PUBLIC PROCUREMENT PRACTICES AND PUBLIC PROCUREMENT PRICE VARIANCE IN TECHNICAL AND VOCATIONAL EDUCATION TRAINING INSTITUTIONS IN NAIROBI METROPOLITAN AREA

BY

HOSEA KIPTOO LANG'AT

A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER IN SCIENCE IN PROCUREMENT AND SUPPLIES MANAGEMENT OF

MOUNT KENYA UNIVERSITY

JULY, 2025

DECLARATION AND APPROVAL

This research project is my original work and has not been presented for a degree or any other award in any other University.

Signed :  Date: 5TH JULY, 2025.

Hosea Kiptoo Lang'at.

MPSM/2022/34715

Mount Kenya University

I confirm that this research project was prepared by the candidate under my supervision.

Signed:  Date: 5TH JULY,2025.

Dr. Kamoni Peter.

School of Business and Economics

Mount Kenya University

DEDICATION

I dedicate this research project to my Family for their unending support and prayers.

ACKNOWLEDGEMENT

I acknowledge the guidance and support accorded to me by my supervisor, Dr Kamoni Peter; the Faculty at the School of Business and Economics of Mount Kenya University. I also acknowledge the support of supportive departments of the university and fellow classmates.

TABLE OF CONTENT

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS AND ACRONYMS

CMA:	Capital Markets Authority
COVID 19:	Coronona Virus Disease 2019
ERC:	Ethics Review Committee
ICT	Information Communication Technology
KEMSA:	Kenya Medical Supplies Agency
KLR:	Kenya Law Reporting
OAG:	Office of the Auditor General
OECD:	Organization for Economic Cooperation and Development
NACOSTI:	National Commission for Science and Technology
RBV:	Resource Based View
TCE:	Transaction Cost Economics
TVET:	Technical and Vocational Education and Training

ABSTRACT

Public procurement accounts for a huge percentage of government expenditure of any nation. This expenditure. This huge outlay of government expenditure is necessary in the provision of services and infrastructure, as well as actualizing social economic development, including supporting vulnerable groups in the economy such as small and micro enterprises. In Kenya, as in other developing Nations, that often depend on donor aid and expensive loans to finance public expenditure, the achievement of these objectives is however curtailed by procurement inefficiency that often manifest as overpricing; resulting in loss of huge sums of expenditure that would have otherwise propelled development objectives-such as education development. It is on this background that this study sought to examine the effect of public procurement management practices on public procurement price variance in TVET institutions in Nairobi. The study was guided by the Resource based view, institutional theory and the Transaction Cost Economic Theories. The study, adopting a descriptive research design, collected data from all the 34 TVETs in Nairobi, and conduct multiple linear regression analysis to examine the statistical significance of the public procurement management practices. This study investigated the effect of public procurement practices—procurement planning, procurement audits, open contracting, and competitive bidding—on procurement price variance in public TVET institutions within the Nairobi Metropolitan Area. Data were collected through structured questionnaires targeting procurement managers, with a high response rate of 82%. The results reveal systemic overpricing, with average price variances as high as 268%, underscoring inefficiencies in procurement systems. The study provides compelling evidence linking poor procurement practices to increased price variance. Procurement planning was found to be inconsistently applied, with up to 26% of procurements occurring outside approved plans. These deviations were statistically linked to a 4.396% increase in price variance per percentage increase in unplanned procurement, highlighting the cost implications of reactive, unstructured procurement. Similarly, limited and untimely procurement audits were found to diminish oversight, with institutions conducting fewer than three audits per procurement cycle experiencing higher price variances. Notably, each additional audit correlated with an 18.647% reduction in price variance, emphasizing the critical role of audits in controlling costs. Open contracting, although legally mandated, remains underutilized; most institutions disclosed less than 20% of procurement data publicly. Regression analysis confirmed that increased transparency significantly reduces overpricing. Competitive bidding, though widely adopted, is undermined by persistent use of non-competitive methods, which contribute to inflated prices. The study concludes that enhanced planning, rigorous auditing, full transparency through open contracting, and stricter adherence to competitive bidding are essential to reducing price variance and safeguarding public funds.

CHAPTER ONE

INTRODUCTION AND BACKGROUND OF THE STUDY

1.0 Introduction

This section provides a contextual background of the concepts of public procurement price variance and public procurement practices. The chapter also outlines the study objectives, hypotheses, and significance of the study.

1.1 Background of the study

Public procurement accounts for a huge part of government expenditure. In developed nations, the share of Public procurement is estimated to be about 18% of the gross domestic product (Baldus & Hatton, 2020). In developing nations, that have huge developmental needs. It accounts for more; up-to 30% of the Gross domestic products of these nations (Thiankolu, 2019). This huge outlay of government expenditure is necessary in the provision of services and infrastructure, as well as actualizing social economic development, including supporting vulnerable groups in the economy such as small and micro enterprises (Ambe, 2019). However, the achievement of developmental objectives of public procurement are however often hindered by inefficiency and corruption. Fazekas and Blum (2021) opine that even minimal savings as a result of measures to improve efficiency could have huge impact. Considering an annual global procurement spend of $11 Trillion, even a 1% saving could yield over $110 Million in savings globally. This shows that public procurement plays a key role in public fiscal efficiency.

Quite often, this inefficiency manifests in the form of waste and corruption. Lyra et al (2021) note that it's often difficult to examine the various forms of public procurement corruption and inefficiencies. However, a keen examination of public procurement reveals various indicators of inefficiencies (Graycar, 2019) such as lack of documentation, lack of procedure, non-delivery or quality issues, and Overpricing (Mokoena, 2020). This study takes special interest in over-pricing (Public Procurement price variance). In developed nations, such as the EU, Placek et al (2020) observe that public procurement price variance is a prevalent issue across EU nations, especially less advanced economies that leads to loss of colossal amounts of public funds. Similarly, according to Silva et al (2024), public procurement price variance has been observed in Brazil. It

is a great indicator of inefficiency of the public procurement process that leads to loss of public funds. Fazio (2022), also indicates that overpricing is a prevalent practice in United States of America procurement system.

In developing nations, where there is an acute need for efficiency due to constrained fiscal space and heavy reliance on donor funding or debt aid, overpricing in public procurement presents a significant challenge to economic growth. These countries face growing public expenditure demands amid limited domestic revenue generation, making the efficient allocation and utilization of public funds critical. In such contexts, achieving price conformance is not merely a matter of financial stewardship—it becomes a developmental imperative. Funds lost through inflated procurement could otherwise be redirected toward vital economic and infrastructure development initiatives, such as health, education, roads, or energy. Empirical evidence underscores the gravity of this challenge. Mokoena (2020) documents instances of overpricing in public contracts of up to 186%, attributing such inefficiencies to the lack of robust compliance mechanisms. According to Mokoena (2020), the absence of systematic oversight and effective enforcement opens up public procurement systems to manipulation, where cartels, inflated invoicing, and favoritism thrive unchecked. Without transparency and real-time monitoring, procurement officers and suppliers may collude, exploiting weak institutional structures to inflate contract values, leading to massive financial hemorrhages.

In Kenya, Kamoni et al. (2024) reported overpricing levels as high as 220% in public procurement contracts, highlighting the magnitude of the problem in East Africa's largest economy. They argue that systemic overpricing is perpetuated by opaque procurement procedures, limited public scrutiny, and weak internal controls. Their research supports the view that implementing open contracting frameworks, conducting frequent procurement audits, and digitizing procurement processes could significantly curtail overpricing. Open contracting, by making procurement data accessible to the public, curbs opportunities for collusion and discourages price manipulation. Procurement audits play a deterrent role by ensuring adherence to market benchmarks and procedural compliance. Digitization, on the other hand, enhances transparency and traceability, reduces human discretion, and improves the speed and accuracy of procurement data analysis.

Taken together, these measures offer a pathway toward more accountable and efficient public procurement. In the context of developing nations, where each dollar saved could substantially impact service delivery, the pursuit of price conformance is more than a governance reform—it is a strategic lever for national development. The implications are clear: closing the gaps that enable overpricing can unlock resources for transformative socio-economic change and reduce dependency on external financing.

1.1.1 Global Perspective on Public Procurement Practice and Public Procurement Price Variance

Public procurement price variance, often manifesting as overpricing of public contracts, remains a significant concern for organizations and governments globally. It undermines public trust, strains limited fiscal resources, and compromises the value for money that procurement systems are designed to achieve. In response, various countries have implemented a range of strategies to combat this issue, though the causes and effectiveness of solutions often vary by region. In the European Union, overpricing has been widely attributed to a combination of ethical concerns, regulatory overreach, excessive bureaucratic layers, and market-related factors such as low competition or supplier collusion (Placek et al., 2020). According to Placek et al. (2020), the EU's approach to addressing procurement inefficiencies has been predominantly policy-driven, focusing on strengthening governance frameworks and enhancing the efficiency of procurement systems. Reforms have included measures to streamline procurement procedures, improve integrity and accountability, and increase competition. These interventions have aimed to reduce administrative burdens while promoting transparency, thus lowering the likelihood of inflated pricing and inefficiencies.

In Russia, the problem takes a different shape. Tkachenko et al. (2016) found that non-transparent procurement processes—particularly for large-scale and repetitive purchases—carry a high risk of overpricing. The lack of transparency opens the door for manipulation, repeated contracts with favored suppliers, and weak oversight. However, the study also highlighted that the adoption of electronic auctions (e-auctions) within State-Owned Enterprises (SOEs) has shown promise in mitigating these risks. E-auctions enhance competition and limit the discretion of procurement officers, thereby lowering prices and increasing accountability. In this system, suppliers submit bids electronically in real time, often leading to competitive pricing outcomes that reduce

opportunities for collusion and favoritism. These international experiences illustrate a common theme: that procurement price variance and overpricing are systemic issues requiring multifaceted responses. Whether driven by bureaucracy, ethics, opacity, or weak enforcement, the solution lies in fostering greater transparency, enhancing accountability, and leveraging technology.

Countries that have implemented regulatory reform, e-procurement tools, and proactive auditing mechanisms tend to report better outcomes in managing price conformance. Global evidence underscores that tackling procurement overpricing requires more than procedural adjustments—it demands an institutional commitment to transparency, oversight, and efficiency. Without such commitments, public procurement systems remain vulnerable to price distortions that undermine development and public service delivery. Stehlik (2018) also notes that overpricing is a major concern in public procurement in the Czech Republic. Similar to the situation observed in Russia, Competitiveness of the procurement process has been observed to mitigate overpricing. Stehlik (2018) notes that with each additional tenderer, a price drop of 3.4% was observed in the Czech Republic public procurement system. Similarly, a 2.9% reduction of price due to increase in number of bidders has been observed by Gavurova et al (2020) in the Czech Republic. This seems to underscore the importance of public procurement practices that promote competition in the procurement process.

The situation of overpricing in Brazil mirrors trends observed globally, with public procurement systems frequently undermined by price distortions. In response, Brazil enacted stringent legislation intended to curb excessive pricing by introducing provisions akin to price capping (Signor et al., 2022). These legal measures were designed to limit the ability of contractors to submit abnormally high bids, thereby protecting public funds and promoting greater fiscal responsibility. However, this well-intentioned intervention has produced unintended consequences. According to Signor et al. (2022), the strict enforcement of capped pricing has led to a surge in unsustainably low bids, as contractors underprice their proposals in a bid to win contracts. This race to the bottom has introduced a twin challenge: widespread project delays and contract abandonment. Contractors, having secured contracts at unrealistically low prices, often find it financially unfeasible to execute the projects without incurring losses, leading to compromised quality, prolonged timelines, or outright withdrawal from obligations.

A comparable dynamic is observed in Hungary, particularly in projects funded by the European Union. Hadju and Miklós (2017) highlight that EU-funded public procurement projects in Hungary are characterized by policy deficiencies that create an environment conducive to corruption and market inefficiencies. The lack of robust policy frameworks and effective oversight mechanisms reduces the intensity of competition, increasing the likelihood of inflated pricing and collusive behaviors. These deficiencies ultimately result in higher risks of price distortions, despite the presence of external funding aimed at development and capacity enhancement. These cases reinforce the broader hypothesis that competitive procurement practices, sound policy frameworks, and effective internal control mechanisms significantly influence price outcomes in public procurement. Where competition is weak, policy ambiguous, or controls lax, the environment becomes fertile for overpricing and inefficiency. Conversely, systems that emphasize transparency, market participation, and regulatory enforcement are better positioned to achieve price conformance and maximize value for money.

The experiences of Brazil and Hungary illustrate that tackling price variance is not solely a matter of controlling the final bid price, but also about creating an ecosystem where pricing is both realistic and competitive. Overregulation without flexibility may lead to distortions just as damaging as unregulated overpricing. Therefore, balanced procurement policies, supported by effective oversight and market intelligence, are essential in combating systemic inefficiencies and safeguarding public resources.

1.1.2 Regional Perspective on Public Procurement Practice and Public Procurement Price Variance

Alhyari et al. (2022) observe that public procurement pricing challenges are not confined to the developed world but are especially pronounced in African jurisdictions. The prevalence of overpricing in public contracts across Africa often stems from systemic regulatory deficiencies that create loopholes and foster environments conducive to inefficiencies. Unlike their developed counterparts, many African nations lack robust institutional frameworks, comprehensive procurement oversight, and enforcement mechanisms necessary to uphold market-based pricing and procurement integrity. This regulatory fragility provides fertile ground for inflated contract pricing, which undermines transparency and weakens public financial management. Kahanji and Mwanaumo (2023) contend that tender overpricing poses significant threats to the successful

implementation of infrastructure projects across Africa. In many cash-constrained African economies, public infrastructure investments are heavily reliant on donor funds and concessional financing. Overpriced contracts erode the limited fiscal space, diverting critical resources away from developmental objectives. This severely hampers the attainment of value for money, as inflated pricing either reduces the scale of deliverables or leads to poor-quality outcomes within the available budget envelope.

Interestingly, Kahanji and Mwanaumo (2023) note that overpricing in tenders is sometimes a strategic response by contractors to mitigate procurement entity-related risks—particularly delays in payment, weak contract enforcement, and unpredictable procurement timelines. In such environments, contractors buffer themselves against anticipated losses by padding prices. While this risk-pricing strategy may seem rational from the contractors' perspective, it has far-reaching consequences on public project performance and fiscal sustainability. To address this multidimensional issue, Kahanji and Mwanaumo (2023) recommend a comprehensive review of tender regulations aimed at promoting greater competition, enhancing pricing control mechanisms, and improving the accuracy of contract cost estimation. Furthermore, they advocate for innovations that foster price transparency and visibility, including the use of digital procurement platforms and real-time market price benchmarking. These reforms would not only deter exploitative pricing behavior but also improve accountability and foster trust between procurement entities and suppliers.

The African experience seems to illustrate that procurement overpricing is as much a governance and institutional issue as it is a technical one. Reducing it requires not just the tightening of rules, but also building institutional resilience through capacity development, technology adoption, and fostering a procurement culture rooted in fairness, competition, and accountability. Without such reforms, procurement systems risk continuing to drain scarce public resources and derail infrastructure development goals across the continent. Due to weak institutional and accountability mechanisms, procurement corruption, often manifests in overpriced contracts (Williams-Elegebe, 2018). Wamunyima et al (2024) notes deep overpricing in Zambia's public deals and its negative effect on service delivery. Public contracts analysis revealed alarming trends. Overpricing takes money from vital public services. It weakens the state's ability to help its people. A key cause of this problem is ethics. Ethical failures make overpricing common. Some officials might take bribes

or kickbacks. This raises project costs unfairly. Favoritism and conflicts of interest also play a part. These actions undermine good governance and damage public trust.

Mokoena (2020) identifies overpricing as a critical concern in Africa's public procurement systems, particularly in the healthcare sector. In South Africa, the study highlights that medical supplies were found to be overpriced by more than 186%, significantly undermining access to essential healthcare services. Such inflated costs have far-reaching implications, especially in resource-constrained settings where public funds are limited and healthcare demands are high. When procurement prices are grossly exaggerated, fewer supplies can be purchased, leading to shortages and diminished quality of care for vulnerable populations. The lack of a unified digital system to drive visibility of procurement prices is another key practice that demands attention. For instance, According to Mokoena (2020), the root causes of this overpricing are often embedded in systemic isolation and secrecy within procurement processes. These conditions obscure true market prices and restrict competition, creating opportunities for unethical pricing behavior. Suppliers may exploit the lack of transparency to inflate costs, while procurement officials may manipulate or bypass competitive bidding procedures.

The absence of open information impedes the ability of stakeholders—including oversight bodies, civil society, and the public—to scrutinize procurement decisions or compare prices across suppliers. Digitizing procurement processes presents a promising solution. Digital platforms can introduce real-time tracking, price comparison tools, and public access to procurement data. These technologies enhance transparency by making information available and accessible, thereby reducing opportunities for manipulation. Moreover, regular audits are essential for ensuring accountability. When procurement transactions are routinely reviewed against market benchmarks and regulatory standards, irregularities can be identified early, and corrective action can be taken.

In tandem, digital systems and audit mechanisms can lower procurement costs by promoting competitive pricing and discouraging collusion. Open procurement environments encourage more suppliers to participate, which drives down prices and improves value for money. As Mokoena (2020) emphasizes, competition and access to procurement information are critical pillars for achieving fair and efficient pricing. In the context of healthcare, implementing these reforms is not only a matter of financial efficiency but a public health imperative. Affordable medical supplies

mean broader access to treatment, improved health outcomes, and a more resilient health system. Thus, promoting transparency, accountability, and market discipline in public procurement is essential for tackling overpricing and strengthening public service delivery across Africa.

1.1.2 Local Perspective on Public Procurement Practice and Public Procurement Price Variance

Overpricing in public procurement within Kenya mirrors global and regional trends. Kamoni et al (2024) found overpricing averaging 220% in public procurement cases. Notably, other reported cases of overpricing in Kenya have established similar or even higher levels of overpricing in public procurement. The Kenya Medical Supplies Agency (KEMSA) faced a KES 7.8 billion procurement scandal. Overpricing led to a KES 39 million loss, per the Auditor General (OAG, 2020). The Ethics and Anti-Corruption Commission found up to 550% price increases in National Youth Service tenders. This caused about KES 37 million in losses (KLR, 2018). Other cases include the KES 2 billion Smart plate tender (PPARB, 2023). Also, the Police choppers tender was inflated by KES 1 billion (Mutai, 2017).The reasons behind Kenya's overpricing echo global and regional factors. Ethical lapses are a primary cause. Weak oversight and compliance also contribute. Non-competitive bidding methods worsen the problem.

For instance, some projects might lack enough bidders. This allows those few bidders to inflate prices. Ozor and Nyambane (2020) point out that open contracting helps. Open contracting increases project openness. It also promotes accountability. Select African countries, including Kenya, have seen some gains from this. More transparency can deter inflated costs. Openness allows watchdogs to spot suspicious pricing. This ultimately pushes for better value in public projects. Chebet and Kwasira (2016) observe that use of open tendering and e-procurement could also promote the reduction of instances of overpricing in public procurement in Kenya.

1.3 Statement of the Problem

The achievement of developmental objectives of public procurement are however often hindered by inefficiency and corruption. Fazekas and Blum (2021) opine that even minimal savings as a result of measures to improve efficiency could have huge impact. Considering an annual global procurement spend of $11 Trillion, even a 1% saving could yield over $110 Million in savings globally. Therefore, any effort to improve procurement efficiency could portend great effect on achievement of public procurement objectives; and even contribute to reduced fiscal pressure on governments of developing Nations; that quite often depend on expensive budgetary finance mechanisms to support public expenditure

In Kenya, cases of public procurement price variance are rampant. One notable case is the Kenya Medical Supplies Agency (KEMSA) scandal, where procurement irregularities resulted in losses amounting to KES 7.8 billion (OAG, 2020). The Auditor General reported that overpricing alone contributed to a direct loss of KES 39 million, raising concerns about inefficiencies and corruption in public procurement. Similarly, the Ethics and Anti-Corruption Commission (EACC) found significant overpricing in the National Youth Service (NYS) tenders, where costs were inflated by up to 550%, leading to approximately KES 37 million in losses (KLR, 2018). Another notable case is the the KES 2 billion Smart Plate tender, where the Public Procurement Administrative Review Board (PPARB) flagged substantial irregularities (PPARB, 2023). These cases illustrate a pattern of systemic challenges in public procurement, including weak oversight, lack of transparency, and regulatory failures.

Extant literature has not provided evidence of empirical inquiry into this subject. For instance, Kamoni et al (2024) examined the extent of public procurement price variance but did not examine the effect of public procurement practices on the overpricing. This study therefore sought to enrich literature by providing empirical evidence of the relationship between procurement management practices and price variance in the public sector.

1.4 General Objective

The general objective of this study was to examine the effect of public procurement management practice on public procurement price variance in TVETs of Nairobi Metropolitan Area.

1.5 Specific Objective

a) To examine the effect of Procurement Planning on public procurement price variance in TVETs of Nairobi Metropolitan Area.
b) To examine the effect of Procurement audit on public procurement price variance in TVETs of Nairobi Metropolitan Area.
c) To examine the effect of open contracting on public procurement price variance in TVETs of Nairobi Metropolitan Area.
d) To examine the effect of competitive bidding on public procurement price variance in TVETs of Nairobi Metropolitan Area.

1.6 Research Question

a) What is the effect of Procurement Planning on public procurement price variance in TVETs of Nairobi Metropolitan Area?
b) What is the effect of Procurement audit on public procurement price variance in TVETs of Nairobi Metropolitan Area?
c) What is the effect of open contracting on public procurement price variance in TVETs of Nairobi Metropolitan Area?
d) What is the effect of competitive bidding on public procurement price variance in TVETs of Nairobi Metropolitan Area?

1.7 Significance of the Study

The study on public procurement practices and public procurement price variance in Kenya is significant as it will sheds light on the link between procurement management practices and public procurement price variance. Examining procurement practices helps identify gaps in regulatory enforcement, transparency, and accountability, which are critical for ensuring value for money in government spending. Price variance analysis is essential in detecting inflated costs, market

distortions, and collusion among suppliers, enabling policymakers to implement corrective measures. Understanding these variances also informs cost control mechanisms, ensuring that public funds are allocated efficiently to maximize social and economic benefits.

Given Kenya's history of procurement scandals, such research supports policy reforms aimed at enhancing compliance with the Public Procurement and Asset Disposal Act (2015), strengthening oversight institutions such as the Auditor General and the Ethics and Anti-Corruption Commission. Additionally, it provides empirical evidence for the adoption of digital procurement systems to minimize human discretion and reduce opportunities for manipulation. By promoting fair competition, accountability, and fiscal discipline, such a study contributes to sustainable development, improved public trust, and better service delivery across sectors.

1.8 Limitation

The study on public procurement practices and price variance in Kenya may face key limitations, particularly in data acquisition, regulatory compliance, and systemic institutional barriers. Obtaining accurate and reliable procurement data can be challenging due to restricted access to government records, the presence of confidentiality clauses, and the general reluctance of public agencies to disclose sensitive financial information—especially in cases where irregularities or non-compliance may be present. These challenges can limit the completeness and credibility of the data collected, thereby affecting the robustness of the study's findings. To mitigate these challenges, the study utilized formal credentials, including an official university introduction letter and a research license from the National Commission for Science, Technology and Innovation (NACOSTI). These documents helped assure participants and institutions of the academic and ethical integrity of the study. Additionally, the research team emphasized its commitment to confidentiality, clearly outlining how data was anonymized, securely stored, and used solely for academic purposes. These measures aim to foster trust and transparency, thereby encouraging greater participation and cooperation from targeted institutions. By addressing these limitations proactively, the study sought to ensure that it collected sufficient and credible data necessary for rigorous analysis and informed conclusions.

1.9 Operational Definition of Terms

Competitive Bidding: A procurement method where multiple suppliers submit bids to provide goods or services, ensuring fairness, transparency, and cost-effectiveness.

Open Contracting: A procurement approach that promotes transparency by making procurement data and contracts publicly accessible to enhance accountability and reduce corruption.

Procurement Audit A systematic review of procurement processes, expenditures, and compliance with regulations to assess efficiency, effectiveness, and integrity.

Public Procurement Planning The process of forecasting, budgeting, and scheduling procurement activities to align with organizational needs and regulatory requirements.

Public Procurement Price Variance: The difference between the expected or market price and the actual procurement cost, used to assess pricing irregularities and financial efficiency.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This section provide the discussion on the theories supporting this study, including the Resource Based view on procurement planning; the Agency Theory on Procurement Audit; the Institutional Theory on Open Contracting; and the Transactional Cost Economic Theory on Competitive Bidding. Additionally, the chapter presents a review of recent literature related to the study concepts; and a conceptual framework that guided this study.

2.1 Theoretical Review

2.1.1 Resource Based View on Procurement Planning

Procurement planning is key to procurement performance, impacting cost efficiency, supplier selection, and contract management (Thai, 2017). Poor planning often causes rushed purchases, emergency procurement, and price changes. These issues raise procurement costs (Mokogi, 2019). Resource-Based View (RBV) theory helps to understand procurement planning's role in public procurement price variance. Penrose (1959) first proposed RBV. Barney (1991) later expanded it. RBV states that an organization's resources, like strategic planning, create a competitive edge. Using resources well leads to efficiency and lower costs. Supply chain and procurement management use RBV. Internal resource planning is vital for cutting waste and inefficiency (Wernerfelt, 1984).

In public procurement, RBV theory supports that good procurement planning ensures optimal resource use, minimizing price variance. Governments with solid plans can predict cost trends. They can buy in bulk for good prices. This also lowers risks from price changes (Osei-Tutu, Badu, & Owusu-Manu, 2019). Studies show weak planning causes cost overruns and waste. Public groups then buy unplanned items at higher prices (Basheka, 2009). For example, a local council might delay planning for road repairs. Then, they must pay more for emergency repairs when the road fails. Also, developing countries often lack resources for planning. This worsens price

variances because they react instead of plan (Akenroye, 2013). A small government might not invest in procurement training. They end up paying more due to poor negotiation skills.

2.1.2 Agency Theory on Procurement Audit

Procurement audit is key to control public buying. It makes sure rules are followed. It also checks money is spent wisely (Schapper, Veiga Malta, & Gilbert, 2006). Agency Theory helps explain how audits cut price differences. Jensen and Meckling (1976) came up with this idea. It looks at the link between bosses and workers. Bosses are like the government or taxpayers. Workers are those who buy things or are public workers. The theory says workers might do what helps them. This might not be best for the bosses. Audits watch over them. This lines up what they do with the right goals. It also cuts down on selfish acts (Eisenhardt, 1989). Often, those buying things know more than those watching over them. This can cause problems like wasted money and cheating (Ameyaw, Mensah, & Osei-Tutu, 2019). Audits act like a check. They make sure those buying things follow rules. This lowers price differences. Studies show regular audits lead to lower costs. They also make things work better. Plus, they make sure people are responsible in public buying (Jeppesen, 2019).

Audits also make things clear. They find problems like raised prices and unfair bidding. These issues raise price differences (Hawkins, Gravier, & Powley, 2011). If there are no audits, people might not compete fairly. This makes buying things cost more and wastes money (Søreide, 2002). But, audits only work if the groups doing them are free and strong. If they can't make people follow the rules, audits can't stop price differences (OECD, 2020). For example, if an audit finds a company raised prices unfairly, but can't punish them, the company might do it again. This shows why strong rules are needed.

2.1.3 Institutional Theory on Open Contracting

Open contracting is an approach that promotes transparency in procurement processes by ensuring that procurement data, including contract awards, supplier information, and financial expenditures, are publicly accessible (World Bank, 2021). Institutional Theory provides a theoretical framework for understanding the role of open contracting in reducing procurement price variance. This theory, advanced by DiMaggio and Powell (1983), argues that institutions shape organizational behavior

through regulatory, normative, and cultural-cognitive influences. Institutional Theory highlights the role of transparency mechanisms in establishing norms of accountability and reducing procurement inefficiencies (Scott, 2008).

In public procurement, the adoption of open contracting practices is driven by institutional pressures to enhance transparency and reduce procurement malpractices (Knack, Biletska, & Kacker, 2019). The theory suggests that governments that institutionalize open contracting practices are more likely to experience reduced procurement price variances due to increased competition, lower incidences of corruption, and improved supplier accountability (Prier, McCue, & Bevis, 2021). Empirical evidence indicates that open contracting mechanisms reduce procurement costs by enabling public scrutiny, discouraging collusion, and promoting efficiency in procurement processes (Kelman, 1990).

Thus, within the institutional theory framework, the hypothesis posits that open contracting exerts a stabilizing effect on procurement pricing by strengthening institutional governance, reducing opportunistic behavior, and promoting efficiency in public procurement. The anticipated outcome is a reduction in price variance, aligning procurement costs more closely with market benchmarks. However, the effectiveness of open contracting in addressing procurement price variance depends on the level of institutional enforcement and the willingness of public authorities to embrace transparency reforms (Kaufmann & Vicente, 2011).

2.1.4 TCE on Competitive Bidding

Competitive bidding is a procurement method that allows multiple suppliers to compete for government contracts, promoting price competitiveness and cost efficiency (Bajari & Tadelis, 2001). The Transaction Cost Economics (TCE) theory, initially proposed by Coase (1937) and later refined by Williamson (1975), provides a theoretical basis for understanding the role of competitive bidding in reducing procurement price variance. The TCE theory posits that organizations seek to minimize transaction costs by adopting governance structures that optimize efficiency and market competition.

In the context of public procurement, competitive bidding reduces procurement price variance by fostering market-driven pricing and minimizing the risks of monopolistic pricing (Tadelis, 2012).

Studies have demonstrated that procurement systems that emphasize competitive bidding experience lower procurement costs and improved efficiency compared to non-competitive procurement methods (Pavel et al., 2020). Competitive bidding encourages market discipline, ensuring that suppliers offer the most cost-effective solutions while maintaining quality standards (Coviello & Mariniello, 2014).

However, the effectiveness of competitive bidding in addressing procurement price variance is influenced by factors such as bid evaluation criteria, supplier capabilities, and market conditions (Albano, Snider, & Thai, 2013). While competitive bidding can lead to cost savings, excessive reliance on price competition without considering quality can result in substandard procurement outcomes (Bajari, Houghton, & Tadelis, 2014). Therefore, a balance between cost efficiency and quality considerations is essential in optimizing procurement outcomes and minimizing price variance in public procurement (Dimitri, Dini, & Piga, 2006).

2.2 Empirical Review

2.2.1 Procurement planning and procurement price variance

Kibet and Njeru (2014) investigated the effects of procurement planning on procurement performance at the Agricultural Development Corporation in Nairobi, Kenya. The study aimed to assess how procurement planning practices, such as need assessment, budgeting, and supplier selection, influence procurement performance. The findings revealed that proper procurement planning led to improved procurement efficiency, reduced costs, and enhanced supplier relationships. However, the study focused on a single organization, limiting its generalizability to other public institutions in Kenya (Kibet & Njeru, 2014). In Nairobi City County Government, a study by Owuor and Kagiri (2022) analyzed the influence of procurement planning on procurement performance. The study established that procurement planning had the most significant influence on procurement performance compared to other procurement practices, including contract management, inventory management, and supplier sourcing. The study recommended that procurement officers should engage in comprehensive planning processes, including early supplier selection and demand forecasting, to improve procurement efficiency. Nonetheless, the study was limited by its reliance on self-reported data, which could introduce response bias (Owuor & Kagiri, 2022).

A study conducted by Abebe (2021) in Ethiopia examined factors affecting public procurement performance in selected public universities. The study aimed to determine how procurement planning, staff qualifications, procurement procedures, and ICT utilization influenced procurement efficiency. The findings indicated that effective procurement planning positively affected procurement performance by reducing delays, enhancing transparency, and minimizing procurement price variances. However, the study noted that procurement inefficiencies persisted due to bureaucratic challenges and inadequate technological integration. A limitation of this study was its focus on the education sector, which may not be representative of other public institutions in Ethiopia (Abebe, 2021). In Tanzania, a study by Mrope (2018) assessed the effectiveness of procurement planning on procurement performance in public organizations. The study found that procurement planning significantly influenced procurement performance by ensuring timely acquisitions, cost reduction, and better supplier management. The study recommended the adoption of procurement planning software to enhance efficiency. However, the study failed to account for external factors such as inflation and supplier market conditions that could affect procurement price variance (Mrope, 2018).

Dushimimana (2024) examined the impact of procurement planning on public institutions' performance in Rwanda. The study found that procurement planning positively affected institutional performance by improving procurement timelines, reducing costs, and enhancing compliance with procurement regulations. The study emphasized the importance of needs identification in procurement planning to ensure the timely delivery of goods and services. However, the study did not explore the role of procurement audits in mitigating procurement price variances (Dushimimana, 2024). In Kenya, a study by Barasa et al. (2023) analyzed the effect of strategic procurement planning on service delivery in county governments. The study found that strategic procurement planning significantly accounted for 40.5% of the variance in service delivery. The findings highlighted a strong positive relationship between procurement planning and service delivery, emphasizing the need for county governments to prioritize procurement planning to enhance service delivery efficiency. However, the study did not consider the impact of political interference on procurement planning and performance (Barasa et al., 2023).

Finally, Mwangi (2020) investigated procurement planning and price stability in Kenya’s public sector. The study sought to determine how procurement planning mechanisms contributed to

predictable procurement costs. The findings revealed that effective procurement planning reduced procurement price fluctuations and enhanced supplier competition. However, the study did not assess the role of external economic factors, such as inflation and government fiscal policies, in procurement price variance (Mwangi, 2020).

2.2.2 Procurement Audit and Public Procurement Price Variance

In Kenya, a study by Mwangi (2020) investigated the effects of procurement audits on procurement performance in public universities. The objective was to determine the role of procurement audits in promoting compliance and enhancing procurement efficiency. The findings indicated that institutions conducting regular procurement audits experienced improved compliance with procurement laws and regulations, leading to increased procurement efficiency and reduced costs. However, challenges such as resistance to audits and limited auditor independence were highlighted, potentially compromising the effectiveness of the audits. A limitation of this study is its focus on public universities, which may not be representative of other public sector entities in Kenya. In the United States, a comprehensive analysis by Ernst & Young (2024) of Houston's 22 city departments uncovered significant issues, including potential misuse of city credit cards and inefficient contracting practices. The objective was to assess procurement practices and identify inefficiencies. The findings revealed that a small number of vendors monopolized city contracts, and purchasing card payments were manipulated to exceed spending limits. The study highlighted the need for stricter credit card policies and improved procurement processes. However, the analysis did not explore the root causes of these inefficiencies, limiting the ability to develop targeted interventions.

In the United Kingdom, a comprehensive study identified serious corruption risks in COVID-19-related contracts worth over £15 billion awarded by the Conservative government, highlighting systemic bias, lack of competition, and conflicts of interest. Over 5,000 contracts reviewed revealed 135 high-risk contracts with multiple corruption red flags, such as political connections and a controversial "VIP lane" for procurement. Contracts worth £1 billion procured through the VIP lane were deemed unfit for use, and £14.9 billion was ultimately written off. The study criticizes the excessive suspension of procurement safeguards and reliance on non-competitive awards. However, the study does not provide detailed information on the methodology used, which

may affect the reliability of the findings. In Australia, the Auditor-General's report (2023) highlighted significant delays and cost overruns in major defense procurement projects, emphasizing the need for effective procurement audits. The objective was to assess the effectiveness of procurement processes and identify areas for improvement. The findings indicated that inadequate procurement audits contributed to inefficiencies and lack of accountability in defense procurement. However, the report faced criticism for limited access to detailed data due to security concerns, which may have affected the comprehensiveness of the audit findings.

In the United States, an audit by the New York State Comptroller's office (2023) found that the Metropolitan Transportation Authority (MTA) had not achieved the purchasing consolidation and cost reductions it committed to under its 2019 "Transformation Plan." The audit revealed that by September 2023, the MTA was still operating under old procurement practices, despite pledging to consolidate by October 2021. The MTA spends over $7 billion annually on procurement and claimed to have saved $152 million in 2022, yet none of the savings resulted from consolidation. The audit highlights the challenges of implementing procurement reforms in large organizations. In the United Kingdom, the Competition and Markets Authority (CMA) warned of a significant risk of bid-rigging in the public procurement sector, which is worth £300 billion annually. The CMA is trialing an AI-backed tool to identify collusion in public contract bids by analyzing large-scale data and spotting anomalies. Recent CMA investigations and fines have targeted collusion in procurement for educational buildings and construction services. The CMA aims to enhance public sector productivity and drive substantial savings, aligning with its growth mission. However, the effectiveness of the AI tool in detecting bid-rigging has yet to be fully evaluated.

2.2.4 Open Contracting and Public procurement Price Variance

Open contracting seeks to make government purchasing transparent. It also promotes accountability in how public money is spent. Many studies have looked at open contracting in different places. These studies examine its effect on how well purchasing works. They also check if it saves money and reduces corruption. The World Bank studied Ukraine's ProZorro system in 2016. ProZorro is an online system for government purchasing. It aims to make the process open and increase competition. The study showed more companies bid on projects using ProZorro. It also found savings of 10% on contracts. The study noted some problems. Data accuracy needed

improvement. Purchasing officials needed more training. Transparency International studied road construction in Indonesia in 2018. The study looked at how open contracting affected corruption. It also examined if it improved project quality. The study found less bid rigging when open contracting was used. Project results were also better. The study said monitoring was important. Civil society needed to be involved to keep things improving. The Open Contracting Partnership studied cities in Colombia in 2019. The study looked at how open data affected purchasing efficiency. They wanted to know if open data led to better results. Cities using open data had faster purchasing times. They also saved money. The study said data quality needed to be better. Data needed to be standardized.

The Public and Private Development Centre studied health care purchasing in Nigeria in 2017. The study examined how open contracting affected this process. They wanted to know if it improved purchasing and service. The study showed more openness and accountability. Medical supplies arrived on time. Some people resisted the changes. Limited technology also made it harder to implement fully. Transparencia Mexicana studied the "Social Witness" program in Mexico in 2019. This program involves civil society in watching purchasing. The study checked if it reduced corruption and improved results. The program led to more competition. It also helped save money on purchasing. Keeping civil society monitors independent was a challenge. It was also hard to make sure they had the skills needed. The European Commission studied open contracting in the European Union in 2020. The study looked at how it affected purchasing in different countries. They wanted to know if it made purchasing more efficient and open. Open contracting helped lower costs. It also increased trust in government. They needed common data standards. Countries needed to work together to get the most benefit. The Institute of Development Studies studied education purchasing in Kenya in 2018. The study examined how open contracting affected this process. They wanted to know if it made purchasing more efficient and lowered costs. Open contracting led to savings. Educational materials arrived on time. Getting access to data was a challenge. Keeping people involved was important to keep the improvements going.

2.2.4 Competitive Bidding and public procurement price variance

Empirical studies have explored competitive bidding's impact on public procurement across different places. These studies show how bidding affects cost, competition, and collusion. Understanding these effects can lead to better use of public money and fair markets. Fazekas and Kocsis (2020) studied public procurement rules in Europe, Switzerland, and Macedonia. They wanted to know if better rules led to more competition and lower costs. Their work showed that stronger rules meant more bidders. More bidders helped lower the cost of public contracts. The study mainly used European data. This limits how well the findings apply to other places with different rules. Piga and Saussier (2023) looked at data from the Tenders Electronic Daily database from 2017 to 2020. They studied what parts of contract notices boost competition in Europe. They found that longer bidding times and open procedures increased the number of bidders. More bidders increased competition. However, the study did not focus on how more competition affects costs or project quality.

Imhof et al. (2018) created a tool to find bid-rigging in Swiss public auctions. They wanted to spot firms working together to cheat. The study found that prices changed less when firms colluded. The tool helped find possible bid-rigging. Still, the tool might not find all types of collusion, especially complex schemes. Albano et al. (2008) studied how different European countries regulate joint bidding. They wanted to see how joint bids affect competition and procurement results. The study found that joint bids let firms share resources and bid. Yet, joint bids can also lower the number of competitors. This can lead to higher prices. Careful rules are needed to balance the good and bad sides of joint bidding. The study did not have data on how joint bidding changes prices. This makes it hard to measure the effects. A 2025 report by the UK's Competition and Markets Authority showed bid-rigging risks in public procurement. The sector is worth £300 billion each year. The authority is testing an AI tool to find collusion in bids. The tool looks at data to find strange patterns. Early tests show promise for increasing competition and cutting collusion. The report lacks detailed results because the tool is still being tested.

2.3 Conceptual Framework

A conceptual framework is a visual representation of hypothesized relationship between variables of the study (Luft et al, 2022); it enables the study develop a mechanism to measure the variables. In this study, the variables of study are: Independent Variables-Procurement Planning, Procurement Audit, Open Contracting, and Competitive Bidding; while the dependent Variable is Public Procurement Price Variance. The conceptual framework is shown on figure 2.1.

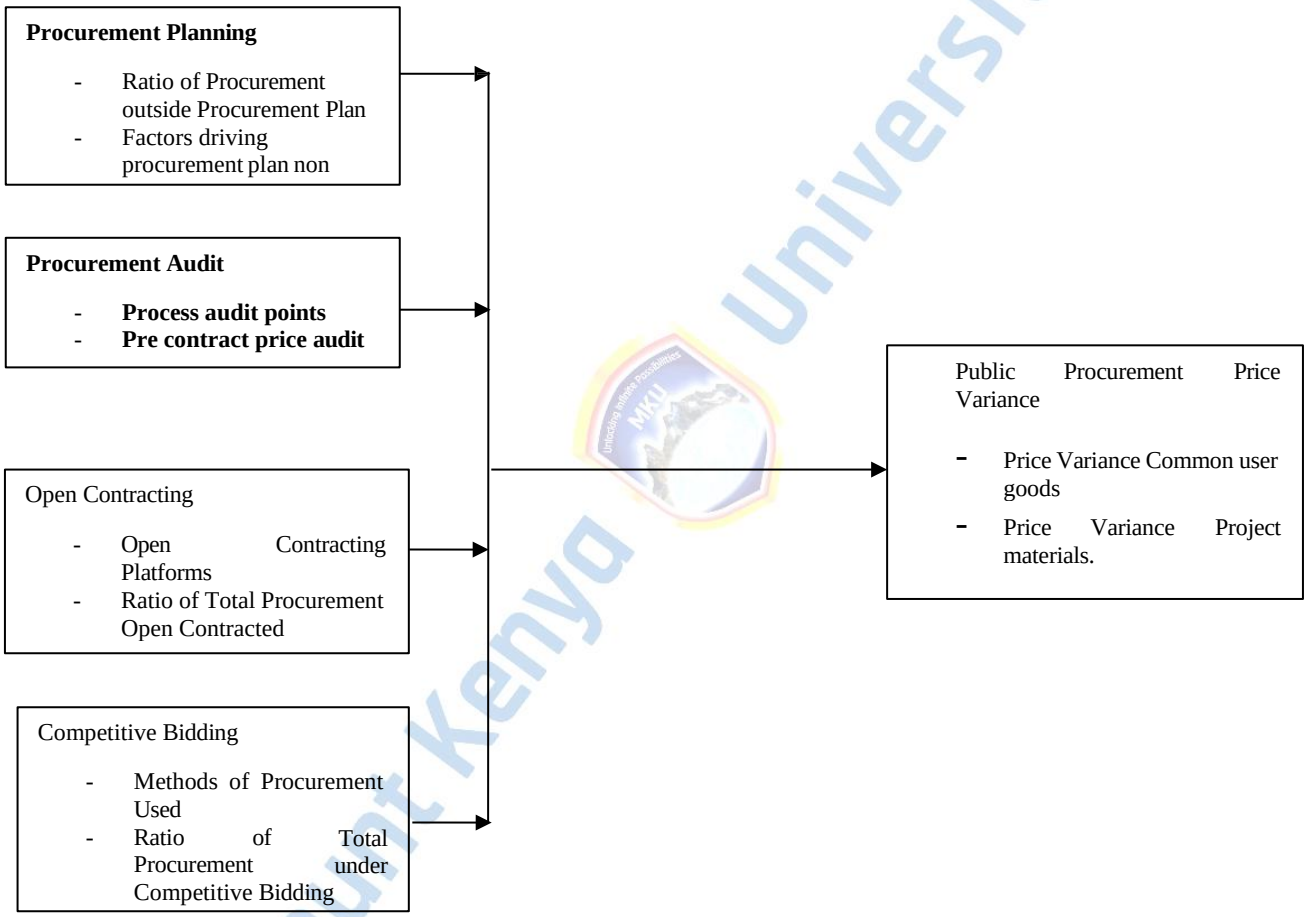

Figure 2.1: Conceptual Framework

2.3.1 Procurement Planning and Public Procurement Price Variance

In public procurement, good planning is thought to greatly lower price differences, mainly by cutting overpricing risks. Procurement planning includes finding needs, estimating costs, choosing ways to buy, and scheduling actions. A strong plan makes costs more predictable. Buyers can do market research, match decisions to budgets, and bargain for better prices. This lowers cost surprises and price increases. It enables procuring entities to interact with the market and understand market price trends. When buying is unplanned, late buys, emergency buys, and single-source buys happen more. These limit competition and raise prices.

Planned actions let procuring entities involve more suppliers, push for competition, and use size to save money. This cuts price differences and overpricing. Planning also helps choose the right buying methods, which affects prices. Additionally, planning also helps control budgets and costs. Matching buying to budgets stops needless spending and uses funds well. Without planning, buying can be rushed, leading to price problems from quick choices, high prices, or fraud like collusion. One example is infrastructure projects. Poor planning might lead to scope changes during construction. This results in inflated costs. So, good planning should lower price differences in public buying. It cuts price changes and overpricing.

2.3.2 Procurement Audit and Public Procurement Price Variance

Procurement audit is vital for oversight. It promotes transparency, accountability, and efficiency in public procurement. Audits help ensure rules are followed. This can reduce problems like price variance. Overpricing often happens due to weak procedures. It also occurs from lack of transparency. Noncompliance with guidelines also causes overpricing. Agency theory has been leveraged on to explain the link between audit and price variance in this study. Agency theory suggests officials might act selfishly. This can lead to price issues. Audits add oversight, aligning actions with good procurement. Institutional theory says audits boost rule following. This builds a culture of compliance, cutting down on price problems. For instance, imagine a city buying construction materials. Without audits, an official might choose a more expensive supplier due to personal connections. This raises costs for the city.

Audits lower price variance by improving compliance. They deter bad financial actions, and improve cost efficiency. More audit checks should reduce price differences. This strengthens how

well procurement works. Yet, audit impact relies on factors like independence. Enforcement capacity and following audit advice matters too. If auditors lack power, their findings might get ignored. A good audit process should lower public procurement price variance. Strengthening audit work is key to good procurement. It ensures processes are efficient and provide good value. This results in ideal use of public money. Thus, procurement audit is hypothesized to have a negative and significant effect on public procurement price variance.

2.3.3 Open Contracting and Public Procurement Price Variance

Institutional theory helps to explain the link between open contracting and overpricing in public procurement. This theory looks at how rules, norms, and enforcement affect how groups act. Open contracting promotes transparency, public input, and data release. This should lower price differences by sharing information, boosting competition, and fighting corruption. Public procurement works within rules and standards that shape the market. Weak rules and a lack of transparency often lead to high price differences. This happens because of corruption and unfair bidding. Open contracting puts pressure on the system to change. For example, legal rules require data release. Best practices become the norm. Groups copy transparency reforms to meet global standards. These changes push procurement to be more efficient and accountable.

Research shows that more transparency in procurement cuts down on collusion. It also lowers the risk of unfair bidding. This makes prices level out to more normal market rates. Open contracting allows the public to watch over the process. It also helps with making decisions based on facts. This discourages setting prices in ways that lead to overpricing. Publicly available data on contracts can help detect unusual pricing patterns. Therefore, this forms the basis of the study hypothesis that open contracting has a significant and substantial effect on public procurement price variance.

2.3.4 Competitive Bidding and Public Procurement Price Variance

The link between competitive bidding and price differences in public procurement can be shown through Transaction Cost Economics (TCE). TCE states that transaction costs affect market exchange efficiency. These costs come from unequal information, self-interest, and limited decision-making ability. Competitive bidding aims to lower these transaction costs by finding fair prices. It also works to lower the risk of high procurement costs. Competitive bidding involves many suppliers. They compete to offer the best price. This should lead to lower costs and less price variation. This fits TCE's idea that market systems can reduce transaction costs. They do this by limiting supplier self-interest and increasing price clarity. For example, governments seeking road construction bids may see prices drop when multiple firms compete.

This process makes costs visible and prevents single suppliers from inflating prices. Also, clear bidding rules help prevent misunderstandings. They also reduce the chance of suppliers exploiting unclear terms for extra profit. This forms the basis of this study's hypothesis, that competitive bidding has a significant and substantial effect on public procurement price variance.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter describes the research design of this study. The chapter also defines the population of the study, data collection methods to be used; as well as data analysis methods.

3.1 Research Design

The study adopted a descriptive research design. According to Bell et al. (2022), a descriptive design allows researchers to accurately represent a business phenomenon as it exists, enabling meaningful analysis of relationships between study variables. This approach is suitable for examining patterns, behaviors, and practices without manipulating the study environment. The study focused on investigating public procurement practices—specifically procurement planning, procurement audit, open contracting, and the use of competitive bidding—within TVET institutions in the Nairobi Metropolitan Area. It aimed to assess how these practices influence public procurement price variance. By capturing data on actual procurement behaviors and outcomes, the descriptive design supports the identification of trends, gaps, and correlations that may explain inefficiencies or irregularities in pricing. This design choice is essential in highlighting the extent to which procurement practices affect value for money and resource utilization in public institutions.

3.2 Population of the Study

Naseri et al (2021) posit that the population of a study are all those elements for which data is sought. This study seeks to examine the effect of public procurement practices on public procurement price variance in technical and vocational education training institutions in Nairobi metropolitan area. Therefore, the population of this study included all 34 registered TVET institutions in Nairobi metropolitan area. These were be the unit of analysis. The unit of observation were be the procurement managers, or their equivalent, in these institutions.

3.3 Census Survey

The study adopted a census survey approach, targeting all TVET institutions within the Nairobi Metropolitan Area. According to Bell et al. (2022), a census involves collecting data from every unit in the target population, ensuring comprehensive coverage. This approach eliminates sampling bias and enhances the accuracy and reliability of the findings. Consequently, the study will seek procurement-related data from all 34 public TVET institutions in the region. This method is appropriate given the manageable population size and the need to obtain a full picture of procurement practices and their impact on price variance across the entire sector.

3.4 Data Collection

Various methods of data collection are available for application by researchers in business research. These include interviews, observation, and questionnaires (Taherdoost, 2021). This study collected two sets of data. Data on public procurement practices and procurement prices from procuring entities. To facilitate this, the study will design objectively structured questionnaires, guided by the aspects of interest in this study as described in the conceptual framework. Additionally, the study collected secondary data on market price data for the financial year 2023/2024 from the reports of the Kenya National Bureau of Statistics using a data collection guide; which will contain a list of 10 commonly used goods and a list of 10 commonly used project materials.

3.5 Pilot Study

A pilot study is vital to check if research tools are doable, reliable, and valid before a full study (Ratten, 2023). A pilot study was done in Murang'a County. It involved four TVET schools. This pilot refines how data is collected for a study. Two aspects will be of interest: Reliability and Validity. Reliability checks for measurement consistency. Research tools should give stable, repeatable results. Cronbach's alpha (α) is used for internal consistency. It checks if items measure the same thing. A score of 0.7 or higher is good. This means the tool is reliable. Teresi et al. (2022) support this standard. If the alpha score is low, items need fixing. Some items may need to be removed. This makes the tool more consistent. On the other hand, the second aspect of interest, Validity, checks if a tool measures what it should (Aityan, 2022). Content validity is ensured with

expert reviews. Procurement experts reviewed the tool. This confirms it covers all important areas. Construct validity was tested with factor analysis. This test checks if items group as expected.

3.6 Data Analysis

This study employed both descriptive and inferential statistical techniques to examine the effect of public procurement practices, including procurement planning, procurement audit, open contracting, and competitive bidding, on public procurement price variance. Descriptive statistics will be used to summarize and organize the collected data, providing an overview of the nature and distribution of procurement practices and procurement price variance. Measures such as means, standard deviations, and frequency distributions offered insights into the prevalence of different procurement practices across public entities. Frequency distributions captured the occurrence of various procurement approaches, while mean values will summarize the average levels of procurement price variance. These descriptive statistics were be essential in facilitating an initial understanding of the dataset before conducting inferential analysis (Ratten, 2023).

To examine the relationship between public procurement practices and procurement price variance, a multiple linear regression model was employed to determine the extent to which variations in procurement planning, procurement audit, open contracting, and competitive bidding predict changes in procurement price variance. The regression model is specified as follows: $PPV= \beta_0+ \beta_1PP+ \beta_2PA+ \beta_4OC+\beta_4CB$; where public procurement price variance (PPV) serves as the dependent variable, and the independent variables include procurement planning (PP), procurement audit (PA), open contracting (OC), and competitive bidding (CB). The intercept term (β_0) represents the baseline level of procurement price variance, while the coefficients ($\beta_1, \beta_2, \beta_3, \beta_4$) indicate the influence of each procurement practice on procurement price variance.

The regression analysis tested the significance and strength of the relationship between procurement practices and procurement price variance. Coefficient estimates will reveal the extent to which each independent variable affects procurement price variance while controlling for other factors. Hypothesis testing using t-statistics and p-values will determine whether the observed effects are statistically significant. Additionally, the coefficient of determination (R2R^2R2) measured the proportion of variation in procurement price variance explained by the independent variables, thereby assessing the overall explanatory power of the model (Liu, 2022).

Variance analysis was conducted to measure deviations between expected and actual procurement costs, providing insights into procurement efficiency and cost control (Schuster et al., 2021). Procurement price variance analysis will be utilized to assess the degree to which procurement costs deviate from budgeted amounts, using the formula: Procurement Price Variance= {(Actual Cost−Market price)/Market rice}*100. A positive variance indicated higher-than-expected procurement costs, which may signal inefficiencies, lack of competitive pricing, or procurement irregularities, while a negative variance will imply cost savings, potentially resulting from effective procurement planning and competitive bidding. Variance trends was also analyzed to identify systematic deviations over time, which may suggest underlying procurement inefficiencies or structural issues in procurement management. These insights were critical in evaluating procurement performance and identifying areas for policy intervention and improvement (Schuster et al., 2021).

3.7 Ethical Consideration

The study sought ethical approval from an accredited Ethics Review Committee (ERC). The ERC will assess the study's ethical compliance based on a detailed proposal. Informed consent was obtained from all respondents. A consent form explained the study's purpose, risks, and confidentiality measures. A university introduction letter authenticated the research. This letter facilitated access to institutions and respondents. A research permit was obtained from the National Commission for Science, Technology, and Innovation (NACOSTI). This license is required for research involving human subjects and public institutions. Confidentiality and data protection was be strictly maintained. Data was anonymized and securely stored. Findings were reported in aggregate form.

CHAPTER FOUR

FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents the results of the descriptive and inferential analysis of the study. The chapter also provides an elaborate discussion of the findings on each variable of the study.

4.2. Pilot Study Results

A pilot study was carried out in four Technical Vocational Education and Training (TVET) institutes located in the neighboring county of Murang'a. The main purpose of this pilot was to test the questionnaire used in the research for its reliability, ensuring that it would produce consistent and dependable results. The selected institutions were chosen because they closely resemble the population targeted in the main study. This means they share similar student demographics, training programs, and staffing structures, making them ideal for testing the survey instrument. Before applying the questionnaire broadly, it is important to verify that each set of questions is clear, relevant, and stable. This step helps identify any confusing items or wording that could distort the data later.

To assess the reliability of the questionnaire, the study calculated a statistical measure called Chronbach's Alpha for each of the main variables involved. Chronbach's Alpha is a common method used in research to determine how well a set of questions measures a single concept. The value of this coefficient ranges from 0 to 1. A higher score indicates that the questions are consistently linked and reliable. The research adopted a cutoff point of 0.7, meaning any variable with a Chronbach's Alpha of 0.7 or above was considered to have good internal consistency. This threshold is widely accepted in academic studies, including recent guidelines as recommended by Aityan (2022). This ensures the questions for each variable accurately reflect the intended concept and are not random or inconsistent. The results of this reliability test were positive. All the variables tested produced Chronbach's Alpha scores above the 0.7 cutoff mark. The results of the analysis is shown on Table 4.1.

Table 4.1: Pilot study

Items	Chronbach's Alpha
Procurement Planning	0.882
Procurement Audit	0.920
Open Contracting	0.720
Competitive Bidding	0.898

4.3. Response Rate

The target population of this study was 34 TVET institutions in the Nairobi Metropolitan Area. Therefore, a total of 34 questionnaires were issued to Procurement managers, or their equivalent in the public TVETs in the Nairobi Metropolitan Area. A total of 30 Questionnaires were collected. Of these questionnaires, 2 were incompletely filled, while 28 properly filled. 4 questionnaires were not collected or returned to the research team. Therefore the study achieved a response rate of 82.35. The results of this analysis is shown on Table 4.2.

Table 4.2: Response Rate

	Q. issued	Q. returned-Incomplete	Q. Not Returned	Q. Responsive
Frequency	34	2	4	28
Percentage	100	5.88	11.76	82.4

As catechized in Aityan (2022), the response rates obtained in this study may be considered sufficient to allow for meaningful data analysis and the drawing of statistical inferences from the results. Although the study did not achieve a 100% response rate, the level of participation was within the acceptable thresholds typically regarded as reliable for empirical research. This suggests that the findings derived from the collected data are both credible and representative of the broader population under study, thereby supporting the validity of the conclusions drawn. The observed non-response, however, is not unusual in research of this nature and may be attributed to several probable factors. These include fear of scrutiny, especially in environments where transparency

may lead to unintended consequences; concerns over the confidentiality of the information provided; institutional or bureaucratic restrictions that limit participation in external research; fear of misinterpretation of their responses; potential professional or personal repercussions; and the high workload and tight schedules often faced by individuals in demanding roles.

In many cases, potential respondents may prioritize immediate organizational responsibilities over voluntary research participation, especially when they perceive little direct benefit from the study. Furthermore, lack of awareness about the purpose and significance of the research or skepticism about how the data would be used could also contribute to non-response. Despite these challenges, the study achieved a sufficient number of responses to uphold the integrity of its analysis and conclusions

4.4 Demographics

The Procurement managers or their equivalent were the unit of observation in this study. Therefore questionnaires that were objectively prepared, were issued to the procurement managers. In order to determine whether the respondents were knowledgeable and experienced about the institutions' operations during the 2023/ 2024 financial year, the study asked respondents to indicate the period they have served in the institutions' supply chain function. The responses revealed that all respondents had served in the institutions for over two years. Thus responses for this study could be deemed to have been received from appropriately knowledgeable persons. Figure 4.1 shows the results of the analysis.

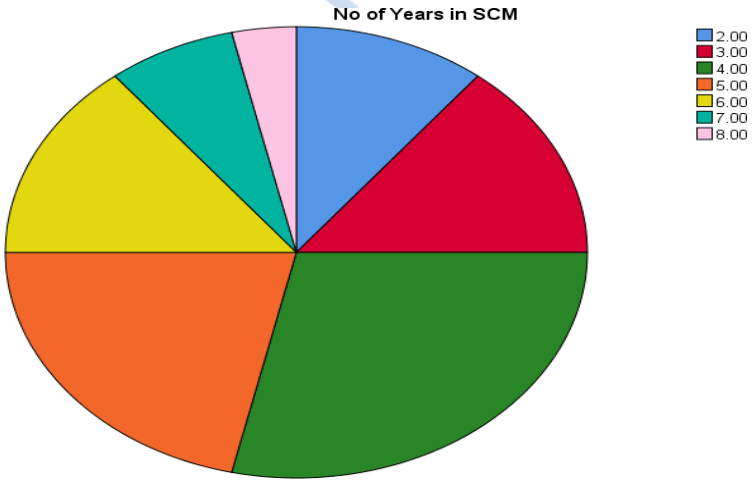

Figure 4.1: Respondents Years of Service.

4.5. Public Procurement Price Variance in Government Agencies in Nairobi.

The study sought to establish the level of price variance of goods commonly procured by TVET institutions in the Nairobi Metropolitan area. To establish price variance (Negative or Positive), the study collected data on market prices of 12 commonly acquired goods. The study further collected data on prices at which these items were acquired at in the financial year 2023/2024 by the TVET institutions in the Nairobi Metropolitan Area. The analysis reveals that the highest price variance was 268% while the lowest was 6%. Notably, all variance was positive thus indicating overpricing-That commonly acquired goods are purchased at prices significantly higher than the market price. This denotes widespread overpricing by TVET institutions in the Nairobi Metropolitan area. These findings support the findings of Hassan et al (2025) who found similar prevalent state of overpricing in public entities in Kenya. The results of the analysis is shown in Figure 4.2.

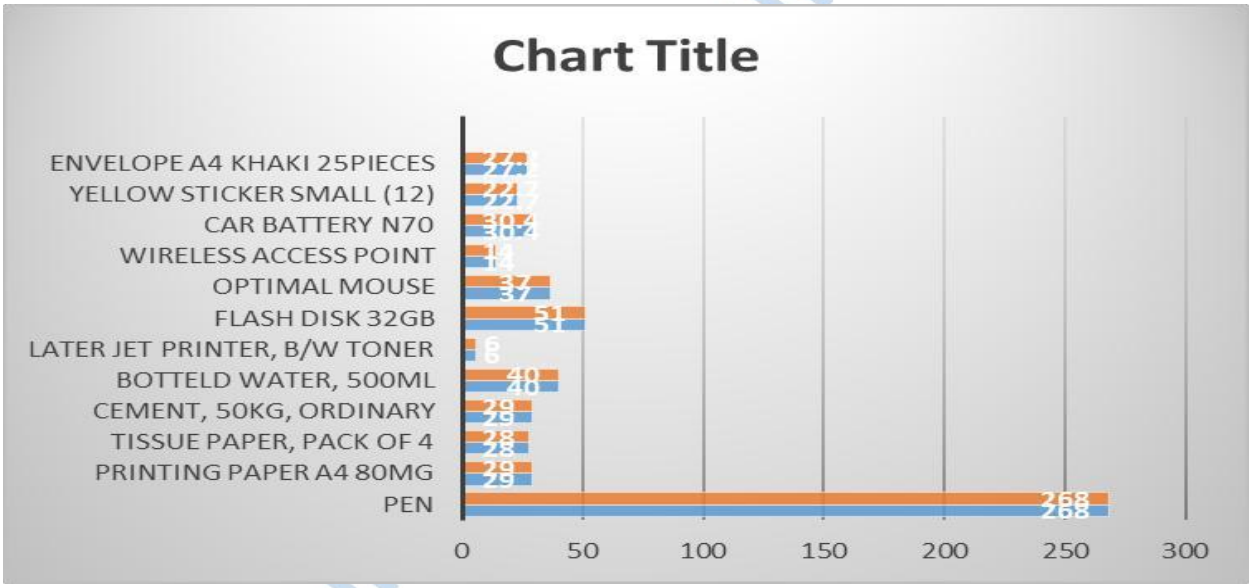

Figure 4.2: Average Price Variance of Commonly Procured Goods

4.6. Procurement Planning and Public Procurement Price Variance in TVETs in Nairobi Metropolitan Area.

The study hypothesized that procurement planning has no significant effect on public procurement price variance. Thus the study collected and analyzed data on the procurement planning practice in TVET institutions in the Nairobi Metropolitan Area. Specifically the study collected data on procurement conducted outside procurement plans, and probable causes of the procurement

outside the procurement plan. This section provides the descriptive and inferential analysis of this study.

4.6.1 Descriptive statistics on Procurement Planning and Public Procurement Price Variance in TVETs in Nairobi Metropolitan Area.

The study examine the extent to which procurement is conducted outside the approved procurement plan in a financial year in the TVET institutions in the Nairobi Metropolitan Area. The analysis reveals that all TVET institutions in the study conducted procurement outside the procurement plan. The largest extent was 26% of procurement outside the procurement plan; while the lowest extent was 8%. The results of the analysis is shown on Figure 4.3.

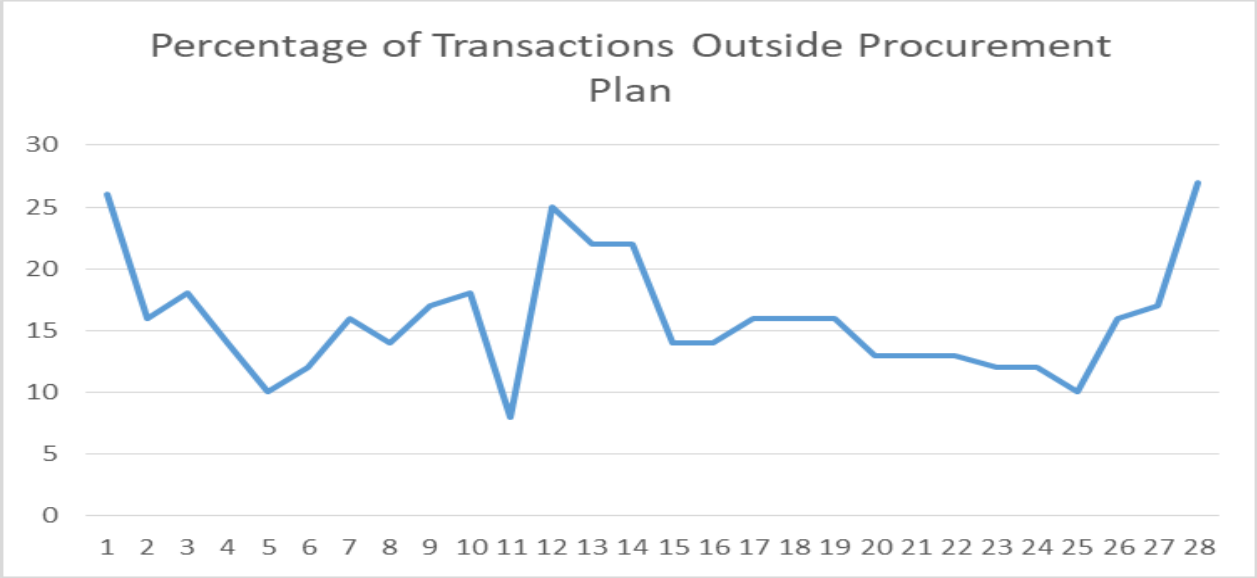

Figure 4.3: Percentage of Transactions outside Procurement Plan

The study further sought to investigate the probable reasons for instances of procurement occurring outside the officially approved procurement plans. This aspect of the research was important in understanding the underlying operational and administrative factors that contribute to deviations from planned procurement processes. Analysis of the responses collected revealed that emergency needs emerged as the most prevalent reason cited for engaging in unplanned procurement. Specifically, 22 of the entities included in the study identified emergency needs—typically arising from unforeseen circumstances or urgent service delivery requirements—as the leading cause of such deviations.

Additionally, 16 respondents reported that emergent needs, which had not been anticipated or captured during the initial procurement planning phase, also contributed significantly to unplanned procurement activities. These findings highlight the dynamic nature of procurement environments in many organizations, where rigid adherence to pre-set plans is often challenged by real-time operational demands, emergencies, or changing priorities.

4.6.2 Inferential Statistics on Procurement Planning and Public Procurement Price Variance in TVETs in Nairobi Metropolitan Area.

The study also sought to examine the statistical significance of the effect of procurement planning practice on the public procurement price variance in TVETs in the Nairobi Metropolitan Area. The study therefore examined the effect of the percentage of procurement outside procurement plan, on the percentage of average price variance in the TVET institutions. The study conducted linear regression analysis using the regression model: $Y= \beta 0+ \beta 1X1+\varepsilon$; Where; Y = Public Procurement Price Variance; $\beta 0$ = constant (coefficient of intercept); X1 is procurement planning; and $\beta 1$, is the regression coefficient. The results of the analysis revealed an R squared of 0.853, and a P-Value of 0.000. This indicates that procurement planning has a significant and substantial effect on the public procurement price variance. The results of the analysis is shown on Table 4.3.

Table 4.3: Regression of Public Procurement Price Variance on Percentage of Procurement outside Procurement Plan

R-Squared	P-value
.853	.000
co-efficient: B, -23.154, X1, 4.396	

The resultant regression model becomes: Y=-23.154+4.396X1. This implies that a percentage increase of procurement outside procurement plan, leads to a 4.396% increase in Public Procurement price Variance. The findings of this study auger well with the findings of Mrope (2018) who found that procurement planning significantly influenced procurement performance by ensuring timely acquisitions, cost reduction, and better supplier management.

4.6.3 Discussion on Procurement Planning and Public Procurement Price Variance in TVETs in Nairobi Metropolitan Area.

The study has established a prevalent scenario of procurement outside procurement plans. This scenario is a major violation of the stipulations and spirit of the public procurement and asset disposal act (2015) (PPRA, 2022). Specifically, Section 53 (1) stipulates that all procurement shall be made within approved annual procurement plans that ties the needs to budgetary provisions. The study assessed the reasons for procurement outside procurement plans and established that emergency needs and emergent unidentified needs were the most prevalent causes. These reasons underscore the need for greater flexibility, improved forecasting capacity, and adaptive planning mechanisms in procurement processes. Procurement activities conducted outside of formal plans undermine these objectives by introducing irregularities, reducing oversight, and increasing the risk of inefficiencies, corruption, and poor service delivery. The findings suggest a gap between policy and practice, indicating either a lack of enforcement, capacity constraints in procurement planning, or a culture of reactive procurement that circumvents due process.

The study further established that procurement planning has a significant effect on procurement price variance- that percentage increase in procurement outside the procurement plan coincides with a percentage increase in positive price variance (over-pricing). These findings agree with findings of Dushimimana (2024) who found that procurement planning positively affected institutional performance by improving procurement timelines, reducing costs, and enhancing compliance with procurement regulations. It can thus be deduced that procurement planning disrupts the mechanisms of inefficiency by reducing unplanned procurement, promotes compliance to competitive bidding methods, and provides visibility of procurement processes thus contributing to price compliance.

4.7 Procurement Audit and Public Procurement Price Variance in TVETs in Nairobi Metropolitan Area.

The study sought to examine the effect of Procurement audit on the Price variance by assessing the nature of procurement audit in the TVET institutions in Nairobi Metropolitan Area. This section provides the results, and discussion of the descriptive and inferential analysis.

4.7.1 Descriptive Statistics on Procurement Audit and Public Procurement Price Variance in TVETs in Nairobi Metropolitan Area.

The study analyzed the nature of procurement audit in the TVET institutions in two ways. Firstly, the study assessed the number of instance when audit is conducted on the procurement proceedings; and also the exact instance when the audit is conducted. The study found that while majority of the entities conducted between 2 and three audits on each procurement proceeding, four institutions did not normally conduct any audit of process during the procurement proceedings. The results of the analysis are shown in Figure 4.4.

Figure 4.4: Instances of Procurement Audit.

The study also revealed that most organizations tend to conduct procurement audits at specific stages of the procurement process, primarily during contract execution (reported by 26 entities), payment of suppliers (reported by 28 entities), and during supplier audits. These findings suggest that while audits are indeed being carried out, they are largely focused on the latter stages of the procurement cycle—after procurement decisions have been made and contracts awarded. Notably, the study found that a majority of government agencies rarely conduct audits aimed at verifying price conformance, such as price benchmarking or market comparisons during the procurement decision-making stage. As a result, these agencies miss a critical opportunity to ensure that procurement transactions are executed at fair and competitive prices. This gap has significant implications for cost-efficiency and value for money in public procurement.

Extant empirical evidence, such as that presented in Sallwa (2022), emphasizes the importance of various types of procurement audits—particularly compliance audits—in promoting price conformance. Compliance audits are instrumental in identifying deviations from procurement rules, detecting overpricing, and ensuring that awarded contracts reflect prevailing market rates. The absence or underutilization of such audit mechanisms means that government agencies are not fully leveraging the power of audits to control costs and enhance procurement performance. These insights underscore a missed strategic opportunity for public institutions to improve procurement efficiency and effectiveness. Integrating comprehensive audit practices, including price verification and compliance reviews, throughout the procurement cycle can enhance transparency, promote accountability, and ultimately contribute to better use of public resources.

4.7.2 Inferential Statistics on Procurement Audit and Public Procurement Price Variance in TVETs in Nairobi Metropolitan Area.

The study further sought to assess the relationship between procurement audit and price variance. The study assessed the relationship between number of general average instance of procurement audit in procurement proceedings and the percentage variance using the regression model: $Y= \beta0+ \beta1X1+\varepsilon$; Where; Y =Public Procurement Price Variance (General-average percentage price variance in a firm); $\beta0$ = constant (coefficient of intercept); X1 is Procurement Audit (Instances of Procurement Audit); and $\beta1$, is the regression coefficient of Procurement Audit; the analysis yielded the following statistics shown on Table 4.4.

Table 4.4: Regression Results: Procurement Audit and Public Procurement Price Variance.

R-Squared	P-value
.865	.000
co-efficient: B, 77.657, X1, -18.647	

The R square 0.865 (P-Value 0.000) indicates that procurement audits have a significant and substantial effect on the public procurement price variance in TVETs in the Nairobi Metropolitan Area. The resultant regression model of the analysis becomes. Y=77.657-218.647ProcAudit. This means that an increase in instances of procurement audits by 1, leads to a reduction of average public procurement variance by 18.647%. These findings support the assertion by Mwangi (2020)

conducting regular procurement audits experienced improved compliance with procurement laws and regulations, leading to increased procurement efficiency and reduced costs.

4.7.3 Discussion of Findings on Procurement Audit and Public Procurement Price Variance in TVETs in Nairobi Metropolitan Area.

The findings revealed that the majority of the institutions under study typically conducted two to three audits for each procurement process. These audits were often aligned with key stages in the procurement cycle, such as pre-qualification, contract award, and post-implementation reviews. However, the study also uncovered notable gaps in compliance and internal controls. Specifically, four institutions reported that they do not conduct any audits of procurement processes during the procurement proceedings. This absence of audit oversight raises concerns regarding accountability, transparency, and the potential for procedural irregularities or mismanagement of public resources.

Further the study establishes that Procurement audits have a significant and substantial effect on price variance-the more the number of audit instance, the lower the price variance. This statistically significant relationship underscores the vital role that procurement audits play in enhancing compliance, controlling costs, and promoting efficient use of public resources. Procurement variance, often a proxy for inefficiencies, cost overruns, or pricing inconsistencies, can be substantially minimized through regular and systematic audit interventions. These findings lend strong support to the assertions made by Mwangi (2020), who concluded that institutions that conduct regular procurement audits tend to experience higher levels of compliance with procurement laws and regulations. Such compliance not only ensures adherence to legal and procedural standards but also contributes to greater procurement efficiency and reduced expenditure variances. The results of this study, therefore, affirm the importance of institutionalizing routine audit practices as a strategic tool for improving procurement outcomes in public sector organizations.

4.8 Open Contracting and Public Procurement Price Variance in TVETs in Nairobi Metropolitan Area.

The study on open contracting and procurement price variance focused on examining the extent of open contracting and its effect on price variance in public procurement. The section that follows presents the results of the descriptive and inferential analysis; as well as the discussion of the results.

4.8.1 Descriptive statistics on Open Contracting and Public Procurement Price Variance in TVETs in Nairobi Metropolitan Area.

The study asked respondents to indicate the estimated percentage of the total procurement portfolio that is published on open contract platforms such as the public procurement information portal. Analysis of the results show that majority of the TVETs in the Nairobi metropolitan area have open contracted less than 20% while less than 4 TVET institutions have Open contracted up-to 33% of the total procurement portfolio. This indicates that despite government efforts to develop openness in the public procurement system, most government entities are yet to achieve this milestone. The results of the analysis are shown on Figure 4.5.

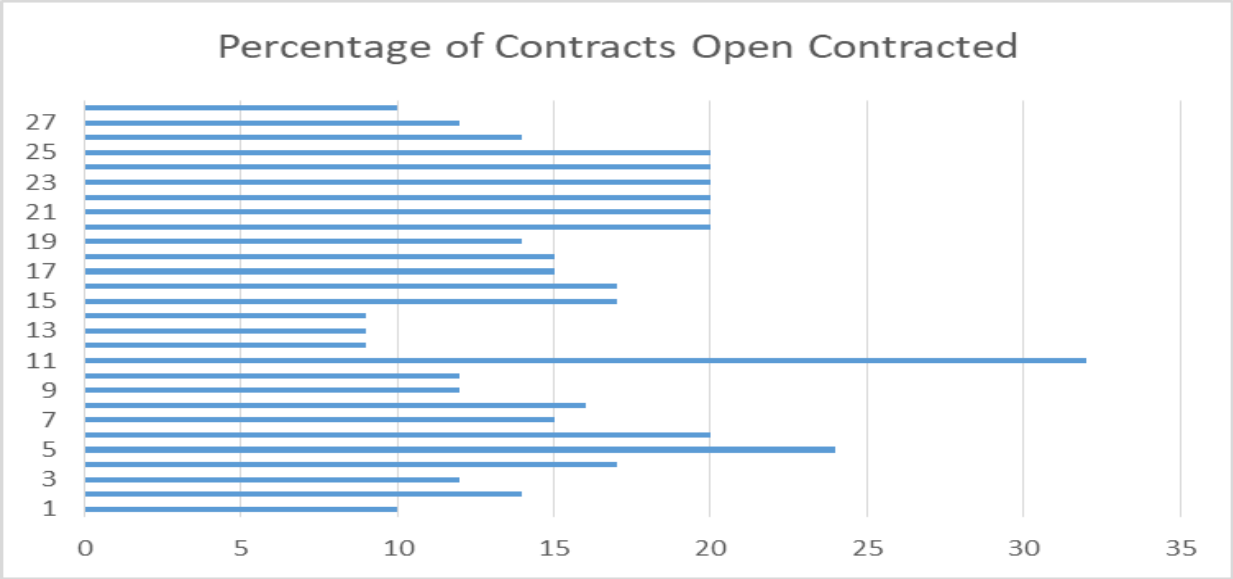

Figure 4.5: Percentage of Contracts Open Contracted.

This indicates that, despite significant government efforts to foster transparency and accountability in the public procurement system, most TVET institutions have yet to meet this critical milestone.

4.8.2 Inferential Analysis on Open Contracting and Public Procurement Price Variance in TVETs in Nairobi Metropolitan Area.

Further, the study sought to examine the effect of the level of open contracting on the percentage price variance. This inquiry relied on the following regression model: $Y= \beta0+ \beta1X1+\varepsilon$; Where; Y =Public Procurement Price Variance; $\beta0$ = constant (coefficient of intercept); X1 is Estimated Percentage of Procurement Portfolio Open Contracted; and $\beta1$, is the regression coefficient of Estimated Percentage of Procurement Portfolio Open Contracted. The results of the analysis are shown on table 4.5.

Table 4.6: Regression Analysis of Percentage of Procurement Portfolio Open Contracted and public Procurement Price Variance

R-Squared	P-value
.845	.000
co-efficient:	B, 110.514, X1, -3.995

The results of the regression analysis reveals an R squared of 0.845, and P-Value of 0.000. This means that open contracting has a significant and substantial effect on the percentage price variance. Further the regression analysis yields the following regression model: Average Percentage Procurement Price Variance=110.514-3.995OpenContracting. This implies that a percentage increase on the value of open contracted portfolio yields an estimated 4 percent reduction in the positive price variance. Simply put, an increase in open contract practice yields a reduction in overpricing. This supports the assertion by Fazekas and Blum (2021) that presented enhanced openness could result into cost savings and other efficiencies of the procurement process-such as reduced instances of overpricing.

4.8.3 Discussion of Analysis on Open Contracting and Public Procurement Price Variance in TVETs in Nairobi Metropolitan Area.

The study establishes relatively low levels of open contracting among TVETs in the Nairobi Metropolitan area. This low uptake of open contracting is especially concerning given the constitutional and legislative requirements under Article 227 of the Constitution of Kenya and the Public Procurement and Asset Disposal Act (PPADA), 2015. These frameworks mandate that all public procurement must be conducted in a transparent, fair, and competitive manner and require institutions to make procurement plans, tender opportunities, and contract awards publicly accessible. Open contracting is not optional but a legal obligation meant to enhance public trust, promote competition, and ensure the effective use of public funds. Failure by TVETs to meet these transparency thresholds undermines the core objectives of these laws. As espoused by World Bank (WB, 2016), It limits public oversight, increases the risk of mismanagement, and restricts opportunities for suppliers—particularly disadvantaged groups meant to benefit from inclusive procurement.

The study establishes that greater adoption of open contracting is associated with a notable decline in procurement overpricing. These findings empirically support the assertions by Fazekas and Blum (2021), who argue that enhanced procurement transparency—through open contracting—leads to greater cost efficiency, reduced risks of inflated pricing, and better value-for-money outcomes. Open contracting reduces the information asymmetry and discretionary power often exploited in opaque procurement systems, thereby tightening price controls and improving overall financial stewardship. In the context of public institutions such as TVETs, this underscores the economic imperative of complying with transparency obligations outlined in Article 227 of the Constitution and the PPADA (2015) to minimize procurement inefficiencies and safeguard public resources.

4.9 Competitive Bidding and Public Procurement Price Variance in TVETs in Nairobi Metropolitan Area

The study sought to examine the extent of application of competitive bidding in entities. This section provides a detailed analysis that creates a profile describing the extent of application of competitive bidding in TVETS in Nairobi Metropolitan Area and its effect on price variance in public procurement.

4.9.1 Descriptive Analysis on Competitive Bidding and Public Procurement Price Variance in TVETs in Nairobi Metropolitan Area

The study sought data about the extent to which competitive bidding is applied in procurement proceedings of TVETs in the Nairobi Metropolitan Area in the financial year 2023/2024. The analysis of data reveals that all TVETs had a relatively high application of competitive bidding in Procurement-as all entities had over 60% application of competitive bidding in the financial year under study. However, only two entities had a relatively high level, of above 80%, of application of competitive bidding The results of this analysis is shown in Figure 4.6.

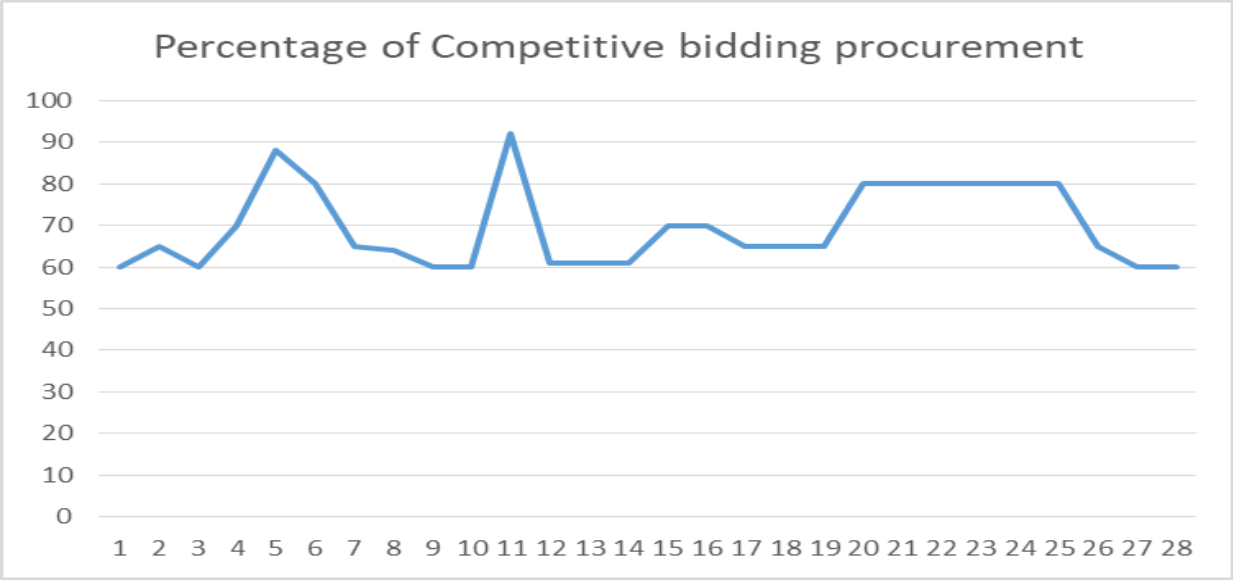

Figure 4.6: Percent of Procurement through Competitive Bidding

These results show that while competitive bidding is widely used, as recommended by the Public Procurement and Asset Disposal Act (2015), non-competitive methods are still substantially applied in the acquisition of goods, works, and services by public entities. Although the findings reflect a relatively high level of competitive bidding, the continued use of non-competitive methods may contribute to the observed overpricing, as they allow for price setting with limited market comparison

4.9.2 Inferential Analysis on Competitive Bidding and Public Procurement Price Variance in TVETs in Nairobi Metropolitan Area

The study examined the effect of competitive bidding on price variance using the regression model: $Y= \beta0+ \beta1X1+\varepsilon$; Where; Y =Public Procurement Price Variance; $\beta0$ = constant (coefficient of intercept); X1 is Percentage of total procurement through competitive bidding; and $\beta1$, is the

regression coefficient of Percentage of procurement through competitive bidding. The results of the analysis are shown on Table 4.6.

Table 4.6: Procurement Price Variance on Procurement through Competitive Bidding

R-Squared	P-value
.837	.000
co-efficient: B, 195.826, X1, -2.14.	

The analysis yielded a co-efficient of determination of 0.837, and a p-value of 0.000. This means that the competitive significantly and substantially affects public procurement price variance. The regression model becomes: Procurement Price variance in an agency=195.826-2.14; indicating that an increase in one percent of total procurement conducted through competitive bidding results in 2.14% reduction in average price variance. This finding support the finding of Fazekas and Kocsis (2020) that shows that more bidders helped lower the cost of public contracts

4.9.3 Discussion on Competitive Bidding and Public Procurement Price Variance in TVETs in Nairobi Metropolitan Area

These results demonstrate that while there is a relatively high application of competitive bidding, in alignment with the provisions of the Public Procurement and Asset Disposal Act (PPADA), 2015, non-competitive procurement methods still feature significantly in the acquisition of goods, works, and services by public entities. Competitive bidding is central to promoting transparency, fairness, and value for money, and its widespread use is a positive indicator of procedural compliance (PPRA, 2022). However, the concurrent reliance on non-competitive methods—such as direct procurement, restricted tendering, or request for quotations—raises concerns, particularly when such methods are applied without strict justification as required by the law.

The continued use of these non-competitive approaches may, in part, account for the prevalence of procurement overpricing, as they offer limited market testing and reduce price competition. In such contexts, entities may have broader discretion in price determination, increasing the risk of awarding contracts at rates above prevailing market prices. This undermines the cost-efficiency objectives of public procurement and weakens public confidence in the system. Therefore, while adherence to competitive bidding is commendable, public institutions must strengthen internal

controls and justification procedures for non-competitive methods to minimize the risk of inflated pricing and ensure compliance with both the intent and letter of the PPADA (2015)

The study finds that competitive bidding significantly affects the level of price variance. This suggests that competitive bidding mechanisms play a critical role in achieving cost efficiency and minimizing price inflation in public procurement. The model reinforces the principle that wider bidder participation enhances market testing, thereby exerting downward pressure on prices and curbing the risk of overpricing. These findings align with Fazekas and Kocsis (2020), who found that increasing the number of bidders in public tenders was strongly correlated with lower contract prices, indicating that competition not only improves transparency but also delivers tangible financial savings. In the context of public procurement reform, particularly under the framework of the Public Procurement and Asset Disposal Act (2015), this evidence underscores the economic rationale for strengthening competitive bidding processes. It further affirms that efforts to expand access, reduce barriers to entry, and ensure openness in procurement procedures are not only enhance legal compliance, but also affect fiscal prudence-and enhance value for money in the use of public funds.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of findings, conclusions, and recommendations drawn from an in-depth analysis of the effects of public procurement management practices on procurement price variance in TVET institutions within the Nairobi Metropolitan Area. The study explored the impact of four key variables: procurement planning, procurement audit, open contracting, and competitive bidding; on price variance, with a focus on understanding the causes and possible remedies to systemic overpricing in public procurement. This chapter presents a summary of the findings, conclusions, and recommendations.

5.2. Summary of Findings

The general objective of this study was to examine the effect of procurement practices on the public procurement price variance in the TVETs in the Nairobi Metropolitan Area. The study assesses the effect of four procurement practices: Procurement planning, Procurement Audit, Open Contracting and Competitive bidding; on public procurement price Variance in the TVETs in Nairobi Metropolitan Area. The study is ground on the resource based view, the agency theory, the Institutional Theory and the Transaction Cost Economics (TCE). A literature review established that while extant literature exists, it only explain minor aspects of this study; and therefore does not give empirical explanation on the effect of procurement practices on price variance in Technical and Vocational Training institutions in the Nairobi Metropolitan Area. The study adopted a descriptive research designed aimed at describing in detail the application of these procurement practices, and their effect on public procurement price variance in these institutions.

The study adopted a survey research design to collect data from all the 34 TVET institutions in the Nairobi Metropolitan Area. The unit of observation was the procurement managers or their equivalent. The study achieved a response rate of 82%. The study applied both descriptive and inferential analysis. The following is the summary of the Findings.

5.2.1 Procurement planning and Public Procurement Price Variance.

The study uncovered widespread deviations from official procurement plans across all surveyed TVET (Technical and Vocational Education and Training) institutions. In many cases,

procurement activities outside the scope of approved plans ranged from as low as 8% to as high as 26%. This means that a significant portion of procurement is taking place without prior approval or proper planning, which raises concerns about transparency and accountability. These numbers suggest that, despite the existence of formal rules requiring procurement to follow carefully developed plans, these rules are often ignored or sidestepped. The findings of the study indicate that, instead of proactively preparing and allocating resources based on forecasts and long-term needs, many institutions respond to urgent or unforeseen demands only when they arise. For example, an institution might urgently purchase equipment or supplies needed for an upcoming demonstration or exam outside of their scheduled procurement cycle. Such emergency purchases tend to bypass standard approval processes and detailed reviews, increasing the risk of errors and unfair practices.

The implication is that these unanticipated procurements are less likely to undergo thorough inspection, cost analysis, or competitive bidding, increasing the likelihood of paying inflated prices or selecting suppliers who may not offer the best value. This pattern compromises the integrity of the procurement process and leads to inefficiencies. A deeper analysis through regression tests revealed a critical link between procurement outside the plan and the variation in prices paid for goods or services. The analysis showed that whenever procurement was carried out outside the approved plans, it was closely associated with larger price discrepancies. In fact, every 1% increase in procurement activities outside the plan resulted in an average rise of 4.396% in price variance. This statistic confirms that deviations from planned procurement contribute directly to higher costs and wasted resources. This give credence to earlier findings that poor planning not only causes delays and disruptions but also pushes institutions toward purchasing at prices that do not reflect current market conditions. Such practices can lead to paying more than necessary or settling for inferior quality because of hurried decisions made without proper market analysis.

The findings highlights gaps in the current procurement practices of these institutions. They point to a system that often reacts rather than plans. This reactive approach leads to unplanned purchases, which disrupt the efficient use of public funds and undermine the goal of achieving value for money. Improving procurement planning and sticking to approved plans would help reduce unnecessary costs, improve transparency, and ensure that resources are used to meet actual needs

rather than urgent or unforeseen demands. Addressing these issues requires stronger internal controls, better forecasting, and more disciplined adherence to procurement rules.

5.2.2 Procurement Audit and Public Procurement Price Variance

Procurement audits were found to be inconsistently implemented across TVET institutions, with notable disparities in both frequency and scope. While most entities conducted two to three audits per procurement cycle, others—specifically four institutions—conducted none at all. This disparity reflects significant institutional variation in how procurement oversight is perceived and executed, suggesting a lack of standardized auditing frameworks across the sector. Moreover, the audits that were carried out were predominantly reactive in nature, often limited to post- procurement stages such as contract execution, payment processing, and supplier review. This narrow application of audits neglects critical stages such as tender evaluation and price benchmarking, where early detection of anomalies and inconsistencies is most effective. The minimal emphasis on verifying price conformance during the procurement planning and tendering phases reflects a missed opportunity to influence procurement outcomes before financial commitments are made.

The regression analysis revealed a strong and statistically significant relationship between procurement audits and procurement price variance, with each additional audit instance associated with an 18.647% reduction in overpricing. This finding highlights the central role of audits not just as compliance checks but as strategic interventions capable of directly influencing procurement efficiency and fiscal prudence. Audits contribute to cost containment by reinforcing internal controls, uncovering instances of inflated pricing, and ensuring that contractual terms reflect market-appropriate costs. Institutions that embed regular, comprehensive audit protocols into their procurement cycles are better equipped to monitor pricing behavior, prevent fraudulent practices, and maintain consistency with procurement regulations. The findings support the view that proactive audit practices promote a culture of accountability within procurement departments. They instill discipline among procurement officers, knowing that their decisions will be subject to scrutiny and documentation. In contrast, the absence or irregularity of audits fosters environments where cost irregularities, supplier collusion, and administrative errors go undetected, enabling procurement inefficiencies to persist unchecked.

5.2.3 Open Contracting and Public Procurement Price Variance

The findings clearly showed that open contracting is rarely used in the public TVET sector. Most institutions only open less than 20 percent of their procurement activities to the public. Very few institutions—less than 10 percent—reach higher levels, with some achieving up to 33 percent openness. This overall low compliance with open contracting laws and policies weakens the intended goal of promoting transparency and fairness in public procurement. These policies, like Article 227 of the Constitution and the Public Procurement and Asset Disposal Act (PPADA, 2015), aim to make procurement processes more open, fair, and accessible. When institutions fail to meet these openness standards, it makes it harder to hold them accountable for their procurement decisions.

A more detailed analysis confirms that open contracting has a tangible impact on pricing. Regression results indicate that increasing open contracting by just 1 percent leads to a nearly 4 percent decrease in price variation. This suggests that when procurement information is made accessible to the public, it fosters more competition. Buyers and suppliers are pushed to be fair, knowing that their actions can be watched. Transparency helps prevent price fixing and other unfair practices. It encourages suppliers to offer better prices because they know their bids are visible. This makes the market more competitive and helps ensure that prices are fair. When open contracting is ignored, organizations often see prices inflated unnecessarily. Lack of openness makes it easier for some suppliers or officials to manipulate prices in secret, harming the efficiency of spending.

The findings of this study could imply and support assertion by other studies that open contracting promotes transparency in procurement-which builds trust and encourages competition. It leads to fairer deals for the government and taxpayers. When procurement is open, officials are more likely to follow rules and avoid corruption. It also helps the public and oversight bodies monitor and evaluate how funds are spent. In the end, open contracting improves procurement efficiency and strengthens fiscal discipline. It ensures that public money is used wisely and that procurement processes serve the true needs of the community. Without it, procurement risks becoming opaque and unfair, wasting public funds and reducing confidence in government processes.

5.2.4 Competitive Bidding and Public Procurement Price Variance

Despite a generally high level of competitive bidding across all institutions—where over 60% of procurement was done competitively—the study revealed that non-competitive methods, such as direct procurement and restricted tendering, continue to be frequently applied. This coexistence of competitive and non-competitive approaches reflects a dissonance between regulatory intent and operational practice. While the widespread use of competitive bidding aligns with the core principles of the Public Procurement and Asset Disposal Act (2015), which emphasizes transparency, fairness, and value for money, the persistent application of non-competitive methods undermines these very principles. Such methods, when used without clear justification or oversight, weaken the integrity of the procurement process by reducing supplier participation, encouraging price manipulation, and creating environments conducive to favoritism and collusion.

The regression analysis demonstrated a strong and statistically significant negative relationship between the extent of competitive bidding and procurement price variance, with a 1% increase in competitive procurement correlating with a 2.14% reduction in price variance. This finding provides empirical support for the long-held assertion that competition is not only a procedural requirement but a financial safeguard. Competitive bidding forces suppliers to submit more realistic and market-aligned prices in order to remain viable contenders, thereby curbing overpricing and promoting cost efficiency. It introduces discipline into the procurement market, stimulates innovation, and offers public institutions a broader spectrum of choices with better value propositions.

However, the continued use of non-competitive methods—particularly when not warranted by exceptional circumstances—raises critical concerns about the robustness of procurement oversight mechanisms. The tendency to rely on direct procurement and restricted tendering, even in cases where open tendering would be more appropriate, reflects systemic weaknesses in policy enforcement and a possible culture of administrative convenience or deliberate circumvention. The duality between the high reported levels of competitive bidding and the frequent use of its non-competitive counterparts suggests that competitive procurement is often selectively applied, and in some instances, undermined altogether.

5.3 Conclusions

Based on these findings, the study concludes as follows:

5.3.1 Procurement planning and Public Procurement Price Variance.

The study clearly finds that poor procurement planning plays a large part in causing overpricing in public TVET institutions. When planning is weak or incomplete, it often fails to include critical market information about current prices and supplier options. Without timely and detailed data, estimating how much goods or services should cost becomes unreliable. This leads to inflated estimates that push costs higher than necessary. As a result, institutions tend to rely more on emergency or ad hoc purchases. These types of buying happen quickly, often without proper checks, and tend to be more costly. When procurement is not based on a clear, approved plan that fits within the institution's budget rules and regulations, it becomes harder to monitor spending or compare prices. This situation creates gaps where prices can spiral higher. Officials might cut corners to keep up with urgent needs, pushing prices up even more. Over time, these practices lead to substantial financial losses for the institutions and waste public funds meant for education.

Institutionalizing planning means making it a regular part of the procurement process. Institutions should have clear guidelines that link planning closely with their budgets and legal requirements. When they do not, procurement is often conducted on a scattered basis, outside approved plans. This creates opportunities for costly errors, favoritism, or inflated prices. It also reduces the ability of auditors or oversight bodies to track how money is spent. When procurement happens without proper planning, it tends to be more expensive because urgent orders often bypass competitive bidding, leading to inflated quotes and higher prices

5.3.2 Procurement Audit and Public Procurement Price Variance

The study concludes that audits of the procurement process is essential to identify and prevent unfair pricing practices. These audits often focus on comparing prices with industry standards and ensuring that procurement procedures are followed correctly. When done regularly, such checks act as strong tools to discourage vendors or suppliers from setting inflated prices. For example, a government agency that compares procurement costs against market rates can spot when a supplier charges more than the average, preventing unnecessary expenses. Additionally, audits verify that suppliers comply with the agreed terms, reducing the chance of price manipulation or padding

costs. Without these routine checks, irregularities in the procurement process often go unnoticed. Vendors might take advantage of gaps or lack of oversight to inflate prices, knowing they face little risk of discovery. This can lead to overspending and drain resources from the organization. When corruption or favoritism enters the process, inflated costs become even more common. Institutions that do not adopt proper audit measures lose a key line of defense. They risk losing control over spending and fail to foster transparency and fairness in procurement.

Having audit mechanisms in place encourages discipline among procurement officials. Knowing that their decisions are monitored helps ensure adherence to rules and fair price-setting. It also boosts accountability, as officials become more cautious about approving transactions. These audits create a culture of transparency and fairness that benefits the entire organization. Three key conclusions can be made out of these findings. Firstly, procurement audit units should be institutionalized in all government entities, with clear mandates for price verification. Second, accounting officers must be held accountable for conducting regular conformance audits as required by law. Third, audit processes should integrate real-time market price monitoring to improve oversight. Persistent non-compliance with audit requirements points to deeper systemic issues in procurement governance that demand structural reform.

5.3.3 Open Contracting and Public Procurement Price Variance

Open contracting remains significantly under-implemented across public institutions, despite being both a legal requirement and an ethical imperative in Kenya's procurement framework. This shortfall is particularly concerning given the explicit provisions of Article 227 of the Constitution of Kenya, which mandates that public procurement must be carried out in a manner that is fair, equitable, transparent, competitive, and cost-effective. These constitutional values are operationalized through the Public Procurement and Asset Disposal Act (PPADA), 2015, which further obligates procuring entities to publish procurement plans, tender notices, and contract awards in accessible public platforms such as the Public Procurement Information Portal (PPIP). The study confirms that greater levels of transparency—measured through the extent of open contracting—are associated with a significant reduction in procurement price variance. This affirms that transparency is not merely an administrative formality but a core strategy for promoting cost efficiency, eliminating pricing distortions, and ensuring value for public money.

Institutions that fail to comply with open contracting obligations restrict public scrutiny, limit supplier competition, and foster environments where price manipulation and favoritism can flourish unchecked. Non-compliance with open contracting requirements represents a direct violation of legal mandates under PPADA (2015), which places a duty on accounting officers to disclose procurement information proactively. The underuse of platforms like PPIP deprives citizens, suppliers, oversight bodies, and other stakeholders of critical information needed to monitor procurement performance, detect irregularities, and hold entities accountable. This opacity undermines not only the effectiveness of procurement systems but also erodes public trust in government spending and weakens democratic accountability.

5.3.4 Competitive Bidding and Public Procurement Price Variance

The study concludes that competitive bidding remains one of the most effective tools for tackling overpricing in public procurement. By encouraging suppliers to compete openly, it drives prices closer to real market values and ensures that public funds are spent more efficiently. Competitive bidding promotes price discipline, strengthens supplier accountability, and removes the influence of individual discretion in awarding contracts. Simply put, when suppliers know they're competing on a level playing field, they're more likely to offer fair and reasonable prices. This not only helps public institutions get better value for money, but also builds confidence in the procurement process. However, the study also uncovered a troubling trend: while competitive bidding is widely used, many institutions continue to rely heavily on non-competitive methods like direct procurement or restricted tendering. These alternatives, though permitted under certain legal conditions, are often applied without clear justification or sufficient oversight. This dual approach—using both competitive and non-competitive methods within the same institutions—raises serious questions about compliance with Kenya's procurement laws and the effectiveness of existing regulatory safeguards.

According to Article 227 of the Constitution of Kenya, public procurement must be conducted in a way that is fair, transparent, competitive, and cost-effective. This principle is echoed in the Public Procurement and Asset Disposal Act (PPADA), 2015, which designates open tendering as the preferred and default method. Non-competitive approaches are meant for exceptional cases only, and even then, the law requires strict documentation and justification. Yet the findings of this study suggest that these standards are not consistently upheld, leaving room for potential misuse. When

non-competitive methods are used without proper checks, it becomes easier for favoritism, inflated pricing, and even corruption to take root—putting public resources at risk. This situation highlights the urgent need for clearer regulatory guidance, stronger enforcement, and targeted training for procurement officials. Public institutions must not only understand the legal thresholds for choosing procurement methods but also be equipped to apply them correctly. Strengthening internal controls, enforcing compliance through regulatory bodies like the Public Procurement Regulatory Authority (PPRA), and conducting routine audits are necessary steps to close these gaps.

5.4. Recommendations

The study makes the following recommendations

5.4.1 Recommendation to Stakeholders of Public Procurement

The study findings could have several implications to the Kenyan public procurement system, such as designed for TVET institutions. Firstly, the study finds gaps exist in procurement planning that give opportunity for arbitrary pricing not based on market survey; and reactive procurement not anchored on the budget process. The study therefore recommends that procurement planning be strengthened through strict adherence to approved procurement plans. Institutions should institutionalize the practice of conducting regular market surveys to ensure that budget estimates reflect real-time market conditions. This will promote accurate cost forecasting and discourage arbitrary pricing. Secondly, the study findings indicate a lethargic application of procurement audit that does not focus on achieving price conformance as stipulated in law. The study therefore recommends that procurement audits should be made integral to all procurement cycles. Institutions must establish internal audit units with the capacity and authority to conduct price conformance audits before, during, and after the procurement process. This will enhance oversight, prevent overpricing, and promote accountability.

Thirdly, the study finds that despite the known benefits of open contracting, the implementation of open contracting practices is below par. The study recommends that TVET institutions should be mandated to publish procurement data—including plans, tender notices, and contract awards—on designated public platforms such as the Public Procurement Information Portal. This will facilitate public scrutiny and foster transparency. Lastly, the study finds that competitive bidding,

even though relatively well applied, perhaps in effort to achieve legal compliance, non-competitive methods never-the less are substantially applied. The study thus recommends that competitive bidding must be reinforced as the default procurement method. Exceptions should be granted only under clearly defined circumstances, supported by comprehensive justifications. Regulatory bodies must strengthen enforcement to ensure compliance with competitive procurement standards and discourage discretionary use of non-competitive methods.

5.4.2 Further Research

While this study provides critical insights into the link between procurement practices and price variance, it also highlights areas requiring further exploration. Notably, future research should investigate the organizational and behavioral factors contributing to deviations from procurement plans, despite the presence of formal planning frameworks, and the low application of procurement audit to enforce price conformance. Understanding the internal dynamics—such as institutional culture, leadership accountability, and capacity constraints—that undermine adherence to procurement planning could offer actionable solutions to improve compliance. Given the strong statistical relationship observed between open contracting and reduced price variance, longitudinal studies are needed to assess the long-term impact of procurement audit, and transparency reforms, on procurement efficiency and corruption mitigation. Such studies would help determine whether the initial gains associated with open contracting are sustained over time and under what institutional conditions.

Further, comparative analysis of procurement methods—particularly the cost implications of open tendering versus non-competitive methods—would deepen understanding of how procurement choices affect pricing outcomes. This can inform evidence-based revisions to procurement thresholds and exception criteria. Lastly, the role of digital procurement platforms in reducing price variance and enhancing oversight warrants continued investigation, particularly in low-resource settings. Future research should assess not only the technological performance of these systems but also the organizational readiness needed for effective adoption and impact.

Appendix I: References

Ambe, I. M. (2019). The role of public procurement to socio-economic development. *International Journal of Procurement Management, 12*(6), 652-668.

Ambe, I. M., & Badenhorst-Weiss, J. A. (2012). Procurement challenges in the South African public sector. *Journal of Transport and Supply Chain Management, 6*(1), 242-261.

Abebe, B. (2021). Factors affecting public procurement performance in Ethiopia: Case of Jimma, Mettu, and Bonga Universities. https://repository.ju.edu.et/bitstream/handle/123456789/6654/BERHANU%20ABEBE%20RESEARCH%20JU%202021.pdf?sequence=1

Ameyaw, C., Mensah, S., & Osei-Tutu, E. (2019). Public procurement audit and its impact on procurement performance in developing economies. *Journal of Public Procurement, 19*(3), 254-273.

Agyepong, A., & Nhamo, G. (2019). The influence of procurement planning on procurement performance in Ghana's public sector. *African Journal of Business Management*, 13(4), 112-128.

Aityan, S. K. (2022). *Business research methodology: Research process and methods.* Springer Nature.

Albano, G. L., & Sparro, M. (2008). Regulating Joint Bidding in Public Procurement. *Journal of Competition Law & Economics*, 5(2), 335–360.

Bals, L., Laine, J., & Mugurusi, G. (2018). Evolving purchasing and supply organizations: A contingency model for structural alternatives. *Journal of Purchasing and Supply Management, 24*(1), 41-58.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99-120.

Barasa, P., Kiprotich, S., & Mutuku, C. (2023). *Strategic procurement planning and service delivery in county governments in Kenya*. https://ajernet.net/ojs/index.php/ajernet/article/view/54

Bolton, P. (2006). Government procurement as a policy tool in South Africa. *Journal of Public Procurement, 6*(3), 193-217.

Bell, E., Harley, B., & Bryman, A. (2022). *Business research methods*. Oxford university press.

Baldus, B. J., & Hatton, L. (2020). US chief procurement officers' perspectives on public procurement. *Journal of purchasing and supply management*, *26*(1), 100538.

Basheka, B. C., & Bisangabasaija, E. (2010). Determinants of unethical public procurement in local government systems of Uganda: A case study. International Journal of Procurement Management, 3(1), 91-104.

Coase, R. H. (1937). The nature of the firm. *Economica, 4*(16), 386-405.

CMA (2025). UK faces 'significant risk' from procurement collusion, CMA warns. Financial Times

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review, 48*(2), 147-160.

Dushimimana, J. D. (2024). *Effect of procurement planning on public institutions' performance: A case study of Rwandan Development Board*. https://ajernet.net/ojs/index.php/ajernet/article/view/370/

Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of Management Review, 14*(1), 57-74.

European Commission. (2020). The impact of open contracting on procurement performance in the EU. Retrieved from https://ec.europa.eu/info/publications/impact-open-contracting-procurement-performance-eu_en.

Eyaa, S., & Oluka, P. N. (2011). Explaining non-compliance in public procurement in Uganda. International Journal of Business and Social Science, 2(11), 35-44.

Fazio, D. (2022). *Rethinking discretion in public procurement*. SSRN.

Fazekas, M., & Blum, J. R. (2021). Improving public procurement outcomes. *Policy research working paper*, *2*(4), 2-3.

Fazekas, M., & Kocsis, G. (2020). Effect of public procurement regulation on competition and cost-effectiveness: Evidence from the European Union. International Tax and Public Finance, 27(6), 1364–1392.

Graycar, A. (2019). Mapping corruption in procurement. *Journal of Financial Crime*, *26*(1), 162-178.

Gavurová, B., Mikeska, M., & Huculova, E. (2020). Evaluation of selected determinants of public procurement in the health sector. *Administratie si Management Public*.

Hajdu, I., & Miklós, J. (2017). Intensity of Competition, Corruption Risks and Price Distortion in the Hungarian Public Procurement–2009-2016.

Imhof, D., Karagök, Y., & Rutz, S. (2018). Screening for Bid Rigging—Does It Work? *Journal of Competition Law & Economics*, 14(2), 235–261.

Ijeoma, N. B., & Nwufo, C. I. (2015). Impediments of fraud prevention and control in public sector organizations in Nigeria: The case of Enugu State. *International Journal of Management Sciences and Business Research*, *4*(3), 1-6.

Institute of Development Studies. (2018). Open contracting in Kenya's education sector: An evaluation. Retrieved from https://www.ids.ac.uk/publications/open-contracting-in-kenyas-education-sector-an-evaluation/.

Kahanji, C., & Mwanaumo, E. M. U. (2023). Public sector contracting model for management of construction tender price volatility. *Journal of Construction Project Management and Innovation*, *13*(1), 19-44.

Kamoni P., Mbaabu O., Wamitu S., Wachira K.,and Ombati R. (2024) Public Procurement price variance in Kenya: extent, Drivers, and Proposed Mitigation, *European Journal of Logistics, Purchasing and Supply Chain Management*, Vol.12 No.2, pp.1-13.

Kenya Law Reports (KLR). (2018). *Ethics and Anti-Corruption Commission Investigations on NYS Procurement.* Government of Kenya.

Kibet, W., & Njeru, A. (2014). *Effect of procurement planning on procurement performance: A case study of Agricultural Development Corporation, Nairobi*. https://strategicjournals.com/index.php/journal/article/viewFile/1359/1319

Kinyua, J. K., Gakure, R. W., Gekara, M., & Orwa, G. (2015). Effect of internal audit practices on procurement performance in state corporations in Kenya. *International Journal of Innovative Research and Development,* 4(1), 101-107.

Kipchilat, L. (2018). The effect of procurement planning on procurement performance in public universities in Kenya. *International Journal of Procurement and Supply Chain Management,* 2(4), 45-60.

Lyra, M. S., Damásio, B., Pinheiro, F. L., & Bacao, F. (2022). Fraud, corruption, and collusion in public procurement activities, a systematic literature review on data-driven methods. *Applied Network Science*, *7*(1), 83.

Liu, G. (2022). Research on prediction and analysis of real estate market based on the multiple linear regression model. *Scientific Programming*, *2022*(1), 5750354.

Luft, J. A., Jeong, S., Idsardi, R., & Gardner, G. (2022). Literature reviews, theoretical frameworks, and conceptual frameworks: An introduction for new biology education researchers. *CBE—Life Sciences Education*, *21*(3), rm33.

Lianju, C., Akenroye, T. O., & Oladinrin, O. T. (2021). Procurement planning as a risk mitigation tool in public sector procurement. *Journal of Public Procurement*, 21(3), 341-365.

Mkasiwa, T. A. (2018). Compliance with public procurement regulations in Tanzania local government authorities. *Journal of Public Procurement,* 18(1), 1-23.

Mlinga, R. (2019). Procurement planning and cost predictability in Tanzania's public procurement. *International Journal of Procurement Management,* 12(1), 89-104.

Mwangi, C. (2020). Effects of procurement planning on price stability in Kenya's public sector. *African Journal of Public Administration*, 8(3), 67-82.

Mokoena, S. K. (2020). Analysis of overpricing of PPE acquired by government during COVID-19: causes and policy suggestions. *Journal of Public Administration*, *55*(3-1), 526-537.

Naseri, R. N. N., Hussin, H., Esa, M. M., Aziz, N. E. M., & Nordin, M. N. B. (2021). What is a population in online shopping research? A perspective from Malaysia. *Turkish Journal of Computer and Mathematics Education*, *12*(4), 654-658.

Office of the Auditor General (OAG). (2020). *Audit Report on the Kenya Medical Supplies Agency (KEMSA) Procurement Process.* Government of Kenya.

OCP (2019) Open contracting data and procurement efficiency in Colombia. Retrieved from https://www.open-contracting.org/resources/open-contracting-data-and-procurement-efficiency-in-colombia/.

Owuor, M., & Kagiri, A. (2022). *Influence of procurement practices on procurement performance in Nairobi City County Government*. https://ijecm.co.uk/wp-content/uploads/2022/04/1049.pdf

Ozor, N., & Nyambane, A. (2020). The state of open contracting in selected african countries. *Humanist Institute for Co-operation with Developing Countries (HIVOS). https://bit. ly/3S78CTz*.

Plaček, M., Nemec, J., Ochrana, F., Schmidt, M., & Půček, M. (2020). Analysis of factors of overpricing in public procurement: A study for low-performing EU countries. *International Journal of Public Administration*.

Public Procurement Administrative Review Board (PPARB). (2023). *Findings on Smart Plate Tender Irregularities.* Government of Kenya.

Public and Private Development Centre. (2017). The impact of open contracting on Nigeria's health sector procurement. Retrieved from https://www.ppdc.org.ng/the-impact-of-open-contracting-on-nigerias-health-sector-procurement/.

Pavel, J., Stejskal, J., & Kasl, F. (2022). Competitive procurement planning and price variance in the European public sector. *Public Administration Review*, 82(1), 127-146.

Prier, E., & McCue, C. P. (2009). The implications of a muddled definition of public procurement. *Journal of Public Procurement*, 9(3/4), 326-370.

Piga, G., & Saussier, S. (2023). Intensifying Competition in Public Procurement: Evidence from the European Union. *Public Organization Review, 23(1), 123–140.*

Ratten, V. (2023). *Research methodologies for business management.* Routledge.

Signor, R., Marchiori, F. F., Raupp, A. B., Magro, R. R., & Lopes, A. D. O. (2022). The new Brazilian public procurement law as promoter of the winner's curse. *Revista de Administração Pública*, *56*, 176-190.

Silva, M. O., Costa, L. G. L., Gomide, L. D., Bezerra, G., Oliveira, G. P., Brandão, M. A., Lacerda, A., & Pappa, G. (2024). Overpricing Analysis in Brazilian Public Bidding Items. *Journal on Interactive Systems*, *15*(1), 130–142. https://doi.org/10.5753/jis.2024.3831

Stehlík, P. (2018). The competitive effect on public procurement for public service contracts: the case of the Czech Republic. *Ekonomický časopis*, *66*(04), 416-427.

Schuster, P., Heinemann, M., & Cleary, P. (2021). Variance analysis and control. *Management Accounting*, 173-214.

Taherdoost, H. (2021). Data collection methods and tools for research; a step-by-step guide to choose data collection technique for academic and business research projects. *International Journal of Academic Research in Management (IJARM)*, *10*(1), 10-38.

Teresi, J. A., Yu, X., Stewart, A. L., & Hays, R. D. (2022). Guidelines for designing and evaluating feasibility pilot studies. *Medical Care*, *60*(1), 95-103.

Tkachenko, A., Yakovlev, A., & Kuznetsova, A. (2017). 'Sweet deals': State-owned enterprises, corruption and repeated contracts in public procurement. *Economic Systems*, *41*(1), 52-67.

Thiankolu, M. K. (2019). Using public procurement as a tool of economic and social development policy in Kenya: Lessons from the United States and South Africa. *Financing for Development*, *1*(1), 1-150.

Transparencia Mexicana. (2019). Evaluating the "Social Witness" program in Mexico's public procurement. Retrieved from https://www.tm.org.mx/evaluating-the-social-witness-program-in-mexicos-public-procurement/.

Transparency International. (2018). Open contracting in Indonesia's road construction sector: An assessment. Retrieved from https://www.transparency.org/en/publications/open-contracting-in-indonesias-road-construction-sector-an-assessment.

Tukuta, M., & Saruchera, F. (2018). Procurement planning and cost efficiency in public institutions. *Journal of Transport and Supply Chain Management,* 10(1), 1-11.

Wamunyima, N. A., Madimutsa, C., Shikabi, P., Hang'andu, M., & Nyirenda, T. C. (2024). Outsourcing in the Public Sector and Its Negative Effects on Service Delivery in Zambia. *The African Review*, *1*(aop), 1-30.

Williams-Elegbe, S. (2018). Systemic corruption and public procurement in developing countries: are there any solutions?. *Journal of Public Procurement*, *18*(2), 131-147.

World Bank. (2021). Open contracting and transparency in procurement: A global perspective. *World Bank Reports.*

World Bank. (2016). Ukraine's ProZorro: Open contracting reforms result in procurement savings. Retrieved from https://www.worldbank.org/en/news/feature/2016/11/01/ukraines-prozorro-open-contracting-reforms-result-in-procurement-savings

Appendix II: Questionnaire

SECTION A: GENERAL INFORMATION

(Please tick (✓) where appropriate or provide responses as required)

1. Name of Organization (Optional):----------
2. Designation: ----------

Number of years in procurement practice:

- Less than 3 years
- 3 – 5 years
- 6 – 10 years
- More than 10 years

SECTION B: PROCUREMENT PLANNING

1. How many procurement transactions in your organization were conducted outside the approved procurement plan in the last financial year?
    - None
    - 1–10
    - 11–20
    - More than 20
2. What are the main reasons for procurement transactions occurring outside the procurement plan? (Select all that apply)
    - Urgent or emergency procurement needs
    - Poor initial procurement planning
    - Political or administrative interference
    - Emergent Needs not identified in plan

SECTION C: PROCUREMENT AUDIT

3. How many times was an internal procurement audit conducted in your organization last year?
    - None
    - 1–2 times
    - 3–5 times
    - More than 5 times
4. Which of the following process audit points are regularly checked in procurement audits? (Select all that apply)
    - Supplier selection and qualification
    - Price verification before contract signing
    - Contract execution monitoring
    - Payment process and financial accountability

SECTION D: OPEN CONTRACTING

5. Does your organization use open contracting platforms?
    - Yes
    - No
6. What percentage of total procurement transactions in your organization are conducted through open contracting mechanisms?
    - 0–25%
    - 26–50%
    - 51–75%
    - More than 75%
7. How accessible is procurement information to the public in your organization?
    - Not accessible
    - Partially accessible
    - Fully accessible

SECTION E: COMPETITIVE BIDDING

8. What is the most frequently used procurement method in your organization? (Select one)
    - Open tendering
    - Restricted tendering
    - Direct procurement
    - Request for quotations
9. What proportion of procurement transactions in your organization are conducted under competitive bidding?
    - 0–25%
    - 26–50%
    - 51–75%
    - More than 75%

SECTION F: PUBLIC PROCUREMENT PRICE VARIANCE

10. What are the main causes of procurement price variance in your organization? (Select all that apply)
    - Market price fluctuations
    - Poor procurement planning
    - Lack of competitive bidding
    - Weak procurement audit practices
11. What measures has your organization taken to reduce procurement price variance? (Select all that apply)
    - Strict adherence to procurement plans
    - Strengthening procurement audit processes
    - Increased use of open contracting platforms
    - Enhancing competitive bidding procedures

12. Price data collection Form

Sn	Item	2023/2024 Procuring Entity Purchase Price	2023/2024 Market Price
1			
2			
3			

Appendix III: Sample Letter of Consent

To Respondents

RE: Informed Consent for Data Collection

This study seeks to examine the effect of PUBLIC PROCUREMENT PRACTICES AND PUBLIC PROCUREMENT PRICE VARIANCE IN TECHNICAL AND VOCATIONAL EDUCATION TRAINING INSTITUTIONS IN NAIROBI METROPOLITAN AREA. This study is a prerequisite, and requirement for the award of a Master degree in Procurement and Supplies of Mt Kenya University.

Therefore, your participation is essential in the successful completion of the research study, and completion of my academic journey. The study findings will also be important in providing empirical recommendations on management of overpricing in public procurement.

Data sought is therefore for academic purposes, and will be anonymously collected, and reported; while processing will be as per university academic policy-that safeguards the provider of the data sought.

This is to therefore seek your consent in filling this study by appending your signature below. For further information please reach me on: 0723576786.

CONSENT

I have read and understood this form and got the opportunity to ask questions. I agree to participate in this study without coercion.

Respondent's Signature……. Date……..

Masters' Student,
Mount Kenya University.

Appendix IV: Introduction Letter

Mount Kenya University

DIRECTORATE OF GRADUATE STUDIES

MPSM/2022/34715

10th June, 2025

National Commission for Science Technology & Innovation (NACOSTI)
Off Waiyaki Way, Upper Kabete,
P.O Box 30623- 00100
NAIROBI, KENYA

Dear Sir/Madam,

RE: HOSEA KIPTOO LANG'AT – REGISTRATION NO. MPSM/2022/34715

The purpose of this letter is to introduce the above named student who is pursuing **Master of Science in Procurement and Supplies Management** in the **Department of Management** in the school of **Business and Economics**

The title of the research is **"Public Procurement Practices and Public Procurement Price Variance in Technical and Vocational Education Training Institutions in Nairobi Metropolitan Area."**. It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **June, 2025 and August, 2025.**

Any assistance accorded to the student will be highly appreciated.

Thank you.

Mount Kenya University
P.O. Box 342 - 01000.THIKA
Office of the Director,
Graduate Studies

Dr. Samuel M. Karenga, Ph.D
Director, Graduate Studies
Enc.

Appendix V: License

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 106927

Date of Issue: 03/July/2025

RESEARCH LICENSE

This is to Certify that Mr.. HOSEA KIPTOO LANGAT of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: PUBLIC PROCUREMENT PRACTICES AND PUBLIC PROCUREMENT PRICE VARIANCE IN TECHNICAL AND VOCATIONAL EDUCATION TRAINING INSTITUTIONS IN NAIROBI METROPOLITAN AREA for the period ending : 03/July/2026.

License No: NACOSTI/P/25/4176050

106927

Applicant Identification Number

Ag. Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions

Appendix VI: Plagiarism Report

HL Project Exam Submit.docx

by lagat Hosea

Submission date: 05-Jul-2025 10:58AM (UTC+0300)
Submission ID: 2581995226
File name: HL_Project_Exam_Submit.docx (3.61M)
Word count: 20231
Character count: 125018

HL Project Exam Submit.docx

ORIGINALITY REPORT

20%	19%	11%	11%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	ir.jkuat.ac.ke Internet Source	2%
2	Submitted to Mount Kenya University Student Paper	2%
3	tudr.org Internet Source	1%
4	www.coursehero.com Internet Source	1%
5	bjmas.org Internet Source	1%
6	www.iosrjournals.org Internet Source	1%
7	ir-library.ku.ac.ke Internet Source	1%
8	ir.knust.edu.gh Internet Source	<1%
9	repo.pacuniversity.ac.ke Internet Source	<1%
10	www.ipsera.com Internet Source	<1%
11	repository.seku.ac.ke Internet Source	<1%