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Project Management Practice and Performance of Building Projects in Kenya: Case of Migori, Homabay and Kisii Counties

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Abstract: The study investigated the influence of project management practice on performance of building projects in Kenya. Despite devolution in management of building project, their performance is yet to be satisfactory. The objective was to examine the influence of project planning, resource scheduling, and monitoring and evaluation on performance of building construction projects in Kenya. From a sample of 151 respondents, 130 usable instruments were obtained. The majority of respondents 37 (28.5%) were relatively young professionals aged between 25 and 34 years. Quantity surveyors 25(16.6%) Architects 24 (15.9%) , contractors represented 28 (18.5%), clerks of works 25 (16.6%), project managers 27 (17.9%), while structural engineers were 16 (10.6%). In respect of project planning, descriptive results indicated moderate adoption of scope definition and resource allocation practice, and significant gaps in use of building information management and data analytics, work breakdown structure and risk management. Regarding schedule management, results show milestone setting and continuous monitoring are partially implemented, while advanced tools such as Microsoft Project and AI-driven scheduling are not widely adopted. In respect of monitoring and control, results show that while basic monitoring practices such as monitoring for delays and cost overruns, are relatively common, there is limited uptake of advanced monitoring tools such as mobile apps, drones, AI, and Earned Value Management. Data on project performance indicate moderate achievements in stakeholder satisfaction, regulatory compliance, occupational safety, and alignment with strategic goals. The correlation matrix shows that all three independent variables are positively and significantly correlated. A correlation of $r = 0.642$, $p < 0.01$, suggesting a strong positive relationship between Project Planning and performance of building projects. The results for Schedule Management ($r = 0.613$, $p < 0.01$) indicates that better scheduling techniques could improve performance of building projects. Correlation results for Project Monitoring & Control ($r = 0.695$, $p < 0.01$) show the strongest positive relationship, suggesting that a robust monitoring framework had the greatest influence on project performance. Multiple regression results revealed $R = 0.782$, indicating a strong combined relationship between the independent variables and project performance. The $R^2 = 0.611$ implies that 61.1% of the variation in project performance can be explained by project planning, schedule management, and monitoring & control. The remaining 38.9% is attributed to other factors not captured in this model. The ANOVA show the model is statistically significant ($F = 39.75$, $p < 0.001$), suggesting that project planning, schedule management, and project monitoring and control had a positive and statistically significant effect on project performance. Specifically, the standardized coefficient of $\beta = 0.316$ ($p < 0.001$) for project planning indicates that strong planning practices significantly enhanced performance. Schedule management coefficient of $\beta = 0.298$ ($p = 0.001$), confirmed that well-executed scheduling processes contribute to project success. Project monitoring and control's highest standardized coefficient at $\beta = 0.376$ ($p < 0.001$), suggests it is the most influential factor among the three. These findings provide empirical evidence that effective implementation of key project management practices has a substantial impact on the performance of county government construction projects. The influence of all variables on performance is positive, with project monitoring and control being the strongest predictor, followed closely by planning and then schedule management. The findings suggest that robust monitoring frameworks, strategic planning, and realistic scheduling are foundational to delivering infrastructure projects on time, within budget, and according to quality expectations, within devolved governments in Kenya.

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I. INTRODUCTION

The construction industry is globally acknowledged as a critical sector that drives socio-economic development. It provides the infrastructure required for housing, healthcare, education, and commerce, while also stimulating growth in other industries such as manufacturing, transport, and financial services. According to the World Bank (2022), the sector is a major contributor to GDP in both developed and developing countries and has a significant multiplier effect on employment creation.

In Kenya, the construction industry contributes about seven percent of the gross domestic product and generates over 200,000 direct jobs annually, in addition to supporting thousands more through indirect linkages (Kenya National Bureau of Statistics [KNBS], 2023). Within devolved government units in Kenya, building projects form a substantial part of county government budgets, contributing to socio-economic development through the provision of administrative, health, educational, market, and housing infrastructure. The devolved government system in Kenya aims to improve infrastructure delivery through local governance. However, challenges in project performance, often manifesting as delays, cost overruns, and quality issues, persist in county government building projects. Such inefficiencies undermine the objectives of devolution and compromise service delivery. Further, they indicate ineffectiveness of the public sector in managing infrastructure investment, and in particular, devolved government units.

Effective project management is globally recognized as pivotal to infrastructure delivery (Mwangi, 2022; Hossain et al., 2022). However, there is limited empirical evidence on how these practices influence project performance in county governments in Kenya.

In particular, despite the acclaimed role of advanced digital tools, their use for planning, scheduling, and monitoring is undocumented in the context of county government building construction projects.

The research significance of investigating the role of project management practice is evident from the global nature of the problem. The literature suggests that worldwide, the performance of construction projects, and in particular public building projects, remains unsatisfactory. Studies from developed economies such as Singapore, the United States, and China highlight that structured project management processes, combined with technology integration, can significantly enhance infrastructure delivery outcomes. Project planning establishes scope, allocates resources, and sets the foundation for efficiency. Advanced technologies such as BIM enhance visualization and coordination (USAID, 2022). Schedule management employing critical path methods and AI-based tools optimize timelines and prevents delays (Aghimien et al., 2021). Monitoring and control enable early issue detection and corrective action. Yet, public sector construction often lags due to technical capacity constraints, leading to poor project outcomes (Transparency International Kenya, 2023; Ndungu, 2020).

Despite evidence that project management practice is a globally recognized driver of building construction project success, it remains under-researched worldwide. In particular, there is scant attention to the influence of adopting project management practice on the performance of public sector building infrastructure projects.

➢ *Research Problem*

Infrastructure development is central to Kenya's socio-economic transformation, yet county government building projects are frequently marred by inefficiencies. Despite increased budget allocations, many projects are either delayed, abandoned, or completed at costs significantly higher than planned. According to Ndungu (2020), public construction projects in Kenya experience time overruns of between 20 and 40 per cent and cost overruns of 15 to 30 per cent. Although project management frameworks are theoretically in place, their implementation at the county level remains weak and inconsistent. Counties lack systematic project planning mechanisms, often failing to define project scope adequately or account for risks. Scheduling tends to be unrealistic and resource allocation inefficient, while monitoring and evaluation systems are either absent or ineffective (Kibet & Langat, 2021). This allows problems to persist until projects collapse or stall, wasting resources and eroding public trust in devolution.

Whereas there is a growing body of literature on project management in Kenya, much of it focuses on national-level or private sector projects. County-level research is limited, particularly in the Nyanza region. Without localized evidence, counties cannot develop tailored interventions to strengthen project management frameworks. Such absence of localized insights limits understanding of the special problems and strategic responses specific to county governments (Mwangi, 2022; Wanyama, 2023). Despite project management's critical role in achieving the infrastructure development objectives of devolved governments, several research gaps remain unexplored. While many studies have examined project management in Kenya, there is a lack of research focusing specifically on county-level practices in Migori, Homabay, and Kisii.

➢ *Research objective*

The overall objective was to establish the influence that project management practice may have on the performance of building projects managed by county governments in Kenya. Specifically the study aimed to**;** establish project planning's influence on the performance of county government building construction projects in Kenya**,** investigate schedule management's influence on the performance of building construction projects of county

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governments in Kenya, analyze project monitoring and control's influence on the performance of building construction projects of county governments in Kenya and provide recommendations from the findings on the best way to improve performance of building construction projects funded by county governments in Kenya.

➢ *Study Significance*

The significance of this study lies in its potential to benefit a wide range of stakeholders in the construction industry, governance, academia, and the wider community in several ways. By examining the influence of project management practices on the performance of county government building projects, the study provides evidence and insights that are of both theoretical and practical importance. At the policy level, the study is significant because it will provide valuable insights for both county and national governments. County governments are mandated under the Constitution of Kenya 2010 to deliver public goods and services in an efficient, equitable, and sustainable manner (Government of Kenya, 2010).

II. LITERATURE REVIEW

➢ *Review of Theories*

- *Project Management Theory*

Project management is the application of knowledge, skills, tools, and techniques to project activities to meet requirements (PMI, 2021). Project Management Theory provides the foundational framework for understanding how projects should be managed to achieve desired outcomes. The PMBOK framework outlines core processes in integration, scope, time, cost, quality, human resources, risk, procurement, and stakeholder management. Beyond the traditional PMBOK emphasis on integration, scope, time, cost, and quality, contemporary research stresses the "execution intelligence" that comes from digital tools and real-time control loops. Recent global work links structured planning baselines to AI-assisted schedule diagnostics and proactive risk re-sequencing, yielding measurable reductions in slippage, for example, AI-supported schedules and predictive resource leveling (Chen, 2024; Koirala, 2024). In Kenya, newer empirical studies show that when counties and public agencies operationalize basic planning artefacts (WBS, baselines, earned value), performance improves—especially on road and housing projects (Kyalo & Kising'u (2024); Kirui & Gichana (2024), KURA projects) These findings support retaining PMBOK's discipline while integrating data-driven planning and variance-controlled execution in devolved units. For county government projects in Kenya, Project Management Theory underscores the necessity of robust planning, realistic scheduling, and rigorous monitoring. However, the extent to which county governments adhere to structured project management processes remains questionable, hence the need for empirical investigation.

- *Systems Theory*

Systems Theory, advanced by Bertalanffy (1968), views projects as interconnected systems comprising multiple interdependent parts. It views a project as a complex system of subsystems that are interrelated, consisting of components for planning, scheduling, resource management, and monitoring & control that collectively determine overall project outcomes. A failure in one component, such as weak procurement processes, can compromise the entire system. The performance of a building project is thus the result of the synergy or, lack thereof, among these elements. Systems Theory is especially pertinent for county projects, which operate within complex political, social, and financial environments. It emphasizes holistic analysis and coordination among subsystems to achieve desired project outcomes.According to Systems Theory, a project is a dynamic and interconnected system where each component interacts with others to achieve overarching project goals (Bertalanffy, 1968). This holistic approach emphasizes the interdependence and complexity of project elements, including stakeholders, resources, processes, and environmental factors (Jackson et al., 2021). By adopting Systems Theory, project managers can gain insights into how these interconnected parts influence project outcomes and identify potential synergies and conflicts early in the project lifecycle.

This proactive approach supports adaptive management strategies that can enhance project resilience and responsiveness to changing conditions (Linnenluecke, 2020). Moreover, Systems Theory encourages continuous learning and improvement by fostering a comprehensive understanding of the project's systemic interactions (Midler, 2020).

➢ *Project Planning Practices*

Globally, project planning is recognized as a fundamental determinant of project success. Turner (2019) reported that projects with comprehensive planning had significantly higher completion rates within budget and schedule. In the UK, Smith et al. (2021) demonstrated that projects that integrated stakeholder input during planning were 30 percent more likely to meet quality expectations. In Asia, Zhang and Wang (2021) found that detailed planning frameworks in Chinese infrastructure projects improved risk management and reduced time overruns.

Similarly, Ali and Chileshe (2022) reported that in Australia, comprehensive planning reduced cost overruns by up to 25 percent.

➢ *Schedule Management*

Effective schedule management ensures timely project completion. Kerzner (2017) emphasized that time overruns directly translate into increased costs and reduced stakeholder satisfaction. In the U.S., the adoption of advanced scheduling tools such as Primavera P6 and MS Project has been linked to improved schedule adherence (Rigby et al., 2020). Technological innovations are transforming scheduling practices. Zhang et al. (2023) reported that AI-based scheduling systems improved efficiency in Chinese construction projects by predicting potential delays and optimizing sequencing.

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➢ *Monitoring and Control*

Monitoring and control practices are essential for ensuring projects remain aligned with plans. The PMI (2021) emphasizes variance analysis, performance measurement, and corrective action as core elements. In Singapore, Lee (2022) found that integrating BIM with monitoring frameworks improved transparency and minimized risks. In South Korea, Kim and Park (2023) reported that IoT-enabled monitoring improved compliance with safety regulations and reduced project delays. Similarly, in the Middle East, projects that employed digital monitoring frameworks achieved better cost and time performance compared to traditional approaches (Ahmed & Ibrahim, 2021).

➢ *Project performance*

Globally, project performance is measured by time, cost, quality, and stakeholder satisfaction. Williams (2020) concluded that while planning, scheduling, and monitoring strongly influence performance, contextual factors such as governance and culture also play critical roles. Sustainability has emerged as a key performance dimension. In Europe, adherence to green building standards is increasingly viewed as a measure of success (Jones & Smith, 2024). This shift suggests that future assessments of project performance must integrate environmental and social impact indicators alongside traditional metrics.

- *Influence of project management practice on performance of County Building projects*

Kenya's construction industry is a key driver of economic growth, contributing approximately 7 percent of GDP and providing thousands of jobs (KNBS, 2023). National projects such as the Standard Gauge Railway and expressway developments highlight both the opportunities and challenges of infrastructure delivery. At the county level, projects are central to realizing devolution's promise. However, numerous studies have documented persistent inefficiencies. Ndungu (2020) found that public projects in Kenya experience cost overruns of 15–30 percent and time overruns of 20–40 percent. Kibet and Langat (2021) observed that counties often lack systematic planning frameworks, leading to resource misallocation and delays.

- *Influence of project planning on performance of building projects*

Planning of project is fundamental to success within the construction industry, as it sets the direction for all project activities. A well-conceived project plan defines the scope, allocates resources, identifies potential risks, and sets clear objectives for all stakeholders (Manyara, 2020).

According to Kwak and Stoddard (2023), planning is the foundation upon which all other project management activities are built. By creating a clear and detailed project plan, project managers can foresee potential challenges, allocate resources efficiently, and minimize unforeseen delays.

Planning entails the identification of purpose, definition of scope, customer requirements, identification of key activities, time and cost estimation, and assignment of responsibilities for activities (Brown and Hyer, 2010). In the context of county government building projects in Kenya, project planning has been identified as a primary cause of delays and cost overruns.

➢ *Influence of schedule management on building project's performance*

The practice of schedule management is vital in ensuring that a construction project is completed within a stipulated timeframe, which is critical for managing costs and stakeholder expectations. Schedule management involves creating detailed timelines, assigning responsibilities, and monitoring progress throughout the project lifecycle so as to complete on time. To schedule a project, the project manager must determine the dates at which the completed project will be delivered and set up the key milestones bearing in mind all constraints (Newton, 2005). Development of a project's schedule starts from assessing the output desired from the key processes to define, sequence, estimate resources and durations of activities using a scheduling tool (PMI, 2013).

- *Influence of monitoring and control on the building project's performance*

Project monitoring and control are essential to ensuring that projects remain on track. While monitoring involves tracking the project's progress, control focuses on planning as necessary to stay within the defined scope, budget, and schedule. According to Li and Zhao (2024), an effective monitoring system prevents delays and overruns in costs because issues can be identified at an early stage of the project's lifecycle. The use of real-time monitoring tools, such as mobile apps and construction management software, has proven to enhance the monitoring process (Jiang et al., 2023).

➢ *Research Gaps*

A review of pertinent literature on project management practices and performance of building projects in Kenya highlights several research gaps. First, most studies in Kenya focus on national projects, with limited research on county-level building projects. In particular, little attention has been given to the researching the influence of project management practice on performance of building construction projects funded using devolved units.

Related studies have tended to focus on the adoption of project management practice to manage development projects, in general and little on building projects in particular. Moreover, little attention has been granted to examining the case of counties in the former Nyanza province of Western Kenya. Second, while global studies emphasize advanced tools such as BIM and AI, little research has been done on their applicability in Kenyan counties. Third, there is limited comparative analysis of counties, particularly in Nyanza, to identify localized patterns in project management and performance.

➢ *Conceptual Framework*

The empirical and theoretical literature on construction project management practice and implementation of building construction management

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projects has been distilled into a conceptual framework showing the relationships among the study variables. Figure 1 presents the conceptual framework that guides the rest of the study.

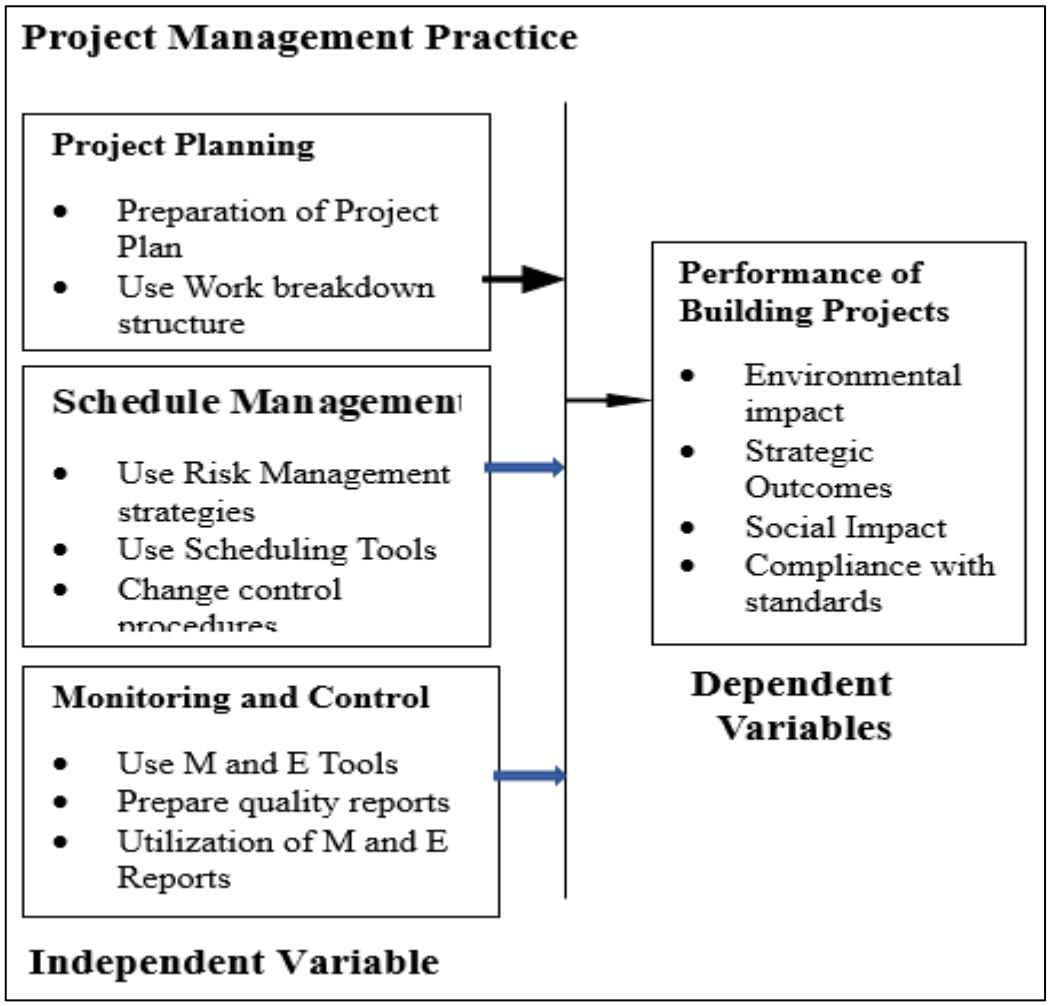

Fig 1 Conceptual Framework on the Influence of Construction Project Management Practice on Performance of Building Projects in Kenya

III. METHODOLOGY

➢ *Research Design*

This study employed a descriptive correlational research design to investigate the influence of project management practices on the performance of building projects managed by county governments in Kenya, specifically focusing on Migori, Homabay, and Kisii counties. The descriptive correlational approach aligns well with the study objectives because it allows for the collection of quantifiable data from a broad range of project stakeholders to explore potential relationships between key variables—project planning, schedule management, project monitoring and control—and project performance.

- *Target population*

The study population comprised building construction project stakeholders actively involved in managing building projects within the counties of Migori, Homabay, and Kisii. According to the County Integrated Development Plans (2023), the combined number of active building construction projects in these counties is approximately 525. Relevant stakeholders include project managers, quantity surveyors, architects, contractors, clerks of works, and structural engineers who are directly engaged in planning, implementing, supervising, and monitoring county government-funded building works. These professionals were identified from official registers maintained by respective professional bodies—the Construction Project Manager's Institute, Board of Registration of Architects and Quantity Surveyors, Engineers Registration Board of Kenya, Clerks of Works Institute, and the National Construction Authority.

- *Sample size*

To obtain a representative and diverse sample reflecting the multidisciplinary nature of construction project management, a stratified random sampling technique was employed. The target population was divided into six professional strata: project managers, architects, quantity surveyors, contractors, clerks of works, and structural engineers. Within each stratum, participants were randomly selected according to proportional representation of their registered population across the three counties.

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Random sampling technique was used to stratify the population so as to achieve representation of construction professionals across six key roles, of project managers, architects, quantity surveyors, contractors, clerks of works, and structural engineers.

Table 1 Size of Sample

Strata	Population	Proportion (%)	Sample size (n)
Project managers	43	62	27
Architects	39	62	24
Quantity surveyors	40	62	25
Contractors	45	62	28
Clerk of works	40	62	25
Structural engineers	35	62	22
Total	**242**		**151**

- *Data Collection Instruments and Procedures*

Primary data were collected via a structured questionnaire designed to elicit detailed information about project management practices (planning, scheduling, monitoring and control) and project performance outcomes. The questionnaire employed a Likert scale (1–5) to assess the extent of agreement or adoption of various practices and compliance parameters.

- *Reliability and Validity of Instruments*

Ensuring the reliability and validity of data collection instruments is critical for credible results. To enhance reliability, the study adopted established measures and constructs from prior literature in project management and construction performance. The use of standardized Likert-type questions supports internal consistency. During the pilot, Cronbach's alpha coefficients were computed to assess the reliability of instrument scales. Variables showing inadequate internal consistency were revised to improve clarity and focus.

- *Data Analysis Techniques*

Data analysis constituted a critical phase in this study to transform the raw data collected into meaningful insights aligned with the research objectives. The analysis was primarily quantitative and followed a systematic multi-stage approach. Initially, the collected data from questionnaires were cleaned and verified for completeness, consistency, and accuracy before any statistical processing. Data cleaning involved checking for missing values, outliers, and logical errors. Descriptive statistical methods, including frequencies, percentages, measures of central tendency (mean, median), and dispersion (standard deviation), were then computed to summarize respondents' demographic characteristics and their perceptions regarding project management practices. This stage provided a foundational understanding of the dataset.

IV. FINDINGS

➢ *Project planning practices adopted by county governments in Kenya*

The research sought to establish whether or not county governments applied various project planning practices in managing building construction projects. Project planning is a fundamental component in the management of construction projects, which is key in determining the project's performance (Mwangi, 2022). Table 2. presents the findings.

Table 2 Project Planning

Statements	1	2	3	4	5	Total
Our project plans specify scope and allocate resources	13	32	24	45	16	130
We use Gantt charts to plan our building projects	19	24	29	38	20	130
We have work breakdown structures for our building projects	21	30	24	34	21	130
We use building information modelling to plan our projects	27	31	22	28	22	130
We use forecasting techniques to predict costs and cash flows	14	35	27	39	15	130
Data analytics is used for making data-driven plans	25	29	30	30	16	130
We include risk management strategies in our plans	18	28	26	38	20	130
Our plans consider legal and regulatory compliance issues	22	33	24	31	20	130

As evident in Table 2 majority of respondents agreed (ratings 4 and 5) that their project plans specified scope and allocated resources, with a combined 47% (45 strongly agreeing and 16 agreeing). This indicates that scope definition and resource allocation are reasonably emphasized in county building projects, a positive sign because well-defined scope and resource planning reduce cost overruns and delays in project schedule (Ochieng & Akech, 2023).

➢ *Schedule management practices adopted by county governments in Kenya*

It involves planning, monitoring, and controlling the sequence and timing of activities using various tools and techniques to ensure that construction projects are completed within stipulated timeframes and resource constraints while maintaining quality standards (Kibet & Langat, 2021). The study examined the extent to which county governments adopted schedule management practices for managing building projects. Table 3 presents the results.

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Table 3 Schedule Management

Statement	1	2	3	4	5	Total
We schedule constraints in determining delivery dates and milestones	20	27	28	35	20	130
We use time management techniques in schedule management	22	29	26	30	23	130
Project schedules have baselines for control of implementation	18	25	30	34	23	130
We use Microsoft Project to establish project Critical Path	28	29	22	29	22	130
We use artificial intelligence (AI) for schedule management	30	33	18	29	20	130
We use AI-powered scheduling tools in predicting potential delays	27	30	22	28	23	130
We use resource leveling strategies in schedule management	21	31	27	28	23	130
We continuously monitor and adjust our project schedules	19	27	24	35	25	130

The findings show that 55 (42.3%) respondents agreed that their projects schedule constraints when determining delivery dates and milestones, while 47 (36.2%) disagreed or strongly disagreed. This indicates that although some counties consider constraints such as labor, materials, and regulatory timelines, the practice is not consistently applied. The lack of systematic constraint analysis has been linked to unrealistic delivery timelines, resulting in project delays (USAID, 2022).

- *Monitoring and control practices adopted by county governments in Kenya*

Monitoring and control of building projects is a critical aspect of managing projects since the practice provides continuous oversight and performance evaluation to ensure projects remain on track regarding scope, time, and cost. Effective monitoring helps detect deviations early and facilitates corrective actions, thus preventing project delays and cost overruns (Ndungu, 2020). The study sought to assess the utilization of project monitoring and control practices by county governments in managing building construction projects. Table 4 presents the findings.

Table 4 Monitoring and Control of Building Projects

Statement	1	2	3	4	5	Total
We monitor projects to prevent project delays and cost overruns	15	22	25	40	28	130
We monitor projects using mobile apps-based software	28	31	21	27	23	130
We use tracking software, drones and AI for monitoring and control	29	28	24	26	23	130
We use Earned Value Management (EVM) for monitoring and control	26	29	22	29	24	130
We use cost, schedule and quality performance indicators in monitoring	20	26	28	31	25	130

The results in Table 4 shows that 68 (52.3%) of those surveyed agreed that county governments monitor building projects to prevent delays and cost overruns, while 37 (28.5%) disagreed. This finding shows a relatively positive uptake of basic monitoring practices among the counties studied. Effective monitoring is crucial for early detection of risks and deviations, which allows for timely corrective actions to keep projects on schedule and within budget (Transparency International Kenya, 2023).

- *Performance of building construction projects by County Governments in Kenya*

The current study conceptualized project performance to include stakeholder satisfaction, compliance with regulatory standards, adherence to safety requirements, and alignment with broader strategic goals. Project performance is a critical measure of the success of construction projects. Its measurement is essential because it provides feedback for improving processes and accountability for public resource utilization (Ochieng & Akech, 2023). Table 5 presents results on the project performance of county government building construction projects.

Table 5 Performance of County Government Building Projects

Statement	1	2	3	4	5	Total
Project stakeholders are satisfied with the project process and outcomes	17	24	26	37	26	130
Projects comply with regulatory and environmental standards	15	27	28	35	25	130
Most of our projects meet occupational safety and health requirements	18	23	30	32	27	130
Our building projects comply with NEMA requirements	21	26	25	31	27	130
Most of our building projects are in accordance with building standards	16	28	29	31	26	130
Our building projects contribute to broader county strategic goals	14	30	28	34	24	130

- *Correlational Analysis*

To conduct inferential analysis, correlation analysis was used to establish the direction and strength of the link between project management practice and project performance. The Pearson's coefficient (r) was used because it determines the degree of linear association between variables on an interval scale (Field, 2020).

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Table 6 Correlation Matrix

Variables	Project Performance
Project Planning	0.642**
Schedule Management	0.613**
Project Monitoring & Control	0.695**

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

V. CONCLUSIONS

The first conclusion is in respect of the significance of planning projects. From empirical evidence the findings show that effective project planning substantially improves county government building project performance by ensuring scope clarity and resource adequacy.

Schedule management positively correlates with project success by enabling realistic milestone setting, constraint analysis, and progress tracking. The current low utilization of advanced scheduling software and AI tools weakens counties' ability to mitigate delays and optimize resources.

Monitoring and control processes exert the strongest influence on performance outcomes. Whereas basic monitoring practices are somewhat prevalent, the inadequate uptake of innovative digital tools and comprehensive performance indicators limits counties' capacity for proactive project governance and accountability.

The collective application of planning, scheduling, and monitoring & control explains a significant portion of project performance variability, underscoring project management as a pivotal determinant in achieving timely, within-budget, and quality infrastructure delivery.

Technology integration remains fragmented, risk and compliance management under-emphasized, and project alignment with county socio-economic strategies is inconsistent. These factors collectively hinder the attainment of devolved government infrastructure objectives.

RECOMMENDATIONS

From the results, five recommendations can be made. First, county governments should adopt modern digital tools such as Building Information Modelling (BIM), AI-driven scheduling software, drones, and Earned Value Management systems. These tools can improve project precision, forecasting, and real-time performance tracking. Second, counties should invest in building the technical capacity of staff to skill them on modern project management practices. Training and continuous professional development in modern project management practices is essential to bridge skills gaps among county technical staff. Thus collaboration with professional bodies like the Project Management Institute (PMI) is recommended to ensure continuous professional development and certification in emerging techniques. Third, standardized monitoring and evaluation (M&E) frameworks integrating cost, schedule, and quality performance indicators should be developed to ensure consistent performance measurement and accountability across all counties. Developing and institutionalizing comprehensive M&C systems integrating cost, schedule, and quality indicators with digital reporting can improve accountability. Fourth, project prioritization and selection processes should be aligned with county integrated development plans (CIDPs) to ensure that infrastructure investments support broader socio-economic development objectives. To align projects with strategic plans, county governments, need to strengthen project prioritization to ensure infrastructural investments directly support county development goals. Lastly, counties should embed structured risk management strategies into project planning to mitigate uncertainties and minimize the likelihood of delays and cost escalations. This can be done by embedding risk management strategies by implementing well-structured risk assessment and mitigation strategies early and throughout project lifecycles to minimize uncertainties.

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Diploma in Building Construction Technology-TU-K