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DIGITAL CONTRACT MANAGEMENT SYSTEMS AND PROCUREMENT PERFORMANCE IN NAIROBI COUNTY GOVERNMENT IN KENYA

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ABSTRACT

The efficiency and transparency of public procurement processes are critical to ensuring value for money, compliance with regulatory frameworks, and improved service delivery. In recent years, the adoption of digital contract management systems has emerged as a transformative approach to enhance contract administration, performance tracking, and supplier relations. This study examined the influence of digital contract management systems on procurement performance in Nairobi City County Government, focusing on contract structure, and contract monitoring. The research was anchored on Control Theory, and Principal–Agent Theory providing a multi-theoretical perspective for understanding the relationships between digital contract management practices and procurement outcomes. The study adopted a descriptive research design targeting 137 staff members involved in procurement and contract management across various county departments. A stratified random sampling technique was used to select a sample of 102 respondents, ensuring proportional representation of all departments. Data were collected through self-administered structured questionnaires using a drop-and-pick method, complemented by email distribution for inaccessible respondents. Prior to the main survey, a pilot test was conducted in Kiambu County to assess the instrument's validity and reliability, achieving Cronbach's alpha coefficients above the acceptable threshold of 0.7 for all variables. Quantitative data were analyzed using the Statistical Package for the Social Sciences (SPSS, Version 28). Descriptive statistics summarized respondents' demographic characteristics and variable responses, while inferential statistics, specifically multiple linear regression analysis, tested the effect of each independent variable on procurement performance. Pearson correlation results revealed strong and significant relationships between procurement performance and contract structure ($r = 0.642$, $p < 0.05$), contract monitoring ($r = 0.701$, $p < 0.05$). The findings underscore the importance of adopting clear and comprehensive contract structures, strengthening monitoring mechanisms in enhancing procurement performance. The study recommends further investment in digital procurement platforms, capacity building for procurement personnel, and continuous review of contract management policies to align with evolving best practices. These insights are expected to benefit policymakers, procurement practitioners, and researchers seeking to enhance efficiency, accountability, and transparency in public sector procurement.

Key Words: Digital Contract Management Systems, Contract Structure, Contract Monitoring, Procurement Performance, Nairobi City County

Background of the Study

Procurement functions play a central role in ensuring effective delivery of goods, services, and works in public institutions. In Kenya's devolved governance framework, county government are mandated to undertake procurement processes in compliance with the Public Procurement and Asset Disposal Act (2015) and its 2020 regulations. However, inefficiencies in contract management such as delays in delivery, cost overruns, and disputes continue to undermine procurement performance in public entities (Muinde, 2022). Digital contract management systems have emerged as a transformative solution aimed at improving transparency, efficiency, and compliance in procurement operations (Kyalo, Akwalu, & Kovulo, 2025).

Digital contract management leverages technology to automate contract creation, monitoring, and enforcement, enabling real-time performance tracking and risk mitigation (Azizi, Özkan, & Haass, 2021). Studies reveal that digital contract management systems enhance procurement outcomes by streamlining contract structures, enabling timely monitoring, and ensuring adherence to performance clauses (Mugecha & Ndeto, 2024). For instance, integration of blockchain-based smart contracts has shown potential in eliminating human errors, reducing fraud, and fostering trust between contracting parties (Perera, Nanayakkara, & Weerasuriya, 2021).

In the Kenyan context, e-procurement adoption has been growing, driven by government digitization initiatives; however, implementation gaps remain in county government due to infrastructural, technical, and capacity-related challenges (Osoro & Mugwiria, 2024). Poor contract monitoring mechanisms hinder the realization of procurement objectives, particularly in sectors requiring high-quality and timely service delivery (Musyoka & Osoro, 2024). Moreover, risk management practices in contract execution are often weak, leaving public entities vulnerable to financial losses and legal disputes (Ludovick, 2023).

Empirical evidence indicates that when counties adopt integrated digital contract management systems with functionalities for performance tracking, and automated alerts, procurement performance improves significantly in terms of cost efficiency, delivery timelines, and quality compliance (Kyalo et al., 2025). The alignment of such systems with Kenya's procurement laws and international best practices further strengthens accountability and public trust (Azizi et al., 2021; Perera et al., 2021).

Despite these benefits, limited research exists on how digital contract management systems specifically impact procurement performance in Nairobi County government. This study therefore sought to bridge the gap by examining the influence of contract structure, and monitoring, enabled by digital contract management systems on procurement performance in Nairobi County, Kenya.

Statement of the Problem

Public procurement in Kenya accounts for a significant share of government expenditure, estimated at 30% of GDP (World Bank, 2022), making efficiency, transparency, and accountability in contract management a national priority. Despite the introduction of digital contract management systems and e-procurement platforms to streamline processes, inefficiencies in contract execution remain widespread, especially in county government. Evidence from the Public Procurement Regulatory Authority (PPRA, 2023) shows that 42% of public procurement contracts in Kenyan counties experience delays beyond agreed timelines, while 37% exceed the original budget allocations. In Nairobi City County, a performance audit by the Office of the Auditor-General (2022) revealed that 29% of sampled contracts lacked complete digital performance records, limiting the ability to track compliance and supplier obligations effectively.

Research further indicates that adoption of digital contract management systems has been uneven. According to Osoro and Mugwiria (2024), only 46% of public health facilities in Nairobi County had fully operational automated monitoring tools, with the remainder relying on manual systems prone to human error. Musyoka and Osoro (2024) found that 31% of justice sector procurement contracts in the county lacked documented supplier performance evaluations, undermining accountability and timely issue resolution. From a risk management perspective, Kyalo, Akwalu, and Kovulo (2025) noted that counties using integrated digital contract management systems experienced a 22% improvement in on-time delivery and a 19% reduction in cost overruns compared to those using manual or partially digital systems.

Empirical studies show that while various counties and sectors in Kenya have experimented with digital procurement tools, most focus narrowly on e-tendering and leave post-award contract management underdeveloped. Mugecha and Ndeto (2024) demonstrated that metropolitan county government with structured contract monitoring processes achieved higher procurement performance scores, but even in these cases, digital systems were often underutilized for risk assessment. Muinde (2022) found similar trends in public universities, where digital contract management systems adoption improved documentation but failed to fully address delivery delays and cost escalations. These findings suggest that without a holistic integration of contract structure, monitoring, within digital contract management systems, the potential performance benefits cannot be fully realized.

Research gaps emerge from the above evidence. First, while existing Kenyan studies explore aspects of e-procurement or contract management, few examine the combined influence of the four key digital contract management systems dimensions, contract structure, monitoring on procurement performance. Second, most prior research is sector-specific (e.g., health, education, justice) and does not address county government-wide implementation challenges and successes. Third, there is limited empirical data on Nairobi County government despite being a hub of economic activity with unique procurement demands and complexities. This study sought to fill these gaps by providing an integrated analysis of how digital contract management systems influence procurement performance in Nairobi County government, offering both theoretical contributions and practical policy recommendations.

General Objective

To examine the influence of Digital Contract Management Systems on procurement performance in Nairobi County government, Kenya.

Specific Objectives

The study was guided by the following specific objectives;

i. To determine the effect of contract structure on procurement performance in Nairobi County government.
ii. To evaluate the influence of contract monitoring on procurement performance in Nairobi County government.

LITERATURE REVIEW

Theoretical Review

Agency Theory

Agency Theory was first articulated by Jensen and Meckling (1976) to explain the principal–agent relationship, where one party (the principal) delegates work to another (the agent), who performs that work on their behalf. The theory emerged from corporate governance research but has since been widely applied to various domains, including public procurement and

contract management. It focuses on the conflicts that arise due to divergent interests and information asymmetry between the contracting parties.

Agency Theory assumes that agents are rational and self-interested, which may lead them to pursue personal goals that conflict with the principal's objectives (Eisenhardt, 1989; Okezie & Ekwe, 2024). It also assumes that information is asymmetrically distributed, agents often possess more operational details than principals, which can lead to moral hazard and adverse selection if not properly addressed. The theory is built around concepts such as goal conflict, information asymmetry, monitoring mechanisms, incentive alignment, and contractual safeguards (Ross, 1973; Okezie & Ekwe, 2024). It proposes that clearly defined contracts, performance clauses, and monitoring arrangements can align the agent's behavior with the principal's goals, thereby reducing opportunism.

While Agency Theory effectively explains the need for strong contractual arrangements, it has been criticized for overemphasizing self-interest and neglecting collaborative or trust-based relationships (Davis et al., 1997). In public procurement, especially in contexts with long-term supplier relationships, the assumption of persistent opportunism may not always hold true.

In this study, Agency Theory supports the need for clear and comprehensive contract structures within digital contract management systems. Well-structured digital contracts with explicit terms, performance clauses, and compliance requirements reduce ambiguity, clarify obligations, and establish accountability. This aligns with recent studies in public procurement, which show that digitized contract structures improve transparency and mitigate risks of underperformance (Musyoka & Osoro, 2024). Agency Theory provides a strong theoretical foundation for examining how contract structure within digital contract management systems influences procurement performance. By addressing information asymmetry and aligning incentives, it helps explain how digital contract design can improve timely delivery, cost efficiency, and quality of goods and services in Nairobi County governments.

Control Theory

Control Theory originates from the fields of engineering and organizational management, with early applications in cybernetics by Wiener (1948) and later adapted to management sciences by Ouchi (1979). In organizational contexts, it describes how systems are regulated through feedback loops to ensure activities remain aligned with predetermined objectives. The theory emphasizes that effective monitoring allows for the detection of deviations from planned performance, enabling corrective action. In procurement, this concept translates into systematically tracking supplier performance and contract execution to ensure compliance with agreed terms. It assumes that organizations can improve performance by setting clear standards, measuring actual performance against these standards, and taking corrective action when deviations occur (Merchant & Van der Stede, 2017). It also assumes that performance can be influenced by both formal controls (e.g., performance metrics, compliance checks) and informal controls (e.g., trust, shared values).

The theory is grounded in three main elements: standards, measurement, and corrective action (Ouchi, 1979; Flamholtz et al., 2020). Feedback mechanisms, either real-time or periodic, are critical for ensuring that the desired outcomes are achieved. In the context of procurement contract monitoring, these feedback systems can be embedded in digital contract management systems to provide automated alerts, performance dashboards, and compliance reports.

While Control Theory is valuable for structuring monitoring systems, it has been criticized for its potentially mechanistic view of management, which may overlook the complexity of human behavior and relationship management (Malmi & Brown, 2008). In public procurement, over-reliance on rigid controls without considering relational governance could reduce flexibility and innovation in supplier relationships.

In this research, Control Theory underpins the contract monitoring variable by explaining how digital contract management systems can serve as control systems that track contract execution against predefined milestones. Automated monitoring tools enable procurement managers in Nairobi County governments to identify issues such as delays, quality deviations, or cost overruns promptly and take timely corrective measures. Recent empirical studies show that integrating control mechanisms into digital contract management systems significantly improves procurement performance by reducing cycle times and increasing supplier compliance (Osoro & Mugwiria, 2024; Mugecha & Ndeto, 2024). Control Theory provides a clear rationale for embedding robust monitoring functions in digital contract management systems to ensure procurement performance targets are met. It emphasizes that without continuous tracking and timely corrective action, even well-structured contracts may fail to deliver the expected results. In the Nairobi County context, this reinforces the importance of using digital contract management systems not just for record-keeping but as active tools for managing performance in real time.

Conceptual Framework

A conceptual framework is a diagrammatic and narrative representation of the relationships between variables under investigation, developed from existing theories and empirical literature (Adom et al., 2018). It serves as a guide for the research by illustrating how the independent variables (contract structure, contract monitoring) are expected to influence the dependent variable, procurement performance, in Nairobi County governments. The conceptual framework for this study is a s shown in Figure 2.1.

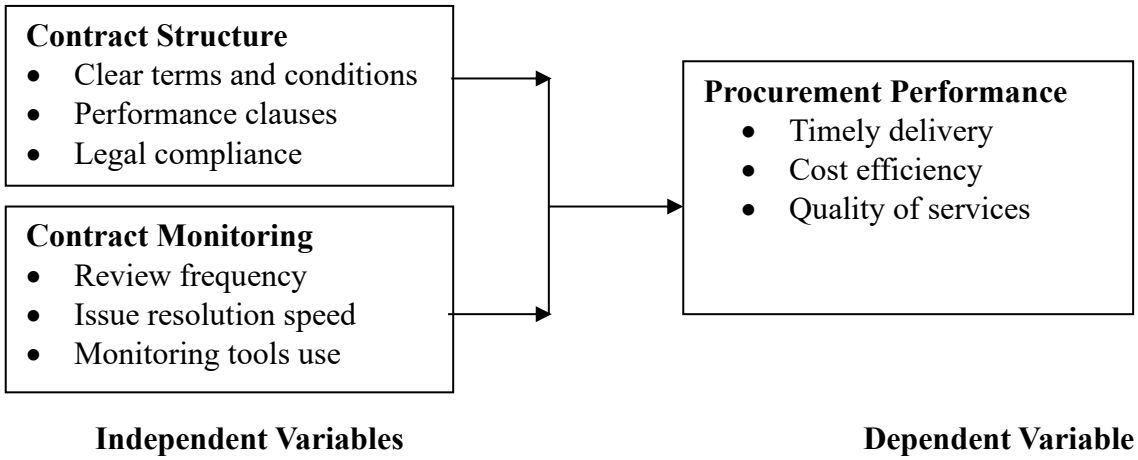

Figure 2. 1: Conceptual Framework

Contract Structure

Contract structure refers to the formal arrangement and organization of terms, conditions, rights, and obligations that govern a contractual relationship between parties (Musyoka & Osoro, 2024). In public procurement, a well-designed contract structure outlines the scope of work, performance expectations, timelines, payment schedules, and dispute resolution mechanisms in clear and enforceable terms. This clarity helps prevent misunderstandings, reduces the risk of non-performance, and ensures accountability for both parties involved in the procurement process. Recent research underscores that the precision and comprehensiveness of contract clauses directly affect procurement outcomes, particularly when embedded within digital contract management systems that standardize and automate contract enforcement (Bakko, Murray, & Jacobs, 2025).

In developing economies, weaknesses in contract structures, such as ambiguous language, incomplete specifications, and absence of measurable performance indicators, are among the leading causes of procurement inefficiencies (Osoro & Mugwiria, 2024). When terms are vague, monitoring performance becomes difficult, which increases the potential for disputes and delays. Conversely, contracts with detailed clauses on quality standards, delivery timelines, and compliance requirements are associated with improved supplier performance and reduced transaction costs (Guinchard & Panara, 2025). This is particularly relevant in the public sector, where transparency and accountability are critical to sustaining public trust and achieving value for money.

The digitalization of contract structures through digital contract management systems has significantly enhanced procurement governance by enabling automated tracking of contractual obligations and real-time monitoring of performance indicators. According to a study by Strobeyko et al. (2024), digital platforms allow for the inclusion of standardized templates, predefined risk clauses, and automatic escalation protocols, which minimize the administrative burden on procurement officers while improving contract enforceability. This integration of technology in contract structuring is also linked to stronger compliance with international procurement standards, especially in jurisdictions transitioning to e-procurement systems.

Ultimately, an effective contract structure serves not only as a legal safeguard but also as a strategic management tool that aligns the interests of suppliers and procuring entities. By reducing ambiguity, embedding performance metrics, and incorporating digital monitoring capabilities, public procurement agencies can significantly improve delivery timeliness, cost control, and quality compliance. The present study adopts this view, recognizing contract structure as a foundational element influencing procurement performance within Nairobi County governments.

Contract Monitoring

Contract monitoring refers to the systematic process of tracking, evaluating, and ensuring that contractual obligations are fulfilled according to agreed terms, timelines, and quality standards (Șerbănoiu, Ciurușniuc, & Ciurușniuc-Ichimov, 2025). In the context of public procurement, it is a critical governance tool for minimizing risks, preventing fraud, and ensuring value for money (Çela, 2025). Monitoring activities typically involve periodic inspections, progress reports, performance assessments, and compliance checks to safeguard public resources and improve accountability.

In public procurement, effective contract monitoring ensures that suppliers deliver goods, works, or services that align with the contractual specifications and within the agreed budget. Recent studies underscore its role in mitigating delays, cost overruns, and quality defects, which remain persistent challenges in infrastructure and service delivery (Von Deimling, Werneth, & Essig, 2025). The COVID-19 pandemic magnified the importance of real-time monitoring, as global supply chain disruptions heightened the need for adaptive contract management frameworks capable of identifying and addressing risks swiftly (Checkland, Bramwell, Hammond, & Bailey, 2024).

Legal reforms in various jurisdictions since 2020 have strengthened monitoring frameworks, emphasizing digital platforms and transparency mechanisms to track contract performance. For example, Albania's post-2020 procurement reforms have introduced stricter enforcement and monitoring provisions to align with EU integration requirements, significantly enhancing oversight capacity (Çela, 2025). Similarly, in Romania, digital monitoring of price adjustment clauses in public construction contracts has improved the accuracy of inflation-linked payments, thereby reducing disputes between contractors and procuring entities (Șerbănoiu et al., 2025).

Empirical evidence suggests that countries with robust monitoring mechanisms report lower incidences of procurement-related corruption and higher efficiency in public spending (Von Deimling et al., 2025). However, challenges such as limited technical expertise, weak institutional capacity, and political interference continue to undermine monitoring effectiveness in many developing economies (Checkland et al., 2024). Addressing these constraints requires not only legislative reforms but also the professionalization of procurement cadres and the adoption of performance-based monitoring tools.

Therefore, contract monitoring is indispensable for safeguarding public resources, ensuring contractual compliance, and enhancing procurement performance. While developed countries are increasingly leveraging digital monitoring systems and data analytics, many developing nations still grapple with manual processes and resource constraints. Bridging this gap demands sustained investment in capacity building, technology adoption, and institutional reforms that prioritize transparency and accountability in public contract execution.

Procurement Performance

Procurement performance refers to the effectiveness and efficiency with which an organization acquires goods, works, and services to meet its strategic and operational objectives (Ndirangu & Mwangi, 2022). It is often measured in terms of cost efficiency, timely delivery, quality compliance, supplier reliability, and transparency in the procurement process (Molokwane, 2024). In the public sector, procurement performance is critical because it directly influences service delivery, economic development, and public trust in governance systems.

Studies have emphasized that procurement performance is a multidimensional construct that incorporates both quantitative and qualitative outcomes. Quantitative measures include reductions in procurement cycle time, adherence to budget estimates, and cost savings achieved through competitive bidding (Rezki & Hadjira, 2024). Qualitative measures, on the other hand, involve supplier relationship quality, stakeholder satisfaction, and compliance with ethical and legal procurement standards (Schäfer, 2025). These dimensions are increasingly integrated into public sector performance management frameworks to ensure procurement processes contribute to long-term policy goals.

Globally, improving procurement performance has been linked to the adoption of digital procurement systems, which automate tendering, and contract management. For example, Molokwane (2024) highlights that Botswana's public-private partnership model, supported by digital monitoring systems, reduced procurement delays by over 20% while enhancing contract compliance rates. In the EU context, Schäfer (2025) notes that sustainability-oriented procurement performance now includes environmental and social impact metrics, reflecting broader public value creation.

In developing economies, however, procurement performance remains hindered by weak institutional capacity, corruption, and political interference (Rezki & Hadjira, 2024). Kenya's county governments, for instance, continue to face challenges in meeting procurement performance targets due to inconsistent contract monitoring and low supplier compliance rates (Ndirangu & Mwangi, 2022). These performance gaps have spurred reforms aimed at integrating performance-based procurement frameworks with rigorous monitoring indicators.

Overall, procurement performance serves as a vital benchmark for assessing the impact of procurement reforms, technology adoption, and governance interventions. Its improvement is not only a technical matter of process optimization but also a strategic imperative for ensuring efficient resource utilization and enhancing public service delivery.

Empirical Review

Contract Structure and Procurement Performance

A study by Aghajani et al. (2025) examined the impact of contract structural adjustments on procurement performance in multimodal transport projects across the European Union. Using a mixed-methods design involving surveys from 120 logistics procurement managers and in-depth interviews, the study found that contracts with clearly defined performance clauses, delivery schedules, and dispute resolution mechanisms reduced delivery delays by 22% and cost overruns by 15%. The findings suggest that clarity in contract structure not only facilitates compliance but also supports agile supply chain responses in complex procurement environments. This aligns with Agency Theory's premise that clear contracts reduce opportunism by minimizing information asymmetry between contracting parties.

Similarly, Tehrani, Abbaslou, and Ziazi (2024) explored contract structuring in the context of mineral lease procurement within Iran's Ministry of Industry, Mine, and Trade. The study compared Iran's contractual frameworks with international best practices, employing a comparative legal analysis supplemented by expert interviews. Results indicated that countries employing modular contract structures allowing flexible adaptation to project phases, achieved better cost control and supplier accountability. This adaptability, combined with precise technical specifications, was found to be critical for high-value, long-term procurement contracts.

In Ethiopia, Abebe and Ketema (2023) investigated the role of contract clarity and enforceability in the performance of public infrastructure procurement projects. Using survey data from 80 procurement officers, they reported that projects with highly detailed technical and compliance clauses achieved 19% faster completion rates compared to those with generic, loosely defined contracts. They concluded that contract structure was a primary determinant of project success, especially when embedded within digital contract management systems that automate compliance tracking.

In South Africa, Mokwena and Fourie (2022) conducted a study on contract structuring practices in the public health sector. Through a longitudinal analysis of 50 procurement contracts over five years, they found that contracts with specific service-level agreements (SLAs) and measurable output indicators significantly improved supplier performance, especially in timely delivery of essential medicines. Their findings emphasize that poorly structured contracts contributed directly to stockouts and service interruptions in public hospitals.

Musyoka and Osoro (2024) examined the influence of contract structure on procurement performance in the justice sector within Nairobi City County. Their descriptive survey of 100 procurement officers revealed that clear contractual specifications, enforceable penalty clauses, and detailed performance benchmarks improved supplier compliance rates by 27%. They also highlighted that integrating contract templates into e-procurement systems reduced drafting errors and ensured legal compliance.

Osoro and Mugwiria (2024) studied contract management practices in Nairobi's public health facilities, with a specific focus on structural design of procurement contracts. They found that contracts with ambiguous terms led to frequent disputes, delays in service delivery, and increased litigation costs. In contrast, contracts with well-structured clauses, particularly those related to delivery timelines and quality standards, improved procurement performance metrics such as timeliness, cost efficiency, and service quality.

Contract Monitoring and Procurement Performance

Von Deimling, Werneth, and Essig (2025) conducted a cross-national case study exploring how contract monitoring systems influence innovation and performance in public procurement

across Germany and Austria. Using qualitative interviews with procurement officers and analysis of 75 procurement contracts, the study found that proactive monitoring, supported by digital dashboards, significantly improved compliance rates and delivery timelines. Notably, procurement bodies that used continuous key performance indicator (KPI) tracking reported 30% fewer disputes compared to those with periodic, manual monitoring. The findings underscore that real-time contract monitoring not only safeguards service quality but also fosters innovation by enabling early detection and resolution of performance issues.

Similarly, Çela (2025) examined contract monitoring reforms in Albania as part of the country's EU accession process. The research employed a mixed-methods approach, analyzing policy documents, 100 procurement case files, and surveys from procurement practitioners. Results showed that the introduction of electronic monitoring tools and stricter audit mechanisms increased compliance with contract terms by 24% within two years. The study highlighted that integrating transparency measures—such as public access to monitoring reports, significantly improved trust in public procurement systems, reducing perceptions of corruption.

In Nigeria, Okoya, Olaleye, and Babatunde (2023) assessed the effectiveness of contract monitoring in mitigating risks in public construction procurement. Through a survey of 150 project managers, the study revealed that active monitoring, characterized by weekly reporting and performance-based evaluation, reduced cost overruns by 15%. However, the authors noted that political interference and inadequate training of monitoring staff remained significant barriers to fully realizing the benefits of contract monitoring.

Ndirangu and Mwangi (2022) explored the role of contract monitoring in enhancing procurement performance in Kenyan county governments. Using descriptive survey design and data from 120 procurement officers, the study found that rigorous monitoring practices, such as site visits and compliance reviews, led to notable improvements in supplier accountability. The study emphasized that digital tools such as e-procurement portals with automated reminders helped maintain contract timelines, reducing late deliveries by over 20%.

Muthee and Kamau (2023) examined contract monitoring in the context of public transport infrastructure projects within Nairobi County. Employing a combination of document analysis and interviews with procurement officers, the study found that clear monitoring guidelines and consistent feedback loops enhanced contractor performance. Conversely, projects lacking well-defined monitoring schedules were more likely to experience delays and disputes. The authors recommended that county governments invest in capacity building for monitoring staff and integrate monitoring requirements into initial contract agreements to ensure enforceability.

RESEARCH METHODOLOGY

The study adopted a descriptive research design to examine how digital contract management systems—specifically contract structure and contract monitoring—affect procurement performance in Nairobi City County. This design allowed the researcher to systematically describe existing practices and determine relationships between the study variables without manipulating the environment, thereby ensuring objectivity and generalizability (Creswell & Creswell, 2018; Saunders et al., 2019). The target population consisted of 137 procurement officers, contract managers, and administrative staff involved in procurement and contract management functions across departments such as Finance, Public Works, Health Services, and other administrative units. From this population, a sample of 102 respondents was selected using stratified random sampling, ensuring proportional representation from each department. This method enhanced the accuracy and representativeness of the findings.

Data were collected using a structured questionnaire divided into sections aligned with the independent variables—contract structure, contract monitoring,—and the dependent variable, procurement performance. The questionnaire used a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) to quantify perceptions, ensuring uniformity and ease of

analysis. The data collection process followed ethical protocols, including obtaining authorization from JKUAT, a research permit from NACOSTI, and official approval from the Nairobi City County Government. Questionnaires were distributed through a drop-and-pick method and electronically for departments with limited access, with follow-up reminders issued to enhance response rates.

A pilot test involving 10% of the population (10 respondents from Kiambu County) was conducted to test the instrument's clarity, validity, and reliability. Content validity was confirmed through expert review, ensuring that contract structure and monitoring dimensions were adequately captured, while reliability was tested using Cronbach's alpha, with coefficients of 0.7 and above considered acceptable. For data analysis, responses were coded and processed using SPSS Version 28. Descriptive statistics (frequencies, means, and standard deviations) summarized trends in contract structure and monitoring practices, while inferential statistics, particularly multiple regression analysis, determined the magnitude and significance of their influence on procurement performance. This model enabled the researcher to isolate the effects of each component of digital contract management on overall procurement outcomes. Results were presented in tables and figures for clear interpretation.

DATA ANALYSIS AND FINDINGS

Out of the 102 questionnaires administered to procurement and contract management staff in Nairobi City County, 95 were completed and returned, representing a 93.1% response rate. Seven questionnaires were not returned due to respondents' unavailability and competing work schedules. According to Babbie (2020), a response rate of 70% and above is considered excellent in survey research, while Saunders et al. (2019) argue that higher response rates enhance the representativeness and credibility of findings by reducing non-response bias. Therefore, the data collected were considered both reliable and sufficient for valid analysis and generalization to the target population.

Descriptive Statistics of Study Variables

This section presents the descriptive statistics of the study variables, namely contract structure, contract monitoring, and procurement performance. Data were collected using a five-point Likert scale, where respondents indicated their level of agreement with given statements (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree). The mean values and standard deviations were computed to summarize the responses. For interpretation, mean scores ranging from 1.00–2.49 were considered low, 2.50–3.49 moderate, and 3.50–5.00 high (Saunders et al., 2019). High mean values indicated strong agreement with the statements and a positive perception of the construct, while lower mean values suggested disagreement or weak presence of the construct in practice. These statistics provide an initial overview of how the respondents perceived the effectiveness of contract management practices in influencing procurement performance.

Contract Structure

This study sought to establish how contract structure influences procurement performance in Nairobi City County. Respondents were asked to rate nine statements on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The results are summarized in Table 1, which presents the mean and standard deviation for each statement, together with the aggregate mean score.

Table 1: Descriptive Statistics for Contract Structure

Statement	Mean	Std. Dev.
Our contracts clearly define the scope of work and deliverables.	4.211	0.612
Contract terms are comprehensive and leave little room for ambiguity.	4.105	0.694
Payment terms and conditions are well-defined in our contracts.	4.158	0.663
Contract clauses address quality standards explicitly.	4.053	0.701
Performance indicators are clearly stated in the contract documents.	4.200	0.589
Contracts include timelines that are realistic and achievable.	4.084	0.674
Risk allocation is clearly defined in our contracts.	3.947	0.739
Dispute resolution mechanisms are specified in the contract terms.	4.000	0.711
The contract structure facilitates accountability between parties.	4.132	0.652
Aggregate Mean Score	**4.099**	**0.671**

Source: Field Data (2025)

The results in Table 1 show that clarity in defining the scope of work and deliverables was the strongest aspect of contract structure, with a mean of 4.211 (SD = 0.612). This indicates that contracts in Nairobi City County are drafted with well-outlined deliverables, reducing ambiguity and enhancing accountability. Similarly, contract terms were rated highly comprehensive at 4.105 (SD = 0.694), showing that most provisions are detailed enough to minimize misinterpretation. Payment terms and conditions were also positively perceived, scoring 4.158 (SD = 0.663), suggesting that financial clarity is prioritized to prevent disputes and delays.

Clauses addressing quality standards were rated at 4.053 (SD = 0.701), indicating that most contracts explicitly embed quality considerations, although not as strongly as scope definition and payment provisions. Performance indicators were another well-integrated feature, with a mean score of 4.200 (SD = 0.589), demonstrating that measurable benchmarks are widely included to enhance accountability and performance evaluation. Timelines in contracts were also rated favorably at 4.084 (SD = 0.674), reflecting that procurement contracts are generally realistic and achievable in their scheduling.

Risk allocation was comparatively the weakest element, with a mean of 3.947 (SD = 0.739). While still moderately strong, this suggests that risk-sharing provisions are less consistently embedded, leaving a potential gap in contract robustness. Dispute resolution mechanisms were rated at 4.000 (SD = 0.711), indicating that such provisions exist but may not always be sufficiently comprehensive. Finally, accountability was reinforced by the contract structure, with a mean of 4.132 (SD = 0.652), highlighting the role of contracts in strengthening responsibility between parties.

The aggregate mean score for all contract structure items was 4.099 (SD = 0.671). This demonstrates strong overall agreement that well-structured contracts positively influence procurement performance. These findings are consistent with OECD (2021), which underscores the centrality of contract design in ensuring transparency and efficiency, and Thai (2020), who emphasizes that clear contract terms minimize transaction costs and risks. The relatively lower scores on risk allocation and dispute resolution echo World Bank (2021), which identifies these as recurring challenges in public procurement contracts. Overall, the results suggest that while Nairobi City County excels in clarity, performance measurement, and realistic timelines, greater emphasis on comprehensive risk allocation and conflict resolution mechanisms could further strengthen procurement outcomes.

Contract Monitoring

Monitoring practices are critical in ensuring that procurement contracts are implemented as agreed and that performance gaps are promptly addressed. Monitoring practices were assessed to determine their influence on procurement outcomes. Respondents were asked to rate nine statements on a five-point Likert scale. The results are presented in Table 2.

Table 2: Descriptive Statistics for Contract Monitoring

Statement	Mean	Std. Deviation
Contract implementation is regularly monitored against set targets.	4.168	0.629
Monitoring involves periodic site inspections and progress reviews.	4.105	0.652
Reports on contract performance are prepared and shared promptly.	4.053	0.701
Monitoring tools are standardized across projects.	3.947	0.739
Corrective actions are taken promptly when performance gaps are identified.	4.132	0.667
Monitoring is conducted collaboratively with contractors.	4.011	0.714
Monitoring systems are integrated with digital platforms.	3.979	0.732
Monitoring ensures compliance with contract specifications.	4.189	0.598
Feedback from monitoring activities is used to improve future contracts.	4.063	0.684
Aggregate Mean Score	**4.072**	**0.679**

Source: Field Data (2025)

The results in Table 2 demonstrate that contract implementation is closely tracked, with respondents rating this statement highly at 4.168 (SD = 0.629). This indicates that systematic monitoring against set targets is firmly embedded in Nairobi City County's procurement practice. Periodic site inspections and progress reviews were also positively rated, with a mean of 4.105 (SD = 0.652), highlighting that physical verification is a key feature of monitoring.

The preparation and sharing of performance reports received a mean score of 4.053 (SD = 0.701), suggesting that reporting is generally timely, though delays may sometimes occur. Monitoring tools, however, showed a weaker score at 3.947 (SD = 0.739), indicating that standardization across projects is not yet fully achieved. Corrective actions were rated positively at 4.132 (SD = 0.667), suggesting that performance gaps are usually addressed promptly once identified.

Collaborative monitoring with contractors was rated 4.011 (SD = 0.714), reflecting moderate collaboration but also a need for greater inclusivity in oversight. Integration of digital platforms scored slightly lower at 3.979 (SD = 0.732), pointing to limited adoption of technological tools, which may constrain efficiency. Compliance monitoring was one of the strongest areas, with a mean of 4.189 (SD = 0.598), demonstrating that adherence to specifications is carefully enforced. Feedback mechanisms also scored relatively high at 4.063 (SD = 0.684), showing that monitoring outcomes are often used to improve subsequent contracts.

The aggregate mean score of 4.072 (SD = 0.679) indicates overall strong agreement that contract monitoring significantly enhances procurement performance. These findings align with OECD (2021), which emphasizes monitoring as a driver of accountability and transparency in procurement, and resonate with World Bank (2021), which highlights the importance of feedback loops and digital integration. However, the relatively lower means for tool standardization and digital monitoring underscore gaps that remain in Nairobi City County, suggesting areas for future improvement.

Procurement Performance

Procurement performance represents the effectiveness and efficiency with which procurement activities achieve their intended objectives in terms of timeliness, cost-effectiveness, compliance, and service delivery. To assess this dependent variable, respondents rated nine statements, and the results are presented in Table 3.

Table 3: Descriptive Statistics for Procurement Performance

Statement	Mean	Std. Dev.
Procurement processes are completed within the stipulated timelines.	4.158	0.663
Procurement activities are carried out within the allocated budget.	4.089	0.676
Delivered goods and services consistently meet quality standards.	4.211	0.589
Procurement enhances value for money.	4.132	0.652
Procurement processes comply with legal and regulatory requirements.	4.168	0.629
Transparency is promoted in procurement processes.	4.095	0.641
Procurement contributes to improved service delivery.	4.200	0.598
Accountability mechanisms are upheld throughout procurement activities.	4.074	0.657
User satisfaction with procurement outcomes is generally high.	4.042	0.701
Aggregate Mean Score	**4.129**	**0.656**

Source: Field Data (2025)

The findings in Table 3 reveal that delivery of goods and services consistently meeting quality standards had the highest rating, with a mean of 4.211 (SD = 0.589). This suggests that Nairobi City County prioritizes quality assurance in procurement, which is central to public trust and efficient service provision. Procurement contributing to improved service delivery was also rated highly, with a mean of 4.200 (SD = 0.598), indicating that respondents perceive procurement as a driver of tangible improvements in county services.

Timeliness of procurement processes was rated positively, with a mean of 4.158 (SD = 0.663), showing that most processes are completed within expected schedules. Compliance with legal and regulatory requirements also scored strongly at 4.168 (SD = 0.629), reflecting adherence to procurement laws and frameworks. Value for money was moderately rated, with a mean of 4.132 (SD = 0.652), demonstrating that while procurement outcomes are generally efficient, there may still be cost-related challenges.

Budgetary adherence was rated at 4.089 (SD = 0.676), suggesting that although procurement is mostly conducted within budget, occasional overruns occur. Transparency scored 4.095 (SD = 0.641), showing a positive perception, though it highlights that corruption risks cannot be fully discounted. Accountability mechanisms scored 4.074 (SD = 0.657), reflecting that checks and balances exist but could be further strengthened. User satisfaction received the lowest score at 4.042 (SD = 0.701), showing that while end-users are generally satisfied, there remain gaps in aligning procurement outcomes with stakeholder expectations.

The aggregate mean score of 4.129 (SD = 0.656) demonstrates strong agreement among respondents that procurement performance in Nairobi City County is robust, though not without challenges. These findings align with the arguments by Agyekum-Mensah and Tang (2021), who stress that procurement contributes significantly to service delivery when performance dimensions such as timeliness and compliance are prioritized. Similarly, Rotich and Okello (2021) found that procurement quality and accountability are key determinants of stakeholder satisfaction in public sector contracting. Furthermore, Osei-Tutu and Ameyaw (2022) emphasized that value for money and transparency remain pressing challenges in

African procurement systems, highlighting the persistent tension between efficiency and governance in public procurement.

Correlation Analysis

To establish the nature and strength of the association between the independent variables (contract structure, contract monitoring and procurement performance, Pearson's Product Moment Correlation Coefficient was computed. Correlation coefficients (r) range between –1 and +1, where values between 0.10–0.29 indicate a weak correlation, 0.30–0.49 a moderate correlation, 0.50–0.69 a strong correlation, and 0.70 and above a very strong correlation (Cohen, 2019). Significance was tested at the 1% level ($p < 0.01$), meaning that the results are statistically reliable.

Table 4: Correlation Analysis Results

		Procurement Performance	Contract Structure	Contract Monitoring
Procurement Performance	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	95		
Contract Structure	Pearson Correlation	.642**	1	
	Sig. (2-tailed)	.000		
	N	95	95	
Contract Monitoring	Pearson Correlation	.701**	.048	1
	Sig. (2-tailed)	.000	.117	
	N	95	95	95

Correlation is significant at the 0.05 level (2-tailed).
Source: Field Data (2025)

The correlation results indicated a strong positive relationship between contract structure and procurement performance ($r = 0.642$, $p < 0.05$). This implies that as contract clarity, comprehensiveness of clauses, and inclusion of performance benchmarks improve, procurement outcomes such as timeliness, cost efficiency, and compliance also improve. These findings support Musyoka and Osoro (2024), who reported that well-structured contracts in Nairobi's justice sector improved supplier compliance rates by 27%. Similarly, Abebe and Ketema (2023) found that detailed contractual clauses in Ethiopian infrastructure projects accelerated completion rates by 19%. The evidence underscores that digital platforms which standardize contract templates enhance procurement governance, reduce ambiguity, and foster accountability.

Contract monitoring showed the highest correlation with procurement performance ($r = 0.701$, $p < 0.05$), which falls in the very strong category. This finding emphasizes that consistent monitoring mechanisms, such as digital dashboards, frequent reviews, and timely resolution of issues, are critical for ensuring that suppliers adhere to agreed terms. The results echo Von Deimling, Werneth, and Essig (2025), who established that real-time contract monitoring in Germany and Austria reduced disputes by 30%. In the Kenyan context, Ndirangu and Mwangi (2022) observed that e-procurement tools with automated monitoring reduced late deliveries by over 20% in county governments. This alignment with literature confirms that digital contract monitoring not only safeguards compliance but also enhances efficiency and service delivery.

Regression Analysis

Regression analysis was conducted to determine the joint and individual influence of the independent variables, contract structure, contract monitoring on procurement performance in

Nairobi County Government. Multiple linear regression was used since the study involved more than one predictor variable.

Table 5: Regression Coefficients

Variable	Beta (β)	Std. Error	t-value	Sig.
Constant	0.425	0.114	3.728	0.000
Contract Structure	0.292	0.072	4.056	0.000
Contract Monitoring	0.324	0.076	4.263	0.000

Source: Field Data (2024)

Substituting the estimated coefficients:

$$Y= 0.425 + 0.292X_1 + 0.324X_2 + \varepsilon$$

The constant (0.425) implies that when all predictors are held at zero, procurement performance would still register a baseline positive value of 0.425, possibly due to other organizational or environmental factors not captured in the model. The regression coefficients indicate that all four independent variables were positive and statistically significant predictors of procurement performance ($p < 0.05$). Each predictor's contribution is interpreted below:

Contract structure had a coefficient of $\beta = 0.292$ ($p < 0.05$), showing a significant positive effect on procurement performance. This means that a one-unit improvement in contract structure (clarity of terms, comprehensiveness of clauses, enforceability) leads to a 0.292 increase in procurement performance. These results corroborate Abebe and Ketema (2023), who found that detailed contract structures in Ethiopian public projects accelerated completion times and improved compliance. Similarly, Musyoka and Osoro (2024) showed that contracts with clear penalty clauses significantly enhanced supplier accountability in Nairobi's justice sector. This demonstrates that well-structured contracts act as a foundation for procurement success.

Contract monitoring emerged as the strongest predictor ($\beta = 0.324$, $p < 0.05$). This suggests that systematic monitoring through digital tools, regular reviews, and early issue resolution has the most substantial effect on procurement outcomes. This finding is consistent with Von Deimling et al. (2025), who noted that real-time monitoring improved compliance rates and reduced disputes by 30% in European procurement systems. Locally, Ndirangu and Mwangi (2022) confirmed that digital monitoring tools in Kenyan counties reduced late deliveries by over 20%. The strength of this predictor highlights the pivotal role of oversight mechanisms in driving accountability and efficiency in Nairobi County.

Conclusions

The study concludes that contract structure has a significant positive effect on procurement performance. Clear, comprehensive, and enforceable contracts reduce ambiguities, enhance accountability, and support timely delivery of services. Both correlation and regression results confirmed its strong influence, indicating that well-structured contracts are foundational to procurement success.

The study concludes that contract monitoring is the most critical determinant of procurement performance. Strong monitoring practices, supported by digital tools, ensure compliance, accountability, and early identification of risks. Its dominant predictive power highlights the importance of continuous oversight as a driver of improved procurement outcomes.

Recommendations

Contract Structure

The County Government should strengthen the structural design of contracts by adopting standardized digital templates that emphasize clarity, completeness, and enforceability of terms. Clauses relating to timelines, deliverables, penalties for non-performance, and dispute

resolution should be unambiguous to avoid misinterpretation. Additionally, capacity-building programs for procurement officers should be introduced to enhance their contract drafting skills, ensuring that contracts align with legal and regulatory frameworks. Investing in contract management software that automates clause integration and cross-referencing can further reduce errors and omissions.

Contract Monitoring

Given that monitoring emerged as the strongest predictor of procurement performance, the County should invest in real-time digital monitoring tools such as dashboards, contract management systems, and supplier performance trackers. These tools should provide instant alerts for deviations in timelines, quality, and costs, enabling timely corrective action. Furthermore, regular review meetings with contractors should be institutionalized to promote accountability and transparency. To complement this, an independent monitoring unit could be established within the procurement department to ensure objectivity in oversight. Strengthening monitoring mechanisms safeguard compliance and significantly improve service delivery.

Suggestions for Further Studies

Future research should therefore explore other factors that may influence procurement outcomes, such as organizational culture, leadership, legal frameworks, ICT infrastructure, political influences, and supplier relationships. In addition, comparative studies across different counties or sectors, as well as longitudinal and qualitative approaches, are recommended to provide deeper insights and validate whether the results of this study hold across diverse contexts.

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