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INFLUENCE OF PROJECT DELIVERY ATTRIBUTES ON THE EXECUTION OF BUILDING PROJECTS IN THE KENYAN JUDICIARY

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Abstract

This study investigates the influence of project delivery attributes on the execution of building projects in the Kenyan Judiciary. The research is grounded in Systems Theory, Theory of Change, and Stakeholder Theory, which together provide a holistic framework for understanding the dynamics of project delivery. A mixed-methods approach was adopted, combining qualitative and quantitative research techniques. Data collection involved questionnaires, structured interviews with stakeholders, including project managers and judiciary representatives, alongside surveys of ongoing and completed projects to gather comprehensive performance data. This study reveals the critical influence of project delivery attributes on court-building projects within the Kenyan Judiciary. The Design-Bid-Build system emerges as suitable, promoting structure and accountability. However, project team integration and user involvement present a complex dynamic. While enhanced integration fosters collaboration, it can prolong timelines. Conversely, effective user engagement expedites delivery but may escalate costs. Unexpectedly, project management practices show a link to increased site disputes, demanding further investigation. This study underscores the need for strategic management of project delivery attributes to optimize outcomes. Future research should explore the nuanced relationships uncovered, particularly the counterintuitive association between PMPs and disputes.

Keywords: Project delivery attributes, project delivery system, Project team integration, project management practices, user involvement, mixed methods, Judiciary.

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Introduction

Construction industry faces several challenges that result in high rates of project failure (Mollaoğlu-Korkmaz et al., 2013). These challenges often lead to project execution failure, emphasizing the need for a comprehensive approach to project delivery that addresses these challenges and promotes successful project execution (Salena, 2012; Ng & Cruz, 2020). Lack of proper management of project delivery attributes, including the chosen project delivery system, project team integration, project management practices, and user involvement can lead to various project failures, such as cost overruns, schedule delays, compromised quality, and disputes among stakeholders (Aiyetan & Das, 2021; Gumay et al., 2020).

The term project delivery attributes are those integral components of a project's framework that facilitate the establishment of processes and relationships necessary to complete a construction project successfully. This includes the methodology chosen for project delivery, the degree of integration and collaboration between project participants, management practices, and the extent of stakeholder involvement (Taylan et al., 2014; Wang et al., 2014).The influence of project delivery attributes, such as the project delivery system, project team integration, project management practices, and user involvement, is crucial in determining the success of building projects in the Kenyan judiciary (Okello, 2024).

The project delivery system is a key factor in building project execution, as it dictates the contractual relationships and responsibilities among the various project stakeholders (Kahvandi et al., 2020). Integrated project delivery has emerged as a promising approach, as it promotes collaboration, risk sharing, and a common goal among the project team. This approach can help address the challenges associated with traditional project delivery methods, such as adversarial relationships, fragmentation, and lack of coordination (Ling et al., 2020).

Project team integration is another critical factor, as it ensures effective collaboration and communication among the project stakeholders. Successful project execution requires strong integration and coordination among the various project team members, including the client, design team, construction team, and end-users (Simanjuntak, 2021). Integration of the project team can be achieved through measures such as joint goal setting, design charrettes, and collective risk management (Kahvandi et al., 2020).

Project management practices also play a significant role in building project execution. Effective project management practices, such as rigorous planning, risk management, and quality control, can help ensure the timely and efficient delivery of the project (Aiyetan & Das, 2021). Project management practices also play a significant role in the execution of building projects in the judiciary of Kenya. Effective project planning, scheduling, cost control, and risk management are essential for ensuring timely and cost-effective project delivery (Kahvandi et al., 2020; Aiyetan & Das, 2021)

User involvement is also a key factor, as the end-users of the building project have a vested interest in the project's success. Incorporating user requirements and feedback throughout the project delivery

process can help ensure that the final product meets their needs and expectations (Hettithanthri et al., 2022). The influence of these project delivery attributes during the execution of building projects in the judiciary of Kenya is a critical area of research. Understanding the interplay of these factors can provide valuable insights into improving project delivery and ultimately enhancing the efficiency and effectiveness of the judicial system in Kenya (Okello et al., 2021).

Literature Review

Theoretical Foundation

Previous research has highlighted the usefulness of theory-based methodologies like the theory of change for analyzing complex systems and interventions (Dhillon & Vaca, 2018; Laing & Todd, 2015). By drawing on systems theory, theory of change, stakeholder theories and empirical evidence (Dhillon & Vaca, 2018; Laing & Todd, 2015; Maru et al., 2018), the study aims to develop a contextualized understanding of the causal pathways and assumptions underlying the relationship between project delivery attributes and execution of building projects in the Kenyan Judiciary.

The use of system theory enabled the examination of how different project delivery attributes interact to influence project execution (Azman et al., 2020; Ahmed & El-Sayegh, 2020; Rajablu et al., 2014; Azari et al., 2014). Theory of change provided a framework to understand how the various project delivery attributes lead to successful project execution. Stakeholder theory meanwhile shed light on the role of different stakeholders and their influence on project delivery and execution (Ahmed & El-Sayegh, 2020; Azman et al., 2020; Rajablu et al., 2014).

Systems theory provides a foundation for understanding the complex nature of construction projects, recognizing that they comprise various interconnected elements and subsystems (Wu et al., 2020). This framework acknowledges that project delivery systems, project team integration, project management practices, and user involvement are interdependent components within the construction project system. By examining these elements holistically, we can better understand how their interactions and dynamics influence project execution (Kahvandi et al., 2020).

The theory of change emphasizes the importance of understanding the causal relationships and pathways through which project delivery attributes influence project execution outcomes (Rajablu et al., 2014). The theory of change approach can provide several benefits throughout the research process (Dhillon & Vaca, 2018). During the design stage, a clear theory of change can help articulate the pathways through which project delivery attributes are expected to influence execution outcomes. This can aid in testing the internal coherence of the proposed relationships and aligning the understanding of the research team (Laing & Todd, 2015; Dhillon & Vaca, 2018). At the evaluation stage, the theory of change can inform data collection and analysis to assess whether the expected outcomes were achieved. Utilizing a theory of change approach, this framework seeks to identify how project delivery attributes impact time, cost, site dispute, and quality outcomes.

Stakeholder theory is also integrated into this theoretical framework, recognizing that the interests and perspectives of various stakeholders play a significant role in project success (Ahmed & El-Sayegh, 2020; Azman et al., 2020; Rajablu et al., 2014). Understanding and effectively managing stakeholder attributes is crucial in ensuring project success. Stakeholder theory posits that managers should consider the interests of all stakeholders, not just shareholders, in their decision-making (Waxenberger & Spence, 2003).

This theoretical model posits that the successful execution of building projects is influenced by several key factors, including project delivery systems, project team integration, project management practices, user involvement and the complex interactions among these factors. This framework argues that understanding and effectively utilizing these influential attributes is essential for project success (Ahmed & El-Sayegh, 2020;Vrchota & Řehoř, 2021). By drawing on relevant theories and empirical evidence (Dhillon & Vaca, 2018;Laing & Todd, 2015;Maru et al., 2018), the study aims to develop a contextualized understanding of the causal pathways and assumptions underlying this relationship.

Project Delivery Systems

Measurement of project delivery systems is an important aspect of construction project management. There are various factors that can be taken into consideration while measuring the performance of project delivery systems. Contract responsibility is one of the factors that can be used to measure the performance of project delivery systems (Ghadamsi, 2016). Contract responsibility refers to the degree of involvement of each party in the project delivery process. The more involved each party is, the better the project delivery system is likely to perform (Ghadamsi, 2016). Roles and responsibilities of parties is another factor that can be used to measure the performance of project delivery systems. Each party in the project delivery process has a specific role and responsibility. The better defined and understood these roles and responsibilities are, the more efficient the project delivery system is likely to be (Ghadamsi, 2016). The efficiency of a project delivery system can be effectively evaluated by analyzing the sequence of activities involved in project execution. A streamlined and logically ordered sequence of activities generally indicates a more efficient and higher-performing project delivery system. This streamlined approach minimizes delays, reduces the potential for errors, and ultimately contributes to a smoother and more successful project outcome (Bagshaw, 2021; R. et al., 2018). The effectiveness of a project delivery system can be measured by its ability to minimize disputes, which often stem from miscommunication, poor coordination, and project delays. A system that successfully mitigates these issues streamlines project execution, improves stakeholder relationships, and ultimately contributes to a more successful outcome (Ghadamsi, 2016). Therefore, the reduction of disputes serves as a tangible indicator of a project delivery system's efficiency and overall performance (Saeb et al., 2021; Alaloul et al., 2019).

Project Team Integration

Effective team integration is essential for the success of any project. There are various factors that can be used to measure the level of team integration, such as trust and respect, collective understanding, no blame culture, and sharing information (Ibrahim et al., 2015). These factors are crucial for achieving successful project delivery in the building construction industry.

Trust and respect form the bedrock of effective team integration, fostering a collaborative and productive work environment. When team members trust and respect one another, they communicate openly, value diverse perspectives, and work together harmoniously to achieve project goals. This positive team dynamic ultimately translates to improved project outcomes, characterized by higher quality work, increased efficiency, and a greater likelihood of success

(Vosse & Aliyu, 2018). Collective understanding is another important factor that can be used to measure the level of team integration. When team members have a shared understanding of project goals, objectives, and priorities, they are better able to work together towards a common goal (Ram & Vijayakumar, 2019). This can help to prevent misunderstandings and promote a sense of unity among team members. A no blame culture is also an important factor that can be used to measure the level of team integration. When team members are encouraged to take responsibility for their actions rather than blaming others, they are more likely to work together to find solutions to problems (Kim et al., 2022). This can promote a more supportive and collaborative work environment, where team members feel comfortable sharing their ideas and opinions. Sharing information is another important factor that can be used to measure the level of team integration. When team members share information openly and transparently, they are better able to work collaboratively and make informed decisions. This can help to prevent misunderstandings and promote a sense of unity among team members.

Project Management Practices

Effective project management practices are essential for the success of any project. There are various factors that can be used to measure the effectiveness of project management practices, such as work scope management, resource management, communication management, and risk management. Work scope management is a critical factor that can be used to measure the effectiveness of project management practices (Susilowati et al., 2021). When work scope is managed effectively, project managers are better able to define project goals, objectives, and deliverables. This can help to prevent scope creep and ensure that project outcomes meet stakeholder expectations (Komarova et al. 2020).Resource management is another important factor that can be used to measure the effectiveness of project management practices (Wale, 2016). When resources are managed effectively, project managers are better able to allocate resources (such as personnel, materials, and equipment) to project tasks (Keshk et al. 2018). This can help to prevent resource shortages and improve project efficiency. Communication management is also a critical factor that can be used to measure the effectiveness of

project management practices. When communication is managed effectively, project managers are better able to keep stakeholders informed about project progress, risks, and issues (Samáková et al., 2018). This can help to prevent misunderstandings and promote a collaborative work environment. Risk management is yet another important factor that can be used to measure the effectiveness of project management practices. When risks are managed effectively, project managers are better able to identify potential risks, assess their impact on the project, and develop strategies to mitigate them. Effective project management practices in addition play a crucial role in minimizing risks and ensuring successful project delivery (Ádám et al., 2019; Ahmed & El-Sayegh, 2020).

User Involvement

User involvement is a critical factor in ensuring the success of construction projects. There are various factors that can be used to measure the level of user involvement, such as involvement in the design process, construction supervision, certification of the works, and approval and funding of the works (Kim et al. 2016; Oppong et al.2017). Involvement in the design process is an important factor that can be used to measure the level of user involvement. When users are involved in the design process, they can provide valuable insights and feedback on how the project can best meet their needs (Eriksson et al. 2014; Kusumaningdyah & Ratri, 2021). This can help to ensure that the project outcomes meet user expectations and needs. Construction supervision is another important factor that can be used to measure the level of user involvement. When users are involved in construction supervision, they can provide feedback on the quality of the work and how well it meets their needs. This can help to ensure that the construction meets the required standards and that the project outcomes meet user expectations (Qi et al. 2020). Certification of the works is also a critical factor that can be used to measure the level of user involvement. When users are involved in the certification of the works, they can provide feedback on the quality of the work and how well it meets their needs. This can help to ensure that the works meet the required standards and that the project outcomes meet user expectations (Vezhavendhan et al. 2017; Kim et al. 2016). Additionally, the involvement of users in the certification process can contribute to the overall quality of construction workers' competence (Soemartono, 2016). Approval and funding of the works is yet another important factor that can be used to measure the level of user involvement. When users are involved in the approval and funding of the works, they can provide feedback on the project goals, objectives, and priorities (Aa et al., 2018; Gcora & Chigona, 2019). This can help to ensure that the project outcomes meet user expectations and that the project is aligned with user needs.

Project Execution Metrics

Time, cost, site dispute and quality are some of the variables that can be used to measure project performance (Seo & Kang, 2020). In the construction industry, the completion of a project within the estimated budget and timeline are key performance indicators (Anuar & Ng, 2011). Additionally, the quality of the final product and the level of client satisfaction are also important

measures of project success. These metrics were used in a similar study by Ngacho and Das (2013). Construction project delays are a common problem that affect stakeholder satisfaction, timeliness, and budgets. Delays in project delivery are caused by a variety of factors, many of which are intertwined (Shen & Sammani, 2022). Project teams that don't communicate and coordinate well may misunderstand each other, make mistakes, and have to redo work, which can delay the project.

Similarly, inadequate planning and risk management can leave projects vulnerable to unforeseen events, further exacerbating delays. Additionally, external factors like economic fluctuations, regulatory changes, and unforeseen site conditions can significantly impact project schedules. Understanding the interplay between these factors and project delivery attributes is crucial for mitigating delays and ensuring successful project outcomes (Shen & Sammani, 2022).

Project Delivery System: Design-bid-build (DBB) because of its traditional linear approach often leads to longer project durations. This is because the design phase must be fully completed before construction begins, limiting opportunities for concurrent work and increasing the likelihood of delays due to design changes during construction (Cheng et al., 2023; Tamur & Erzaij, 2021). Design-Build (DB) contracts typically result in shorter schedules due to the integration of design and construction under one entity. This allows for faster decision-making, better coordination, and the potential for overlapping design and construction phases - fast-tracking (Park & Kwak, 2017). Construction Management at Risk (CMAR) can lead to improved time performance through early contractor involvement during the design phase. This allows for constructability reviews, early identification of potential delays, and proactive scheduling adjustments (Mohamed et al., 2020). Integrated Project Delivery (IPD) emphasizes collaboration and shared risk among all stakeholders from the project outset. This fosters early problem-solving, reduces rework due to miscommunication, and promotes efficient decision-making, all of which contribute to shorter project schedules (Hall & Bonanomi, 2021; Kahvandi et al., 2020).

Project Team Integration: When project teams are well-integrated, with open communication and shared goals, decision-making is expedited, and potential conflicts are resolved quickly (Choi et al., 2019). This collaborative environment minimizes delays caused by miscommunication, rework, or disputes. Conversely, poorly integrated teams with fragmented communication and conflicting priorities often experience delays (Chang et al., 2019;Garrido et al., 2019). This can stem from slow decision-making, lack of coordination, and increased potential for disputes.

Project Management Practices: Thorough upfront planning, realistic scheduling, and proactive resource allocation are crucial for timely project completion. This includes identifying critical path activities, anticipating potential delays, and implementing mitigation strategies (R. et al., 2018).Establishing clear communication channels and protocols ensures timely information flow among stakeholders,

reducing delays caused by miscommunication or misunderstandings (Jo et al., 2018).Proactively identifying and assessing potential risks to the project schedule allows for the development of contingency plans and mitigation strategies, minimizing the impact of unforeseen events (Lota et al., 2022).

User Involvement: Engaging users early in the design and planning phases ensures their needs and expectations are incorporated from the outset, reducing the likelihood of costly and time-consuming changes during construction (Hettithanthri et al., 2022). Maintaining open communication channels with users throughout the project lifecycle allows for timely feedback, prompt resolution of issues, and minimizes the potential for delays caused by misinterpretations or unmet expectations (Hyun et al., 2020).

Project Delivery System: While familiar, DBB's linear structure can lead to cost overruns due to limited early contractor involvement, potential for change orders, and disputes arising from segregated responsibilities. By integrating design and construction under one entity, DB fosters collaboration, reduces design changes during construction, and allows for early cost optimization, potentially leading to cost savings (Arsenos & Giannadakis, 2023). CMAR's early contractor involvement during design facilitates constructability reviews, value engineering, and proactive risk management, contributing to better cost control.IPD's collaborative, shared-risk approach aligns stakeholders on cost goals from the outset. Early involvement of all parties allows for innovative solutions and minimizes costly rework, potentially leading to significant cost savings (Rodrigues & Lindhard, 2021; Hall & Bonanomi, 2021).

Project Team Integration: Collaborative teams with open communication and shared goals can proactively identify and address cost risks, optimize design choices, and improve construction efficiency, leading to cost-effective outcomes. Poor communication, mistrust, and conflicting priorities can result in rework, delays, disputes, and ultimately, cost overruns (Madhavan et al., 2023; Arsenos & Giannadakis, 2023). The choice of project delivery method has been shown to be a critical factor in fostering integration and collaboration among project stakeholders (Ramanathan & Ping, 2009;Trach et al., 2019).

Project Management Practices: Detailed cost estimates, realistic schedules, and proactive resource allocation minimize delays, optimize resource utilization, and contribute to cost certainty. Identifying and mitigating potential cost risks through contingency planning and proactive response strategies helps avoid or minimize financial impacts (Hamaattar,2018). Analyzing design and construction methods to achieve the required functionality and quality at the lowest possible cost can lead to significant savings without compromising project goals (Akinradewo et al., 2019).

User Involvement: Involving users in the design and planning phases ensures their needs are met, reducing costly changes during construction. Regular communication and prompt user feedback minimize misunderstandings, prevent rework, and align the project with budget expectations

(Hettithanthri et al., 2022). The influence of these project delivery attributes during the execution of building projects in the Kenyan judiciary cannot be overstated.

Project Delivery System: DBB's siloed approach, with separate contracts for design and construction, often leads to a higher probability of disputes. This is due to unclear responsibilities, potential for adversarial relationships between parties, and increased likelihood of design changes during construction.DB contracts, with their unified approach to design and construction, tend to experience fewer disputes (Saseendran et al., 2020; Nguyen & Nguyen, 2020). This stems from better communication, shared goals, and early contractor involvement, which minimizes design changes during construction. CMAR, with its early contractor involvement during design, can reduce disputes through collaborative problem-solving, constructability reviews, and proactive risk identification (Gransberg & Gransberg, 2020). IPD's emphasis on shared risk and reward incentivizes collaboration and early dispute resolution. The transparent and collaborative environment fosters trust and minimizes the likelihood of adversarial relationships (Hall & Bonanomi, 2021)

Project Team Integration: Projects with strong team integration, characterized by open communication, mutual respect, and shared goals, are less prone to disputes (Saeb et al., 2021). This collaborative environment allows for proactive identification and resolution of issues before they escalate. Conversely, poorly integrated teams with fragmented communication, mistrust, and conflicting priorities are more susceptible to disputes (Nursin et al., 2018). This can stem from misunderstandings, lack of coordination, and an increased likelihood of finger-pointing when problems arise (Johnson, 2016).

Project Management Practices: Well-defined contracts with clear scope boundaries, roles, and responsibilities minimize ambiguity and reduce the potential for disputes arising from misunderstandings (Joseph & Rose, 2016).Establishing open and transparent communication channels among all stakeholders ensures timely information flow, minimizes misinterpretations, and allows for early identification and resolution of potential conflicts (Saeb et al., 2021).Identifying and assessing potential risks to the project, including those that could lead to disputes, allows for the development of mitigation strategies and contingency plans, reducing the likelihood of disagreements escalating into formal disputes (Vaux & Dority, 2020).

User Involvement: Involving users throughout the project lifecycle, from design to construction, ensures their needs and expectations are understood and addressed, minimizing the potential for disputes arising from unmet requirements (Saseendran et al., 2020). Establishing clear channels for users to provide feedback and voice concerns allows for the timely resolution of issues and prevents disagreements from escalating into major disputes. Careful consideration and implementation of these factors can contribute to the successful and cost-effective delivery of construction projects, while also minimizing the likelihood of disputes that can hinder progress and impact project outcomes (Vaux & Dority, 2020).

Project Delivery System: DBB, with its linear and sequential approach, can sometimes hinder quality due to limited communication between design and construction teams. This can lead to design flaws going unnoticed during the construction phase, resulting in costly rework and compromised quality (Tamur & Erzaij, 2021).DB contracts often lead to enhanced quality due to the integrated nature of design and construction under one entity. This fosters better communication, allows for early identification and resolution of design issues, and promotes a shared focus on quality from the outset (O'Connor & Koo, 2020). CMAR, with its early contractor involvement during the design phase, allows for constructability reviews and value engineering, leading to more practical designs and potentially higher quality construction (Gransberg & Gransberg, 2020). IPD, with its emphasis on collaboration, shared risk, and early involvement of all stakeholders, often results in the highest quality outcomes. This collaborative approach allows for continuous improvement, innovation, and a shared commitment to achieving the highest quality standards (Rodrigues & Lindhard, 2021).

Project Team Integration: Projects with highly integrated teams, characterized by open communication, trust, and shared goals, tend to achieve higher quality outcomes (Chang et al., 2019). This collaborative environment fosters a sense of ownership, encourages innovation, and allows for early detection and resolution of quality-related issues. Conversely, poorly integrated teams with fragmented communication, mistrust, and conflicting priorities often struggle to achieve high quality. This can lead to miscommunication, errors, rework, and ultimately, a compromised final product (Gosan & Kosasih, 2020).

Project Management Practices: Establishing clear quality standards, procedures, and metrics from the outset is crucial. Regular inspections, testing, and quality control checks throughout the project lifecycle ensure adherence to these standards (Basu,2017).Effective communication channels and protocols ensure that quality-related information is shared promptly and accurately among all stakeholders, minimizing misunderstandings and preventing errors.Identifying and assessing potential risks to project quality allows for the development of mitigation strategies and contingency plans, reducing the likelihood of quality issues arising or escalating (Hamaattar, 2018).

User Involvement: Engaging users early in the design and planning phases ensures their needs and expectations regarding quality are understood and incorporated from the outset. This reduces the likelihood of costly and time-consuming changes during construction to meet quality requirements (Hyun et al., 2020). Establishing mechanisms for continuous feedback from users throughout the project lifecycle allows for timely identification and resolution of quality concerns, ensuring the final product meets or exceeds.

The reviewed literature has revealed that selecting appropriate project delivery system, fostering a highly integrated team, implementing robust project management practices, and ensuring effective user involvement are all essential for achieving high-quality outcomes in construction

projects in terms of timeliness, cost control, site dispute minimization and quality product. These are the findings that this study aimed to investigate during the execution of court building projects at the Kenyan Judiciary.

Study objective

The primary objective of this study was to examine the influence of project delivery attributes, including project delivery system, project team integration, project management practices, and user involvement, on the execution of building projects in the Judiciary of Kenya in respect to time, cost, site dispute and quality.

Hypothesis

H0: Project delivery attributes have no significant influence on the execution of building projects in relation to time, cost, site dispute, and quality in the Kenyan Judiciary.

Conceptual Model

This conceptual framework was guided by systems theory, theory of change and stakeholder theory. It postulates that there is a correlation between project delivery attributes represented by project delivery systems, project team integration, project management practices and user involvement as independent variable and execution of building projects represented by time, cost, site dispute and quality as dependent variable. Figure 1 shows the conceptual model developed from the literature review used in the study.

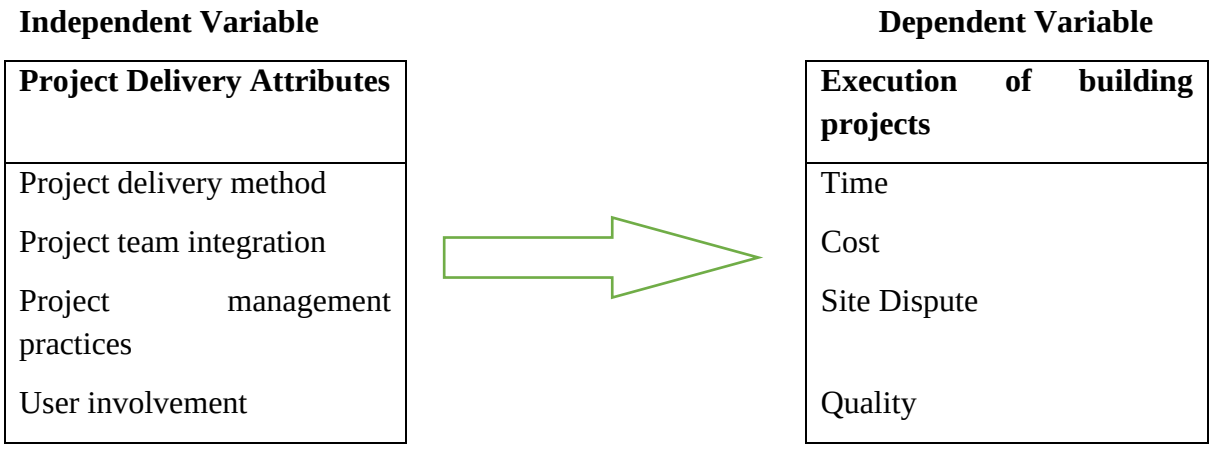

Figure 1--Conceptual Model showing a correlation between project delivery attributes and execution of building projects

Okello, (2024)

Methodology

The study employs a pragmatic research design that combines quantitative and qualitative research techniques. The researcher collected and analysed qualitative and quantitative data in the same phase. After combining the data, a comprehensive analysis was produced, and a convergent

mixed method design was created (Bryman & Bell, 2015). The triangulation of data gathered through alternate approaches to countercheck and mitigate weaknesses in the approaches used is the strength of this approach. Triangulation and validation were used in the method to enable diversity in data collection and interpretation.

Validity and Reliability of the Instruments

Three project management experts verified the validity of the research instruments by providing valuable feedback on how to develop the contents in accordance with the study's objectives. The constructs were deemed suitable for measuring the study variables after they were applied to 12 projects, wherein all of the Cronbach Alpha scores for the constructs used to assess project delivery attributes and court building execution scored above the acceptable level of 0.7, in accordance with Pallant's 2007 recommendation. In addition, validity was further tested using Principal Component Analysis (PCA) based on data received from the pilot study. The constructs were confirmed valid. The primary study used 51 projects.

Ethical Consideration

The researcher was given permission to collect the study data by the chief registrar of the Judiciary. He undertook not to divulge any information that might affect the courts or people in the study. Confidentiality and anonymity were provided to the research participants. The participants were also informed about the purpose of the research as well as treated with dignity and respect

Data Collection

Data collection and analysis was guided by the following diagram

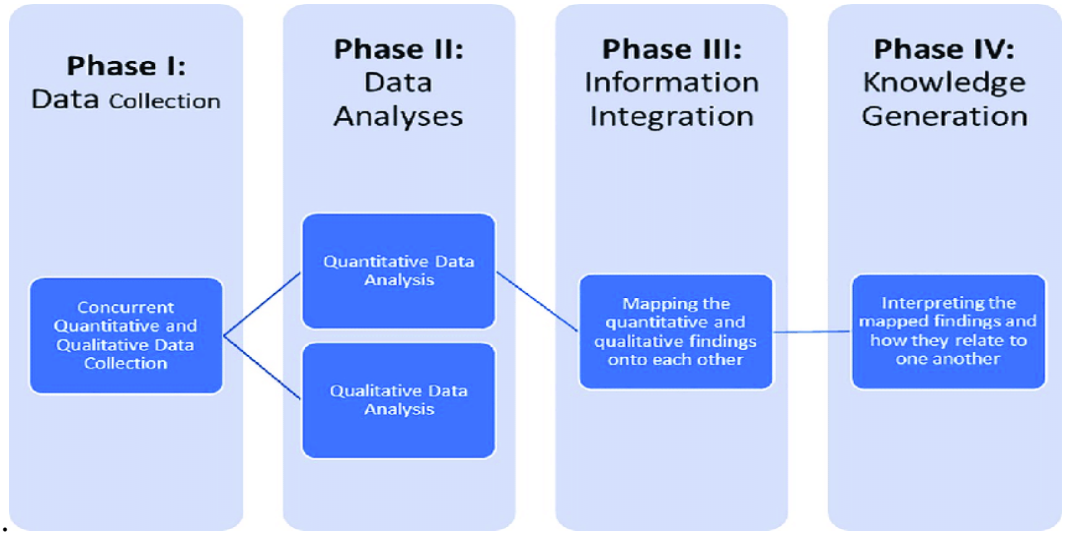

Figure 2: Visual representation of the mixed methods study design adapted for this research work as adopted by Rad et al, (2021).

The study collected data from 63 ongoing court buildings in Kenya at (Molo, Nyando, Vihiga, Oyugis, Nyamira, Muhoroni, Nakuru, Olkalau, Engineer, Nanyuki, Mukurweini, Kigumo, Chuka, Homabay, Maralal, Kajiado, Mombasa, Mombasa court of Appeal, Narok, Kibera, Makindu, Kitui, Isiolo, Makueni, Kabarnet, Marsabit, Amagoro, Githongo, Machakos, Mbita, Habasweini, Hamisi, Muranga, Mandera, Garissa, Nyeri, Iten, Karatina, Makadara, Forodha House, Wajir, Kapenguria, Kwale, Maralal, Kakamega, Kangema, Makueni, Malava, Siaya, Port Victoria, Bomet and Nyahururu (Okello, 2024). A questionnaire was the main tool used in the study to collect data. The questionnaire asked for categorical background data, which included the following: the project's name, location, stage of completion, highest educational attainment, position within the judiciary, and length of time spent in the current role (design, construction, or completion stage) are all noteworthy details.

Data used during the descriptive analysis (Ordinal data) came from respondents' ratings of the project delivery attributes variables of project delivery systems, project team integration, project management practices and user involvement. On a five-point Likert scale, which is used by Shek and Wu (2014), respondents rated the execution of court building constructs in terms of timely completion, completion within budget, site disputes, and quality of work. The 10-point visual analogue scale (produced continuous data), with 1 denoting the lowest score and 10 the highest, is used to generate data for inferential analysis (correlation, linear, and multiple regression analysis) using the same constructs. Inferential data was tested and passed tests on llinearity, normality, multicollinearity, homoscedasticity, and autocorrelation.

Additionally, an interview guide was used to collect data from Judiciary management, which consists of National Environment Management Authority (NEMA) specialists and Judiciary Infrastructure Committee members. The instrument was designed to meet the objectives of the study in accordance with the advice of Patton and Appelbaum (2003), who suggested that protocols and instruments for data collection should be established in order to avoid being overwhelmed by an abundance of data. The study also employed data from the following sources to confirm the impact of project delivery attributes on Kenyan court-building execution: the Public Procurement Act, the Judicial Performance Improvement Project (JPIP) framework, project appraisal reports, site meeting minutes, Treasury directions, JSC directives, the World Bank financial cooperation agreement, and Sessional papers.

Data Analysis

The study utilizes quantitative and qualitative data analysis techniques. The researcher employed the Statistical Package for Social Sciences (SPSS, 29) to streamline the process of data analysis. The mode, mean, and standard deviation of summary statistics were used to analyse the quantitative data obtained from the Likert scale ratings. Regression was applied on visual analog data to analyse and determine how significantly the project delivery attributes influenced the dependent variable using the coefficients of determination and hypothesis tests.

The hypothesis; H0: Project delivery attributes have no significant influence on the execution of building projects in relation to time, cost, site dispute, and quality in the Kenyan Judiciary, was tested using the following multiple regression model $Y= \beta0 + \beta1X1 + \beta2X2 + \beta3X3 + \beta4X4 + \varepsilon$

Where:

Y is the execution of building projects in relation to (Time, Cost,

Site dispute and Quality)

X1 is the Project delivery system

X2 is the Project team integration,

X3 is the Project management practices,

X4 is the Users' involvement,

$\beta0$ is a constant

$\beta1$, $\beta2$, $\beta3$ & $\beta4$ are regression coefficients

ε is the error term

The coefficient of determination, R^2, was used to assess the explanatory power of project delivery attributes (project delivery system, project team integration, project management practices and user's involvement) on the execution of building projects (in relation to time, cost, site dispute and quality) in the Kenyan Judiciary. Similarly, the F-test (Analysis of variance) was used to assess the goodness of fit of the regression model while the T statistics were used to assess the significance of the slope coefficient.

Findings

Descriptive Statistics on project delivery attributes is shown on table 1.

Table 1: Descriptive Statistics of Project Delivery Attributes

Study Variable	Indicator	N	Mode	Mean (M)	Standard Deviation (SD)
1.0	Project delivery System	51	4	3.88	0.83
2.0	Project team integration	51	3.8	3.85	0.8
3.0	Project management practices	51	3.88	3.85	0.60
4.0	User involvement	51	3.79	3.60	0.58
5.0	Project delivery Attributes	51	3.87	3.80	0.70

Source: Okello, (2024)

In summary from Table 2, respondents agreed that the project delivery system used was appropriate for the execution of court-building projects in the Kenyan Judiciary (Mode=3.75, M=3.69, SD=0.50) and that there was team integration during the execution of court-building projects in the Kenyan Judiciary (Mode=3.88, M= 3.85,

SD= 0.58). From Table 2, the respondents further agreed that project management practices were well managed during the execution of court-building projects in the Kenyan Judiciary (Mode=4, M=3.59 SD=0.60) and that there was user involvement during the the execution of court-building projects in the Kenyan Judiciary (Mode=3.79, M=3.60, SD=0.58).

The key respondents stated that the delivery system used by the Judiciary was Design, Bid, and Build (DBB) system. They highlighted that the project delivery system used was suitable for the execution of court-building projects in the Kenyan Judiciary as captured by this comment;

'*The system used may be suitable, as opposed to having one person do the designs and construction; this could create governance problems; the designer can overdesign and employ shortcuts during construction. The system enables accountability, reduces the cost, and makes supervision easy in addition to incorporating all stakeholders, including the court users and staff*. (Respondent-R 4)

A review of project files, contracts, minutes of site meetings, inspection, and acceptance minutes indicated that the project delivery system used in the procurement of construction projects in the Kenyan Judiciary was Design Bid and Build (DBB). This supports the finding from descriptive statistics and corroborated information from key informants.

The key informants agreed that there was team integration during the execution of court-building projects in the Kenyan Judiciary pertaining to design, construction supervision and project management but not in the area of ESMP. This theme was captured by a statement by a respondent that:

'*The team was fairly well integrated, especially for design, construction and*

Project management; this was not the case for Environmental and Social issues. Some of the team members or architects and quantity surveyors were slow in giving information such as drawings and project estimates. The ESIA consultant were taken for granted as they were not consulted during design' (Respondent-R8).

The key informants agreed that there was proper communication and risk management during the execution of court-building projects in the Kenyan Judiciary. This theme was captured by statements that: *'Communication management was satisfactory from our experience' (Respondent-R10).*

'Aspects of risk management were looked into and properly accommodated. As we undertook the assignment, we did not experience any issues with risk

management' (Respondent -R11).

Key informants agreed that users were involved during the execution of court-building projects in the Kenyan Judiciary. This theme was captured by the following respondent: '*Various stakeholders are involved. These include Court User Committee, which comprises various court users such as police, prison, children's department,advocates, prosecutors, and litigants, among others* (Respondent-R15).

Inferential statistics results

This study examined the influence of project delivery attributes (PDA) on the execution of Building projects (in relation to time, cost, site dispute, and quality) in the Kenyan Judiciary using Pearson's correlation analysis and multiple regression analysis. Pearson's correlation analysis was performed to test whether there was an association between PDA and the execution of building projects in relation to time, cost, site disputes, and quality. A multiple regression analysis was then carried out on the significant results. The findings are highlighted on table 2.

A review ofproject files, contracts, minutes of site meetings, inspection and acceptance minutes also indicated that there were delays from the World Bank in approving ESMP reports and from the client (Government) during certification of the works due to the requirement of the procurement act that all payments be supported with inspection and acceptance reports

Table 2: Project Delivery Attributes and execution of building projects in relation to Time, cost, site dispute and quality.

Model Summary on Time						
Model	R	R-Square	Adjusted R-Square			
1	.655	.428	.405			
Analysis of Variance						
		Sum of Squares	Degrees of Freedom	Mean Square	F	Sig.
Model 1	Regression	73.085	2	36.542	17.986	<.001
	Residual	97.520	48	2.032		
	Total	170.605	50			
Coefficients						
Model		Unstandardized Coefficients	Standardized Coefficients			
		B	Beta	T	Sig.	
1	(Constant)	1.478		.769	.446	
	Project team integration	1.168	.592	5.381	<.001	
	User involvement	-.570	-.365	-3.316	.002	

Model Summary on Cost						
Model	R	R-Square	Adjusted R-Square			
2	0.746	0.556	0.528			
Analysis of Variance						
		Sum of Squares	Degrees of Freedom	Mean Square	F	Sig.
Model 2	Regression	34.399	3	11.466	19.631	<0.001
	Residual	27.452	47	0.584		
	Total	61.851	50			
Coefficients						
Model		Unstandardized Coefficients	Standardized Coefficients			
		B	Beta		T	Sig.
2	(Constant)	-0.013			-0.013	0.989
	Project delivery system	0.703	0.638		4.762	<0.001
	Project management practices	0.030	0.029		0.212	0.833
	User involvement	0.183	0.183		1.825	0.074

Model Summary on Site Dispute				
Model	R	R-Square	Adjusted R-Square	
3	0.712	0.507	0.475	
Analysis of Variance				

		Sum of Squares	Degrees of Freedom	Mean Square	F	Sig.
Model	Regression	52.184	3	17.395	16.098	<0.001
3	Residual	50.786	47	1.081		
	Total	102.970	50			

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B		Beta	T	Sig.
3	(Constant)	-1.305			-1.000	0.323
	Project delivery system		0.289	0.203	1.440	0.156
	Project management practices		0.592	0.453	3.110	0.003
	User involvement	0.235		0.194	1.728	0.091

Model Summary on Quality

Model	R	R-Square	Adjusted R-Square
4	0.686	0.471	0.437

Analysis of Variance

		Sum of Squares	Degrees of Freedom	Mean Square	F	Sig.
Model	Regression	29.718	3	9.906	13.952	<0.001
4	Residual	33.371	47	0.710		
	Total	63.090	50			

Coefficients

Model		Unstandardized Coefficients	Standardized Coefficients		
		B	Beta	T	Sig.
4	(Constant)	0.793		0.749	0.457
	Project delivery system	0.629	0.565	3.865	<0.001
	Project management practices	0.073	0.071	0.474	0.638
	User involvement	0.149	0.157	1.350	0.184

Okello, (2024)

Table 2 summarizes Multiple Regression analysis Reports for Models 1, 2, 3, and 4. These models explore the impact of project delivery attributes on various aspects of execution of building construction projects in the kenyan judiciary in relation to time (model 1), cost (model 2), site dispute (model 3), and quality (model 4). The level of significance in the models is (0.05).

Model 1 with R-squared of .405 explains approximately 40.5% of the variation in project time. In this model, Project team integration has a significant positive effect on time. This suggests that better team integration, while potentially beneficial for other aspects, might lead to longer project durations. User involvement also has a significant negative effect on time, indicating that involving users might lead to shorter project durations.

Model 2 with R-squared of .528 explains approximately 52.8% of the variation in project cost. In this model, Project delivery system has a significant positive effect on cost. This suggests that certain delivery systems might be associated with higher project costs.

Model 3 with R-squared of.475 explains approximately 47.5% of the variation in site disputes. In this model, Project management practices have a significant positive effect on site disputes. This unexpected finding requires further investigation, as effective PMP should ideally reduce disputes.

Model 4 with R-squared of .437 explains approximately 43.7% of the variation in project quality. In this model, Project delivery system has a significant positive effect on quality, indicating that the choice of delivery system plays a crucial role in achieving high-quality outcomes. Overall Project delivery system consistently emerges as a significant predictor across two models (2 and 4), highlighting its crucial influence on project outcomes. Project team integration and user involvement show mixed results, with their impact varying depending on the specific project outcome being analyzed. The unexpected positive

relationship between project management practices and site disputes in Model 3 warrants further investigation.

Discussions

The findings from the study indicate a strong consensus among respondents regarding the effectiveness of the Design, Bid, and Build (DBB) project delivery system in executing court-building projects within the Kenyan Judiciary. The mean score of 3.69 suggests that respondents believe this method enhances accountability and facilitates stakeholder involvement, thereby mitigating governance risks associated with construction projects (Okello, 2024). This perspective is supported by qualitative feedback from key informants, who noted that the DBB system allows for clear delineation of roles, reducing the likelihood of issues such as overdesign and construction shortcuts. However, while team integration was generally recognized as effective in areas such as design and project management, challenges were identified in integrating Environmental and Social Management Plans (ESMP), with some team members reportedly slow to provide necessary information. Moreover, user involvement emerged as a critical factor in the success of these projects, with diverse stakeholders actively engaged throughout the process. The inclusion of the Court User Committee ensures that the needs and perspectives of end users are considered, potentially leading to improved project outcomes (Respondent-R15). Despite positive assessments of communication and risk management practices, delays attributed to bureaucratic processes from external bodies like the World Bank highlight the complexities faced during project execution. Overall, while the DBB system demonstrates strengths in project delivery, addressing challenges related to team integration and external approvals is essential for optimizing project outcomes in future endeavors (Okello, 2024).

The findings from Models 1,2, 3, and 4 shed light on the intricate relationships between the independent variables (project delivery attributes) and key project outcomes.

Model 1 explains approximately 40.5% of the variation in project time, as indicated by an R-squared value of 0.405.A key finding in this model is the positive relationship between project team integration and project time, which implies that enhanced team integration may prolong the project duration. While effective team collaboration is generally seen as beneficial for project outcomes, this result suggests that it may introduce complexities that slow down decision-making and project execution. This finding aligns with other studies that emphasize the importance of managing collaboration carefully to avoid delays due to over-coordination (Xue, Shen, & Ren, 2010).Conversely, user involvement has a significant negative effect on time, suggesting that involving users in the project design and execution process can reduce project durations. This could be due to early detection of potential issues or clearer communication of requirements, reducing the need for revisions and rework later in the project (Dvir, Raz, & Shenhar, 2003). Therefore, while some studies emphasize the risk of "scope creep" due to increased user involvement (Munns & Bjeirmi, 1996), these findings suggest that, in the Kenyan Judiciary context, user involvement may actually streamline the process, possibly due to clearer articulation of project needs from the outset.

Model 2 accounts for 52.8% of the variation in project cost. The findings highlight a significant positive relationship between project delivery system and cost, suggesting that certain delivery systems are associated with higher costs. This may be due to the complexity or inefficiencies inherent in some delivery systems, such as design-bid-build, which may introduce delays or fragmented communication between stakeholders (Latham,1994). On the other hand, integrated systems like design-build could streamline processes and potentially reduce costs, though this analysis does not specify which systems are more costly.The positive effect of user

involvement on project cost aligns with research suggesting that incorporating user requirements often leads to higher expenses (Muller, 2003). While user involvement can enhance project relevance and quality, it may also result in changes during projectexecution that increase costs. This finding highlights the need for a balanced approach where user involvement is structured to avoid excessive changes that can inflate budgets (Zou,Zhang, & Wang, 2007).

Model 3, with an R-squared value of 0.475, explains nearly half of the variation in site disputes, showing that project delivery systems and project management practices (PMP) both have a significant positive impact on site disputes. The positive relationship between delivery

systems and disputes might indicate that certain systems, particularly those that separate design from construction, such as design-bid-build, create misalignments in project goals or expectations, leading to conflicts (Alarcon & Molenaar, 1998). Furthermore, the surprising positive relationship between PMP and disputes suggests that certain management practices might inadvertently lead to misunderstandings or mismanagement of expectations on site, warranting further investigation. While PMPs are generally intended to minimize disputes (Kerzner,2017), this finding suggests that not all practices are equally effective, and that in some cases, over-management or rigid application of practices might exacerbate tensions between project stakeholders (Morris, Pinto, & Soderlund, 2011).

Model 4 accounts for 43.7% of the variation in project quality. The project delivery system once again emerges as a significant positive predictor of quality, emphasizing the critical role that the choice of delivery system plays in achieving high-quality outcomes. This finding suggests that integrated systems such as design-build, which promote better collaboration and communication, are more likely to ensure higher quality outputs compared to fragmented systems (Molenaar & Songer, 1998). The importance of choosing the right delivery system to align with project goals is well-documented, particularly for complex, high-stakes projects where quality is paramount (Molenaar & Songer, 1998).

Across two models, the project delivery system emerges as a significant predictor of project outcomes, underscoring its central role in construction project performance. This is consistent with literature emphasizing that the structure of the delivery system can influence communication, coordination, and overall project execution (Love, Davis, Ellis, & Cheung, 2010). The results indicate that while delivery systems influence costs, disputes, and quality, they must be carefully selected to suit the project's goals and complexities.

The results also show mixed effects for project team integration and user involvement, with each variable affecting project outcomes differently. These mixed results align with the existing debate on the dual-edge nature of these variables in project management. For example, while user involvement may reduce time, it could increase costs. This complexity reflects the challenges faced by project managers in balancing these factors to achieve optimal results across multiple dimensions (Atkinson, 1999).

The unexpected positive relationship between PMP and site disputes in Model 3 suggests that effective project management practices may not always translate into lower conflict levels on-site. This warrants further research to understand whether this is due to the specific types of PMPs used, their implementation, or external factors related to the projects themselves.

Conclusion

In conclusion, the findings of this study emphasize the critical role of the project delivery attributes in shaping the outcomes of court-building projects within the Kenyan Judiciary. The DBB system is viewed as suitable, providing necessary structure and stakeholder accountability. However, the mixed results regarding team integration and user involvement illustrate the complexity of project dynamics. While improved integration fosters collaboration, it can also extend timelines, whereas effective user engagement can lead to faster project delivery but may increase costs. These insights suggest that project managers must balance these factors carefully to optimize project outcomes. The unexpected link between project management practices and site disputes warrants further exploration to ensure that best practices genuinely enhance project effectiveness. Overall, this study contributes to the understanding of project delivery attributes, reinforcing the need for strategic management in construction projects. The findings underscore the multifaceted nature of project delivery attributes and their varied impact on key project outcomes such as time, cost, disputes, and quality. Future research should focus on investigating the factors contributing to the unexpected relationships, particularly the link between PMPs and site disputes.

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