have a positive coefficient of 0.173, suggesting that stronger management oversight is linked to improved fraud prevention; however, this relationship is not statistically significant since its p-value exceeds 0.05. The most influential predictor is internal audit IT adoption, with a coefficient of 0.464, indicating that a unit increase in IT adoption significantly enhances fraud prevention, and the relationship is highly significant.

4.6.3 Regression Model After Moderation

After assessing the direct influence of internal control systems, management controls, and internal audit IT adoption on fraud prevention, the study proceeded to test the moderating effect of board oversight. Moderation analysis was conducted to determine whether board oversight strengthens or weakens the relationship between the predictors and fraud prevention in public TVET institutions. By integrating board oversight into the regression model, the study aimed to capture the conditional influence that governance practices exert on the effectiveness of internal controls in mitigating fraud.

TABLE 18

Model Analysis After Moderation

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.789a	.623	.602	.45204
a. Predictors: (Constant), Board Oversight, Internal Audit IT adoption, Internal Control Systems, Management Controls				

Source, (Researcher, 2025)

The regression results after introducing board oversight as a moderator reveal an R value of 0.789, consistent with the pre-moderation model, indicating a strong correlation between the predictors and fraud prevention. The R Square of 0.623 shows that 62.3% of the variation in fraud prevention is explained collectively by internal control systems, management controls, internal audit IT adoption, and board oversight. This explanatory power remains almost identical to the pre-moderation model, suggesting that the inclusion of board oversight does not substantially alter the overall predictive strength of the model. However, it is important to note that 37.7% of the variance in fraud prevention is still accounted for by other factors not captured in this model.

TABLE 19

Analysis of Variable After Moderation

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31.034	5	6.207	30.375	.000b
	Residual	18.799	92	.204		
	Total	49.833	97			

a. Dependent Variable: Fraud Prevention

b. Predictors: (Constant), Board * (Internal Control Systems, Management Controls, Internal Audit IT adoption), Internal Audit IT adoption, Internal Control Systems, Management Controls, Board Oversight

Source, (Researcher, 2025)

The ANOVA results after incorporating board oversight as a moderator show that the overall regression model is statistically significant, with an F statistic of 30.375 and a p-value of 0.000, which is well below the 0.05 threshold. This confirms that the combined influence of internal control systems, management controls, internal audit IT adoption, and board oversight significantly predicts fraud prevention in public TVET institutions. The findings suggest that, even after moderation, the independent variables jointly contribute meaningfully to explaining variations in fraud prevention. In other words, the probability that this relationship occurred by chance is extremely low, affirming the robustness of the model. This outcome emphasizes the importance of considering board oversight alongside the other control mechanisms to better understand the dynamics of fraud prevention.

TABLE 20

Regression Coefficients After Moderation

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.052	.368		.142	.888
	Internal Control Systems	.240	.116	.232	2.075	.041
	Management Controls	.173	.133	.154	1.302	.196
	Internal Audit IT adoption	.463	.103	.477	4.485	.000
	Board Oversight	-.039	.195	-.034	-.200	.842
	Board * (Internal Control Systems, Management Controls, Internal Audit IT adoption)	.054	.224	.038	.241	.810
a. Dependent Variable: Fraud Prevention						

Source, (Researcher, 2025)

The regression results reveal that Internal Audit IT Adoption and Internal Control Systems are the most significant predictors of Fraud Prevention. Specifically, Internal Audit IT Adoption has a strong positive effect (B = 0.463, p = 0.000), indicating that organizations implementing advanced IT auditing tools experience greater effectiveness in fraud mitigation. Similarly, Internal Control Systems are positively associated with Fraud Prevention (B = 0.240, p = 0.041), suggesting that well-structured internal processes and controls contribute meaningfully to reducing fraudulent activities. In contrast, Management Controls (B = 0.173, p = 0.196) and Board Oversight (B = -0.039, p = 0.842) do not exhibit statistically significant effects, implying that these mechanisms alone may not substantially influence fraud prevention outcomes in the context of this study. Furthermore, the interaction term representing the moderation effect of the board on the relationship between the independent variables and Fraud Prevention is not significant (B = 0.054, p = 0.810), indicating that board involvement does not significantly strengthen or weaken the influence of internal controls, management practices, or IT adoption on fraud prevention. Overall, these findings highlight the critical role of technological adoption and internal control procedures, while traditional management and oversight mechanisms appear less impactful in enhancing fraud prevention in the studied organizations.

Fitting the Model After Moderation

Fitting the Regression Model

The regression model for this study was

$$\mathbf{Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 M + \beta_6} M{*}X_1 + \boldsymbol{\beta_7} M{*}X_2 + \boldsymbol{\beta_8} M{*}X3 + \boldsymbol{\varepsilon}$$

Whereby the variables were identified as follows: -

Y = Fraud Prevention

$\mathbf{X_1}$ = Internal Control Systems

$\mathbf{X_2}$= Management Controls

$\mathbf{X_3}$ = Internal Audit IT Adoption

M = Moderator (Board Oversight)

$M*X_1$ = Board * Internal Control Systems

$M*X_2$ = Board * Management Controls

M*X3 = Board * Internal Audit IT adoption

While $\beta_1 \ldots\ldots \beta_8$ and M were coefficients of determination, β_0 was the constant term and ε was the error term.

Based on the study results, the fitted model becomes:

$Y=0.052+0.240X1+0.173X2+0.463X3-0.039M+0.054(M*X1X2X3)$

Interpretation of the Model

The fitted regression model indicates that Internal Audit IT Adoption (X_3) and Internal Control Systems (X_1) are the most influential predictors of Fraud Prevention, with unstandardized coefficients of 0.463 ($p = 0.000$) and 0.240 ($p = 0.041$), respectively. This suggests that improvements in IT auditing systems and robust internal control mechanisms are associated with measurable increases in fraud prevention effectiveness. Management Controls (X_2) and Board Oversight (X_4) show positive and negative effects, respectively, but these are not statistically significant, implying that, individually, they do not substantially contribute to preventing fraud in this context.

4.7 Discussion of the Findings

On Internal Control Systems (ICS), the study established that ICS play a significant role in preventing fraud. Among the components, regular internal audits, fraud detection audits, and immediate corrective actions were rated most effective, reflecting strong organizational practices in monitoring and addressing irregularities. In contrast, employee training on fraud awareness received the lowest scores, indicating a critical gap in staff preparedness and the need for targeted capacity-building initiatives to enhance the overall effectiveness of ICS. Regression analysis showed that ICS had a significant positive effect on fraud prevention (B = 0.241. These findings align with Jokipii (2010) and Mwangi & Ngugi (2019), who found that well-designed internal controls enhance accountability and transparency, and with Mbetha & Moosa (2024) and Njenga & Warui (2023), who reported that robust internal audit functions significantly reduce fraud risk in organizations.

On Management Controls, the study established that management controls contribute to fraud prevention. Among the components, access restrictions to financial systems, corrective actions for detected fraud, and procurement compliance procedures were rated most effective, reflecting strong organizational measures for preventing irregularities. In contrast, oversight bodies and fraud investigation procedures received the lowest ratings, indicating gaps in implementation and the need for stronger monitoring mechanisms. Regression analysis showed that management controls had a positive effect on fraud prevention (B = 0.173). These findings align with Musila (2021), Micheni (2016), and Kabue & Aduda (2015), who found that management commitment and robust control activities are essential for fraud mitigation, and with Ernst & Young (2022) and Deloitte (2021), who emphasized that effective governance and control frameworks reduce fraud risk.

On Internal Audit IT Adoption, the study established that IT integration in auditing significantly enhances fraud prevention. Among the components, data analytics improving audit efficiency and comprehensive IT audit reports were rated most effective, reflecting strong adoption of digital tools for monitoring and detecting irregularities. In contrast, staff training on IT-related fraud prevention received the lowest scores, indicating gaps in capacity and the need for targeted initiatives to improve digital literacy and organizational culture. Regression analysis showed that IT adoption had a strong positive effect on fraud prevention (B = 0.464). These findings align with Fenz et al. (2021), Owusu & Boateng (2022), and Abdallah & El-Sayed (2024), who found that data analytics and continuous auditing improve fraud detection, efficiency, and accountability, and with Murage & Theuri (2023), Simbiri, Musiega & Simiyu (2023), and Kuria (2025), who emphasized that capacity building is critical for auditors to fully leverage IT tools in preventing fraud.

On Board Oversight, the study established that board oversight contributes to enhancing audit effectiveness and supporting fraud prevention. Among the components, audit recommendations leading to performance improvements, contributions to fraud reduction, and management's commitment to recommendations were rated most effective, reflecting strong governance practices. In contrast, resource allocation received the lowest scores, indicating gaps in implementation and the need for improved follow-up mechanisms. Regression analysis showed that board oversight had an insignificant effect on fraud prevention (B = -0.039). These findings were in contrast with Edacherian et al., (2024) and Mbetha & Moosa, (2024) who emphasized that active board oversight, functional audit committees, and enforcement of audit recommendations strengthen internal audit effectiveness and fraud prevention.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the research findings, the conclusions drawn, and the recommendations arising from the study. It further outlines the established relationship between the independent and dependent variables, highlights the key insights obtained, and provides practical recommendations that can guide TVET institutions in the Nairobi Metropolitan Area toward enhancing their fraud prevention.

5.2 Summary of Findings

5.2.1 Internal Control Systems and Fraud Prevention

The study established that internal control systems had a significant and positive effect on fraud prevention, with a regression coefficient of B = 0.241 ($p = 0.019$) and a correlation of $r = 0.666$. The descriptive mean for internal controls was 3.725, suggesting that measures such as regular audits, fraud detection processes, corrective actions, segregation of duties, and structured risk assessments were fairly strong within the organizations studied. These practices played a vital role in promoting accountability and reducing opportunities for fraudulent activities. However, the analysis also revealed notable weaknesses, particularly in employee training and awareness programs on fraud risk. This gap undermined the overall effectiveness of internal control mechanisms, meaning that while controls were well-structured, their ability to prevent fraud was not fully optimized.

5.2.2 Internal Audit IT Adoption and Fraud Prevention

Internal audit IT adoption emerged as the most influential predictor of fraud prevention, posting the highest correlation with fraud prevention at $r = 0.753$ and a strong regression coefficient of B = 0.464 ($p = 0.000$). The descriptive mean stood at 3.579, showing that organizations were moderately integrating IT tools in audit processes. Respondents highlighted the value of data analytics, electronic audit trails, and system integrations, which enhanced efficiency, accuracy, and early detection of fraud risks. Despite these strengths, challenges persisted, particularly a limited culture of IT adoption and inadequate staff training, which hindered optimal utilization of technological tools. Overall, the findings suggested that while IT-based audit mechanisms had the greatest potential to minimize fraud, institutional support, training, and cultural shifts were necessary to maximize their effectiveness.

5.2.3 Management Controls and Fraud Prevention

The analysis showed that management controls had the highest descriptive mean of 3.787 and a strong correlation with fraud prevention at $r = 0.702$, yet their impact was not statistically significant in regression results (B = 0.173, $p = 0.192$). This indicates that although management control measures exist, they may not consistently translate into effective fraud prevention outcomes. Practices such as access restrictions to financial systems, compliance with procurement regulations, and corrective actions when fraud was detected were noted as positive contributors. However, respondents pointed to weaknesses in the application of oversight mechanisms and inconsistent fraud investigation procedures. These shortcomings weakened the overall influence of management controls. The results imply that without uniform enforcement, management controls, though important, fail to deliver their full potential in fraud prevention.

5.2.4 Board Oversight as a Moderator

Board oversight was evaluated as a moderating variable, recording a descriptive mean of 3.677 and a moderate correlation with fraud prevention at $r = 0.546$. While respondents viewed oversight as an important mechanism especially through implementation of audit recommendations and driving organizational improvements statistical tests showed otherwise. Regression results indicated that board oversight neither had a significant direct effect ($B = –0.039$, $p = 0.842$) nor a moderating effect ($B = 0.054$, $p = 0.810$) on the relationship between the independent variables and fraud prevention. The findings suggested that resource limitations and inadequate follow-up on audit recommendations constrained the board's effectiveness. Thus, while boards were perceived to strengthen governance in theory, their actual statistical influence in enhancing fraud prevention was limited, calling for stronger commitment and adequate resourcing.

5.3 Conclusions

The study concludes that internal control systems are a cornerstone of fraud prevention in TVET institutions, as they enhance accountability and reduce opportunities for mismanagement of resources. Mechanisms such as segregation of duties, periodic audits, and structured risk assessments were found to strengthen oversight and discourage fraudulent activities. However, the study established that these systems are often undermined by inadequate staff training, limited awareness of fraud risks, and weak enforcement of control policies. This means that while the frameworks could be present, their effectiveness is not fully realized in practice.

The study concludes that internal audit IT adoption is a critical determinant of fraud prevention in TVET institutions. The use of technology-driven tools such as digital audit trails, data analytics, and integrated financial systems enhances the timeliness, accuracy, and effectiveness of audit functions. By reducing reliance on manual processes, IT adoption minimizes human error, strengthens monitoring, and makes fraud detection more proactive. Despite these benefits, the study noted that weak technological cultures, limited resources, and inadequate training hinder optimal utilization of IT-based auditing systems in TVET institutions. The institutions can achieve meaningful fraud prevention if they prioritize IT integration into audit functions, supported by sustained investment in digital infrastructure and capacity building.

The study concludes that management controls, though important, are less consistent in deterring fraud within TVET institutions compared to internal controls and IT adoption. Controls such as procurement compliance, access restrictions, and corrective actions provide a foundation for accountability, yet their impact is weakened by inconsistent enforcement, weak investigative processes, and leadership gaps in ensuring compliance. This inconsistency creates opportunities for irregularities to persist despite the presence of policies. Therefore, strengthening management controls in TVET institutions requires more robust enforcement mechanisms, transparent governance practices, and stronger leadership oversight.

The study concludes that board oversight significantly moderates the relationship between control mechanisms and fraud prevention in TVET institutions. Strong and active board involvement enhanced the effectiveness of internal control systems, IT adoption, and management controls by ensuring accountability, enforcing compliance, and providing strategic direction. Conversely, weak or passive board oversight diminished the strength of these mechanisms, creating loopholes that allowed fraudulent practices to persist. The study further concludes that board oversight is not merely a complementary governance role but a critical determinant of whether fraud prevention systems function as intended. For TVET institutions, this implies that fraud prevention efforts must be anchored in boards that are competent, independent, and proactive in fulfilling their governance and supervisory responsibilities.

5.4 Recommendations

5.4.1 Internal Control Systems

The study recommends that TVET institutions strengthen the effectiveness of internal control systems by institutionalizing continuous staff training and sensitization on fraud risks. This will ensure that employees not only comply with existing frameworks but also understand the rationale behind them. In addition, institutions should adopt stronger enforcement mechanisms to guarantee the consistent application of controls such as segregation of duties, risk assessments, and corrective actions. TVET institutions should also embrace a culture of accountability by linking compliance with internal controls to performance appraisal and disciplinary processes. To optimize fraud prevention, it is further recommended that internal controls be reviewed periodically to align them with emerging risks and sector-specific operational realities.

5.4.2 Internal Audit IT Adoption

The study recommends that TVET institutions prioritize the integration of IT in internal audit functions by investing in modern digital audit tools such as automated audit trails, real-time data analytics, and system integration platforms. Equally, staff capacity building must be emphasized through continuous training programs tailored to audit technologies, ensuring that personnel can effectively use available systems. To overcome cultural resistance to IT adoption, management should spearhead awareness campaigns that emphasize the efficiency and reliability of digital solutions in fraud detection. Furthermore, government and regulatory bodies should support TVET institutions by allocating resources and developing sector-wide digital infrastructure that facilitates standardized IT adoption across institutions.

5.4.3 Management Controls

The study recommends that TVET institutions strengthen management controls through stricter enforcement of compliance procedures, particularly in procurement processes and financial access restrictions. Leadership must ensure that fraud investigation procedures are transparent, timely, and applied uniformly to deter irregular practices. It is further recommended that TVET councils and principals enhance oversight structures by establishing fraud risk management committees mandated to monitor compliance and recommend remedial actions. Strengthening management controls will also require building institutional cultures that reward compliance and penalize breaches, thereby creating an environment where accountability is non-negotiable. Policymakers should provide guidelines to standardize management control practices across TVET institutions to reduce inconsistencies in application.

5.4.4 Board Oversight

The study recommends that board oversight in TVET institutions be enhanced through improved training and capacity building of board members on governance, risk management, and fraud prevention. To strengthen their independence, boards should be provided with adequate resources and authority to follow up on audit recommendations and monitor institutional compliance. It is also recommended that boards adopt a proactive stance by holding management accountable through regular review meetings, documented resolutions, and performance evaluations linked to fraud prevention outcomes. At the policy level, regulators should set minimum standards for TVET board composition and mandate continuous professional development to ensure competence. Strengthening board oversight will not only enhance fraud prevention but also foster a governance culture rooted in transparency, accountability, and integrity.

5.5 Suggestions for Further Studies

First the study established that chosen variables could only explain 65.2% of the variation in fraud prevention in TVET institutions and therefore another study can be done to evaluate other factors not included such as organizational culture, leadership ethics, regulatory enforcement, and resource allocation. Finally, the study concentrated on fraud prevention within TVET institutions without explicitly linking it to institutional performance outcomes such as financial sustainability, student enrollment, or public trust. Future research could expand the scope by examining how effective fraud prevention systems contribute to broader institutional effectiveness and service delivery.

5.6 Limitations of the Study

First, the study was limited to selected TVET institutions in Kenya, which constrains the generalizability of the results to other regions and or private institutions. Secondly, the research relied primarily on self-reported data collected through structured questionnaires, which are prone to response bias, social desirability bias, and misreporting. Some respondents may have underreported or overstated issues related to fraud prevention due to sensitivity of the subject matter. This limitation could have affected the accuracy of the findings, particularly in variables such as internal controls and management practices.

Third, the study was restricted to TVET institutions in Kenya, which may limit the generalizability of the findings. Fraud prevention mechanisms may operate differently in other educational or organizational contexts due to variations in governance structures, resource availability, and regulatory frameworks. Future studies should therefore consider broader samples across different institutional settings or countries for comparative analysis. Finally, while the study employed quantitative methods, the absence of qualitative perspectives meant that deeper insights into behavioral, cultural, and contextual dimensions of fraud prevention were not captured. Incorporating interviews or case studies would have enriched the understanding of underlying dynamics.

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APPENDIX I: INTRODUCTION LETTER

APPENDIX II: RESEARCH PERMIT

REPUBLIC OF KENYA

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This is to Certify that Mr.. PAUL KINGANGI NJUGUNA of KCA University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: INTERNAL AUDIT PRACTICES, MANAGEMENT CONTROLS AND FRAUD PREVENTION AMONG PUBLIC TECHNICAL VOCATIONAL EDUCATION AND TRAINING INSTITUTIONS IN NAIROBI METROPOLITAN AREA for the period ending : 02/September/2026.

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APPENDIX III: QUESTIONNAIRE

My name is Paul King'ang'i Njuguna**.** I am an MSC Commerce (Finance Option) student at KCA University undertaking research on Internal audit practices, Management Controls and fraud prevention among public Technical Vocational Education and Training Institutions in Nairobi metropolitan area in Kenya.

INSTRUCTIONS

Please read each question and follow the instruction given. Kindly answer the question by ticking in the box provided where applicable. The data that will be collected will be treated with a very high degree of confidence and is meant for academic purposes only.

Section I: Demographic Information

(Please tick [✓] the appropriate option)

1. **Gender**

   ☐ Male

   ☐ Female

   ☐ Prefer not to say

2. **Age**

   ☐ 18–25 years

   ☐ 26–35 years

   ☐ 36–45 years

   ☐ 46–55 years

   ☐ Over 55 years

3. **Educational Background**

   ☐ Diploma

   ☐ Bachelor's Degree

   ☐ Master's Degree

   ☐ Doctorate (PhD)

   ☐ Other (specify): ____________

4. **Marital Status**

   ☐ Single

   ☐ Married

   ☐ Divorced/Separated

   ☐ Widowed

Section II: Board Oversight

(Please indicate the extent to which you agree or disagree with the following statements using the scale below:)
1 – Strongly Disagree | 2 – Disagree | 3 – Neutral | 4 – Agree | 5 – Strongly Agree

No.	Statement	1	2	3	4	5
1	The board regularly reviews the institutional fraud risk management strategies	☐	☐	☐	☐	☐
2	There is sufficient resource allocation to address issues identified in the audit report	☐	☐	☐	☐	☐
3	The board's oversight activities have contributed to a measurable reduction in fraud incidents	☐	☐	☐	☐	☐
4	Management demonstrates a commitment to implementing audit recommendations	☐	☐	☐	☐	☐
5	Follow-up procedures are in place to evaluate the effectiveness of implemented actions	☐	☐	☐	☐	☐
6	There is an effective system for the board to monitor internal controls related to fraud prevention	☐	☐	☐	☐	☐
7	The audit report's recommendations lead to measurable	☐	☐	☐	☐	☐

	improvements in organizational performance.					

Section III: Internal Control Systems

(Please indicate the extent to which you agree or disagree with the following statements using the scale below:)
1 – Strongly Disagree | 2 – Disagree | 3 – Neutral | 4 – Agree | 5 – Strongly Agree

No.	Statement	1	2	3	4	5
1	The organization conducts regular risk assessments to identify areas vulnerable to fraud.	☐	☐	☐	☐	☐
2	Management demonstrates a strong commitment to internal controls	☐	☐	☐	☐	☐
3	Segregation of duties is effectively implemented to reduce the risk of fraud.	☐	☐	☐	☐	☐
4	Regular internal audits are conducted to detect potentially fraudulent activities	☐	☐	☐	☐	☐
5	Employees are trained regularly on fraud awareness and prevention.	☐	☐	☐	☐	☐
6	The organization takes immediate corrective actions when fraud is detected.	☐	☐	☐	☐	☐
7	Regular internal audits are conducted to monitor compliance	☐	☐	☐	☐	☐

Section IV: Management Controls

(Please indicate the extent to which you agree or disagree with the following statements using the scale below:)

1 – Strongly Disagree | 2 – Disagree | 3 – Neutral | 4 – Agree | 5 – Strongly Agree

No.	Statement	1	2	3	4	5
1	The organization’s oversight bodies effectively oversee financial controls related to fraud prevention	☐	☐	☐	☐	☐
2	Access to financial systems and sensitive information is restricted based on job roles	☐	☐	☐	☐	☐
3	Segregation of duties is effectively implemented to reduce fraud risk.	☐	☐	☐	☐	☐
4	There are established procedures for investigating suspected fraud cases.	☐	☐	☐	☐	☐
5	There are effective internal controls in place to detect and prevent fraudulent activities	☐	☐	☐	☐	☐
6	There are established procedures to ensure procurement activities adhere to applicable laws and regulations.	☐	☐	☐	☐	☐
7	Management ensures that corrective actions are taken promptly when fraud is detected.	☐	☐	☐	☐	☐

Section V: Internal Audit IT adoption

(Please indicate the extent to which you agree or disagree with the following statements using the scale below:)
1 – Strongly Disagree | 2 – Disagree | 3 – Neutral | 4 – Agree | 5 – Strongly Agree

No.	Statement	1	2	3	4	5
1	The organization maintains a comprehensive and accessible IT audit trail for all financial transactions	☐	☐	☐	☐	☐
2	IT audit reports on fraud are comprehensive and facilitate effective decision-making.	☐	☐	☐	☐	☐
3	Our audit department has access to real-time data for more accurate assessments.	☐	☐	☐	☐	☐
4	There is a strong culture of using IT tools to monitor and prevent fraud	☐	☐	☐	☐	☐
5	Staff receive ongoing training on fraud prevention related to IT systems.	☐	☐	☐	☐	☐
6	The use of data analytics has improved the efficiency of internal audits.	☐	☐	☐	☐	☐
7	There is a strong integration between IT systems and internal audit procedures.	☐	☐	☐	☐	☐

Section VI: Fraud Prevention

(Please indicate the extent to which you agree or disagree with the following statements using the scale below:)
1 – Strongly Disagree | 2 – Disagree | 3 – Neutral | 4 – Agree | 5 – Strongly Agree

No.	Statement	1	2	3	4	5
1	The internal control systems in our institution have significantly reduced opportunities for fraud.	☐	☐	☐	☐	☐
2	Adoption of IT in internal audit processes has improved the accuracy and reliability of fraud detection.	☐	☐	☐	☐	☐
3	Management controls in place are effective in deterring and minimizing fraudulent activities.	☐	☐	☐	☐	☐
4	Board oversight enhances the effectiveness of internal audit practices in preventing fraud.	☐	☐	☐	☐	☐
5	The combined effect of internal controls, IT adoption, management controls, and board oversight has strengthened fraud prevention in our institution.	☐	☐	☐	☐	☐

THANK YOU FOR TAKING YOUR TIME TO FILL THE QUESTIONNAIRE