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ABSTRACT
For a construction project to perform better, cost management techniques are essential. This study examines the complex interactions between cost management techniques and the effectiveness of programs to build educational infrastructure in Marigat Sub County. In light of the difficulties in completing projects successfully while staying below budget constraints, this study seeks to identify the vital links between cost management techniques and construction project outcomes. According Marigat Sub County ministry of education office, 23 out of total 32 school construction projects which is 71% of the construction projects are either stalled or are not performing to their anticipated standards. Therefore, the problem addressed in this study is the significant of cost management practices employed in school construction projects and their influence on construction project performance within Marigat Sub County. The study's overall goal was to examine how cost management practices affect the performance of ministry of education-funded school construction projects in Marigat Sub County. Its specific goals are to evaluate the impact of project resource planning, project cost estimation, and project schedule planning on these construction projects, as well as the impact of each on the ministry of education-funded school construction projects in Marigat Sub County. The findings of the study contributed to existing research by giving insight and evidence-based knowledge regarding cost management practices on school construction projects and how this involvement influences the successful completion and performance of these projects. The scope of this research was focused on 132 school projects funded by the Ministry of Education in Marigat Sub County, Baringo. The research adopted a descriptive survey design. The 132 educational programmes in Marigat Sub County that are financed by the ministry of education were the target population. The research formula was used to determine the sample size of the respondents given the total population and the desired level of confidence to get 99 school projects, then a random sampling technique was used to select those 99 school projects from the target population. The study used a questionnaire as data collection tool that was administered to project managers who are school principals. Analysis of data was both descriptive and inferential statistics. The mean score of key performance indicators of project resource planning, cost estimation, cost budgeting, and cost control were above 3.5 out of a maximum of 5 respectively indicating that there was involvement of cost management practices in public school construction projects. The regression model predicts that project resource planning, project cost budgeting and project cost control leads to a .154, .208 and .225 increase in project performance respectfully while project cost estimation leads to .116 decrease. In conclusion, the researcher found that cost management practices influence the performance of ministry of education-funded school construction projects in Marigat Sub County. It is therefore recommended that managers of public-school projects to ensure there is proper cost management practices in undertaking of school construction projects.

Keywords: Cost Management Practices, Project Resource Planning, Project Cost Estimation, Project Cost Budgeting, Project Cost Control, Performance
1.0 INTRODUCTION

1.1 Background of the Study

Cost management practices in education infrastructure projects are of utmost importance on a global scale. Educational institutions, whether in developed or developing countries, consistently face the challenge of constructing and maintaining suitable facilities for their students. Across the world, governments and organizations invest significantly in school construction projects to meet the ever-growing demand for quality education. Effective cost management practices are pivotal to the success of these projects (Barbu, 2020).

In Africa, the success of construction projects is not guaranteed because the majority of them fail to meet their long-term objectives due to significant cost overruns and scheduling delays. Government funding plays a crucial role, particularly in financing infrastructure projects and national development. Despite receiving aid for more than 50 years, little progress has been seen (Faniran, 2021). The difficulties experienced in carrying out government-funded educational construction projects are largely to blame for Sub-Saharan Africa's high levels of debt, absolute poverty, high rates of unemployment, and poor economic performance (Herd, 2022). Diverse nations in Sub-Saharan Africa have reported delays and cost overruns.

Infrastructure development is essential to sustainable growth, as shown by worldwide building cost management approaches. To improve schools, countries like the US stress proper budgeting and stakeholder participation. Finland and Japan prioritize fair resource distribution and efficient education funding. Cost overruns and delays in Africa require region-specific cost management solutions. Kenya's construction industry is rising fast, but cost management issues hinder project outcomes. Construction projects are crucial to socioeconomic growth in Marigat Sub County. Kenyan Ministry of Education initiatives fail frequently, especially in desert regions. Project managers, school administrators, contractors, government officials, and community leaders are involved in a Marigat Sub County case study to evaluate cost control strategies. This study can inform targeted actions and policy decisions to improve cost management and project performance in the region, benefitting the education sector and local community.

1.2 Statement of the Problem

Cost management issues continue to plague school construction projects, affecting performance. Olayode (2023) stated that poor school construction initiatives fail to meet goals and stall. According to the office of the auditor general report on expansion, development, and upkeep of school infrastructure by ministry of education (2021), 84% of 55 Kenyan schools need infrastructure expansion and 34% have bad infrastructure. 37% blamed cost overrun and resource mismanagement for poor quality. Marigat Sub County Office of Ministry of Education report (2022) shows that 23 of 32 secondary schools, or 71% of projects, are stopped or underperforming. School project delays cost Kenya 51 billion shillings annually.

Lack of understanding of how cost management procedures affect educational infrastructure development project finances is a major issue. Poor cost management can cause budget overruns, delays, and inadequate resource allocation, harming educational infrastructure and stakeholder experiences. This research addresses this issue by considering the following main issues: Do project resource planning, cost estimating, cost budgeting, and cost control affect project cost outcomes for educational infrastructure construction projects in Marigat Sub County? Are certain cost management strategies linked to school building project performance indicators like timeliness, scope, and quality? This study seeks to illuminate how cost management affects school construction project performance by thoroughly addressing these concerns.

Scholars have concentrated on spending management procedures on building initiatives in other disciplines, but not on ministry of education-financed school construction projects. In Machakos
County, Rose Mutiso (2021) evaluated cost management and government-funded project implementation. Sila, & Gakobo, (2021). measuring Nairobi construction enterprises’ resource management and project effectiveness. Kepher, Rambo, & Nyonje, (2021) examined real estate project building cost overruns in Nairobi and Kisumu counties, Kenya from contractual perspective. We investigated the impact of ministry of education-funded school projects in Marigat Sub County to bridge a knowledge gap.

1.3 Objectives of the study

1.3.1 General objective of the study
To examine the effect of cost management practices on the performance of ministry of education funded school construction projects in Marigat Sub County.

1.3.2 Specific Objectives
The specific objectives of this study are:
1. To assess the effect of project resource planning on the performance of ministry of education funded school construction projects in Marigat Sub County.
2. To examine the role of project cost estimation on the performance of ministry of education funded school construction projects in Marigat Sub County.
3. To evaluate the effect of project cost budgeting on the performance of ministry of education funded school construction projects in Marigat Sub County.
4. To investigate the influence of project cost control on the performance of ministry of education funded school construction projects in Marigat Sub County.

1.4 Research hypotheses
HO1: There is no significant relationship between effective project resource planning and the performance of ministry of education funded school construction projects in Marigat Sub County.
HO2: There is no significant relationship between project cost estimation accuracy and the performance of ministry of education funded school construction projects in Marigat Sub County.
HO3: There is no significant relationship between project cost budgeting and the performance ministry of education funded school construction projects in Marigat Sub County.
HO4: There is no significant relationship between project cost control measures and the performance ministry of education funded school construction projects in Marigat Sub County.

1.5 Scope of the Study
The scope of this research was focused on 132 school construction projects funded by the Ministry of Education in Marigat Sub County, Baringo. The research was conducted between September and November, 2023. Marigat Sub County, with its unique educational infrastructure development challenges, presents an ideal context for this study. By focusing on Ministry of Education funded school construction projects, the research narrows its scope to a specific sector. The 132 school construction projects selected provided a substantial sample size for comprehensive analysis without sacrificing the depth of investigation. The total cost for the study, including research expenses, data collection, analysis, and reporting, was bounded by a budget of 150,000 Kenya Shillings allocated for the research.

2.0 LITERATURE REVIEW

2.1 Theoretical Review
2.1.1 Theory of Constraints
The Theory of Constraints (TOC), developed by Goldratt, (1990), focuses on identifying bottlenecks that impede efficiency in management and manufacturing. It identifies and addresses these limitations with five specific concentrating actions. Throughput, Operational Expense, and Investment are crucial indicators for managing companies. Constraints might be either internal (such as equipment, personnel, policies) or external (like market needs) (Gupta, Digalwar, Gupta, &
Goyal, 2024). TOC utilizes a continuous improvement process by identifying and resolving constraints in a repetitive manner. The process entails finding, prioritizing, enhancing, and iterating actions to maximize productivity. The purpose of TOC is to enhance throughput by methodically eliminating limitations, focusing on rapid enhancements utilizing available resources. It is essential to stay alert for limitations in order to maintain improvements in productivity (Matthews, 2024).

2.1.2 Contingency theory
Contingency theory in construction management highlights that management approaches are tailored to specific circumstances such as project complexity, scale, technology, stakeholders, legal environment, resources, risk, and project goals, rather than being universally applicable (Garavan, & O’Brien, 2024). Adapting and being flexible in management strategies are essential to properly handle these unforeseen circumstances. Managers need to customize their methods to align with particular project needs, focusing on communication, stakeholder engagement, regulatory compliance, effective resource allocation, risk reduction, and goal harmonization (Fiedler, 2015).

2.1.3 Project management theory
Project management theory originated from Taylor, Gantt, and Fayol (1997), who established the foundation for organizing task breakdown and resource allocation. The framework facilitates a thorough grasp of project management, focusing on precise cost estimation, resource allocation, efficient execution, and minimizing disruptions. The idea progresses through concepts such as Process Based Management, Agile, and Lean. Agile prioritizes iterative human interactions and real-time decision-making, while Lean emphasizes team performance and flexibility to adapt to dynamic systems (Ashmore, & Runyan, 2014). Lean's emphasis on waste reduction and internal variability control could potentially lead to dangers. Project management theory combines conventional methods with human factors to enhance project results in the face of evolving conditions (Cesarotti, Gubinelli, & Introna, 2019).

2.2 Conceptual Framework

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project resource planning</td>
<td>Project Performance</td>
</tr>
<tr>
<td>• Resource availability</td>
<td>• Timely completion of the project</td>
</tr>
<tr>
<td>• Resource utilization rate</td>
<td>• Adherence to project scope</td>
</tr>
<tr>
<td>• Resource allocation timeliness</td>
<td>• Project delivery satisfaction</td>
</tr>
<tr>
<td>Project cost estimation</td>
<td></td>
</tr>
<tr>
<td>• Cost estimation accuracy</td>
<td></td>
</tr>
<tr>
<td>• Estimation methodology transparency</td>
<td></td>
</tr>
<tr>
<td>• Estimation Review Cycle</td>
<td></td>
</tr>
<tr>
<td>Project cost budgeting</td>
<td></td>
</tr>
<tr>
<td>• Budget variance</td>
<td></td>
</tr>
<tr>
<td>• Budget allocation effectiveness</td>
<td></td>
</tr>
<tr>
<td>• Budget risk assessment</td>
<td></td>
</tr>
<tr>
<td>Project cost control</td>
<td></td>
</tr>
<tr>
<td>• Earned value management</td>
<td></td>
</tr>
<tr>
<td>• Cost tracking accuracy</td>
<td></td>
</tr>
<tr>
<td>• Performance reviews</td>
<td></td>
</tr>
</tbody>
</table>

*Figure 2.1: Conceptual Framework*
2.3 Empirical Review

Xie (2022) conducted fuzzy synthetic analysis to identify key drivers causing cost overruns in Chinese building projects. The key cost overrun factors for Chinese building projects are identified by defining, classifying, and categorizing construction cost overrun aspects. A Chinese construction sector questionnaire was used to calculate a project-influenced index of elements and clusters. The most significant and frequent factors affecting construction costs are market price changes, national policy changes, currency exchange rate fluctuations, inadequate contract management, risk management, design, major infectious diseases, natural disasters, project location restrictions, design modifications, poor drawing design, and fraud conduct.

Chinthaka Atapattu et al. (2023) examined cost overruns in New Zealand building projects. The study examined cost overrun causes and severity after a thorough literature review. This study employed a systematic review to systematize, transparently, and repeatably assess cost overrun variables to integrate research findings and recommend future research areas. The paper used quantitative (science mapping) and qualitative (thematic) data analysis. Seven factors substantially affected construction cost overruns. Decisions, risk assessment, cost-benefit evaluation, construction management, design/methodology/approach, and time overruns.

Faten Albtoush et al. (2022) examined the main causes of cost overruns in Malaysian building projects. A questionnaire was used to gather data. The study collected the most common cost overrun causes from numerous studies and divided them into 10 groups: design and contract, estimation, planning and schedule, project management, labor, financial, material and machinery, construction phase, communication, and external factors.

Thwala (2023) conducted a confirmatory factor analysis of South African construction labor management difficulties. The study examined the problems of managing the construction workforce in South Africa to improve HRM and service performance. Pragmatic philosophy was used in mixed-method research. Delphi and questionnaire surveys were used for the study's qualitative and quantitative components. Data analysis included descriptive and inferential statistics like mean item score, Kruskal-Wallis H-test, exploratory and confirmatory factor analysis. With high reliability, construct validity, and model fit indices, the study found that construction organizations must carefully address industry issues, unhealthy working environments, employee issues, and diversity and working conditions to achieve effective HRM.

Asiedu and Adaku (2020) examined Ghanaian public sector construction cost overruns. The study presented a system's perspective on project cost overruns, particularly in a less studied scenario, to further the subject. Data was collected and evaluated from 131 Ghanaian public procurement agencies' building workers. Two steps were taken to collect respondents' data. The first step was interviewing key construction industry players in Ghana to understand the causes of building project cost overruns. The second phase validated these features by collecting questionnaire responses from a larger stakeholder group. Factor analysis identified building project cost overrun causes from these variables. Cost overruns occur for four key causes in most public sector building projects. Cost overruns are caused by bad contract design and oversight, change orders, a weak institutional and economic climate for projects, and inefficient coordination among bound parties.

Onyango, (2021), examined cost control and building project delivery in Kenya's Elgeyo Marakwet County. The study examined how cost management affects construction project execution in Kenya's Elgeyo Marakwet County. The paper examines how science and technology imprecision costs affect building projects in Elgeyo Marakwet County. Kenya; Study how project funding affects construction in Kenya's Elgeyo Marakwet County. Determine how regulatory policy expenses affect Elgeyo Marakwet County construction projects. Using descriptive research, the
A study investigated how cost management affects Elgeyo Marakwet County construction projects. Design modification costs had the greatest impact on project management in this region, according to most respondents. Cost management of drawings, designs, talents, and expertise affects project management. Results showed each predictor variable's effect.

Omukuba and Muchulule (2022) examined how project cost management affects Kajiado County, Kenya's donor-funded health programs. The study sought to determine how project cost management, control, resource planning, and budgeting affected donor-funded medical programs in Kajiado County and overall donor-funded health projects. The descriptive design allowed the researcher to explain the scenario and explain causal links between variables. The study found that donor-supported initiatives in Kajiado County performed better when expenses were managed. To complete the project within budget, planning, estimation, budget financing, funding, and expenditure control must be done.

Nyonje (2021) studied real estate project contracting and building cost overruns in Nairobi and Kisumu counties, Kenya. The study examined how contracting affects real estate construction cost overruns. Data analysis used descriptive and inferential statistics. Statistical measurements of central tendency included frequency, percentage, mean, standard deviations, composite mean, and composite standard deviation. While inferential statistics employed Spearman correlation and regression. The simple linear regression coefficients and Pearson correlation results showed that contracting process significantly affected Real Estate Construction Cost Overruns. Small p-values indicated a substantial association between contracting process and real estate construction cost overruns.

### 3.0 RESEARCH METHODOLOGY

This study employed a descriptive research design to investigate Ministry of Education supported school development projects in Marigat Sub County. The study included 132 projects, with school principals being the focus of observation. A sampling frame was created from the population, and a sample size of 99 projects was calculated using Yamane's algorithm. Data was collected using a standardized questionnaire that focused on cost management strategies and project performance metrics. The process involved acquiring permits and receiving support from research assistants. A pilot test was conducted to assess the reliability and validity of the questionnaire using Cronbach's alpha coefficient and expert evaluation. The data analysis utilized regression analysis to evaluate the influence of cost-management approaches on project results. The findings of the research were given in tables.

\[
Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon
\]

Where;

- \(Y\) = the value of dependent variable (Performance of ministry of education funded school projects)
- \(\{\beta_i; i=1, 2, 3, 4\}\) = The coefficient of values representing the independent variables.
- \(\beta_0\) = The Y intercepts which is a constant coefficient
- \(\varepsilon\) = the error term
- \(X_1\) = Project resource planning
- \(X_2\) = Project cost estimation
- \(X_3\) = Project cost budgeting
- \(X_4\) = Project cost control
- \(\{X_i; i=1,2,3,4\}\) = Values of the various independent variables.
4.0 DISCUSSION OF FINDINGS

4.1 Response Rate
The selected sample for the study was 99 school principals of public secondary and primary schools. All respondents were issued with questionnaires but the study was able to receive back 97 questionnaires having been dully filled. The returned questionnaires formed a response rate of 98% as shown in Table 4.3. According to Nigel (2021) and Charles, Ndolo, & Odari, (2023), rate of 50% is considered adequate, a rate of 60% is good and a response rate of 70% and over is considered excellent. Therefore, our response rate of 98% was considered excellent.

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dully Filled and Returned</td>
<td>97</td>
<td>98.0</td>
</tr>
<tr>
<td>Unreturned</td>
<td>2</td>
<td>2.0</td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.2 Descriptive Statistics
In this section the study presents findings on Likert scale questions where respondents were asked to indicate their level of agreement with various statements that relate with the effect of cost management practices on the performance of ministry of education funded school construction projects. They used a 5-point Likert scale where 1-strongly disagree, 2-disagree, 3-neutral, 4-agree, 5-strongly agree. The means and standard deviations were used to interpret the findings where a mean value of 1-1.4 was strongly disagree, 1.5-2.4 disagree, 2.5-3.4 neutral, 3.5-4.4 agree and 4.5-5 strongly agree.

4.2.1 Project Resource Planning On Performance of Ministry of Education Funded School Construction Projects
Respondents gave their level of agreement/disagreement with statements relating effect of project resource planning on performance of ministry of education funded school construction projects in Marigat Sub County. The results were as presented in Table 4.4

Table 4.2 Descriptive Statistics on Project Resource Planning

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>The project resources were readily available</td>
<td>3.9</td>
<td>.77</td>
</tr>
<tr>
<td>The project resources were accessible</td>
<td>4.4</td>
<td>.59</td>
</tr>
<tr>
<td>Available project resources were allocated promptly after the need was identified</td>
<td>4.2</td>
<td>.73</td>
</tr>
<tr>
<td>Allocation of project resources met project schedules</td>
<td>4.5</td>
<td>.61</td>
</tr>
</tbody>
</table>

Based on the findings presented in Table 4.4, the respondents were in agreement that school construction project resources were readily available with mean of 3.9, the respondents agreed that project resources were readily accessible with a mean of 4.4, the respondents were in agreement that the available project resources were allocated promptly after the need was identified with a mean of 4.2 and they strongly agreed that allocation of project resources met project schedules with a mean score of 4.5. Findings are also in concurrent with the conclusions of a study of donor funded construction project, where Lumumba, (2021) while reviewing challenges facing implementation of donor support projects in the Kenya national highway authority, mentioned that project resource planning plays a key role since it effects the size, structure, conduct and performance of the construction project during execution phase.

4.2.2 Project cost estimation on performance of ministry of education funded school construction projects
Respondents gave their level of agreement/disagreement with statements relating role of project cost estimation on performance of ministry of education funded school construction projects in Marigat Sub County. The results were as presented in Table 4.5
Table 4.3 Descriptive Statistics on Project Cost Estimation

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public works were involved in bill of quantities estimation</td>
<td>4.1</td>
<td>.64</td>
</tr>
<tr>
<td>Bill of quantities matched the available resources</td>
<td>4.1</td>
<td>.72</td>
</tr>
<tr>
<td>Stakeholders were involved in cost estimation process</td>
<td>4.2</td>
<td>.62</td>
</tr>
<tr>
<td>The project's cost estimate was regularly reviewed</td>
<td>4.2</td>
<td>.74</td>
</tr>
</tbody>
</table>

From the findings in Table 4.5, the respondents were in agreement that public works were involved in bill of quantities estimation with a mean score of 4.1, also they agreed that that bill of quantities matched the available resources with a mean score of 4.1, the respondents agreed that stakeholders were involved in cost estimation process with a mean score of 4.2. In addition, respondents agreed that project's cost estimate was regularly reviewed with a mean score of 4.2. A study by Chileshe, Njau, Kibichii, Macharia, & Kavishe, (2022), on critical success factors for Public-Private Partnership (PPP) infrastructure and housing projects in Kenya confirms these findings by observing through a study that project cost estimation is a key cost management technique that affects the infrastructure project from initial phase to completion phase.

4.2.3 Project cost budgeting on performance of ministry of education funded school construction projects

Respondents gave their level of agreement/disagreement with statements relating role of project cost budgeting on performance of ministry of education funded school construction projects in Marigat Sub County. The results were as presented in Table 4.6

Table 4.4 Descriptive Statistics on Project Cost Budgeting

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost budgeting process considered type of project contract awarded</td>
<td>3.9</td>
<td>.65</td>
</tr>
<tr>
<td>Project bidding process aligned with project budgeted cost</td>
<td>4.1</td>
<td>.69</td>
</tr>
<tr>
<td>Budget allocation aligned with project priorities and objectives</td>
<td>4.0</td>
<td>.71</td>
</tr>
<tr>
<td>Risk assessments were conducted to anticipate potential budget-related challenges</td>
<td>4.2</td>
<td>.71</td>
</tr>
</tbody>
</table>

As shown in Table 4.6, the respondents were in agreement that cost budgeting process considered type of project contract awarded with a mean of 3.9, the respondents agreed that project bidding process aligned with project budgeted cost with a mean score of 4.1, they also agreed that budget allocation aligned with project priorities and objectives with a mean of 4.0 and the respondents were in agreement that comprehensive risk assessments were conducted to anticipate potential budget-related challenges and their impact on the project with a mean score of 4.2. The above results from findings concur with the study by Matu, Kyalo, Mbugua, & Mulwa, (2020), on stakeholder participation in project initiation: a foundation to completion of urban road transport infrastructure projects, Kenya which concluded that cost budgeting is a pivotal cost management practice which affects the general performance of construction projects.

4.2.4 Project cost control on performance of ministry of education funded school construction projects

Respondents gave their level of agreement/disagreement with statements relating role of project cost control on performance of ministry of education funded school construction projects in Marigat Sub County. The results were as presented in Table 4.7

Table 4.5 Descriptive Statistics on Project Cost Control

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual project costs were consistently tracked throughout</td>
<td>4.0</td>
<td>.71</td>
</tr>
<tr>
<td>Cost tracking contributed to timely decision-making</td>
<td>4.2</td>
<td>.65</td>
</tr>
</tbody>
</table>
Regular performance reviews assessed budget alignment 4.1 .65
Performance reviews led to adjustments in project cost 4.2 .71

Based on the findings in Table 4.7, the respondents agreed that actual project costs were consistently tracked throughout with a mean of 4.0, the respondents were in agreement that cost tracking contributed to timely decision-making with a mean score of 4.2, the respondents agreed that regular performance reviews assessed budget alignment with a mean of 4.1. In addition, the findings show that the respondents agreed that performance reviews led to adjustments in project cost with a mean score of 4.2. This is further confirmed by findings of a study by Kuria, and Kimutai, (2020), and Chepkwony, Muchelule, & Somba, (2023) on internal organization environment and project performance in construction firms within Nairobi city county, Kenya where they opined that cost control is a tool in monitoring and evaluation project financial progress from initial stages to completion stage.

4.2.5 Performance of ministry of education funded school construction projects

Respondents gave their level of agreement/disagreement with statements relating on performance of ministry of education funded school construction projects in Marigat Sub County. The results were as presented in Table 4.8

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project was completed within allocated timeframe</td>
<td>3.9</td>
<td>.65</td>
</tr>
<tr>
<td>The project adhered well to the predefined scope</td>
<td>4.1</td>
<td>.62</td>
</tr>
<tr>
<td>Project was completed within allocated cost</td>
<td>4.0</td>
<td>.72</td>
</tr>
<tr>
<td>Actual project cost matched with estimated project cost</td>
<td>4.3</td>
<td>.68</td>
</tr>
</tbody>
</table>

Based on the findings, the respondents agreed that project was completed within allocated timeframe with a mean score of 3.9, the respondent also agreed that project adhered well to the defined scope with a mean of 4.1, they agreed that project was completed within allocated cost with a mean of 4.0. Lastly, the respondents were in agreement that actual project cost matched with estimated project cost with a mean score of 4.3. The findings align with a study by Hijazi, (2021) on factors hindering quality performance in construction projects that cost management strategies adherence leads to exceptional performance on construction projects.

4.3 Inferential Statistics

4.3.1 Regression Analysis

The study computed multiple regression analysis to investigate the effect of project cost management practices on the performance of ministry of education funded school projects in Marigat Sub County. The findings were presented in three tables discussed in sub-sections below.

4.3.1.1 Model summary

Table 4.7 Model summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.458a</td>
<td>.210</td>
<td>.175</td>
<td>.3526</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Project resource planning, Project cost estimation, Project cost budgeting, Project cost control

From the findings, the value of R square was 0.210 which suggests that 21% variation in performance of ministry of education funded school projects that can be explained by changes in project resource planning, project cost estimation, project cost budgeting and project cost control this concur with the study by Sharma, Gupta, & Khitoliya, (2021), that cost management strategies...
influence construction projects performance. The remaining percentage suggest that there are other factors that can be attributed variation in performance of ministry of education funded school projects in Marigat Sub County. The findings further shows that the variables being investigated are positively related as indicated by correlation coefficient (R) value of 0.458.

4.3.1.2 Analysis of variance

Analysis of variance is used to determine whether the model is significant; whether the model was a good fit for the data.

<table>
<thead>
<tr>
<th>Table 4.8 ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
</tr>
<tr>
<td>Regression</td>
</tr>
<tr>
<td>Residual</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Performance of construction projects
b. Predictors: (Constant), Project resource planning, Project cost estimation, Project cost budgeting, Project cost control

The results in Table 4.13 indicate that the model was significant since the p-value (0.00) was less than 0.05 thus the model is statistically significance in examining the effect of cost management practices on the performance of ministry of education funded school construction projects in Marigat Sub County. Further, the F-calculated (6.101) was found to be more than the F-critical (2.440) which shows that the models were fit in establishing the influence of the four independent variables on the dependent variable.

4.3.1.3 Beta coefficients of the study variables

The findings from the coefficients table were used to fit the regression model and to test study’s hypotheses as shown in Table 4.15

<table>
<thead>
<tr>
<th>Table 4.9 Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
</tr>
<tr>
<td>Project resource planning</td>
</tr>
<tr>
<td>Project cost estimation</td>
</tr>
<tr>
<td>Project cost budgeting</td>
</tr>
<tr>
<td>Project cost control</td>
</tr>
</tbody>
</table>

In determining cost management practices influencing school construction projects in Marigat Sub County, the study performed a regression analysis. Variables that were considered were project resource planning, project cost estimation, project cost budgeting and project cost control. The regression equation was:

\[ Y = 2.134 + 0.154 X_1 - 0.116 X_2 + 0.208 X_3 + 0.225 X_4 \]

The equation above reveals that holding the variables project resource planning, project cost estimation, project cost budgeting and project cost control to a constant zero, performance of ministry of education funded school projects will be at a constant value of 2.134

The findings show that project resource planning has positive influence on performance of ministry of education funded school projects in Marigat Sub County. The p-value is 0.014 which less than
0.05 therefore we reject the null hypothesis that there is no significant relationship between effective project resource planning and the performance of ministry of education funded school construction projects in Marigat Sub County. The coefficient value of resource planning is 0.154 therefore, an increase of one unit in project resource planning will result to improved performance of ministry of education funded school construction projects by 0.154 units.

Project cost estimation is also seen to have negative influence on performance of ministry of education funded school construction projects in Marigat Sub County. The p-value is 0.224 which is greater than 0.05 hence we fail to reject the null hypothesis that there is no significant relationship between effective project cost estimation and the performance of ministry of education funded school construction projects in Marigat Sub County. The coefficient value of cost estimation is -0.116 therefore, an increase of one unit in project cost estimation will result to decrease in performance of ministry of education funded school construction projects by 0.116 units.

The findings also show that project cost budgeting have positive influence on performance of ministry of education funded school construction projects in Marigat Sub County. The p-value is 0.021 which is less than 0.05 suggest that the influence was significant hence we reject null hypothesis there is a positive relationship between project cost budgeting and the performance of ministry of education funded school construction projects in Marigat Sub County. The coefficient value of cost budgeting is 0.208 therefore, an increase of one unit in project cost budgeting will result to improved performance of ministry of education funded school construction projects by 0.208 units.

Finally, the findings show that project cost control has positive influence on performance of ministry of education funded school construction projects in Marigat Sub County. The p-value is 0.015 which is less than 0.05 suggest that the influence was significant hence we reject null hypothesis that project cost control and the performance of ministry of education funded school construction projects in Marigat Sub County. The coefficient value of cost control is 0.225 therefore, an increase of one unit in project cost control will result to improved performance of ministry of education funded school construction projects by 0.225 units.

5.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of Findings
The general objective of the study was to examine the effect of cost management practices on the performance of ministry of education funded school construction projects in Marigat Sub County. The study was guided by the following specific objectives: to assess the effect of project resource planning on ministry of education funded school construction projects in Marigat Sub County; to examine the role of project cost estimation on ministry of education funded school construction projects in Marigat Sub County; to evaluate the effect of project cost budgeting on ministry of education funded school construction projects in Marigat Sub County and to investigate the influence of project cost control ministry of education funded school construction projects in Marigat Sub County.

5.1.1 Project resource planning on ministry of education funded school construction projects in Marigat Sub County
With regard to project resource planning, the results of the study showed that the project resources were readily available, accessible, were allocated promptly after the need was identified and allocation of project resources met project schedules. The study findings concur with Olouch (2021) that availability of project resources are critical components in resource planning phase. Also, study showed that there is a positive relationship between project resource planning and performance of ministry of education funded school construction projects in Marigat Sub County. This is in line with the findings of Adaku (2020) that resource planning and allocation positively
and significantly influenced implementation of the construction projects. Additionally, the model is statistically significant as the p-value is less than 0.05. The model predicts, all things held constant, project resource planning leads to a .154 increase in performance of ministry of education funded school construction projects in Marigat Sub County.

5.1.2 Project cost estimation on ministry of education funded school construction projects in Marigat Sub County

The results of the study showed that public works were involved in bill of quantities estimation, bill of quantities matched the available resources, stakeholders were involved in cost estimation process and the project's cost estimate was regularly reviewed. Also, there is a negative relationship between project cost estimation and performance of ministry of education funded school construction projects in Marigat Sub County. Additionally, the variable is statistically insignificant as the p-value is less than 0.05. The model predicts, all things held constant, increase in one unit of project cost estimation will leads to a decrease of 0.116 units in performance of ministry of education funded school construction projects in Marigat Sub County. Therefore the finding diverge with a conclusion from a study by Kibichii, (2022) which indicated that cost estimation is a key cost management strategy which affects performance of construction project positively.

5.1.3 Project cost budgeting on ministry of education funded school construction projects in Marigat Sub County

There was positive relationship between project cost budgeting and performance of ministry of education funded school construction projects in Marigat Sub County as shown by the results of the study. Additionally, the results of the study showed that cost budgeting process considered type of project contract awarded, project bidding process aligned with project budgeted cost, budget allocation aligned with project priorities and objectives and risk assessments were conducted to anticipate potential budget-related challenges. Also, the model is statistically significant as the p-value is less than 0.05. The model predicts, all things held constant, project cost budgeting leads to a .208 increase in performance of ministry of education funded school construction projects in Marigat Sub County. The findings converge with a study by Johnson Matu, (2020) which concluded that cost budgeting is a pivotal cost management practice which affects the general performance of construction projects.

5.1.4 Project cost control on ministry of education funded school construction projects in Marigat Sub County

With regard to project cost control; the results of the study showed that actual project costs were consistently tracked throughout, cost tracking contributed to timely decision-making, regular performance reviews assessed budget alignment and performance reviews led to adjustments in project cost. Also, there is a positive relationship between project cost control and performance of ministry of education funded school construction projects in Marigat Sub County. Additionally, the model is statistically significant as the p-value is less than 0.05. The model predicts, all things held constant, project cost control leads to a .225 increase in performance of ministry of education funded school construction projects in Marigat Sub County. Results align with findings from a study by Kimutai, (2021), on internal organization environment and project performance in construction firms within Nairobi City County, Kenya where they opined that cost control is a tool in monitoring and evaluation project financial progress from initial stages to completion stage.

5.2 Conclusion

The study's overall goal was to examine how cost management practices affect the performance of ministry of education-funded school construction projects in Marigat Sub County. Evaluating the impact of project resource planning, project cost estimation, and project schedule planning on these construction projects, as well as the impact of each on the ministry of education-funded school
construction projects in Marigat Sub County. According to the discussions above and summary above, the resulting conclusions can be derived and concluded from the study as part of the conclusion.

According to the summary model, R-square value of 0.21 was determined, adjusted to 0.175 with the factor of determination portraying that predictor variables, brings about (21%) variation in performance of ministry of education-funded school construction projects in Marigat Sub County while remaining percentage of the disparities are contributed to by issues not taken by objectives under study. Therefore, it can be generalized that cost management practices in construction projects contribute to performance of those projects in Marigat Sub County by (21%)

On the independent variables, three independent variables were statistically significant whereby p-value is less than 0.05. Project resource planning, cost budgeting and cost control were found to have positive influence on performance of ministry of education funded school construction projects in Marigat Sub County. One predictor variable, cost estimation was not statistically significant. The influence was also found to be negative on performance of ministry of education funded school construction projects in Marigat Sub County.

The model predicts, all things held constant, increase of one unit of resource planning, cost budgeting and cost control leads to a .154, .208, .225 units increase in performance of school construction projects respectively while increase in one unit of project cost estimation leads to .116 units decrease in performance of school construction projects.

In conclusion the researcher found that three cost management practices; project resource planning, project cost budgeting and project cost control involvement has positive influence on performance of school construction projects in Marigat Sub County while one cost management strategy, cost estimation has a negative influence on the performance of school construction projects in Marigat Sub County. Therefore, the cost management practices affects the performance of ministry of education funded school construction projects in Marigat Sub County.

5.3 Recommendations

To overcome the risk associated with cost management practices during the construction projects phase, the managers in construction project must institute a robust methodology aimed at ensuring that project cost management techniques costs are adequately covered in the project life span. Perceived cost management practices generates anxiety among the players in the construction industry and particularly those who are directly involved in the process and may contribute to total rejection and failure of the entire project. It is of high position to take in all the stakeholders early into the project preliminary stages to precaution and ensure that they understand and own the cost management techniques.

To ensure that construction projects realize complete implementation, project resource planning must be considered with precise plans on the key project funding source including the small and mega alternative funds for the project. Cost budgeting must be planned well during the funding procedure to protect on misappropriation, underspending and or overspending by over ambitious project managers. Similarly, caution should be taken on the cost control in order to forecast eventualities and inflation costs changes. Project cost estimation negatively affected performance of ministry of education funded school construction projects in Marigat Sub County. Project cost estimation is necessary for smooth running of any project therefore the study also recommends project managers to ensure project cost estimation process; this can be achieved by developing cost estimation procedures and guidelines that must be adhered to.

Construction project managers require to consider government policies in existence and adhere to all policies and ensure that the project is impenetrable as a result of the direct or indirect policy
influence. Particularly, it should be obligatory policies that all projects must conform to beforehand. Applicable government policies should act as the main implementation criteria for all projects.

5.4 Suggestions for Further Research

This research study focused ministry of education-funded school construction projects; the study recommends future studies to focus on other organizations in different sectors of the economy which deals with construction work. This includes construction works such as roads, bridges, tunnels, dams and housing. This focus excluded other aspects of construction such as electrical services and architectural aspects such as railway, ports, and airports thus cannot be generalized. A recommendation for further restudies including all aspects of construction like heavy civil engineering works with long implementation periods to adequately measure the element of timely completion of projects.

The study was limited to four cost management practices (resource planning, cost estimation, cost budgeting and cost control) which explained 21% variation in performance of ministry of education funded school projects; the study thus recommends future studies to focus on other factors that can affect the performance of construction projects such as risk management, time management etc. Construction industry and projects include numerous stakeholders including the client, contractor, consultants, project managers, artisans, engineers and many more. A specific study is recommended on specific groups of people to have different perspectives of various strata’s that would inform valid results as compared to the generalization of the target population as one.

REFERENCES


