

**EFFECT OF INTERNAL CONTROLS ON DETECTION
AND PREVENTION OF FRAUD IN PUBLIC
UNIVERSITIES IN KENYA**

**BY
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DECLARATION

This research project is my original work and has not been presented for award to any other institution or University.

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Date: 27th November, 2023

D61/77833/2015

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DEDICATION

To my parents for the immeasurable support throughout the study and to my wife Becky for the support and encouragement; together with Renoi and Peyian, I dedicate this work.

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I thank God I thank you all.

LIST OF ABBREVIATIONS AND ACRONYMS

CHE:	Commission for Higher Education
CUE:	Commission for University Education
DVC:	Deputy Vice Chancellor
EACC:	Ethics and Anti-Corruption Commission
IIA:	International Institute of Internal Auditors
IT:	Information Technology
SDGs:	Sustainable Development Goals
VC:	Vice Chancellor

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ABSTRACT

Reports of fraudulent activities within higher learning institutions have been consistent, indicating significant financial losses. Many public institutions in Kenya, including universities, have been tainted with widespread corruption and mismanagement of funds. Thus, the general objective of the study was to determine the effect of internal controls on the detection and prevention of fraud in public universities in Kenya. The specific objectives of the study were to determine the effect of segregation of duties, internal audit, information and communication systems, and staff rotation on the detection and prevention of fraud in public universities in Kenya. The study also examined the moderating effect of government intervention on the relationship between internal control and the detection and prevention of fraud in public universities in Kenya. The study utilized an explanatory research design to explore relationships between variables. The target population consisted of 34 heads of finance and 34 heads of audit totaling to 68 respondents. A census of the selected finance and audit offices was done for all the 34 public chartered universities in Kenya. Quantitative data were analyzed using statistical methods, providing a clear understanding of the respondents' opinions, attitudes, and perceptions regarding the research variables. The correlation results showed that segregation of duties, internal audit, information and communication systems, staff rotation, and government intervention are positively and significantly correlated with the detection and prevention of fraud in public universities in Kenya. The regression results showed that segregation of duties is positively and significantly related to fraud detection and prevention ($\beta=0.204$, $p=0.022$). Furthermore, internal audit is positively and significantly related to fraud detection and prevention ($\beta=0.486$, $p=0.000$). In addition, information and communication systems are positively and significantly related to the detection and prevention of fraud ($\beta=0.228$, $p=0.014$). Besides, staff rotation is related to the detection and prevention of fraud ($\beta=0.147$, $p=0.000$). The findings revealed that the p-values for the interaction terms were less than 0.05. As a result, government intervention in Kenyan public universities has a significant moderating effect on the relationship between internal control and the detection and prevention of fraud. In conclusion, this study found that there is a significant relationship between the segregation of duties, internal audit, information and communication systems, staff rotation and fraud detection and prevention in Kenyan public universities. Specifically, well-defined roles and responsibilities, robust internal audits, advanced information systems, and systematic staff rotation enhances the capacity to detect and prevent fraud. Additionally, government intervention acts as a significant moderator, strengthening the impact of internal control measures on fraud prevention. Consequently, universities are recommended to prioritize enhancing segregation of duties, investing in and strengthening internal audit functions, upgrading information systems, enforcing staff rotation policies, and fostering collaboration with government bodies to fortify fraud prevention efforts.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The prevention of fraud is one of the key factors that can influence the performance and efficiency in an organization. Siyad and Omar (2020) highlighted the critical role of internal controls in mitigating fraud risks and enhancing accountability in public institutions. They emphasized that effective internal controls reduces the opportunity for fraudulent activities. Musila (2018) further supports this notion by emphasizing the importance of robust internal controls in reducing the likelihood of fraudulent activities and enhancing fraud risk mitigation in private sector organizations in Kenya.

The study was underpinned on the agency theory, fraud triangle theory and information systems success theory. The Agency Theory provided a relevant foundation for variables related to segregation of duties and staff rotation, addressing the need to align interests and mitigate agency problems (Panda & Leepsa, 2017). The Fraud Triangle Theory supported the variable of internal audit, focusing on disrupting fraud opportunities through control mechanisms (Cressey, 1953). The Information Systems Success Theory supported the variable of information and communication systems, emphasizing their role in enhancing transparency and facilitating fraud detection and prevention (DeLone & McLean, 2002). Together, these theories provided a comprehensive framework for understanding and implementing effective measures to detect and prevent fraud in public universities.

In the context of public universities in Kenya, conducting a study on the effect of internal controls on fraud detection and prevention was highly justified. The prevalence of fraud cases in the Kenyan higher education sector, as highlighted by Bulimu and Kalui (2021), raises concerns about the need for proactive measures to address fraud risks effectively. Cheruiyot et al. (2018) discussed the specific challenges faced by public universities, including inadequate internal controls and lack of awareness among employees regarding fraud risks. Given these challenges, there was a strong contextual justification for conducting a study in the Kenyan context to assess the effectiveness of internal controls in detecting and preventing fraud in public universities. By examining the specific context of public universities in Kenya, the study provided insights and recommendations tailored to

the unique challenges faced by these institutions, contributing to the existing knowledge base on fraud prevention in the higher education sector.

1.1.1 Internal Controls

Musila (2018) defines internal controls as the measures put in place to safeguard organizational assets, prevent and detect fraud, and ensure compliance with laws and regulations. Saleh (2018) emphasizes that internal controls involve the establishment of checks and balances, segregation of duties, and effective supervision to minimize the risk of fraud and errors. In the context of this study, internal controls refer to the policies, procedures, and mechanisms implemented in public universities in Kenya to prevent and detect fraud, safeguard assets, and ensure accurate financial reporting. The concept of internal controls raises several research issues that warrant further study in the context of public universities in Kenya.

This involves evaluating the design and implementation of internal controls, assessing the awareness and understanding of employees regarding internal control policies and procedures, and identifying potential gaps or weaknesses that may hinder their effectiveness. Additionally, the impact of internal controls on fraud risk management and the overall financial performance of public universities should be examined. This entails assessing how internal controls contribute to reducing fraud risks, enhancing accountability, and improving financial reporting accuracy. Furthermore, exploring the challenges and barriers to implementing and maintaining effective internal controls within the unique context of public universities in Kenya would provide insights for enhancing control systems and practices. Previous researchers have operationalized the variable of internal controls by employing various methods to measure their effectiveness and implementation within organizations.

1.1.2 Detection and Prevention of Fraud

The detection and prevention of fraud involve the identification and mitigation of fraudulent activities within an organization. Several sources provide definitions of this variable. Abei (2021) defines fraud detection and prevention as the implementation of

measures and controls aimed at identifying, investigating, and mitigating fraudulent activities in order to protect the organization's assets and maintain its integrity. Adelana and Toba (2018) describe fraud detection and prevention as the actions taken to identify and deter fraudulent acts, including the design and implementation of internal controls, policies, and procedures to minimize the occurrence of fraud. Additionally, Agathee and Ramen (2017) define fraud detection and prevention as the utilization of techniques and systems to identify, investigate, and mitigate fraudulent activities. In this study, fraud detection and prevention refer to the processes, measures, and techniques employed in public universities in Kenya to identify, prevent, and mitigate fraudulent acts, safeguarding the university's resources and maintaining its integrity.

Within the concept of fraud detection and prevention, there are several research issues that warrant further study. Firstly, it is crucial to investigate the effectiveness of existing fraud detection and prevention mechanisms in public universities in Kenya. This involves evaluating the design and implementation of anti-fraud policies and procedures, assessing the awareness and understanding of employees regarding fraud risks and prevention measures, and identifying potential gaps or weaknesses that may hinder the effectiveness of these mechanisms. Additionally, the factors contributing to the occurrence of fraud within public universities, such as weak internal controls, lack of ethical culture, or inadequate monitoring mechanisms, should be examined. Understanding these factors and their impact on fraud occurrences can inform the development of more robust fraud prevention strategies. Furthermore, exploring the role of technology, such as data analytics and artificial intelligence, in enhancing fraud detection and prevention in public universities would be an important research area.

Researchers have operationalized the variable of fraud detection and prevention through various approaches and measurement methods, employing specific indicators and measures to assess the effectiveness of these mechanisms. They employed indicators such as probing suspect deals, assessing the speed of detecting unscrupulous activities, and recognizing fraud avenues. Mwazo (2017) and Omondi (2021) employed indicators such

as the presence of internal control policies, training and awareness programs, and the ability to probe suspect deals and transactions.

1.1.3 Internal Controls and Detection and Prevention of Fraud

Organizations with effective internal control structures are less likely to have occurrences of fraud (Rashid, 2022). Muhunyo (2018) contended that comprehensive internal regulation mechanisms enable corporations to ward off fraudulent activities, errors, and superfluous expenditure. The meticulousness and correctness of bookkeeping records, punctual generation of fiscal data, and ongoing scrutiny can only be secured when a sound internal regulation mechanism is active (Subaida & Mahbubah, 2020). Musila (2018) suggested that proficient internal regulation systems instill confidence in a corporation regarding its competency in performing various operational activities and circumventing fraud, mistakes, and losses through continuous tracking and improving organizational and fiscal reporting methods, besides assuring compliance with relevant legislation and regulations.

Subaida and Mahbubah (2020) posited that internal regulation is vital in averting and discovering fraud and ensuring transactions adhere to the internal directives and guidelines. Additionally, Agbenyo, Jiang, and Cobblah (2018) pointed out the significance of internal regulation in warding off fraud in public institutions within Ghana. Moreover, Musila (2018) found a direct correlation between high levels of policy adherence and high levels of fraud detection and prevention, thus establishing the efficacy of internal regulations in combating organizational fraud. Furthermore, Lindquist and Huse (2017) suggested that government institutions' fiscal responsibility is positively affected by the adopted internal control methods, such as the incorporation of modern technology, regular audits, and frequent employee rotations. Adding to this, Madi, Joseph, Rahmat, Janang, and Omar (2021) asserted that one of the effective strategies for limiting fraud within public universities is promoting disclosure related to fraud prevention.

1.1.4 Public Universities in Kenya

As defined by the Universities Act of 2012, the Kenyan government owns all 34 public universities within the country. The primary responsibilities of these institutions encompass knowledge propagation, creation through research, and its practical application. Cheruiyot, Namusonge, and Sakwa (2018) pointed out that numerous public institutions in Kenya have unfortunately been plagued by rampant corruption and misallocation of resources. The Ethics and Anti-Corruption Commission (EACC) has been actively working to curtail these illicit practices within institutions, yet reports of corruption and fraud within public institutions, including universities, frequently surface in both domestic and international news. For instance, in 2020, Moi University faced allegations of financial malfeasance, including compensating nonexistent employees (EACC, 2021). In another example, Maasai Mara University was reported to have experienced significant financial losses due to fraud, with the amount lost estimated to be in the tens of millions (EACC, 2021). This study was conducted in 34 public universities in Kenya. The rationale for conducting the study in all 34 universities was to have detailed information for the analysis. Including the 34 universities reduced the chances of biases; thus, the study findings are anticipated to be sufficient for policy formulations.

1.2 Research Problem

Many public institutions in Kenya, including universities, have been tainted with widespread corruption and mismanagement of funds (Cheruiyot, Namusonge & Sakwa, 2018). Reports of fraudulent activities within these higher learning institutions have been consistent, indicating significant financial losses (Guto, 2020). For example, allegations of financial misconduct and phantom employees surfaced against Moi University in 2020 (EACC, 2021). Similarly, Maasai Mara University was reported to have experienced significant financial mismanagement, with losses estimated to be in tens of millions (EACC, 2021). A further notable incident involved the arrest and subsequent legal proceedings against the Vice-Chancellor of Maasai Mara University, along with four others, on charges of swindling the University of Approximately 177 million Kenyan Shillings.

Some studies have shown that internal controls can significantly affect fraud detection and prevention. For instance, Musila (2018) established that higher levels of policy compliance led to higher fraud detection and prevention levels in public universities in Kenya. However, the study was only focused on policy compliance, while the current study focused on segregation of duties, internal audit, information and communication systems and staff rotation with a moderating effect of government policy and regulations. Moreover, Cheruiyot, Namusonge and Sakwa (2018) showed that internal control practices have a positive effect on the performance of county governments in Kenya. The new study was conducted at a university, whereas the old one was conducted by county governments. Mwazo, Weda, Omondi, and Njenga (2017) found that internal control systems improved service delivery. While this study's initial goal was to improve service delivery, it has become clear that identifying and preventing fraud must become an even higher priority going ahead.

1.3 Research Objectives

The section presented the general and specific objectives of the study.

1.3.1 General Objective

The “general objective of the study was to determine the effect of internal controls on detection and prevention of fraud in public universities in Kenya”.

1.3.2 Specific Objectives

- i. “To determine the effect of segregation of duties on detection and prevention of fraud in public universities in Kenya”
- ii. “To establish the effect of internal audit on detection and prevention of fraud in public universities in Kenya”
- iii. “To analyze the effect of information and communication systems on detection and prevention of fraud in public universities in Kenya”
- iv. “To examine the effect of staff rotation on detection and prevention of fraud in public universities in Kenya”
- v. “To determine the moderating effect of government intervention on the relationship between internal control and detection and prevention of fraud in public universities in Kenya

1.4 Value of the Study

The findings from this study are anticipated to be highly beneficial for university administrations. It's expected that the recommendations derived from the research will aid these institutions in implementing appropriate internal control measures to effectively identify and thwart fraud. The study should also allow university administrators to gain a deeper understanding of the various factors influencing fraud detection and prevention. Moreover, this research is projected to enhance awareness among universities, especially public ones, encouraging them to devise robust strategies to minimize fraudulent activities. Government entities, particularly the Ministry of Education and Commission for Higher Education (CHE), can utilize the study's recommendations to inform policy formulation. Policies enhancing fraud detection and prevention can be crafted, drawing upon the conclusions from this study. Additionally, the government might gain valuable insights into university operations, which could aid in addressing common issues affecting these institutions. Other researchers and scholars stand to benefit from this study's findings through citations and recommendations for further research in the same field. Thus, the study is expected to serve as a foundation for future research, thereby enriching the existing body of knowledge.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Literature review is the discussions of the existing information regarding the objectives of the study. The literature review informs more about the knowledge gap that the study seeks to fill. The literature review is discussed in sections.

2.2 Theoretical Framework

The theoretical framework looks into theories that illustrate fraud detection and prevention. The theories adopted by the study are the agency theory, fraud triangle theory and information system success theory as here-below elaborated.

2.2.1 Agency Theory

Developed by Michael Jensen and William Meckling in 1976, agency theory underlines the impact of management decisions on institutional performance. It posits that employee autonomy and senior management endorsement can bolster performance levels (Panda & Leepsa, 2017). The theory cautions that when institutional control is fragmented, managers may act selfishly, neglecting others' interests (Salim & Yadav, 2012). Thus, the importance of task segregation and staff rotation becomes clear, as these measures lessen the risk of erroneous or unsuitable actions (Lightle & Vallario, 2003). This task distribution and rotation also curtail management's influence over groups, fostering more balanced operations (Kapp & Heslop, 2015). The theory, therefore, argues that the separation of control and ownership is crucial in boosting employee efficiency (Bosse & Phillips, 2016).

However, agency theory is not without its detractors. Critics note that while the theory posits that contractual arrangements can resolve agency issues, it overlooks obstacles such as information asymmetry, rationality, fraud, and transaction costs (Olson, 2000). Moreover, it fails to comprehensively define the role of directors beyond managerial supervision (Nielson & Tierney, 2003), and overly focuses on managers' opportunism while disregarding their competence (Gong, Tang, Liu & Li, 2017).

Despite these critiques, agency theory is pertinent to this study, particularly when analyzing the effects of duty segregation and staff rotation on fraud detection and prevention within public universities. Duty segregation and staff rotation are key elements of robust internal controls as they mitigate the risk of errors and improper actions (Lightle & Vallario, 2003). A functional separation of responsibilities can help discover both deliberate and accidental errors, as no single person is in control of every aspect of the process. University Councils can leverage this oversight to ensure management actions align with stakeholder interests by enforcing satisfactory duty segregation and staff rotation. Employee autonomy, along with top management support, forms the bedrock of performance enhancement (Panda & Leepsa, 2017), reinforcing the theory's relevance to this study. Therefore, the agency theory effectively underpinned the variables of duty segregation and staff rotation in the current study.

2.2.2 Fraud Triangle Theory

The theory indicates effective fraud combat requires an understanding of its occurrence and the underlying reasons. Opportunity, as defined by the theory, refers to the circumstances, such as weak internal controls and insufficient accounting policies, that facilitate fraud (Mansor & Abdullahi, 2015). Pressure or incentive is the mindset that drives an employee towards fraudulent actions, often triggered by factors like performance-based bonuses and a desire for greater earnings. The pressure to meet targets linked to financial metrics could potentially drive employees to fraudulent activities (Sujeewa, Yajid, Azam & Dharmaratne, 2018).

Lastly, rationalization is an individual's internal justification for committing fraud, often influenced by mistreatment, managerial behavior, or fear of significant loss (Manurung & Hadian, 2013). However, the theory is not without its limitations. It fails to pinpoint precise strategies to proactively detect and prevent fraudulent activities (Skousen, Smith & Wright, 2009). Furthermore, it does not address information asymmetry, a situation where some sensitive information is kept exclusive within the organization, not disclosed to all employees (Christian, Basri & Arafah, 2019).

Nonetheless, the Fraud Triangle Theory remains relevant to the current study focused on the effects of internal audits on detecting and preventing fraud at public universities. The theory provides valuable insight into why university employees may resort to fraud, underlining the pivotal roles of opportunity, pressure, and rationalization. It signifies those strong internal controls, including effective segregation of duties, diligent supervision, and well-documented processes, can mitigate fraud opportunities. A lack of stringent supervision over internal audits at public universities can potentially foster fraudulent activities. However, the reduction of fraud opportunities through robust internal controls can significantly decrease fraudulent actions, thereby bolstering accountability. Thus, this theory underpinned the variable of internal audit in this study, indicating that regular internal audits can reduce fraud incidence within public universities.

2.2.3 Information Systems Success Theory

William DeLone and Ephraim McLean formulated the Information Systems Success Theory in 1992, asserting that an organization's effectiveness and efficiency are influenced by the technology in use. An advanced information system enables quick data retrieval by storing it in an accessible database (Nguyen & Cao, 2015). Additionally, such a system simplifies decision-making processes, promptly delivering required information and aiding swift and informed decisions (Crowston, Howison & Annabi, 2006). Hence, for optimal efficiency, organizations need to invest in technology.

Effective information systems can streamline an organization's structure by providing managers with comprehensive information to supervise larger teams and grant more decision-making authority to lower-level employees (DeLone & McLean, 2002). Despite its relevance, the theory doesn't account for costs associated with establishing communication infrastructures, channels, and coordinating diverse activities to enhance institutional efficiency (Baskerville, 1999). Implementing new systems necessitates employee training, which can be time-consuming, and resistance to change may also pose challenges.

Regardless, this theory is pertinent to the current study examining the impact of information and communication systems on fraud detection and prevention in public universities. An efficient information system, backed by advanced technology, can expedite fraud detection. It facilitates easy data retrieval and simplifies decision-making by promptly delivering essential information. Implementing such systems can enable university management to supervise larger staff numbers more effectively and empower lower-level employees with decision-making authority. Thus, the Information Systems Success Theory substantiates the relevance of information and communication systems as a variable in the current study.

2.3 An Empirical Review of Determinants of Fraud Detection and Prevention

Internal controls such as segregation of duties, internal audit, information and communication systems and staff rotation have been considered significant in fraud detection and prevention (Siyad & Omar, 2020; Abei, 2021; Musila, 2018; Kabue, 2020; Drogalas, Pazarskis, Anagnostopoulou & Papachristou, 2017).

2.3.1 Segregation of Duties and Detection and Prevention Fraud

Siyad and Omar's 2020 study, segregation of roles, documentation procedures, physical controls, and the assignment of responsibilities were all shown to have a favorable relationship with fraud detection. While it's clear that these things are crucial, the article's narrow emphasis on commercial banks obscures the broader picture. Musila widened the scope of this study in 2018 by looking at the effect internal controls have on spotting and preventing fraud in Kenya's public higher education institutions.

Musila used primary data gathered through a descriptive cross-sectional study approach to demonstrate the link between fraud detection and prevention and factors including division of responsibilities, robust internal controls, management accounting controls, periodic fraud audits, and policy compliance. There was a significant positive correlation discovered, however the study had a conceptual flaw since its authors wanted to look at factors that Musila didn't.

Similarly, in 2018, Saleh embarked on a study to assess the role of internal control on fraud prevention within the listed manufacturing industries in Nigeria. Saleh's research led to several revealing findings, particularly around the contribution of poor segregation of duties, insufficient management policies, lack of proper supervision, inadequate training and nepotism on the escalation of fraud within these industries. The research therefore suggested stronger segregation of duties, improved management policies, increased supervision and training, and discouraging nepotism as significant fraud prevention measures. Notwithstanding these findings, the study's focus on the manufacturing industry presents a contextual gap with regard to the current research's focus on universities.

Lastly, the research by Adelana and Toba in 2018, which sought to uncover the influence of internal controls on fraud detection and prevention in Nigeria's tertiary institutions, adds to this body of knowledge. Their findings suggested that both the segregation of duties and system authorization were fundamental in positively affecting fraud detection and prevention. However, despite these important findings, the research was conducted in Nigeria, which creates a contextual gap for the current study in Kenya.

2.3.2 Internal audit and Detection and Prevention Fraud

Internal audit efficacy is examined in detail in 2017 research by Drogalas, Pazarskis, Anagnostopoulou, and Papachristou. The authors dig into the roles and duties of internal auditors as well as their education and experience in the field. Data gathering consisted of sending out questionnaires to businesses trading on the Athens Stock Exchange. The findings were eye-opening, suggesting a strong positive link between audit efficiency, auditor accountability, auditor education, and the identification of fraudulent activity. As a result, they pushed for more funding for internal auditing systems and education programs. Given that this research will be undertaken at Kenyan institutions, the study's emphasis on the Athens Stock Exchange presents a contextual gap.

The impact of internal audit methods on reducing the prevalence of material misstatement in the financial reports of Kenyan institutions was also studied by Bulimu and Kalui in 2021. The study used a descriptive research approach and found that internal audit methods significantly impacted the reduction of substantial misstatements in financial statements. While these findings are indeed insightful, there is a methodological gap between the descriptive research design and the explanatory approach that is being offered here.

Finally, in 2018, Cheruiyot, Namusonge, and Sakwa undertook a thorough investigation on the relationship between public financial management techniques and the efficiency of county governments. Using a descriptive research strategy and a purposive sample method, they analyzed data from 47 counties. The research revealed a tight connection between the effectiveness of county governments and the use of internal control procedures such control activities, control environment, and internal audits. However, there is a lack of context between the two studies due to the former's emphasis on county governments and the latter's emphasis on public institutions.

2.3.3 Information and Communication Systems and Detection and Prevention Fraud

In 2018, researchers Sukirman, Hidayah, and Suryandari in Indonesia examined the role of IT and internal controls in preventing fraud at Universitas Negeri Semarang. Their study used a descriptive methodology, and their sample group consisted of 90 individuals who were all chosen at random. The results showed that IT had an impact on internal control, which in turn aided in preventing fraud. They also found that IT had a direct effect on preventing fraud, which led them to suggest the institution improve its IT and internal control systems. Despite these new understandings, there remains a methodological chasm between the descriptive research methodology used in the previous study and the explanatory one offered here.

In 2018, Gitau investigated how the internal control processes of grocery chains in Nairobi's Central Business District affected their bottom lines. The researchers used a descriptive survey design and polled representatives from 54 major grocery chains.

Information and communication systems, credit risk assessment processes, procurement control techniques, internal checks, and the practice of division of roles were shown to be responsible for more than half of the variance in financial performance. That research did not expressly target universities, though, and instead looked at grocery chains, so there is a significant context difference between the two.

Njeri analyzed the effect of internal controls on the profitability of Kenyan manufacturing companies in 2014. Using a stratified random selection method, 20 of the 65 registered manufacturing enterprises were chosen as the study's sample. The findings highlighted the importance of efficient internal control systems in boosting financial performance, showing a positive correlation between internal controls and the companies' bottom lines. The new study's concentration on public institutions produces a context gap when contrasted to the previous one, which looked at industrial enterprises.

The effects of information and communication on the prevention and detection of fraud in deposit money institutions were studied by Hussaini and Bashir in a 2021 research done in Nigeria. In this survey, respondents were selected at random from amongst the bank's workforce. Information and communication were shown to have a substantial impact on fraud detection, with elements including information quality, communication efficacy, fraud investigation, monitoring, and disclosure all being identified as particularly important. Despite its useful findings, the present research does not go far enough in exploring the role that internal controls have in preventing and detecting fraud at Kenya's public institutions.

2.3.4 Staff Rotation and Detection and Prevention Fraud

In 2015, researchers Othmana, Arisb, Mardziyaha, Zainan, and Amin investigated existing anti-fraud and anti-corruption measures in the Malaysian government. The study used a descriptive approach and gathered information from participants using questionnaires. The results showed that various mechanisms, such as staff rotation, operational audits, strengthened audit committees, enhanced internal controls, the introduction of fraud reporting policies, fraud hotlines, and the use of forensic accountants, were effective in

detecting and preventing fraud. Note, however, that this research was done in Malaysia, creating a context mismatch with the present study's emphasis on preventing and detecting fraud at Kenya's public institutions.

To learn more about how the control environment affects fraud detection and prevention, Koech and Kimani (2018) performed research at Kenya's University of Eldoret. According to the findings, the board of directors should keep tabs on the state of the control environment on a frequent basis, maybe with the help of the audit committee. However, it should be noted that the current research has a broader scope than theirs and investigates the impact of multiple factors on fraud detection and prevention in public universities. These factors include segregation of duties, internal audit, information and communication systems, and staff rotation.

In a similar vein, Agathee and Ramen (2017) conducted research in Mauritius to learn how often and how well novice auditors, senior auditors, and professional accountants use fraud prevention and detection approaches. Bank staff rotation, bank reconciliation, cash inspections, and password protection were determined to be the most generally implemented strategies to prevent fraud in a survey of banks conducted by the researchers. However, there is a conceptual gap since this study only looked into a few approaches, but the ongoing investigation will look into a much wider scope, including division of responsibilities, internal audit, information and communication systems, employee rotation, and government policy and laws.

Abei's research from 2021 shows that MFIs can identify and prevent fraud thanks in large part to strong internal controls. According to the results, internal control methods drastically cut down on fraud risk, possibility, justification, and capacity in MFIs. The research also found that low employee turnover, low pay, lax oversight, and insufficient internal control mechanisms were major causes of fraud in MFIs. While this study fills in some important gaps in our understanding of fraud prevention in MFIs, it should be highlighted that it was undertaken only in the setting of MFIs in Cameroon. As a result, it's possible that the results of this research won't hold true in the specific setting of public institutions in Kenya.

2.3.5 Government Intervention and Detection and Prevention Fraud

Muhunyo (2018) argued that robust internal regulating procedures allow firms to avoid fraudulent actions, mistakes, and unnecessary spending. The meticulousness and accuracy of accounting records, the timely creation of fiscal data, and continual examination can only be ensured by a strong internal regulating structure (Subaida & Mahbubah, 2020). According to Musila (2018), competent internal regulatory systems instill confidence in a corporation regarding its competency in performing various operational activities and avoiding fraud, mistakes, and losses through continuous tracking and improving organizational and fiscal reporting methods, in addition to assuring compliance with relevant legislation and regulations.

According to Subaida and Mahbubah (2020), internal regulation is critical in preventing and detecting fraud and ensuring transactions follow internal directions and rules. Furthermore, Agbenyo, Jiang, and Cobblah (2018) emphasized the need of internal regulation in preventing fraud in Ghanaian public institutions. Furthermore, Musila (2018) discovered a clear association between high levels of policy adherence and high levels of fraud detection and prevention, demonstrating the effectiveness of internal rules in combatting organizational fraud. Furthermore, Lindquist and Huse (2017) proposed that internal control mechanisms used by government institutions, such as the adoption of contemporary technology, regular audits, and frequent personnel rotations, have a favorable impact on fiscal responsibility. Furthermore, Madi, Joseph, Rahmat, Janang, and Omar (2021) said that boosting transparency linked to fraud prevention is one of the successful techniques for preventing fraud inside public institutions.

2.4 Conceptual Framework

This graphical representation in figure 2.1 provides a clear and simplified way to understand the complex interactions and associations between these variables in the research study.

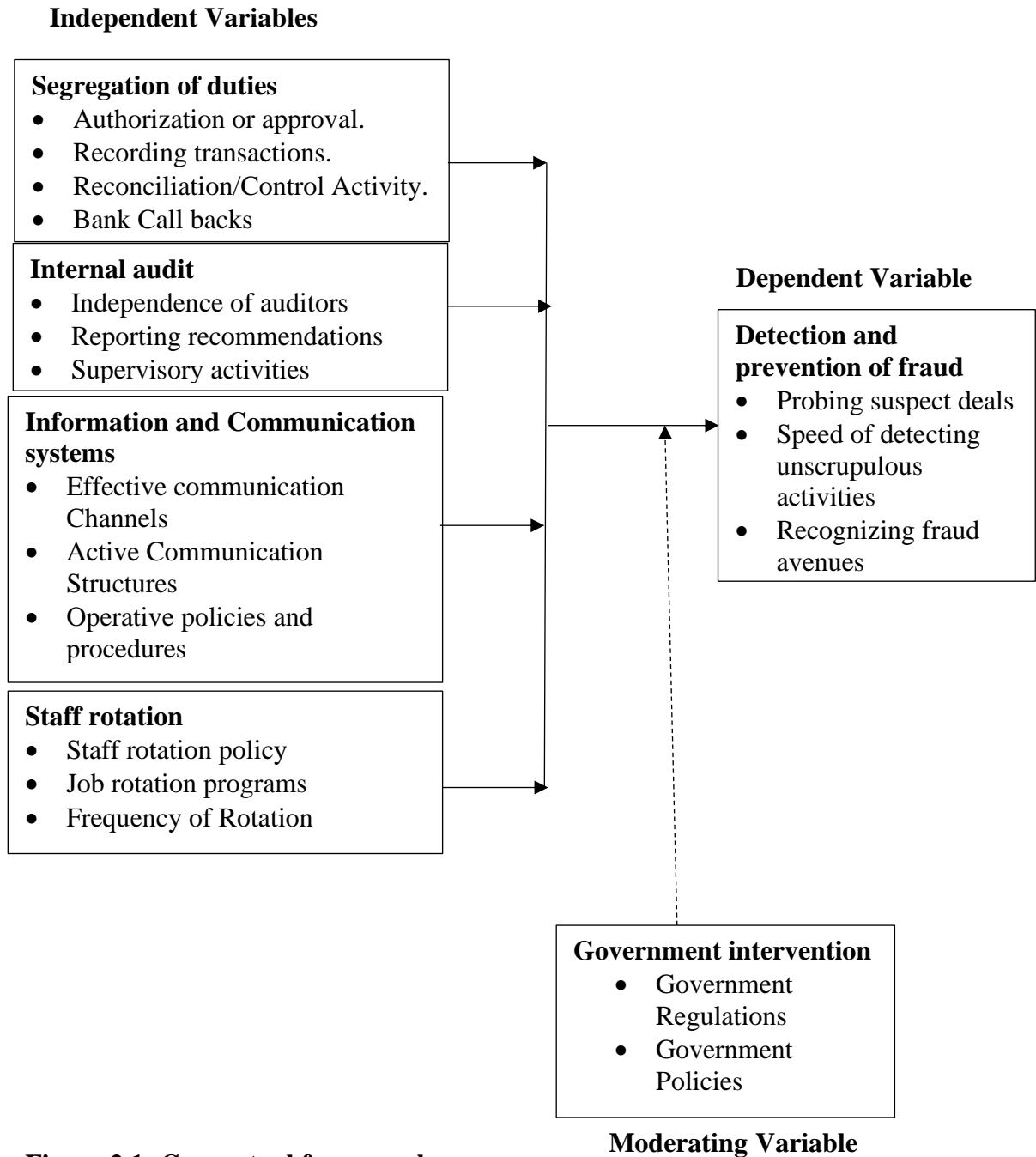


Figure 2.1: Conceptual framework
Source (Researcher, 2023)

Chapter two provided an extensive review of the existing literature. The chapter delved into the theoretical framework, the influencing factors of fraud detection and prevention, and the development of a conceptual framework. Through the review of previous studies, knowledge gaps were identified on several levels: conceptual, contextual, and methodological. Contextual gaps emerged due to various factors. For one, the bulk of the

studies reviewed were conducted in developed nations, with relatively fewer in developing countries like Kenya. Additionally, there was a gap concerning the temporal context of these studies and the fact that many of these studies were not focused on public universities, which was the focus of the current study. Methodologically, there were gaps relating to the type of data utilized, the research design employed, and the sampling techniques implemented. For instance, while some studies used a descriptive research design, this study used an explanatory design, highlighting a clear methodological discrepancy. The limitation of descriptive research was its inability to establish cause-effect relationships between variables, something the current study aimed to address. Therefore, while the existing literature provided a theoretical understanding of the influence of internal controls on fraud detection and prevention, it failed to deliver a comprehensive investigation that the current study intended to provide. Hence, the current research aimed to fill these identified knowledge gaps.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The methodology of the study is presented in sections. Each of the section is discussed in depth to shows its relevance for considerations to be included in the study. The reliability and validity of the results depends on the methodology of the study.

3.2 Research Design

This research utilized an explanatory design, which was a research methodology focused on elucidating the relationships between variables (Patten & Newhart, 2017). Unlike experimental designs, an explanatory design did not involve manipulating or controlling the variables under study. Instead, it was more interested in investigating the nature of the relationships that existed between them. The current study was concerned with examining the relationship between various variables. It provided a broad perspective and enabled a more comprehensive understanding of the relationships between the independent and dependent variables.

3.3 Target Population

The population of the study consisted of finance and audit departments of all public universities in Kenya, totaling 34 public chartered universities. The target population included employees from the middle level management. The middle management level employees comprised the head of finance and the head of audit. Therefore, the study purposively selected the head of finance and the head of audit. Thus, the target population was 34 heads of finance and 34 heads of audit. Hence the study involved a census of the selected finance and audit offices of all public chartered universities in Kenya. The census approach facilitated a diverse representation of perspectives and insights from the various selected relevant areas within the public universities in Kenya.

The rationale for picking only employees from the middle level management was that these employees were in the best position to provide very relevant information about the financial and controls management of public universities in Kenya. Middle-level managers, such as

the head of finance and head of audit were responsible for the day-to-day financial operations of the universities. They had a deep understanding of the financial and control challenges and opportunities facing the universities. They had a broad overview of the financial and control situation of the universities and could provide insights into the challenges and opportunities facing the universities in the long term. By including the head of finance and head of audit, the study was able to get a more comprehensive understanding of the financial management of public universities in Kenya. They were placed in the middle of junior officers who were responsible for the day-to-day operations of the universities like accountants and audit officers, as well as from the people who were setting the strategic direction of the universities including DVCs. They therefore had information representing both their juniors as well as their seniors hence very broad and relevant information for the study. This diversity of perspectives and insights was essential for understanding the complex financial and control challenges facing public universities in Kenya.

Additionally, the study employed a census approach. This meant that the researcher deliberately sought information from all the heads of finance and heads of audit from all the 34 public chartered universities in Kenya. By purposively selecting the middle level management employees, the researcher ensured that response was received from the most knowledgeable employees in relation to the financial and control processes of public universities in Kenya. This census approach ensured that the study got a comprehensive and representative understanding of the control and financial management of public universities in Kenya.

3.4 Data Collection

To collect data for this study, questionnaires were utilized. The questionnaires were administered to employees in the selected census population. These questionnaires were designed to capture relevant information pertaining to the variables under investigation, including segregation of duties, internal audit practices, information and communication systems, staff rotation, and fraud detection and prevention. The questionnaires were structured with sections corresponding to the research objectives, ensuring that each aspect of the research objective was covered in a comprehensive manner.

3.5 Reliability and Validity

The supervisor who oversaw the development of the research project played a critical role in ensuring the validity and reliability of the research instruments. These experts provided valuable insights and professional advice to ensure that the research instruments aligned with the research objectives and accurately measured what they were intended to measure. Their expertise was instrumental in reviewing and providing feedback on the clarity, relevance, and suitability of the items, as well as suggesting necessary adjustments or additions to improve the validity of the instruments. In addition, the supervisor assisted in assessing the content validity of the instruments by reviewing the alignment of the questions with the research objectives and ensuring that all relevant aspects of the variables under investigation were covered.

3.6 Data Analysis

The quantitative data were analyzed using statistical methods, which provided a clear understanding of the respondents' opinions, attitudes, and perceptions regarding the research variables. Descriptive statistics and inferential analysis techniques were employed to assess the extent to which segregation of duties, internal audit, information and communication systems, and staff rotation contributed to the detection and prevention of fraud in public universities. The study results were presented in tables and graphs to enhance clarity and facilitate understanding. These visual representations provided a concise and accessible summary of the quantitative findings. The model used for the analysis was:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

Where: -

Y= Detection and prevention of fraud

X₁= Segregation of duties

X₂= Internal audit

X₃= Information and communication systems

X₄= Staff rotation

β₀ =Constant

β₁, β₂, β₃ & β₄= Coefficients

ε = Error term

In addition, government intervention was used as a moderating variable and the model was;

$$Y = \beta_0 + \beta_1 X_1 * M + \beta_2 X_2 * M + \beta_3 X_3 * M + \beta_4 X_4 * M + \varepsilon$$

Where: -

Y= Detection and prevention of fraud

X₁= Segregation of duties; X₂= Internal audit; X₃= Information and communication systems; X₄= Staff rotation

M=Moderating variable (government intervention)

β_0 =Constant

$\beta_1, \beta_2, \beta_3$ & β_4 = Coefficients

ε = Error term

To ensure that the requirements for regression analysis were met, several tests were conducted, including normality tests and multicollinearity analysis.

3.7 Ethical considerations

Ethical considerations were upheld in the study. Informed consent was obtained, ensuring participants understood the study's purpose, procedures, and any potential risks. Privacy and confidentiality of participants' information were declared and maintained, with data stored securely and only accessed by authorized individuals. Participants were treated with respect. Transparency and honesty guided the reporting and dissemination of findings, and the researcher upheld professional standards and responsibility throughout the study.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1 Introduction

The chapter provides a comprehensive analysis of the study, starting with the response rate to give an idea of the participant involvement and the credibility of the data. This sets the stage for the demographic information, which offers insights into the background and characteristics of the respondents, such as age, gender, and other relevant factors. The chapter then moves on to descriptive statistics, which provide a basic summary of the data, including mean and standard deviation. In addition, diagnostic tests, which evaluate the quality and reliability of the data, making sure it is suitable for more advanced analysis are included in the chapter. The chapter also include the inferential statistics which includes the correlation and regression analysis. The chapter concludes with the discussion of findings.

4.2 Response Rate

The study consisted of a total of 68 participants, comprising 34 heads of finance and 34 heads of audit in public universities in Kenya as indicated in Table 4.1.

Table 4.1: Response Rate

Response	Targeted respondents	Response (Those responded)	Percentages
Head of finance	34	26	0.7647
Head of audit	34	29	0.8529
Average	68	55	0.8088

The findings displayed in Table 4.1 demonstrate that the participation rate among the head of finance was 76.47% and head of audit was 85.29%. The mean response rate observed in the study was 80.88%. The adequacy of the response rate for the analysis was determined based on the findings of Ahmad and Halim (2017), who suggested that response rates exceeding 60% are satisfactory for conducting analysis and drawing inferences. Furthermore, it has been observed by Freiman, Chalmers, Smith, and Kuebler (2019) that a response rate exceeding 50% should be deemed acceptable for the purposes of analysis.

Furthermore, Hendra and Hill (2019) assert that a response rate exceeding 70% is deemed sufficient for the purposes of analysis and making recommendations. Based on the assertions put forth by esteemed scholars, it can be deduced that the response rate of all the units of observation (namely heads of finance and heads of audit) in the study exceeded 70%. Consequently, this response rate is deemed suitable for purposes of analysis and drawing inferences within the study.

4.3 Demographic Information

Demographic data refers to the collection of information that characterizes a population based on its constituent elements. Demographic data is frequently employed in order to comprehend the attributes of a given population and to facilitate comparisons across diverse populations. The study incorporated demographic information such as the respondents' gender, age range and period worked. The inclusion of demographic data was a crucial component of the study as it facilitated a comprehensive understanding of the respondents' characteristics.

4.3.1 Gender of Respondents

The gender of respondents was examined and the findings are presented in Table 4.2

Table 4.2: Gender of Respondents

Gender	Percent
Male	65.5
Female	34.5
Total	100

The results presented in Table 4.2 show that the majority of the respondents were males (65.5%) and the females were 34.5%. The predominance of males over females in middle management roles in finance and audit departments of Kenyan public universities suggests a gender imbalance in decision-making positions. This could limit the diversity of perspectives in financial management and may reflect broader issues of organizational

culture and societal biases. The imbalance highlights the need for targeted strategies to enhance gender diversity at this level, as a more balanced gender representation could offer richer, more varied approaches to managing the complex financial challenges faced by these institutions.

4.3.2 Age Bracket of Respondents

The study sought to examine the respondents' age bracket, and the results are presented in Table 4.3

Table 4.3: Age Bracket of Respondents

Age bracket	Percent
Below 25 years	7.3
25 - 34 years	41.8
35 - 44 years	30.9
45 - 54 years	20
Total	100

The results presented in Table 4.3 indicate that most respondents fall within the 25 to 34 age range (41.80%), followed by those between 35 and 44 years old (30.9%). The remaining participants are between 45 and 54 years old (20%), with the youngest group, below 25 years, making up only 7.3% of respondents. These statistics suggest that middle-aged professionals predominantly occupy the roles of heads of finance and heads of audits. This age distribution could impact various aspects of organizational life, including career progression, work-life balance, and openness to new technologies. The significant number of younger employees suggests potential for growth and innovation, as they may be more adaptable to change and more willing to embrace new technologies, helping to position Kenyan public universities at the forefront of innovation.

4.3.3 Period worked in the University

The study sought to examine the period the respondent had worked in the universities and results are presented in Table 4.4

Table 4.4: Period worked in the University

Period worked	Percent
Below 2 years	9.1
2 - 4 years	47.3
5- 7years	27.3
7- 9 years	16.4
Total	100

The research revealed that a total of 9.1% of the participants reported having a work experience of less than 2 years at the university. Additionally, 47.3% of the respondents indicated having worked at the university for a duration ranging from 2 to 4 years. Furthermore, 27.3% of the participants reported a work experience of 5 to 7 years, while 16.4% of the respondents stated having worked at the university for a period of 7 to 9 years. The data indicates that a significant proportion of participants have held positions at the university for a duration exceeding 2 years. This implies that a significant proportion of the personnel have been afforded sufficient duration to comprehend and engage with the existing internal control mechanisms. Due to their extensive experience, they possess the capability to offer valuable insights regarding the efficacy of the system in detecting and mitigating fraudulent activities. The data presented indicates that a significant proportion of employees possess both knowledge of the procedures and the ability to discern the strengths and weaknesses of the current controls. The feedback provided by individuals could play a crucial role in enhancing these systems, potentially uncovering their efficacy in deterring fraudulent activities or identifying any deficiencies that require attention. Hence, the findings suggest that directing attention towards this cohort of individuals could be crucial in assessing and improving internal mechanisms for the purpose of preventing and detecting fraudulent activities.

4.4 Descriptive Statistics

Descriptive statistics are numerical summaries that help to give an overview of a data set, making it easier to understand the main features of the information. The descriptive statistics are presented in sections per the objective.

4.4.1 Segregation of Duties

The first objective of the study was to determine the effect of segregation of duties on detection and prevention of fraud in public universities in Kenya. The descriptive statistics, which consist of the mean and standard deviation, are displayed in Table 4.5.

Table 4.5: Descriptive Statistics Segregation of Duties

Statements	Mean	Std. Deviation
There is sufficient authorization and approval of any transaction in the university.	2.14	0.98
Different individuals are responsible for authorizing or approving financial transactions in the university.	2.27	1.25
In the university, the division of tasks is set up well enough to make sure different people are responsible for recording financial transactions.	1.97	0.95
Reconciliation and control activities are performed by different individuals in the university.	1.54	0.50
Bank call backs, where necessary, are performed by separate individuals in the university.	1.46	0.53
The segregation of duties has effectively minimized the risk of fraud in the university	1.62	0.66
Average	1.83	0.81

The descriptive statistics from Table 4.5 provide a view of how the segregation of duties is perceived to affect fraud prevention and detection in Kenyan public universities. The statement "there is sufficient authorization and approval of any transaction in the university" has a mean score of 2.14 with a standard deviation of 0.98, indicating that most respondents disagree with the assertion that there's adequate authorization and approval for transactions. This raises concerns about the potential for fraud to occur.

Similarly, the mean score for "Different individuals are responsible for authorizing or approving financial transactions in the university" is 2.27 with a standard deviation of 1.25. Although slightly higher, this score also suggests that respondents don't believe

responsibilities are adequately separated, though opinions vary more widely on this issue. When it comes to the division of tasks for recording financial transactions, the statement "In the university, the division of tasks is set up well enough to make sure different people are responsible for recording financial transactions" received a slightly more favorable mean score of 1.97 and a standard deviation of 0.95. Despite being below the midpoint, this suggests that respondents feel somewhat better about how tasks are divided in this specific area.

The statements "Reconciliation and control activities are performed by different individuals in the university" and "Bank call backs, where necessary, are performed by separate individuals in the university" have low mean scores of 1.54 and 1.46, respectively, with low standard deviations. This indicates a stronger agreement among respondents that these specific activities are better segregated, suggesting some positive elements in the current system. The mean score for the statement "The segregation of duties has effectively minimized the risk of fraud in the university" is only 1.62 with a standard deviation of 0.66, suggesting that respondents generally don't feel that the segregation of duties has significantly reduced the risk of fraud. The average score for all statements is 1.83 with a standard deviation of 0.81, reinforcing the idea that there's room for improvement in implementing effective segregation of duties to prevent and detect fraud in Kenyan public universities.

The implications of these results are profound. While universities may have theoretically sound policies and controls to deter unauthorized transactions, the study suggests that the actual implementation of these measures needs to be reassessed and likely strengthened. It is not enough to have specific controls in place; the effectiveness of these controls must be regularly evaluated and updated as necessary. In light of these findings, an audit of these control mechanisms would be highly advisable to identify weaknesses and implement necessary improvements, thereby enhancing the effectiveness of fraud prevention strategies within the university.

4.4.2 Internal Audit

The second objective of the study aimed to establish the effect of internal audit functions on the detection and prevention of fraud in public universities in Kenya. The data presented in Table 4.6 gives us a comprehensive look into how internal audit measures are perceived and how effectively they are implemented.

Table 4.6: Descriptive Statistics of Internal Audit

Statements	Mean	Std. Deviation
Internal auditors in our university maintain independence and objectivity in their work.	1.92	1.05
Internal auditors provide valuable recommendations to improve controls and prevent fraud in our university.	2.33	1.43
The recommendations made by internal auditors are promptly reported and addressed by the university management.	2.13	0.91
The management do not interfere much with the operations of the internal auditors	1.89	0.76
Internal auditors engage in regular supervisory activities to monitor and assess the effectiveness of internal controls in our university.	1.79	0.81
The findings and recommendations of internal auditors are taken seriously and implemented by the university management.	1.98	1.06
Average	2.01	1.00

Starting with the statement "Internal auditors in our university maintain independence and objectivity in their work," a mean score of 1.92 and a standard deviation of 1.05 suggests that respondents generally believe that auditors are somewhat independent and objective, though there is some variation in opinions. This is crucial for ensuring the auditors can perform their roles without undue influence. The statement "Internal auditors provide valuable recommendations to improve controls and prevent fraud in our university" has a

mean score of 2.33 and a standard deviation of 1.43. This score is higher than for other statements, indicating that the auditors' recommendations are generally valued. However, the high standard deviation shows that opinions on this are quite varied.

When it comes to how these recommendations are treated, the statement "The recommendations made by internal auditors are promptly reported and addressed by the university management" has a mean of 2.13 and a standard deviation of 0.91. This suggests that there is a general belief that auditor recommendations are taken into account, although not as strongly as one might hope for effective fraud prevention. The lower mean score of 1.89 for the statement "The management do not interfere much with the operations of the internal auditors" along with a standard deviation of 0.76 indicates that respondents generally believe that management does not heavily interfere with auditor operations. This is a positive sign for auditor independence.

The statement "Internal auditors engage in regular supervisory activities to monitor and assess the effectiveness of internal controls in our university" has a mean score of 1.79 and a standard deviation of 0.81, which suggests that such supervisory activities are regularly performed and are perceived as effective by most respondents. However, the effectiveness of these activities could be questioned given the mean score of 1.98 for the statement "The findings and recommendations of internal auditors are taken seriously and implemented by the university management," accompanied by a standard deviation of 1.06. This indicates a moderate level of confidence that findings are acted upon, but also shows that there's room for improvement.

Overall, with an average score of 2.01 and a standard deviation of 1.00, the perception of internal audit functions seems somewhat positive but indicates areas that could benefit from improvement. The mean scores suggest that while internal auditors are generally valued and somewhat independent, their recommendations could be better implemented for effective fraud prevention and control. It is clear from these insights that there is a need

to tighten controls specifically around the reconciliation process. This could involve implementing automated systems that flag discrepancies for manual review, instituting periodic third-party audits of the reconciliation process, or requiring multiple layers of approval for reconciled statements. Given the high stakes involved, it would be prudent for the university to consider these and other measures as part of a broader review of its internal control and audit functions. This will ensure that the institution is better equipped to detect and prevent fraud, thereby safeguarding its financial and reputational integrity. In addition, addressing the low levels of internal auditor independence would require a multi-pronged approach that includes policy changes, personnel training, and perhaps even structural reorganization to ensure that the internal audit function can operate with the required autonomy and objectivity. Given the critical role of internal auditing in organizational governance, the identified gaps call for urgent attention to enhance the effectiveness of this key control mechanism.

4.4.3 Information and Communication Systems

The third objective of the study was to analyze the effect of information and communication systems on detection and prevention of fraud in public universities in Kenya. The descriptive statistics, which consist of the mean and standard deviation, are displayed in Table 4.7.

Table 4.7: Descriptive Statistics of Information and Communication Systems

Statements	Mean	Std. Deviation
Effective communication channels are established and utilized within our university to facilitate the flow of information.	2.40	1.31
The information and communication systems in our university promote active and timely communication among staff members.	2.02	1.24
The information and communication systems in our university enhance transparency and accountability.	2.06	1.22

The information and communication systems facilitate the detection of potential fraud incidents in a timely manner.	1.87	1.23
The management in the university support the adoption of the modern information and communication systems	2.03	1.28
The information and communication systems are supported by the management to reduce fraud.	2.08	1.25
Average	2.08	1.25

The data in Table 4.7 provides insights into how information and communication systems are perceived in Kenyan public universities, particularly with respect to their role in transparency, accountability, and fraud prevention. Starting with "Effective communication channels are established and utilized within our university to facilitate the flow of information," the mean score is 2.40 with a standard deviation of 1.31. This is the highest mean score among the statements, indicating a relatively positive view of the communication channels. However, the high standard deviation suggests that opinions are varied, meaning not everyone agrees that the channels are effective. Next, "The information and communication systems in our university promote active and timely communication among staff members" has a mean of 2.02 and a standard deviation of 1.24. This suggests that staff members generally find the systems somewhat effective for timely communication, but again, opinions are varied.

When it comes to transparency and accountability, the statement "The information and communication systems in our university enhance transparency and accountability" has a mean score of 2.06 with a standard deviation of 1.22. This indicates a somewhat positive but mixed perception about the role these systems play in making university operations more transparent and accountable. For fraud detection, the statement "The information and communication systems facilitate the detection of potential fraud incidents in a timely manner" has a lower mean of 1.87 but a high standard deviation of 1.23. This suggests that the systems are not widely perceived as being very effective in timely fraud detection.

Management's role is also evaluated. "The management in the university support the adoption of the modern information and communication systems" has a mean score of 2.03 with a standard deviation of 1.28. This suggests moderate support from management for adopting modern systems, although opinions vary. Similarly, the statement "The information and communication systems are supported by the management to reduce fraud" has a mean score of 2.08 with a standard deviation of 1.25, indicating a slightly better but still mixed perception of management's role in supporting these systems for fraud reduction. Overall, with an average mean score of 2.08 and a standard deviation of 1.25, it appears that while there is some confidence in the role of information and communication systems in these universities, there is also significant room for improvement. The systems are seen as somewhat effective in promoting communication and transparency but less so in detecting fraud in a timely manner.

4.4.4 Staff Rotation

The fourth objective of the study was to examine the effect of staff rotation on detection and prevention of fraud in public universities in Kenya. The descriptive statistics are presented in Table 4.8.

Table 4.8: Descriptive Statistics of Staff Rotation

Statement	Mean	Std. Deviation
Our university has a staff rotation policy in place to ensure the regular rotation of employees in key positions.	2.40	1.36
Job rotation programs are implemented in our university to provide employees with exposure to different roles and responsibilities.	2.10	1.28
The staff rotation policy in our university helps prevent the accumulation of too much power or control in the hands of a single individual.	2.03	1.09
Job rotation programs contribute to the development of employees' skills and knowledge across various areas within our university.	2.27	1.42

The frequency of staff rotation in our university is adequate to mitigate the risk of fraud and enhance internal control.	2.38	1.41
Staff rotation practices in our university promote accountability and reduce the likelihood of collusion among employees.	2.13	1.34
Average	2.22	1.32

The data in Table 4.8 provides an overview of perceptions regarding staff rotation policies and practices in Kenyan public universities, especially in relation to internal control and fraud mitigation. Starting with the statement "Our university has a staff rotation policy in place to ensure the regular rotation of employees in key positions," the mean score is 2.40 with a standard deviation of 1.36. This suggests that a majority of respondents believe there is a policy in place for staff rotation, but the high standard deviation indicates varied opinions on this. Regarding the implementation of job rotation, "Job rotation programs are implemented in our university to provide employees with exposure to different roles and responsibilities" has a mean score of 2.10 and a standard deviation of 1.28. This suggests that while job rotation programs are somewhat implemented, the opinion is not universally shared, as evidenced by the high standard deviation.

The effectiveness of these policies in preventing power concentration is addressed by the statement "The staff rotation policy in our university helps prevent the accumulation of too much power or control in the hands of a single individual." With a mean score of 2.03 and a standard deviation of 1.09, respondents appear to be somewhat in agreement that staff rotation aids in decentralizing power, although not strongly so. In terms of skill development, the statement "Job rotation programs contribute to the development of employees' skills and knowledge across various areas within our university" has a mean score of 2.27 with a high standard deviation of 1.42. This suggests that respondents generally believe rotation programs help in skill and knowledge development, but opinions vary significantly.

As for fraud prevention, "The frequency of staff rotation in our university is adequate to mitigate the risk of fraud and enhance internal control" has a mean score of 2.38 with a standard deviation of 1.41. This implies that there is some confidence in the frequency of staff rotation for fraud prevention, but opinions are diverse. Lastly, "Staff rotation practices in our university promote accountability and reduce the likelihood of collusion among employees" has a mean of 2.13 and a standard deviation of 1.34. This suggests a moderate belief that staff rotation practices do indeed promote accountability and deter collusion. Overall, the average mean score of 2.22 with a standard deviation of 1.32 indicates that there is a moderate level of confidence in the staff rotation policies and practices in place. However, the consistently high standard deviations across all statements suggest that these perceptions are quite varied, pointing to areas where improvement could be beneficial.

The implication of this finding is that there is a pressing need for these educational institutions to revisit their internal control systems and integrate more rigorous staff rotation programs. Such programs should not merely be superficial but need to be carefully planned to ensure that they are robust enough to deter fraud and other unethical behaviors. By not leveraging staff rotation effectively, universities are missing out on a critical layer of defense against fraud. Therefore, policy adjustments coupled with awareness programs could serve as immediate steps towards fortifying internal control systems in these universities. This should be part of a broader initiative to revamp fraud detection and prevention frameworks in public universities in Kenya, thereby safeguarding them from financial losses and reputational damage that come along with fraudulent activities.

4.4.5 Government Intervention

The last objective of the study was to determine the moderating effect of government intervention on the relationship between internal control and detection and prevention of fraud in public universities in Kenya. The descriptive statistics are presented in Table 4.9

Table 4.9: Descriptive Statistics of Government Intervention

Statements	Mean	Std. Deviation
Government regulations play a significant role in shaping internal control practices within our university.	2.62	1.17
The government has implemented policies that specifically address fraud detection and prevention in public universities.	3.05	1.28
Government regulations provide clear guidelines and standards for establishing and maintaining effective internal controls in our university.	2.06	0.64
The government's involvement in fraud prevention efforts enhances the overall effectiveness of internal control systems in our university.	1.68	0.47
The government's policies and regulations promote transparency, accountability, and ethical behavior in public universities.	1.86	1.00
Government intervention positively influences the detection and prevention of fraud by providing necessary resources and support to public universities.	1.75	0.90
Average	2.17	0.91

The last objective of the study sought to understand the moderating effect of government intervention on the relationship between internal control systems and the detection and prevention of fraud in public universities in Kenya. The data in Table 4.9 sheds light on perceptions surrounding the role of government intervention in internal control and fraud prevention within Kenyan public universities. Starting with the statement "Government regulations play a significant role in shaping internal control practices within our university," the mean score is 2.62 with a standard deviation of 1.17. This indicates that there is a fairly strong belief among respondents that government regulations do influence internal controls, though there's some variation in opinion. In terms of specific policies, the statement "The government has implemented policies that specifically address fraud detection and prevention in public universities" scores the highest mean of 3.05 with a

standard deviation of 1.28. This suggests that most respondents believe the government has taken concrete steps to address fraud, although opinions are quite varied.

However, the sentiment changes when it comes to the clarity of these regulations. The statement "Government regulations provide clear guidelines and standards for establishing and maintaining effective internal controls in our university" has a mean score of just 2.06 with a relatively low standard deviation of 0.64. This shows that respondents are less convinced about the clarity and effectiveness of these guidelines. Similarly, the effectiveness of government involvement in fraud prevention is also questioned. The statement "The government's involvement in fraud prevention efforts enhances the overall effectiveness of internal control systems in our university" has a mean score of only 1.68 and a very low standard deviation of 0.47, indicating that respondents generally do not believe that government involvement has significantly improved internal controls. When it comes to promoting good practices, "The government's policies and regulations promote transparency, accountability, and ethical behavior in public universities" has a mean of 1.86 and a standard deviation of 1.00. This suggests a lukewarm belief that government policies effectively promote these values.

Lastly, "Government intervention positively influences the detection and prevention of fraud by providing necessary resources and support to public universities" has a mean score of 1.75 and a standard deviation of 0.90. This indicates a moderate level of confidence that government support contributes to fraud detection and prevention. Overall, the average mean score of 2.17 with a standard deviation of 0.91 suggests a mixed perception of the role of government in this context. While there seems to be a belief that the government is making some efforts, there is less confidence in the effectiveness of those efforts in shaping good practices and preventing fraud.

4.4.6 Detection and Prevention of Fraud

The dependent objective of the study was detection and prevention of fraud in public universities in Kenya. The data presented in Table 4.10 offer a multifaceted glimpse into the state of fraud detection and prevention within public universities in Kenya. These findings warrant an in-depth examination to elucidate the complexities that underpin the effectiveness of fraud detection and prevention in these institutions.

Table 4.10: Descriptive Statistics of Detection and prevention of fraud

Statements	Mean	Std. Deviation
Our university actively probes suspect deals or transactions to identify potentially fraudulent activities.	2.06	1.18
The speed at which our university detects unscrupulous activities is commendable.	2.17	1.21
Employees in our university are skilled at recognizing potential avenues for fraud.	2.13	1.14
Our university has effective mechanisms in place to investigate and respond to suspected fraudulent activities.	1.60	0.81
Adequate resources and technologies are available to support the detection and prevention of fraud in our university.	2.41	1.10
Fraud prevention and detection efforts are consistently communicated and reinforced to all employees in our university.	2.19	1.19
Average	2.09	1.11

The descriptive statistics in Table 4.10 show that the statement " Our university actively probes suspect deals or transactions to identify potentially fraudulent activities" has a mean of 2.06 and a standard deviation of 1.18. This suggests that there is some level of activity in probing suspicious deals, although opinions vary considerably. In terms of speed of detection, the statement "The speed at which our university detects unscrupulous activities is commendable" has a mean score of 2.17 and a standard deviation of 1.21. This indicates a moderate level of satisfaction with the speed of detection, but again, opinions are quite

varied. Employee skill in recognizing fraud is also examined. "Employees in our university are skilled at recognizing potential avenues for fraud" has a mean score of 2.13 and a standard deviation of 1.14, indicating that there is some belief that employees are capable in this regard, although the high standard deviation suggests varied opinions.

However, when it comes to mechanisms for investigation and response, the statement "Our university has effective mechanisms in place to investigate and respond to suspected fraudulent activities" scores a mean of just 1.60 with a lower standard deviation of 0.81. This suggests a less favorable view of the effectiveness of these mechanisms. Regarding resources, "Adequate resources and technologies are available to support the detection and prevention of fraud in our university" has a mean score of 2.41 and a standard deviation of 1.10. This is the highest mean among the statements, suggesting that respondents feel relatively confident about the availability of resources and technologies, although there is some variance in opinion.

Lastly, communication is considered. The statement "Fraud prevention and detection efforts are consistently communicated and reinforced to all employees in our university" has a mean of 2.19 and a standard deviation of 1.19, indicating a moderate level of confidence that such efforts are well-communicated. Overall, with an average mean score of 2.09 and a standard deviation of 1.11, the data suggests that while there are some positive aspects in the efforts for fraud detection and prevention, there are also significant areas where improvement is needed. The variance in opinions across all statements indicates that there is no consensus on the effectiveness of these efforts.

4.5 Diagnostics Tests

The study conducted normality tests and multicollinearity to ensure the requirements for regression are met.

4.5.1 Normality Tests

The study employed the Kolmogorov–Smirnov test to examine whether the data is normal. The normality test was used to determine if the sample data was collected from a population with a normal distribution and the results are presented in Table 4.11

Table 4.11: Normality Test

Variables	Kolmogorov–Smirnov test.		
	Statistic	df	Sig.
Segregation of Duties	0.695	63	0.104
Internal Audit	0.822	63	0.090
Information and Communication Systems	0.75	63	0.208
Staff Rotation	0.634	63	0.894
Government Intervention	0.678	63	0.796
Detection and prevention of fraud	0.683	63	0.060

The results from Table 4.11 show that the data was normally distributed as the respective p values for all variables were greater than 0.05. Therefore, we can conclude that the data is normally distributed.

4.5.2 Multicollinearity Test

The multicollinearity test was done using the Variance Inflation Factor (VIF) and the results are presented in Table 4.12

Table 4.12: Multicollinearity Test

Variables	VIF
Segregation of Duties	2.18
Internal Audit	3.81
Information and Communication Systems	2.02
Staff Rotation	1.36
Government Intervention	5.15

The results in Table 4.12 indicated the absence of multicollinearity since the VIF of all the variables were less than 10. According to Katrutsa and Strijov (2017), VIF values less than 10 indicate a lack of multicollinearity among the variables.

4.6 Inferential Statistics

The inferential statistics included the correlation analysis and regression analysis. Each of the sections is discussed in depth

4.6.1 Correlation Analysis

The correlation analysis presented in Table 4.13 determines the association between independent and dependent variables. These association can be positive, meaning both variables move in the same direction; negative, meaning the variables move in opposite directions; or non-existent, indicating no discernible association between the variables.

Table 4.13: Correlation Analysis

		Detection and Prevention of Fraud	Segregation of Duties	Internal Audit	Information and Communication Systems	Staff Rotation	Government intervention
Detection and Prevention of Fraud	Pearson Correlati on	1.000					
	Sig. (2-tailed)						
Segregation of Duties	Pearson Correlati on	.695**	1.000				
	Sig. (2- tailed)	0.000					
Internal Audit	Pearson Correlati on	.806**	.638**	1.000			
	Sig. (2- tailed)	0.000	0.000				
Information and Communication Systems	Pearson Correlati on	.657**	.517**	.530**	1.000		
	Sig. (2- tailed)	0.000	0.000	0.000			
Staff Rotation	Pearson Correlati on	.499**	.319*	.362**	.404**	1.000	
	Sig. (2- tailed)	0.000	0.018	0.007	0.022		

Government intervention	Pearson Correlation Sig. (2-tailed)	.632** 0.000	.443** 0.001	.496** 0.000	.623** 0.000	.481** 0.000	1.000
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The results from table 4.13 show a positive and significant association between segregation of duties and detection and prevention of fraud ($r=0.695$, $p=0.000$). Similarly, results revealed a positive and significant association between internal audit and detection and prevention of fraud ($r=0.806$, $p=0.000$). The results also indicated a positive and significant association between information and communication systems and detection and prevention of fraud ($r=0.657$, $p=0.000$). Further, results showed a positive and significant relationship between staff rotation and detection and prevention of fraud ($r=0.499$, $p=0.000$). Finally, results showed a positive and significant association between government intervention and detection and prevention of fraud ($r=0.632$, $p=0.000$).

4.6.2 Regression Analysis Without Moderation Effect

Regression analysis examines the relationship between variables. It is a set of statistical methods used to estimate relationships between a dependent variable and one or more independent variables. The components of the regression analysis include the model fitness, analysis of variance and regression coefficients. The model fitness results are presented in Table 4.14

Table 4.14: Model Fitness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.879a	0.772	0.754	0.1328848

The results presented in Table 4.14 indicate that segregation of duties, internal audit, information and communication systems and staff rotation are adequate variables in determining detection and prevention of fraud in public universities in Kenya. This is supported by the coefficient of determination also known as the R square, of 77.2%. This means that segregation of duties, internal audit, information and communication systems and staff rotation explain 77.2% of the variations in the detection and prevention of fraud

in public universities in Kenya. Table 4.15 provides the results on the analysis of variance (ANOVA).

Table 4.15: Analysis of Variance (ANOVA).

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.998	4	0.749	42.443	.000b
	Residual	0.883	50	0.018		
	Total	3.881	54			

The results in Table 4.15 indicate that the overall model is statistically significant. The results signify that segregation of duties, internal audit, information and communication systems and staff rotation are good predictors of detection and prevention of fraud in public universities in Kenya. This is supported by an F statistic of 42.443 and the reported p-value (0.000), which is less than the conventional probability of 0.05 significance level. Further, the study sought to examine the regression coefficients and the study results are presented in Table 4.16

Table 4.16: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.150	0.197		0.760	0.451
	Segregation of Duties	0.204	0.086	0.216	2.366	0.022
	Internal Audit	0.486	0.091	0.494	5.314	0.000
	Information and Communication Systems	0.228	0.089	0.218	2.555	0.014
	Staff Rotation	0.147	0.068	0.163	2.169	0.035

The regression of coefficients results in table 4.16 shows that segregation of duties is positively and significantly related to detection and prevention of fraud ($\beta=0.204$, $p=0.022$). This signifies that an increase in segregation of duties by one unit increases detection and prevention of fraud in public universities in Kenya by 0.204 units, holding other factors constant. In addition, internal audit is positively and significantly related to detection and prevention of fraud ($\beta=0.486$, $p=0.000$). This implies that an increase in internal audit by one unit increases detection and prevention of fraud in public universities in Kenya by 0.486 units, holding other factors constant. Moreover, information and communication systems are positively and significantly related to detection and prevention of fraud ($\beta=0.228$, $p=0.014$). This implies that an increase in information and communication systems by one unit increases detection and prevention of fraud in public universities in Kenya by 0.228 units, holding other factors constant. Further, staff rotation is positively and significantly related to detection and prevention of fraud ($\beta=0.147$, $p=0.035$). This implies that an increase in staff rotation by one unit increases detection and prevention of fraud in public universities in Kenya by 0.147 units, holding other factors constant.

The study results concur with the findings of Siyad and Omar's 2020 study that focused on commercial banks and found that segregation of duties, among other internal controls, positively impacted fraud detection. Similarly, Musila's 2018 research in Kenya's public higher education institutions confirmed this positive correlation. The research also broadened the scope to include other internal controls such as periodic fraud audits and policy compliance. Drogalas et al. in 2017 found a strong positive link between audit efficiency and the identification of fraudulent activity in companies listed on the Athens Stock Exchange. This aligns with findings from Bulimu and Kalui's 2021 study, which demonstrated that internal audit methods in Kenyan institutions significantly impacted the reduction of errors and misstatements in financial reports. While these studies were conducted in different settings, their outcomes suggest that robust internal auditing is universally beneficial for detecting and preventing fraud.

Moreover, Sukirman et al.'s 2018 study showed that IT systems had a direct effect on fraud prevention at Universitas Negeri Semarang in Indonesia. Similarly, Hussaini and Bashir in 2021 found that quality of information and communication efficacy had a substantial impact on fraud detection in Nigerian banks. Despite different contexts and sectors, the common thread in these studies is that effective information and communication systems are vital for fraud prevention. Othman et al. in 2015 researched the Malaysian government and found that staff rotation was effective in fraud detection. Agathee and Ramen's 2017 study in Mauritius also indicated that methods like staff rotation and cash inspections were commonly employed in banks for fraud prevention.

4.6.3 Moderating Effect of Government Intervention

The last objective of the study was to determine the moderating effect of government intervention on the relationship between internal control and detection and prevention of fraud in public universities in Kenya. The coefficient of determination (model fitness) with a moderating effect of government intervention is summarized in Table 4.17

Table 4.17: Model Fitness (Government intervention)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.882a	0.864	0.861	0.0547685

Results from Table 4.17 show that coefficient of determination (R squared) of 0.864 (86.4%). The coefficient of determination, also known as the R square, before the moderating effect of the government intervention was 0.772 (77.2%), but after the moderation, it increased to 0.864 (86.4%). This implies that government intervention has a moderating effect on the relationship between internal control and detection and prevention of fraud in public universities in Kenya. The study results of the ANOVA with a moderating effect of government intervention are summarized in Table 4.15

Table 4.18: ANOVA (Government intervention)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.605	4	1.151	383.83	.000b
	Residual	0.174	58	0.003		
	Total	4.779	62			

Results in Table 4.18 provide the analysis of the variance (ANOVA) results. The results indicate that the overall model is statistically significant. Additionally, the results imply that the independent variables are good predictors of detection and prevention of fraud. This is supported by an F statistic of 383.83 and the reported p-value (0.000), which is less than the conventional probability of 0.05 significance level. The regression coefficients with a moderating effect of government intervention are summarized in Table 4.19

Table 4.19: Regression Coefficients (Government intervention)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.031	0.035		29.863	0.000
	Segregation of Duties* Government intervention	0.023	0.015	0.107	1.574	0.012
	Internal Audit* Government intervention	0.105	0.015	0.494	6.940	0.000
	Information and Communication Systems* Government intervention	0.022	0.017	0.321	4.277	0.001
	Staff Rotation* Government intervention	0.022	0.010	0.098	2.131	0.037

The regression of coefficients results in table 4.19 shows that the interaction between segregation of duties and government intervention is positively and significantly related to detection and prevention of fraud ($\beta=0.023$, $p=0.012$). The study showed that interaction between internal audit and government intervention is positively and significantly related to detection and prevention of fraud ($\beta=0.105$, $p=0.000$). Moreover, the study results showed that interaction between information and communication systems and government intervention is positively and significantly related to detection and prevention of fraud

($\beta=0.043$, $p=0.007$). Finally, the study found that interaction between staff rotation and government intervention is positively and significantly related to detection and prevention of fraud ($\beta=0.022$, $p=0.037$). Hence, the p values under the interaction terms were found to be less than 0.05. Thus, the null hypothesis is rejected. Therefore, government intervention has a significant moderating effect on the relationship between internal control and detection and prevention of fraud in public universities in Kenya.

The study results are in agreement with the finding of Subaida and Mahbubah (2020) who posited that internal regulation is vital in averting and discovering fraud and ensuring transactions adhere to the internal directives and guidelines. Additionally, Agbenyo, Jiang, and Cobblah (2018) pointed out the significance of internal regulation in warding off fraud in public institutions within Ghana. Moreover, Musila (2018) found a direct correlation between high levels of policy adherence and high levels of fraud detection and prevention, thus establishing the efficacy of internal regulations in combating organizational fraud. Furthermore, Lindquist and Huse (2017) suggested that government institutions' fiscal responsibility is positively affected by the adopted internal control methods, such as the incorporation of modern technology, regular audits, and frequent employee rotations. Adding to this, Madi, Joseph, Rahmat, Janang, and Omar (2021) asserted that one of the effective strategies for limiting fraud within public universities is promoting disclosure related to fraud prevention.

CHAPTER FIVE: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

This chapter encompasses a summary of the key findings that highlighted the significant relationships between internal controls and fraud detection and prevention in Kenyan public universities. The conclusions drawn from these findings emphasize the importance of robust internal controls as effective tools in combating fraud. Furthermore, the chapter discusses the recommendations and limitations of the study. Lastly, it provides suggestions for future research avenues to deepen our understanding of fraud prevention in different contexts and industries.

5.2 Summary of the findings

The study sought to ascertain the impact of internal controls on the detection and prevention of fraud in Kenyan public universities. The specific objectives of the study were to examine the effect of segregation of duties, internal audit, information and communication systems, and staff rotation on the detection and prevention of fraud in public universities in Kenya, as well as to determine the moderating effect of government intervention on these relationships. The correlation results discovered a positive and statistically significant association between segregation of duties and the detection and prevention of fraud ($r=0.695$, $p=0.000$). Similarly, the findings revealed a positive and significant association between internal audit and fraud detection and prevention ($r=0.806$, $p=0.000$). The findings also revealed a positive and significant association between information and communication systems and fraud detection and prevention ($r=0.657$, $p=0.000$). Furthermore, the findings revealed a positive and significant association between staff rotation and fraud detection and prevention ($r=0.499$, $p=0.000$). Finally, the findings revealed a positive and statistically significant association between government intervention and fraud detection and prevention ($r=0.632$, $p=0.000$).

According to the regression results, segregation of duties is positively and significantly related to fraud detection and prevention ($\beta=0.204$, $p=0.022$). This means that increasing segregation of duties by one unit increases detection and prevention of fraud in Kenyan public universities by 0.204 units while other factors remain constant. Furthermore, internal audit is positively and significantly related to fraud detection and prevention ($\beta=0.486$, $p=0.000$). This means that increasing internal audit by one unit increases detection and prevention of fraud in Kenyan public universities by 0.486 units while other factors remain constant. Furthermore, information and communication systems are positively and significantly related to detection and prevention of fraud ($\beta=0.228$, $p=0.014$), implying that increasing information and communication systems by one unit increases detection and prevention of fraud in Kenyan public universities by 0.228 units while other factors remain constant. Furthermore, staff rotation is related to the detection and prevention of fraud ($\beta=0.147$, $p=0.000$). This means that increasing staff rotation by one unit increases detection and prevention of fraud in Kenyan public universities by 0.147 units while other factors remain constant.

The study findings are consistent with those of Siyad and Omar (2020), who discovered that segregation of duties is an effective internal control measure for detecting and preventing fraud in commercial banks. This lends credence to the current study's claim that segregation of duties contributes significantly to fraud detection and prevention in Kenyan public universities. Furthermore, the findings are consistent with Musila's 2018 research, which focused on Kenya's public higher education institutions and confirmed a positive correlation between internal controls, such as periodic fraud audits and policy compliance, and fraud detection.

Drogalas et al. (2017) discovered a positive relationship between audit efficiency and the detection of fraudulent activity in companies listed on the Athens Stock Exchange. This is consistent with the study conducted by Bulimu and Kalui in 2021, which concluded that internal audit methods are effective in reducing errors and misstatements in financial reports in Kenyan institutions. Furthermore, the study is consistent with international

perspectives such as those provided by Sukirman et al. (2018) and Hussaini and Bashir (2021), who highlighted the role of IT systems in Indonesian universities and communication efficacy in Nigerian banks for fraud detection and prevention, respectively. Furthermore, the work of Othman et al. (2015) and Agathee and Ramen (2017) confirms that staff rotation is an effective method of fraud prevention used in a variety of sectors ranging from the Malaysian government to banks in Mauritius.

The findings revealed that the interaction between segregation of duties and government intervention is related to the detection and prevention of fraud ($\beta=0.023$, $p=0.012$). The interaction between internal audit and government intervention was found to be positively and significantly related to fraud detection and prevention ($\beta=0.105$, $p=0.000$). Furthermore, the study found that interaction between information and communication systems and government intervention is positively and significantly related to fraud detection and prevention ($\beta=0.043$, $p=0.007$). Finally, the study discovered that the interaction between staff rotation and government intervention is related to the detection and prevention of fraud ($\beta=0.022$, $p=0.037$). As a result, the p values for the interaction terms were less than 0.05. As a result, the null hypothesis is rejected. As a result, government intervention in Kenyan public universities has a significant moderating effect on the relationship between internal control and detection and prevention of fraud.

The study findings agree with Subaida and Mahbubah's (2020) conclusion that internal regulation is critical in preventing and detecting fraud and ensuring transactions follow internal directives and guidelines. Furthermore, Agbenyo, Jiang, and Cobblah (2018) emphasized the importance of internal regulation in preventing fraud in Ghanaian public institutions. Furthermore, Musila (2018) discovered a direct correlation between high levels of policy adherence and high levels of fraud detection and prevention, demonstrating the effectiveness of internal regulations in combating organizational fraud. Furthermore, Lindquist and Huse (2017) proposed that internal control methods used by government institutions, such as the incorporation of modern technology, regular audits, and frequent employee rotations, have a positive impact on fiscal responsibility. Furthermore, Madi,

Joseph, Rahmat, Janang, and Omar (2021) asserted that promoting disclosure related to fraud prevention is one of the effective strategies for limiting fraud within public universities.

5.3 Conclusion

Based on the first objective, which aimed to determine the effect of segregation of duties on the detection and prevention of fraud in public universities in Kenya, it is concluded that there exists a statistically significant relationship between the segregation of duties and the capacity to detect and prevent fraud within Kenyan public universities. In essence, when responsibilities are distinctly allocated and assigned within these academic institutions, a noticeable enhancement is observed in their capability to uncover and thwart fraudulent activities. This deduction is substantiated by the results of the regression analysis, which distinctly indicate that an elevation in the level of segregation of duties corresponds to a significant elevation in the effectiveness of fraud detection and prevention mechanisms within these institutions. In essence, this underscores the paramount importance of well-defined roles and responsibilities as a potent deterrent against fraudulent activities in Kenyan public universities.

Based on the second objective, which sought to establish the effect of internal audit on the detection and prevention of fraud in public universities in Kenya, it is concluded that internal audit plays an indispensable role in the realms of fraud detection and prevention within Kenyan public universities. The affirmative and substantial correlation between internal audit and the effectiveness of fraud detection and prevention, as resolutely evidenced by the results of the regression analysis, unequivocally signifies that amplifying the intensity and thoroughness of internal audit procedures within these institutions corresponds to a profound enhancement in their proficiency in identifying and thwarting fraudulent activities. This unequivocal verdict underscores the pivotal significance of periodic and robust internal audits as an integral component of a holistic strategy aimed at preventing fraud.

Based on the third objective, which was to analyze the effect of information and communication systems on the detection and prevention of fraud in public universities in Kenya, it is concluded there is a statistical significant relationship between information and communication systems and fraud detection and prevention in Kenyan public universities. In essence, enhancing and modernizing information and communication systems within these institutions can decisively and positively contribute to their capacity to uncover and prevent fraudulent activities. The results derived from the regression analysis wholeheartedly buttress this definitive conclusion by delineating that augmenting the quality and sophistication of information and communication systems undeniably results in a corresponding augmentation of the institutions' capabilities in terms of fraud detection and prevention. In essence, this underscores the pivotal role played by state-of-the-art communication infrastructure as a fundamental facet of a comprehensive fraud prevention strategy.

Further elaborating on the fourth objective, which was to examine the effect of staff rotation on the detection and prevention of fraud in public universities in Kenya, the study conclude that staff rotation is a critical factor related to fraud detection and prevention within academic institutions. This finding has significant implications for university administrators and policymakers, highlighting the importance of implementing systematic staff rotation policies and practices as a proactive measure to deter fraudulent activities. By periodically reassigning responsibilities and roles, institutions can reduce the risk of collusion and foster a culture of accountability and transparency. Additionally, this rotation can help uncover irregularities or discrepancies that might otherwise remain hidden when individuals occupy the same positions for extended periods. Consequently, the study's insights advocate for a strategic approach to staff rotation as a valuable component of a comprehensive fraud prevention strategy in Kenyan public universities.

Lastly, based on fifth objective, which aimed to determine the moderating effect of government intervention on the relationship between internal control and the detection and prevention of fraud in public universities in Kenya, it is concluded that government

intervention exerts a significant moderating influence on the relationship between internal control measures and fraud detection and prevention within Kenyan public universities. The interaction terms revealed through the regression analysis decisively substantiate this assertion: when government intervention is actively in place, the impact of internal control measures becomes even more accentuated in the pursuit of detecting and preventing fraud. This unequivocally highlights the indispensable role played by governmental oversight and support in fortifying the collective efforts aimed at fraud prevention within these institutions.

5.4 Recommendations

Based on the first objective, which aimed to determine the effect of segregation of duties on fraud detection and prevention in public universities in Kenya, it is recommended that public universities should prioritize the enhancement of their segregation of duties. Specifically, universities should establish clear and well-defined roles and responsibilities for their staff, ensuring that individuals are assigned tasks that are complementary but not overlapping. Regular training programs should be conducted to educate employees about the importance of adhering to their designated roles, and the institution should enforce these controls consistently across all departments. This proactive approach to segregation of duties can significantly reduce the risk of fraudulent activities within the university.

Building on the second objective, which sought to establish the effect of internal audit on fraud detection and prevention in public universities in Kenya, it is recommended that universities should invest in and strengthen their internal audit functions. This investment includes recruiting qualified internal auditors who possess the necessary expertise to conduct thorough and effective audits. Additionally, universities should allocate resources for training and provide auditors with the required tools and technology to carry out their responsibilities efficiently. Regular and comprehensive internal audits should be conducted to detect and prevent fraud effectively, with a particular focus on financial transactions and processes.

Based on the third objective, which aimed to analyze the effect of information and communication systems on fraud detection and prevention in public universities in Kenya, it is recommended that universities should prioritize the upgrading and modernization of their information and communication systems. This involves adopting advanced software and technology solutions that enhance the monitoring and identification of suspicious activities. Furthermore, universities should ensure that these systems receive regular updates and are equipped with robust cybersecurity measures to safeguard sensitive data and information. Strengthening information and communication systems is essential for proactive fraud prevention and early detection.

Based on the fourth objective, which examined the effect of staff rotation on fraud detection and prevention in public universities in Kenya, it is recommended that universities should continue to implement and enforce staff rotation policies, especially in critical financial and administrative positions. These policies should be well-documented and consistently applied across all departments. By rotating staff, universities can mitigate the risk of collusion and fraudulent activities. Clear guidelines for staff rotation should be established to ensure fairness and transparency in the process.

Regarding the fifth objective, which aimed to determine the moderating effect of government intervention on the relationship between internal control and fraud detection and prevention in public universities in Kenya, it is recommended that government bodies responsible for overseeing public universities should actively collaborate with these institutions to promote and enforce internal controls. Government intervention plays a crucial role in ensuring that universities maintain high standards of fraud prevention. Collaboration should include providing guidance, sharing best practices, and conducting periodic reviews to assess compliance with internal control measures.

5.5 Limitations of the Study

The limitations of this study were that some respondents were hesitant to provide information due to fear of potential repercussions, which could have affected the comprehensiveness of the data collected. This reluctance to disclose certain details related to fraud and internal controls may have resulted from concerns about job security, confidentiality, or professional relationships within the university setting. While every effort was made to ensure the anonymity and confidentiality of participants, the inherent sensitivity of the topic may have influenced the depth of information shared by some respondents.

5.6 Recommendations for Further Study

Recommendations for further study include conducting similar research in different sectors or industries to compare the effectiveness of internal controls in fraud detection and prevention. Additionally, exploring the role of cultural factors and organizational culture in influencing fraud-related behaviors and internal control effectiveness could provide valuable insights. Further research could also investigate the impact of specific fraud prevention training programs for employees within public universities. Lastly, longitudinal studies tracking the evolution of fraud patterns and the effectiveness of internal controls over time could contribute to a more comprehensive understanding of fraud prevention in academic institutions.

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APPENDICES

Appendix I: Cover Letter

Dear Respondent,

I am conducting a research study titled "Effect of Internal Controls on Detection and Prevention of Fraud in Public Universities in Kenya". Kindly facilitate me in the study by filling the data collection questionnaire. The data collected is strictly for academic purposes only and will be treated with utmost confidentiality. Your knowledge and input are highly valuable and will contribute to the success of this research.

Yours sincerely,

Mathew Moikan Takai

Appendix II: Questionnaire for Middle Management

Section 1: Demographic Information

This section presents the demographic information of the respondents.

statement	Category	Please tick where applicable
What is your gender	Male	
	Female	
What is your age range	Below 25 years	
	25 - 34 years	
	35 - 44 years	
	45 - 54 years	
	55 years and above	
How long have you worked in the University	Below 2 years	
	2 - 4 years	
	5- 7years	
	7- 9 years	
	Over 10 years	

Section 2: Segregation of Duties

The questionnaire includes statements regarding the effect of segregation of duties on detection and prevention of fraud in public universities in Kenya. Kindly fill appropriately, where 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree.

Statements	1	2	3	4	5
1. There is sufficient authorization and approval of any transaction in the university.					
2. Different individuals are responsible for authorizing or approving financial transactions in the university.					
3. In the university, the division of tasks is set up well enough to make sure different people are responsible for recording financial transactions.					
4. Reconciliation and control activities are performed by different individuals in the university.					
5. Bank call backs, where necessary, are performed by separate individuals in the university.					
6. The segregation of duties have effectively minimized the risk of fraud in the university					

To what extent does segregation of duties affect detection and prevention of fraud in public universities in Kenya? Kindly explain.....

Section 3: Internal Audit

Statements	1	2	3	4	5
Internal auditors in our university maintain independence and objectivity in their work.					
Internal auditors provide valuable recommendations to improve controls and prevent fraud in our university.					
The recommendations made by internal auditors are promptly reported and addressed by the university management.					
The management do not interfere much with the operations of the internal auditors					
Internal auditors engage in regular supervisory activities to monitor and assess the effectiveness of internal controls in our university.					
The findings and recommendations of internal auditors are taken seriously and implemented by the university management.					

To what extent does internal audit affect detection and prevention of fraud in public universities in Kenya? Kindly explain.....

Section 4: Information and Communication Systems

Statements	1	2	3	4	5
1. Effective communication channels are established and utilized within our university to facilitate the flow of information.					
2. The information and communication systems in our university promote active and timely communication among staff members.					
3. The information and communication systems in our university enhance transparency and accountability.					
4. The information and communication systems facilitate the detection of potential fraud incidents in a timely manner.					
5. The management in the university support the adoption of the modern information and communication systems					
6. The information and communication systems are supported by the management to reduce fraud.					

To what extent does information and communication systems affect detection and prevention of fraud in public universities in Kenya? Kindly explain.....

Section 5: Staff Rotation

Statements	1	2	3	4	5
Our university has a staff rotation policy in place to ensure the regular rotation of employees in key positions.					
Job rotation programs are implemented in our university to provide employees with exposure to different roles and responsibilities.					
The staff rotation policy in our university helps prevent the accumulation of too much power or control in the hands of a single individual.					
Job rotation programs contribute to the development of employees' skills and knowledge across various areas within our university.					
The frequency of staff rotation in our university is adequate to mitigate the risk of fraud and enhance internal control.					
Staff rotation practices in our university promote accountability and reduce the likelihood of collusion among employees.					

To what extent does staff rotation affect detection and prevention of fraud in public universities in Kenya? Kindly explain.....

Section 6: Government Intervention

Statements	1	2	3	4	5
Government regulations play a significant role in shaping internal control practices within our university.					
The government has implemented policies that specifically address fraud detection and prevention in public universities.					
Government regulations provide clear guidelines and standards for establishing and maintaining effective internal controls in our university.					
The government's involvement in fraud prevention efforts enhances the overall effectiveness of internal control systems in our university.					
The government's policies and regulations promote transparency, accountability, and ethical behavior in public universities.					
Government intervention positively influences the detection and prevention of fraud by providing necessary resources and support to public universities.					

To what extent does government intervention moderate the relationship between internal control and detection and prevention of fraud in public universities in Kenya? Kindly explain.....

Section 7: Detection and Prevention of Fraud

Statements	1	2	3	4	5
1. Our university actively probes suspect deals or transactions to identify potentially fraudulent activities.					
2. The speed at which our university detects unscrupulous activities is commendable.					
3. Employees in our university are skilled at recognizing potential avenues for fraud.					
4. Our university has effective mechanisms in place to investigate and respond to suspected fraudulent activities.					
5. Adequate resources and technologies are available to support the detection and prevention of fraud in our university.					
6. Fraud prevention and detection efforts are consistently communicated and reinforced to all employees in our university.					

How is the extent of detection and prevention of fraud in public universities in Kenya? Kindly explain.....

Appendix III: List of Public Chartered Universities in Kenya

Ahipe University College
Chuka University
Co-operative University of Kenya
Dedan Kimathi University of Technology
Egerton University
Garissa University
Jaramogi Oginga Odinga University of Science and Technology
Jomo Kenyatta University of Agriculture and Technology
Kaimosi Friends University College
Karatina University
Kenyatta University
Kibabii University
Kirinyaga University
Kisii University
Laikipia University
Maasai Mara University
Machakos University
Maseno University
Masinde Muliro University of Science and Technology
Meru University of Science and Technology
Moi University
Multimedia University of Kenya
Murang'a University of Technology
Pwani University
Rongo University
South Eastern Kenya University
Taita Taveta University
Technical University of Kenya
Technical University of Mombasa
Tom Mboya University College
University Of Eldoret
University of Embu
University of Kabianga
University of Nairobi

Source: Commission for University Education (CUE, 2023)