

# Public Procurement Management Practices and Public Procurement Price Variance in Government Agencies in Nairobi, Kenya

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**Abstract:** *In developing nations where the urgent need for infrastructure and essential services has been historically neglected, public procurement often accounts for an average of around 30% of GDP highlighting the considerable reliance on public procurement to drive economic growth and improve public services in these regions. However, the large scale of public procurement makes it vulnerable to inefficiencies and corruption. Addressing these vulnerabilities is essential to ensure that public procurement can fulfill its critical role in driving national development. However, despite the pressing need for efficiency, public procurement processes in Kenya have been plagued by an inefficiency that manifests in the form of overpriced tendering processes, raising serious concerns about the integrity of public spending. Very few studies have examined the concept of public procurement overpricing in Kenya, and mechanisms to alleviate it. This study sought to examine the effect of: Procurement Planning; Procurement Audit; E-Supply Chain Management; and Procurement Risk Management; on Public Procurement Price Variance. The study collected data from 73 government agencies in Nairobi; and applied regression analysis to examine the statistical significance of the variables of study on Public Procurement Price Variance. The study established that public procurement management practices. However, the study also found gaps in procurement planning, lack of a concrete procurement audit framework, relatively low application of digitization, and relatively high usage of non-competitive methods of procurement. The study thus recommends for policy and research intervention into these public procurements practices-specifically, the perceived resistance to apply them.*

**Keywords:** Public Procurement; Procurement Management Practices; overpricing; procurement price variance.

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## **INTRODUCTION**

Public procurement is a fundamental aspect of national development that cannot be overlooked. Its significance arises not only from its substantial financial footprint but also due to its overarching goals. In countries that are part of the Organization for Economic Co-operation and Development (OECD), public procurement typically represents about 12% of the nation's Gross Domestic Product (GDP) (OECD, 2021). In some of these nations, this figure can escalate to as much as 22% of the GDP, reflecting the critical role that public procurement plays in their economies. However, the impact of public procurement is even more pronounced in developing nations, where the urgent need for infrastructure and essential services has been historically neglected. In these countries, public procurement often accounts for an average of around 30% of GDP. For example, it averages 28% in Botswana and 26% in Kenya, highlighting the considerable reliance on public procurement to drive economic growth and improve public services in these regions (Bosio & Djankov, 2020).

Given the vast sums of money involved, public procurement emerges as a major component of public spending on a global scale. Governments seek to utilize these funds to provide necessary services and build vital infrastructure for their citizens. However, the large scale of public procurement also makes it vulnerable to inefficiencies and corruption. Issues such as collusion for price fixing, the formation of cartels, delayed payments, failure to deliver goods and services, duplicate payments, and inflated costs for procurement contracts are prevalent challenges that often undermine the intended benefits of public procurement systems (Fazekas, Sberna, & Vannucci, 2022). These problems not only hinder effective development but also erode public trust in government institutions and their capacity to manage resources effectively. As a result, addressing these vulnerabilities is essential to ensure that public procurement can fulfill its critical role in driving national development. Given the size, and impact, any effort to mitigate these vices that result in loss of colossal amounts public funds could have huge impact in the economies of the nations of the world.

For instance, Kenya, just like other developing nations, is experiencing significant pressure to develop, yet it is constrained by decreasing financial resources needed to support this growth. As highlighted by Yohou (2023), Kenya, like many other developing nations, is burdened with substantial debt repayment obligations. This financial strain is compounded by stagnant national revenues, which limits the government's ability to invest in essential development projects. As a result, the fiscal space available for public spending shrinks, making it increasingly difficult to fund infrastructure, education, health care, and other vital sectors that are necessary for the nation's progress. This situation underscores the urgent need for improved efficiency in the management of public resources. According to Nandelenga (2021), effective resource management is not just desirable but essential for maximizing the impact of limited funds available for development.

However, despite the pressing need for efficiency, public procurement processes in Kenya have been plagued by instances of fraud. Reports indicate that these challenges often manifest in the form of overpriced tendering processes, raising serious concerns about the integrity of public spending. Kamoni et al. (2024) estimate that in various public procuring entities, the prices of goods and services can be inflated by as much as 220% above market rates. Such excessive overpricing represents a significant loss of public funds, which would otherwise be redirected toward development initiatives. Furthermore, this misuse of resources exacerbates the country's borrowing pressures, making it even harder for Kenya to achieve its development goals. Addressing these issues is critical for unlocking the potential for growth and advancement in the nation, as the funds lost to procurement fraud could have been utilized effectively in areas that drive sustainable development and economic stability.

Numerous instances of public procurement overpricing have come to light, raising significant concerns regarding the integrity of government contracts. One notable example is reported by Mukinda (2020), which highlights the Smart plate number plate tender. According to this report, the costs associated with this tender were inflated by an astounding 300%, indicating a severe discrepancy between the expected market price and the actual amount paid. In another striking case, Amadala (2020) reveals that in the County of Bungoma, wheelbarrows that were valued at approximately KES 5,000 in the marketplace were procured at an exorbitant rate of KES 109,000 each. This represents a staggering markup that undermines public trust in procurement practices. Additional high-profile cases further illustrate the severity of the situation. For instance, a tender for police helicopters was reported to be inflated by KES 1 billion, as noted by Mutai in 2017.

Further, the Kenya Medical Supplies Agency faced scrutiny for overpricing medical supplies, resulting in a substantial loss of KES 39 million, as documented by the Office of the Auditor General (2020). A thorough analysis conducted by the Ethics and Anti-Corruption Commission on tenders awarded to the National Youth Service revealed a shocking price inflation of 550%. This led to a financial loss exceeding KES 37 million, as reported by KLR (2018). Despite the implementation of various mechanisms intended to prevent overpricing, the prevalence of such practices remains alarming, as outlined by Kamoni et al. (2024). To combat these issues, the Public Procurement Regulatory Authority (PPRA, 2024) reports that there is an established regulatory framework designed to foster price conformity through the use of price indices and adherence to established regulations. However, it is evident that a significant gap persists in the enforcement of these measures, as demonstrated by the ongoing and rampant occurrences of inflated pricing in government contracts. The contrast between regulatory intentions and real-world outcomes underscores the need for a more effective approach to ensuring accountability and transparency in public procurement.

### **Statement of the Problem**

Public procurement is a fundamental aspect of national development that cannot be overlooked owing to its financial footprint accounting for about 12%, and up-to to 30%, of the GDP of OECD countries and developing nations respectively (OECD, 2021). The extensive financial footprint and goals of public procurement however pre-dispose it fraud and corruption (Bosio & Djankov, 2020). Issues such as collusion for price fixing, the formation of cartels, delayed payments, failure to deliver goods and services, duplicate payments, and inflated costs for procurement contracts are prevalent challenges that often undermine the intended benefits of public procurement systems (Fazekas, Sberna, & Vannucci, 2022). Therefore efforts to improve openness and accountability could portend huge savings for nations that could be used to improve fiscal performance.

In Kenya, these efforts are outlined in the Public Procurement and Asset Disposal act of 2015. However, despite these initiatives, procurement inefficiency manifesting in overpriced tender awards persist. One notable example is reported by Mukinda (2020), which highlights the Smart plate number plate tender was inflated by an astounding 300%, indicating a severe discrepancy between the expected market price and the actual amount paid. Amadala (2020) reveals that in the County of Bungoma, wheelbarrows that were valued at approximately KES 5,000 in the marketplace were procured at an exorbitant rate of KES 109,000, while a tender for police helicopters was reported to be inflated by KES 1 billion (Mutai, 2017). This misuse of resources exacerbates the country's borrowing pressures, making it even harder for Kenya to achieve its development goals.

Few studies examine this concept in Kenya. They include Kamoni et al. (2024) who sought to estimate the extent of public procurement price variance among MDAs in Kenya. Other related studies: Ochrana and Stehlik (2015), Placek et al (2019) , and Nemek, Kubak, Krapek and Horejova (2020); have examined this issue outside the jurisdiction of this study. This study therefore seeks to examine the concept of public procurement price variance in Kenya from the perspective of public procurement management practices. Therefore this study will seek to examine the effect of public procurement management practices on public procurement price variance in the county governments of Kenya.

### **Specific Objectives**

The study was be guided by the following specific objectives:

1. To examine the effect of procurement planning on public procurement price variance in Government Agencies in Nairobi, Kenya.
2. To assess the effect of procurement audit on public procurement price variance in Government Agencies in Nairobi, Kenya.
3. To examine the effect of E-supply chain management on public procurement price variance in Government Agencies in Nairobi, Kenya.

4. To assess the effect of procurement risk management on public procurement price variance in Government Agencies in Nairobi, Kenya.

### **Theoretical Review**

The theoretical review examines four key frameworks that inform public procurement practices, with particular emphasis on their implications for price variance, operational efficiency, and accountability mechanisms. The Value for Money (VFM) framework, as articulated by Emmi et al. (2011) and expanded by Zhao et al. (2022), provides a foundational approach for optimizing resource allocation in public procurement through its four cardinal principles: Economy, Efficiency, Effectiveness, and Equity. The framework's evolution to incorporate sustainability considerations, risk management protocols, and socioeconomic impact assessments reflects the growing complexity of modern procurement environments. Procurement planning emerges as a critical operationalization of VFM principles, facilitating market benchmarking, strategic sourcing analysis, and stakeholder engagement - all of which serve to mitigate the pervasive challenge of procurement price variance (Hossain, 2015; PPRA, 2024).

Stewardship theory offers a counterpoint to conventional agency theory perspectives by positing that procurement managers are intrinsically motivated to align their actions with organizational objectives (David et al., 1997). However, as Snippert et al. (2015) demonstrate, this alignment is frequently compromised by systemic transparency deficits and trust erosion within procurement ecosystems. The theory underscores the institutional importance of procurement audits as accountability mechanisms that reinforce stewardship behaviors while simultaneously addressing agency problems (Otera, 2020). Kamoni et al. (2024) further establish the audit function's critical role in price conformance monitoring, particularly in contexts vulnerable to procurement fraud and price inflation.

The Unified Theory of Acceptance and Use of Technology (UTAUT) framework, as conceptualized by Venkatesh (2023) and operationalized by Marikyan and Papagiannidis (2023), provides a robust analytical lens for examining technology adoption dynamics in procurement systems. The model's four core determinants - performance expectancy, effort expectancy, social influence, and facilitating conditions - collectively explain variance in the implementation success of e-procurement solutions. Empirical studies by Saviah et al. (2024) and Shatta (2023) demonstrate how digital procurement platforms can reduce human intermediation, thereby minimizing opportunities for price manipulation while enhancing procedural compliance.

Agency theory, as explicated by Beal-Partyka (2002) and applied to procurement contexts by Shevchenko et al. (2022), elucidates the principal-agent problems inherent in public procurement systems. The theory highlights two fundamental challenges: goal incongruence between procurement stakeholders and information asymmetries in supplier evaluations. Bernheim and

Whinston's (1986) analysis reveals how these agency problems manifest in price variance through multiple pathways, including collusion, market volatility, and control deficiencies. The theory consequently underscores the necessity of robust risk management protocols to mitigate these agency costs and their resultant price distortions.

This theoretical framework provides complementary perspectives on the multidimensional challenge of procurement price variance. The VFM framework emphasizes optimal resource allocation, stewardship theory focuses on behavioral alignment, UTAUT explains technology adoption barriers, and agency theory delineates structural conflicts. This theoretical synthesis informs the study's conceptual approach to analyzing procurement price variance determinants while identifying potential intervention points for enhancing procurement system integrity and efficiency.

## **Empirical Review**

### **Procurement Planning and Public Procurement Price Variance**

Various studies have attempted to examine the public procurement management practices. Procurement planning has been widely recognized for its potential to enhance cost efficiency, sustainability, and social objectives. Studies by Fazekas and Blum (2021) and Mothupi et al. (2022) highlight its benefits in contract supervision and stakeholder involvement, yet they note a lack of empirical evidence on its direct impact on price variance in developing nations. Research in Kenya by Kariuki and Wabala (2021) and Wandera et al. (2023) further underscores its importance in budgeting and corruption reduction, though it fails to fully elucidate its effect on price discrepancies. Kamoni et al. (2024) suggest that inflated cost estimates—whether due to corruption or oversight—contribute to procurement price variance, but the extent of this issue remains empirically unverified.

Procurement audits, another key factor, have been shown to improve transparency and compliance. Anin et al. (2024) and Sallwa (2022) demonstrate that both internal and external audits enhance procurement quality and price adherence, though their effectiveness hinges on managerial support. Similar findings in Tanzania (Ali, 2023) and Uganda (Okoth, 2019) reinforce the role of compliance audits in minimizing waste and irregularities. In Kenya, Kharikala and Ndeto (2023) found that audits promote procedural adherence and value for money, yet their direct influence on price variance remains underexplored.

E-supply chain management, particularly e-procurement, has been linked to greater efficiency and transparency. Fazekas and Blum (2021) argue that digital procurement tools reduce costs and mismanagement, though contextual challenges in developing nations like Kenya are overlooked. Kenyan studies by Mungai and Peter (2023) and Oteki (2021) highlight the benefits of e-

procurement in streamlining processes and improving supplier visibility, yet they do not explicitly analyze its effect on price variance. Rasugu (2021) and Waithaka and Kimani (2021) advocate for policy-driven adoption of e-procurement to enhance competitiveness, but further research is needed to assess its financial impact.

Finally, procurement risk management remains understudied in relation to price variance. Wong (2020) and Stentoft and Mikkelsen (2021) emphasize adaptive risk frameworks, while Peter et al. (2018) identify gaps in supplier risk assessment within Kenya's energy sector, linking poor evaluation to procurement failures. Nyamah et al. (2022) propose decentralized risk management for manufacturing firms, yet the broader implications for public procurement pricing remain unclear.

In conclusion, while existing research underscores the importance of procurement planning, audits, e-supply chain tools, and risk management in enhancing efficiency, there is a notable lack of empirical evidence on their direct influence on public procurement price variance, particularly in Kenya. Future studies should address these gaps to provide actionable insights for policymakers and practitioners in developing economies.



## **RESEARCH METHODOLOGY**

### **Research Design**

The study adopted a descriptive business research design. According to Easterby-Smith et al (2021), descriptive business research design is a systematic approach that focuses on describing the characteristics of a particular phenomenon within the business context. This design seeks to provide a detailed account of various elements, including the behaviors, attitudes, and attributes of individuals or groups related to specific business activities or market trends. By employing this method, researchers aim to gather comprehensive data that paints a clear picture of the existing situation or trend.

### **Population of the Study**

This research will focus on collecting data related to procurement price variance as well as the management practices associated with public procurement within various governmental bodies. Consequently, the targeted population for this research consists of all government agencies in Nairobi. In total, the study will encompass a population of 146 agencies, providing a substantial basis for data collection and analysis. These will be the unit of analysis of the study; while the unit of observation will be the procurement manager of each Agency, or their equivalent.

### **Sampling**

The study will adopt Yamane's formula to draw a sample of 122, using random sampling as guided by Bell et al (2022). Given:  $N$  = Population of study;  $K$  = Constant (1);  $e$  = degree of error expected

$n$ =sample size

$$n = \frac{N}{K + N(e)^2}$$

$$n = 122.$$

### **Data Collection**

The study collected 2 sets of data. The study will collect data on procurement price variance. This will entail collection of market data on 15 commonly procured items in the year 2023/2024 Financial year. To enable establishment of price variance, public procurement price data was also collected from the procuring entities on the same items in the 2023/2024 Financial Year. The study also collected data on public procurement management practices in the agencies under study; using objectively prepared questionnaires. The questionnaires were circulated using Google forms, while unreachable respondents will be sought using drop and pick methods.

**FINDINGS AND DISCUSSION****Response Rate**

The study intended to collect data from a sample of 122 government agencies in Nairobi. Therefore, 122 questionnaires were issued to procurement managers of these agencies, or their equivalent. However, 27 questionnaires were incompletely filled, while 22 questionnaires were not returned by the time of conducting analysis. Therefore, the study achieved a response rate of 59.83%. The results of the analysis on the study response rate is shown on table 1

Table 1: Response Rate

	Q. issued	Q. returned-Incomplete	Q. Not Returned	Q. Responsive
Frequency	122	27	22	73
Percentage	100	22.13	18.03	59.83

The response rate of this study was deemed sufficient, as suggested by Aityan (2022), to permit data analysis and reliance on the results for statistical inference. However, further analysis into the non-response and incomplete questionnaires reveals that a substantial number of questionnaires were not returned or returned incomplete. This indicates that a significant number of entities were not open to scrutiny or their procurement processes, which contradicts the principles of the Constitution of Kenya (2010). A key factor contributing to this non-response is the reluctance of public procurement managers to disclose procurement-related information.

Several reasons may explain this resistance, including concerns about confidentiality, bureaucratic restrictions, fear of misinterpretation or repercussions, and the heavy workload associated with their roles. Additionally, procurement processes are often influenced by political and external pressures, further discouraging transparency. The institutional culture of secrecy in some public entities also plays a role, as does the lack of perceived benefit in participating in academic research. This resistance underscores broader challenges in ensuring accountability within public procurement in Kenya. While public entities are constitutionally mandated to uphold transparency, persistent barriers to disclosure highlight the need for stronger institutional safeguards and policy interventions that promote openness while addressing procurement officials' concerns.

**Findings on Public Procurement Price Variance in Government Agencies in Nairobi.**

This study's main theme of interest was Public Procurement Price Variance in Public entities. The study explored price variance; by examining the difference between public procurement prices, contained in supply contracts of government agencies in the 2023/2024 financial year; and market prices of 15 items in the same year. The analysis reveals overpricing on all items to varying degrees.

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The highest price variance was 235% overpricing, while the least was 6% overpricing. The results of the analysis is shown in figure 2.

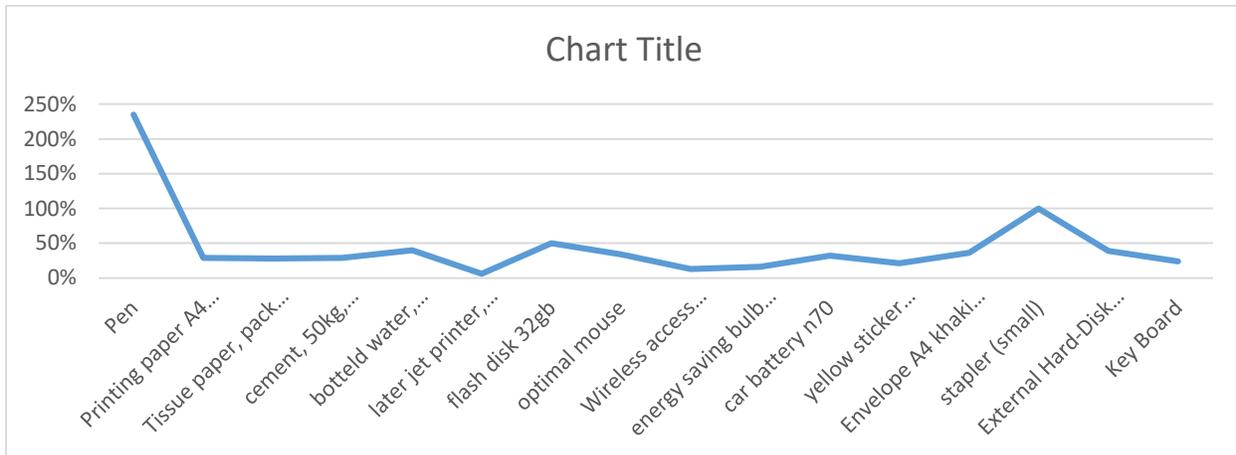


Figure 2: Public Procurement Price Variance on Items

The results show a prevalent price variance (over-pricing), across all the items procured by government agencies in the 2023/2024 financial year. These results indicate that public entities are losing substantial amounts of public funds through overpricing. These results compare well with the results of the study by Kamoni et al (2024) that established prevalent overpricing. Further, the study analyzed average price variance in each government agency. The study established that government agencies have varying levels of average price variance. A substantial number of entities in the study recorded average variance of 50% and above. This indicates that while price variance is rampant, some agencies record higher general price variance (over-pricing) than others. The results of the analysis are shown on figure 3.

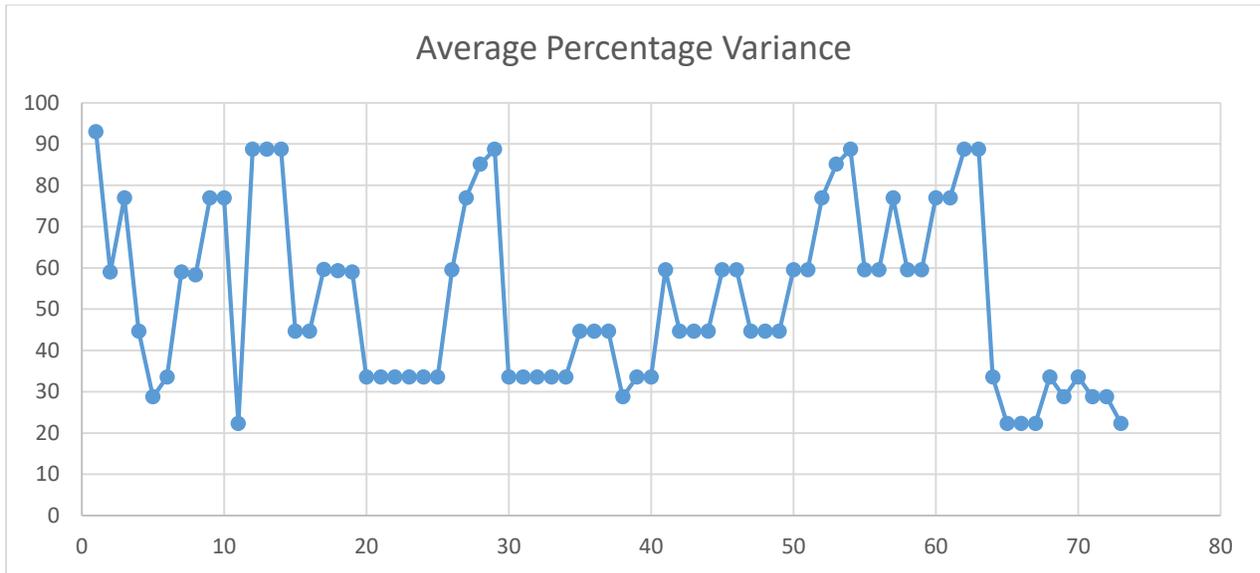


Figure 3 Average Entity Price Variance across the 15 Items.

**Findings on Procurement Planning and Public Procurement Price Variance in Government Agencies in Nairobi.**

The study examined the models of procurement planning used by government agencies in Nairobi. The study specifically sought to find out the dominant method of establishing price estimates in the procurement plan. The study aggregated these methods into two: 1. Based on Market Research; or 2. Based on estimates of the previous procurement plans. The analysis revealed that in 40 agencies, prices in the procurement plan were based on market research; whereas in 33 firms, the predominant methods entailed estimating current prices based on previous year procurement plans. The results of the analysis are shown on Table 2.

Table 2: Method of Procurement Plan Price Estimation

Item	Frequency	Percent
Procurement Plan Price-Based on Previous plans	33	45.2
Procurement Plan Price-Based on Mkt Research	40	54.8
Total	73	100

This indicates that in almost half of the agencies, public procurement plans are not based on factual pricing informed by market research; but are rather based on estimates not ground on market data. This implies that opportunity then exists for poor price conformance, as a substantial portion of procurement plans, that inform budgets, are based on uninformed estimates. This also indicates that a substantial portion of public entities are not conforming to procedural requirements when developing procurement plans.

This study sought to answer the research question: what is the effect of procurement planning on public procurement price variance in government agencies in Nairobi. The study conducted regression analysis using the regression model:  $Y = \beta_0 + \beta_1 X_1 + \varepsilon$ ; Where;  $Y$  = Public Procurement Price Variance;  $\beta_0$  = constant (coefficient of intercept);  $X_1$  is procurement planning; and  $\beta_1$ , is the regression coefficient. The results of the analysis revealed an R squared of 0.849, and a P-Value of 0.000. This indicates that procurement planning (price estimates model) has a significant and substantial effect on the public procurement price variance. The results of the analysis is shown on Table 3.

Table 3: Regression of Public Procurement Price Variance on Method of Procurement Plan Price Estimate.

R-Squared	P-value
.849	.000
co-efficient: B, 71.991, X1, -36.125	

The resultant regression model becomes:  $Y = 71.991 - 36.125 X_1$ . This implies that a procurement plan based on market survey, as opposed to estimation model based on previous procurement plan prices, leads to 36.125% reduction in the average price variance in an entity. These results imply that market survey strategy of determining procurement plan prices is a potent tool in overcoming price variance. The findings of this study auger well with the findings of Wandera et al (2023) who alludes that procurement planning has a strategic role and is a potent tool of overcoming inefficiency in the public procurement process.

The study established that while a substantial portion of agencies, roughly half the sample, base their procurement plans prices on market data, the other half does not give a factual basis, for the procurement plan prices. This absence of market research in public procurement planning creates a systemic risk of overpricing, as budgets are based on uninformed estimates rather than actual market conditions. This leads to inflated costs, inefficient resource allocation, and weak financial discipline, ultimately undermining value for money in public spending. The findings of this study supports the arguments of various researchers, such as Fazekas and Blum (2021), who assert that in the absence of factual pricing benchmarks, procurement officers lack leverage to negotiate fair prices, allowing suppliers to manipulate bids and inflate costs. As indicated in Fazekas et al (2020),

overpricing fosters corruption, as inflated budgets create opportunities for collusion and kickbacks. It also distorts market competition, favoring suppliers who exploit procurement weaknesses over those offering fair pricing. As a result, public procurement becomes a vehicle for inefficiency rather than a tool for cost-effective service delivery.

It is worth noting that the Public Procurement and Asset Disposal Act (2015) of Kenya provides that accounting officers must ensure price compliance; especially through the use of Market Price Index provided by the Public Procurement Regulatory Authority, its notable that a substantial number of entities escape this regulatory provision. This failure by procuring entities to use market prices during cost estimation, supports the ration that it is as a result of corrupt practices of inflating cost estimates (budgeted corruption) in the procurement plans by procuring entities in Kenya. The study establishes that the application of market survey in determination of procurement plan prices has a significant and a substantial effect on public procurement price variance. It leads to reduction in average price variance in the public entities in the study. This implies that market surveys provide an opportunity to anchor public procurement prices to the realism of market prices and thus provide a better platform to achieve price conformance-hence reduced price variance.

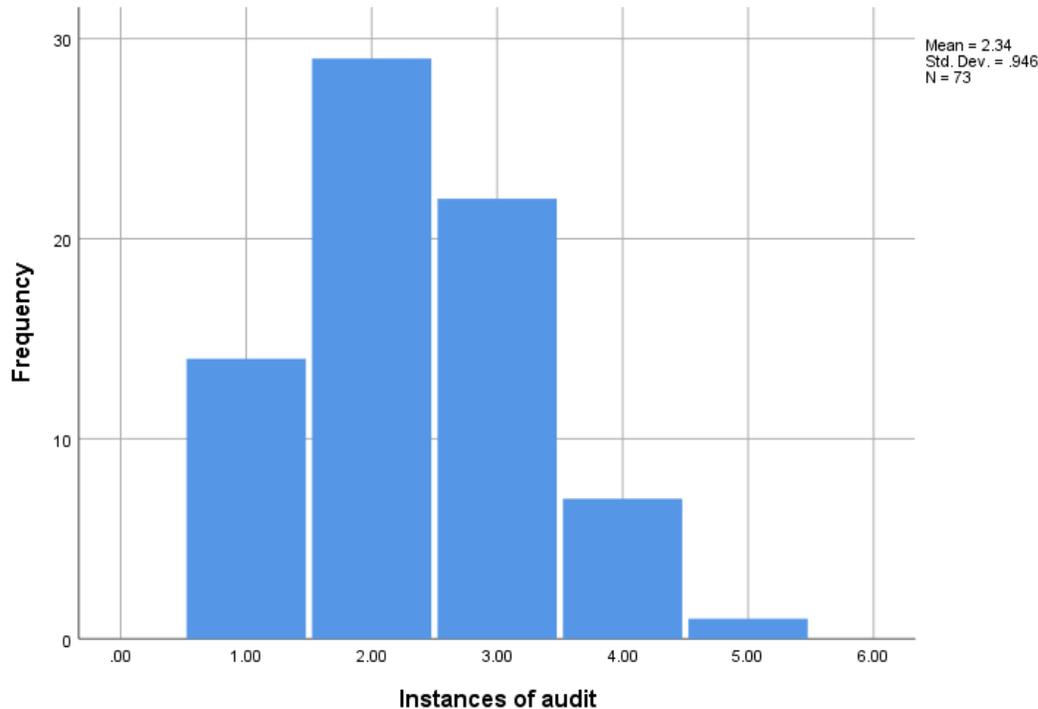
The findings of this study support the argument of Kamoni et al (2024), and Udoba and Mwalukasa (2024), who highlight that procurement planning is a significant variable informing the timeliness and cost of procurement that can be particularly enhanced by training users to enhance proper participation in development and implementation of the procurement plan. The studies assert that procurement planning based on market survey enables realistic cost estimation during procurement process, and helps anchor procurement costs, and helps identification of appropriate procurement methods for each item included in the procurement plan.

### **Findings on Procurement Audit and Public Procurement Price Variance in Government Agencies in Nairobi.**

Firstly, the study examined whether a procurement audit sub-function function exist in government agencies. The analysis revealed that the procurement sub-function was not existing in any of the sampled entities. This implies that the procurement audit practice is yet to take root in public entities, despite its importance, as highlighted in Ali (2023) who intimates that conducting procurement audits, which specifically focus on ensuring compliance with legal regulations and proper record-keeping practices, can significantly enhance the performance of public procurement systems.

Secondly, the study on procurement audit practice asked respondents to indicate the instances when routine audits are performed during procurement proceedings. The analysis of the responses indicate that in majority of the government agencies, 39.7% and 30.1% of the agencies respectively, procurement audits were conducted in 2 and 3 instances of the procurement process respectively. The most common instances were procurement audits during contract administration, post contract implementation, and when integrity issues and disputes arose. Very few entities

conducted procurement audits on the Procurement plan, and audits before award of contract. The results of the analysis are shown in figure 4.



**Figure 4: Instances of Procurement Audit.**

These results indicate that majority of the government agencies rarely conduct procurement audits to verify price conformance, and therefore miss the opportunity to drive price conformance. Notably, extant empirical evidence such as in Sallwa (2022), indicates that various types of procurement audits, particularly compliance audits, is instrumental in achieving price compliance. These insights underscore the critical opportunity missed by the government agencies in achieving price conformance, thereby an opportunity missed at improving overall procurement efficiency and effectiveness.

Further, the study sought to examine the effect of the procurement audit practice on the price variance in government agencies in Nairobi. The study was guided by the regression model:  $Y = \beta_0 + \beta_1 X_1 + \epsilon$ ; Where; Y =Public Procurement Price Variance (General-average percentage price variance in a firm);  $\beta_0$  = constant (coefficient of intercept);  $X_1$  is Procurement Audit (Instances of Procurement Audit); and  $\beta_1$ , is the regression coefficient of Procurement Audit; the analysis yielded the following statistics shown on Table 4.

Table 4: Regression Results: Procurement Audit and Public Procurement Price Variance.

R-Squared	P-value
.904	.000
co-efficient: B, 99.924, X1, -20.375	

The R square 0.904 (P-Value 0.000) indicates that procurement audits have a significant and substantial effect on the public procurement price variance in government agencies in Kenya. The resultant regression model of the analysis becomes.  $Y=99.924-20.375\text{ProcAudit}$ . This means that an increase in instances of procurement audits by 1, leads to a reduction of average public procurement variance in an entity by 20.375%.

These findings support the assertion of Okoth (2019) who opines that compliance audits play a vital role in shaping procurement practices, particularly in their ability to reduce waste and prevent irregularities. The evidence suggests that systematic auditing acts as a deterrent against inefficient use of resources, contributing to improved procurement outcomes.

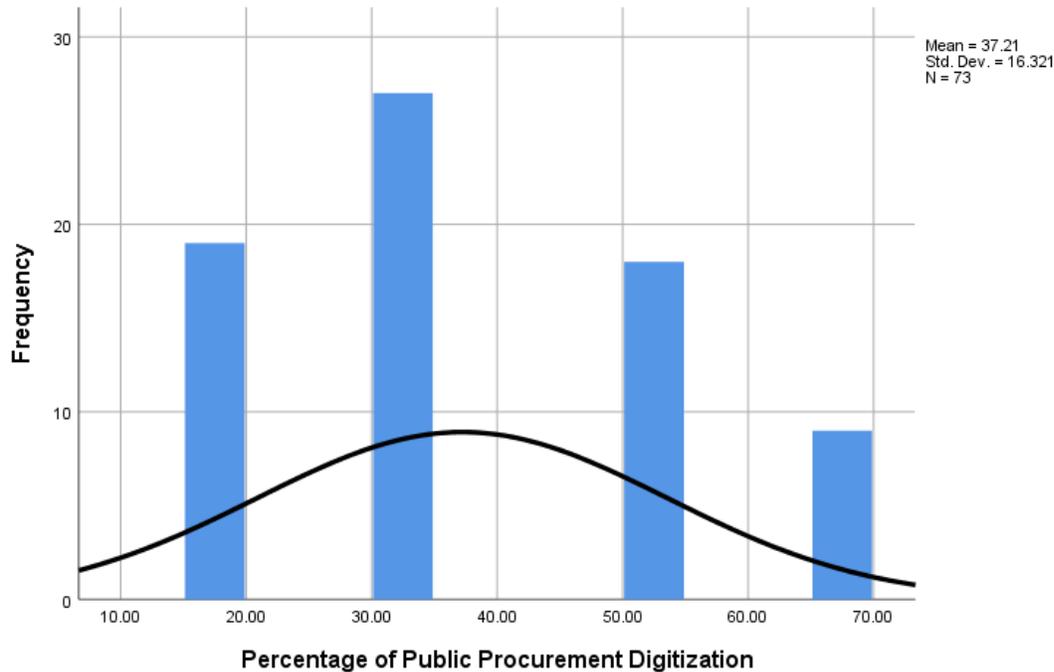
Data suggest that procurement function have not set up procurement audit subsections. This is even as section 27 of the Public Procurement and Asset Disposal Act (2015) suggests that the accounting officer should ensure the proper management of the procurement function, which includes the internal processes and audits to assess compliance and effectiveness. Further, the data suggests most government groups seldom check if prices paid match agreed terms. This lack of regular procurement audits means they often fail to confirm price conformance. For example, agencies might not check if volume discounts were correctly applied. They could miss overcharges on invoices. Price conformance audits help ensure that contract terms are followed. These audits can find errors, prevent waste, and improve how money is spent. Without these checks, as recommended by Sallwa (2022) government agencies in Kenya lose chances to make sure they pay the right price for goods and services.

It is intriguing that very few public entities conduct conformance procurement audits; yet the Public Procurement and Asset disposal Act mandates the Accounting officer to ensure that prices offered in procurement contracts are fair, competitive, and in line with the market rates, and that they conform to the procurement process requirements. Additionally, the Public Procurement Regulatory Authority, The study provides empirical evidence that systematic procurement audit of the procurement process, particularly compliance audit-which should include price conformance- provides an opportunity to reduce significantly, the percentage of public procurement price variance.

The finding that procurement audits support mitigation of public procurement price variance, especially manifesting as overpricing supports Otera (2020) and Kamoni et al. (2024) arguments that implementation of accountability systems that can counteract potential abuses of the managerial role in public procurement. By reinforcing accountability, through conformance procurement audits, these mechanisms aim to ensure that managers prioritize the public interest and work towards maximizing value for money, and enhance public procurement stewardship towards value for money, by monitoring price conformance.

### **Findings on E-Supply Chain Management and Public Procurement Price Variance in Government Agencies in Nairobi.**

The study asked respondents to describe the level of digitization of the procurement process in the government agencies across six phases: Procurement Planning, requisition processing, advertisement and Bid processing, documentation management, and supplier communication. Using the responses, the study computed estimated levels of digitization of the procurement process in each government agency. Analysis of the responses reveals that majority, 27, 19, and 18 government agencies have digitized approximately 33.33%, 16.67%, and 50% of their procurement processes. Only 9 government agencies had digitized 66.67% of their procurement process. This was the highest level of digitization observed by this study. Notably, Procurement planning, and requisition processing, and bid processing were the least digitized phases of the procurement process in the government agencies. This analysis is shown on Figure 5.



**Figure 5: Estimated Level of Digitization of the Procurement Process.**

This analysis indicates that government agencies in Nairobi have adopted a relatively low level of digitization of the procurement process. This finding mirrors the finding of Kamoni (2020) who established similar findings on adoption of e-procurement in public entities.

The study further sought to examine whether E-supply chain management has a significant effect on public procurement price variance in government agencies in Nairobi. The data collected was analyzed using regression analysis guided by the following model:  $Y = \beta_0 + \beta_1 X_1 + \epsilon$ ; Where; Y =Public Procurement Price Variance;  $\beta_0$  = constant (coefficient of intercept);  $X_1$  is Estimated Percentage of Procurement Process Digitized; and  $\beta_1$ , is the regression coefficient of Estimated Percentage of Procurement Process Digitized. The results of the analysis are shown on Table 5.

Table 5: Regression Analysis of Percentage public Procurement Price Variance on E-supply Chain Management.

R-Squared	P-value
.862	.000
co-efficient: B, 97.315, X1, -1.212	

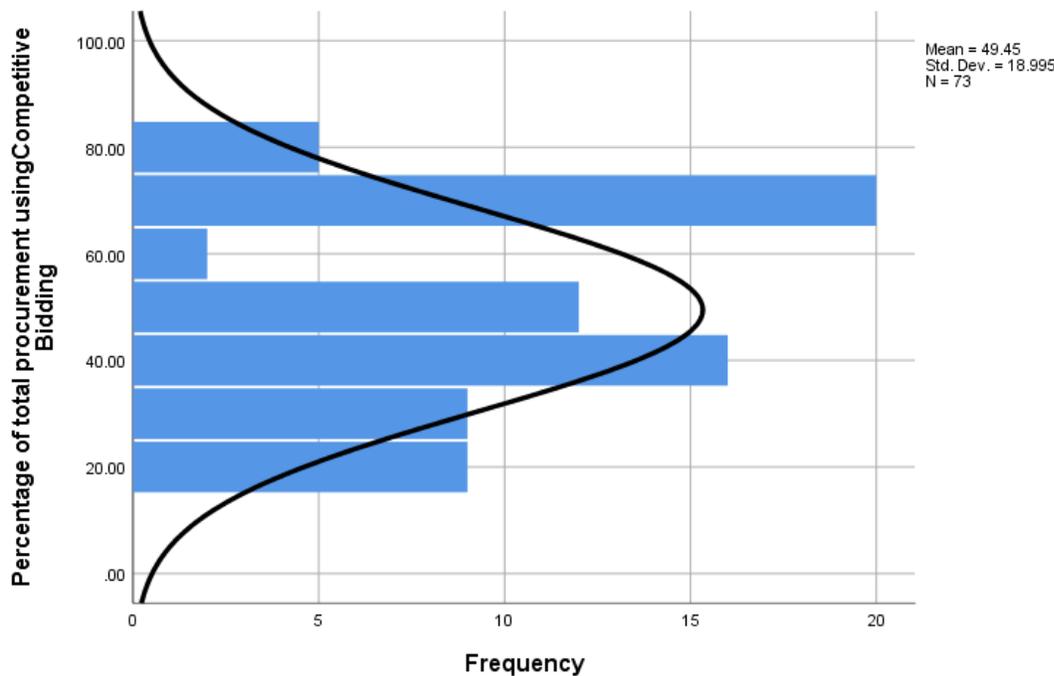
The analysis yielded co-efficient of determination of 0.862, and P-Value of 0.000. This implies that Digitization of the procurement process has a significant and substantial effect on public procurement price variance in government agencies in Nairobi. The resultant regression model was: Average Percentage Procurement Price Variance=97.315-1.212E<sub>scm</sub>. This means that an increase in level of digitization by 1% results in 1.212% decrease in average level of price variance in a government agency. These findings support the findings of the review by Fazekas and Blum (2021) that presented to support the assertion that adoption of E-procurement could result into cost savings and other efficiencies of the procurement process.

The study highlights a limited uptake of digital technologies in public procurement processes, suggesting that government agencies may miss out on the substantial benefits associated with digitization. According to Mungai and Peter (2023), the adoption of e-procurement systems can streamline procurement and logistics operations. Specifically, digitization can lead to reduced cycle times, allowing for faster decision-making and processing. It also improves communication with suppliers, fostering better collaboration and transparency. Furthermore, e-procurement enhances record-keeping, ensuring more accurate and accessible documentation. Additionally, digitization provides greater price visibility, enabling procurement teams to easily compare supplier prices, promoting competition and potentially leading to cost savings. Without embracing these advancements, government agencies risk inefficiencies and may not realize the full potential of digital transformation in procurement.

Further analysis of the study indicates that incremental digitization of the procurement process leads to a significant reduction in public procurement price variance, which aligns with the findings of Rasugu (2021). The study suggests that as government agencies gradually digitize their procurement processes, it improves transparency and visibility, especially regarding pricing information. This enhanced visibility enables procurement teams to more easily compare supplier prices and monitor pricing trends. As a result, there is greater price conformance, where suppliers are more likely to adhere to expected price ranges, reducing price discrepancies. By elevating transparency and making pricing more accessible and comparable, digitization helps mitigate the factors that typically cause price variance in procurement, leading to more predictable and controlled costs. This supports the argument that digitization not only improves efficiency but also strengthens cost management in public procurement processes.

**Findings on Procurement Risk Management and Public Procurement Price Variance in Government Agencies in Nairobi.**

The study on Procurement risk management focused on identifying and addressing the different mechanisms that contribute to variations in procurement prices. The study specifically examined the contribution of competitive dynamics on the pricing outcomes of the public procurement processes. Therefore the study assessed the percentage of procurement conducted through competitive bidding in each entity. The analysis of data collected revealed that in 9, 16, and 12 government agencies in Nairobi, open tendering accounted for between 30-40, 40-50, and 50-60 percent respectively, of total procurement in the financial year 2023/2024. The results of this analysis is shown in figure 6.



**Figure 6: Percent of Procurement through Competitive Bidding**

These results show that while there is good use of competitive bidding as recommended in the Public Procurement and Asset Disposal Act (2015); non-competitive methods also feature substantially in acquisition of goods, works and services by public entities. The prevalent use of non-competitive methods could explain the prevalent overpricing as they enable mechanisms for price setting above market price.

**Inferential Analysis on Procurement Risk Management and Public Procurement Price Variance in Government Agencies in Nairobi.**

The study sought to examine the effect of competitive bidding, as a procurement price risk management model, on public procurement price variance in government agencies in Nairobi. The analysis was guided by the regression model:  $Y = \beta_0 + \beta_1 X_1 + \epsilon$ ; Where;  $Y$  =Public Procurement Price Variance;  $\beta_0$  = constant (coefficient of intercept);  $X_1$  is Percentage of total procurement through competitive bidding; and  $\beta_1$ , is the regression coefficient of Percentage of total procurement through competitive bidding. The results of the analysis are shown on table 6.

Table 6: Regression Analysis of Percentage public Procurement Price Variance on Percentage of Total Procurement through Competitive Bidding

R-Squared	P-value
.940	.000
co-efficient: B, 106.006, X1, -1.088.	

The analysis yielded a co-efficient of determination of 0.940, and a p-value of 0.000. This means that the competitive bidding as a procurement price risk management model significantly and substantially affects public procurement price variance. The regression model becomes: Average Public procurement Price variance in an agency= $106.006 - 1.088$ ; indicating that an increase in one percent of total procurement conducted through competitive bidding results in 1.088% reduction in average price variance. This finding support the finding of Nyamah et al. (2022) that espouses that appropriately applied procurement risk management tools could yield process efficiency.

The study observes that competitive bidding offers a good opportunity to manage price inflation risks, and thus reduces magnitude of public procurement price variance. The study however observes a substantial, widespread, reliance on non-competitive procurement methods in Kenya's public sector. This could be a substantial driver of overpricing by allowing price-setting mechanisms that inflate costs beyond market rates. This supports the assertion of Peter et al (2018), procurement mechanisms that deprive the process the opportunity to critically evaluate bids give rise to procurement risks. On the contrary, Competitive bidding fosters transparency and price discovery, ensuring that suppliers compete to offer the best value. However, when public entities engage in direct procurement, restricted tendering, or single-sourcing, they eliminate the natural cost-control mechanisms that competition enforces.

This absence of market-driven pricing enables suppliers to dictate higher prices without the risk of being undercut. Perhaps, the mechanism of overpricing could also be linked to corruption and favoritism fostered in non-competitive procurement fosters corruption and favoritism as alluded by Fazekas, Sberna, & Vannucci, (2022), where suppliers inflate costs knowing they will secure

contracts without scrutiny. The lack of price transparency further exacerbates the problem, as public entities often do not have access to real-time market data to verify fair pricing, creating an environment where price manipulation thrives. Limited accountability in non-competitive procurement allows excessive pricing to go unchecked.

## CONCLUSIONS

### **Procurement planning and Public Procurement Price Variance.**

This study reveals critical systemic deficiencies in Kenya's public procurement framework, demonstrating that approximately 50% of government agencies establish procurement prices without empirical market data. Such practice constitutes a fundamental violation of sound procurement principles, resulting in artificial price inflation, inefficient resource allocation, and compromised fiscal discipline. The findings indicate that market-disconnected pricing not only facilitates rent-seeking behavior but actively undermines competition by rewarding suppliers who exploit informational asymmetries rather than those offering genuine value. The analysis confirms that market-based procurement planning significantly reduces price variance, establishing it as an essential control mechanism against cost manipulation.

However, persistent non-compliance with existing regulatory requirements—particularly the mandatory use of Market Price Indices—suggests institutionalized resistance to transparency. This deliberate circumvention of oversight mechanisms points to structural governance failures that enable budgeted corruption through inflated cost estimates. These findings carry substantial policy implications. First, they underscore the necessity of institutionalizing market surveys as a mandatory component of procurement planning. Second, they highlight the urgent need for enhanced monitoring mechanisms to enforce existing price compliance regulations. Third, they demonstrate that procurement officer training must emphasize market-based cost estimation techniques to improve planning accuracy.

This study provides empirical evidence that market-informed procurement planning serves as both an efficiency measure and an anti-corruption tool. The documented correlation between market data utilization and reduced price variance offers a clear pathway for procurement reform. Without systemic adoption of these evidence-based practices, Kenya's public procurement system will continue to serve as a conduit for resource leakage rather than value optimization.

### **Procurement Audit and Public Procurement Price Variance**

This study reveals significant institutional weaknesses in Kenya's public procurement oversight framework, particularly regarding the absence of dedicated procurement audit functions in most government entities. The findings demonstrate a troubling disconnect between legal requirements under the Public Procurement and Asset Disposal Act (2015) and actual practice, with systematic failures to verify price conformance against contractual terms. Such oversight gaps create

substantial fiscal vulnerabilities, including undetected overcharges, unclaimed volume discounts, and unchecked invoice discrepancies. The empirical evidence establishes that regular procurement audits, particularly those focusing on price conformance, serve as a powerful mechanism for reducing procurement price variance. These audits provide essential accountability checks that: (1) validate contract compliance, (2) ensure market-aligned pricing, and (3) detect potential overpricing patterns. The demonstrated effectiveness of such audits highlights their dual role as both financial safeguards and anti-corruption tools.

Three critical policy implications emerge from these findings. First, there is an urgent need to institutionalize procurement audit units across all government entities, with specific mandates for price verification. Second, accounting officers must be held directly accountable for implementing regular conformance audits as required by existing legislation. Third, audit processes should incorporate real-time market price monitoring to enhance detection capabilities. The persistent non-compliance with audit requirements suggests deeper systemic issues in procurement governance that require structural reforms.

### **E-Supply Chain Management and Public Procurement Price Variance**

This study underscores a critical gap in Kenya's public procurement system: the persistent underutilization of digital technologies despite their demonstrated potential to enhance efficiency, transparency, and cost-effectiveness. The findings reveal that government agencies continue to rely on manual processes, foregoing the substantial benefits of digitization, including streamlined operations, improved supplier communication, enhanced record-keeping, and greater price visibility. Empirical evidence from the study establishes a clear correlation between digital adoption and reduced procurement price variance. As agencies implement e-procurement systems, they achieve greater pricing transparency, enabling more accurate cost comparisons and stronger supplier compliance with market rates. This digital transformation not only optimizes operational efficiency but also serves as a powerful tool for fiscal control, minimizing opportunities for price manipulation and overpricing.

The implications of these findings are significant. First, they highlight the urgent need for policy interventions to accelerate digital adoption across public procurement entities. Second, they demonstrate that digitization acts as both a performance enhancer and an accountability mechanism, addressing two key challenges in public procurement: inefficiency and price volatility. Third, they provide a compelling case for investing in the technological capacity of procurement teams to ensure effective system utilization.

### **Procurement Risk Management and Public Procurement Price Variance**

This study reveals a fundamental contradiction at the heart of Kenya's public procurement system. While competitive bidding has proven its effectiveness in controlling price inflation and reducing procurement variances, the findings demonstrate an institutional preference for non-competitive

methods that undermines these benefits. The widespread reliance on direct procurement and restricted tendering creates systemic vulnerabilities that distort pricing mechanisms and compromise fiscal discipline. The analysis pushes the argument that non-competitive procurement environments produce three interlinked negative outcomes that collectively erode procurement integrity. It is perceived that they eliminate the market discipline of competitive bidding, allowing artificial price inflation to flourish unchecked. Second, they create governance gaps where favoritism and supplier collusion can thrive without the scrutiny imposed by open competition.

Third, they reduce pricing transparency to critical levels, leaving procurement entities without reliable benchmarks to verify cost reasonableness. These findings carry significant implications for procurement reform. The demonstrated effectiveness of competitive processes suggests they should become the default approach rather than the exception in public procurement. Current practices that permit widespread use of non-competitive methods require urgent review, particularly the criteria for granting exemptions. Furthermore, the study highlights the need for complementary measures to strengthen price verification and enhance oversight even in legitimate cases where non-competitive procurement may be necessary. The persistence of these problematic procurement patterns despite their documented risks points to deeper institutional challenges that merit further investigation.

### **Recommendations**

The findings of this study point to several concrete measures that can strengthen Kenya's public procurement system. For procurement practitioners, the evidence underscores the critical importance of institutionalizing market-based pricing mechanisms. This requires moving beyond ad hoc market surveys to establishing systematic processes for collecting and analyzing price data, ensuring all procurement plans are grounded in current market realities. The demonstrated effectiveness of price conformance audits suggests practitioners should prioritize developing in-house audit capacity, with particular emphasis on verifying contract compliance and detecting pricing anomalies. At an institutional level, government agencies need to re-examine their overreliance on non-competitive procurement methods. The study's findings indicate that competitive bidding should be the default approach, with exceptions granted only under strictly defined and monitored circumstances.

Digital transformation of procurement processes emerges as another key priority, with e-procurement systems offering solutions to both efficiency challenges and transparency gaps. Implementation should focus first on high-value procurement categories where the potential for savings and fraud prevention is greatest. For policymakers and public sector managers, the study highlights the need for stronger compliance mechanisms to enforce existing regulations. This could involve linking budget approvals to demonstrated adherence to market-based pricing and competitive procurement standards. Capacity building initiatives should target both technical skills

- particularly in market analysis and digital procurement tools - and ethical competencies to reinforce professional standards

### **Further Research**

The study, based on study conclusions, recommends several critical research priorities emerge that demand scholarly attention: First, the persistent gap between regulatory requirements and actual procurement practices warrants systematic investigation. Future studies should examine the institutional and behavioral factors that enable agencies to circumvent mandated market-based pricing and audit processes, despite clear evidence of their effectiveness. This research should particularly explore whether this implementation gap stems from capacity constraints, political interference, or weaknesses in enforcement mechanisms. Second, the relationship between procurement methods and pricing outcomes requires deeper analysis. While this study establishes that non-competitive methods correlate with price inflation, research should identify the specific mechanisms through which restricted tendering and direct procurement enable cost manipulation. This should include case studies comparing pricing outcomes for similar procurements conducted through competitive versus non-competitive processes.

Third, the study's finding that digital procurement reduces price variance suggests the need for implementation research. Future work should identify the most effective digital tools for price monitoring and analyze the organizational changes required for successful e-procurement adoption. This research should pay particular attention to overcoming resistance to technological transition in public sector contexts. Fourth, the demonstrated benefits of market-based pricing and audits point to necessary research on scaling these practices. Studies should develop and test frameworks for implementing market surveys and price audits to support actualization of legal Requirements. Research should analyze why evidence-based improvements face adoption barriers, examining the interests and incentives that maintain suboptimal practices despite their demonstrated costs.

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