Assessing project management practices and performance of government construction projects in Tanzania

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Recommended Reference: Lawuo, A. Z. (2026). Assessing project management practices and performance of government construction projects in Tanzania. *African Quarterly Social Science Review, 3*(1), 594–604. https://doi.org/10.51867/AQSSR.3.1.49

ABSTRACT

Using the regions of Arusha, Dar es Salaam, Dodoma, Morogooro, and Pwani as a case study, this research investigates how project management techniques affect the execution of public building projects in Tanzania. The study used the theory of construction management, the theory of the built environment, and resource mobilization theory to form its theoretical basis. The performance of construction projects in the aforementioned regions was monitored by the research project using the descriptive research approach. The study included government construction projects initiated between 2016 and 2024. Purposive sampling and simple random sampling were the sampling techniques used in this investigation. IBM's Statistical Package for the Social Sciences (SPSS) program (version 25.0) was used to import the data. Descriptive statistics like frequency and percentage were the main tools used in this study's data analysis. Additionally, multiple regression, analysis of variance (ANOVA), and Pearson correlation were employed. The results of the study showed that project performance in Tanzania's construction industry was positively and significantly impacted by project management, resource scheduling, project communication management, and project monitoring and evaluation. According to the study, companies should have a project management plan that is started by the project managers and used as a project tool or device during the execution and monitoring phases. Additionally, all project managers should ensure that they have an adequate number of project team members and strike a balance between overstaffing and understaffing. The study concludes that when a firm has monitoring and evaluation mechanisms in place, it will increase the chance of rectifying deviations and hence have effective performance.

Keywords: Communication, Project Management, Project Performance, Resource Scheduling, Tanzania

I. INTRODUCTION

The use of project management techniques by project managers overseeing the construction of roads, bridges, and buildings among others, has been emphasized in recent years. Additionally, this will lower project expenses that rise as a result of bad management and enhance performance (Xie et al., 2022). Effective administration of every construction project authorized by the budget aids the government in accomplishing the objectives set forth by the pertinent ministries. The advancement of information communication technology (ICT), adherence to quality standards, and strict deadlines have all had a significant impact on project management techniques (Irefin, 2013).

Effective project management is crucial to achieving the nation's objectives and guaranteeing the wise use of public funds in the fast-paced corporate world of today. Project control, which is keeping an eye on and managing every facet of the project to guarantee that it is finished on schedule, within budget, and to the necessary quality standards, is one of the most crucial components of project management (Ahuja e al., 1994). This makes it possible for project managers to spot problems and hazards early on and take corrective action to deal with them before they worsen. But according to Dahie et al. (2017, p. 39), "quality is regarded an important consequence of a project since the performance indicators of projects are usually focused on time, money, and quality, often known as the iron triangle."

For any project to be completed, project management is necessary. Making sure a project is successful is one of the primary goals of control. Project control ensures that projects are finished to the necessary quality standards, on schedule, and within budget (Del Pico, 2023). Additionally, it makes it possible for project managers to recognize risks and problems early on and take remedial action to deal with them before they worsen (Niederman, 2021). The second reason is to boost productivity; project managers may minimize waste and maximize project resources thanks to project management. As a result, project managers can keep an eye on developments and see any flaws or roadblocks so they may take corrective action to increase the project's efficacy. The third justification is risk reduction. By identifying and controlling project hazards, project management lowers the possibility of project failure. Project managers can reduce

the impact of unforeseen occurrences on the project by developing a thorough project plan and routinely monitoring and regulating project performance (Mpanju, 2024).

Tanzania's construction sector contributes significantly to the nation's economy, but it has been beset by a number of issues, such as rising project costs, unmanageable and unrealistic timelines, mishaps, subpar work, disputes between project team members and stakeholders, and neglect and incompleteness for both public and private sector construction projects. Infrastructure such as buildings falling, roads cracking, and bridges collapsing are commonplace these days, and nobody can predict what will happen next (Ndunguru et al., 2020). All of them demonstrate how the public's perception of Tanzania's construction industry is currently negative. Therefore, it is imperative to stop projects from failing, particularly because of inadequate project management in the industry. Therefore, the purpose of this study is to experimentally investigate how project management techniques, such as planning activities, managing human resources, and conducting feasibility studies, affect project success. The focus of the study was public sector projects in Arusha, Dar es Salaam, Dodoma, Morogooro, and Pwani regions.

1.1 Statement of the Problem

In order to achieve Development Vision 2030, Tanzania's infrastructure construction projects are essential and one of the main forces behind economic growth and development. Infrastructure building projects must be finished in order to support a nation's economic development, and stakeholders work to guarantee that the projects are finished on schedule, within budget, and with high quality. However, due to a variety of variables that adversely affect these projects' performance, the majority of infrastructure projects (such as road, rail, and dam projects) in Tanzania are not finished within the originally specified time targets. For instance, the Controller and Auditor General's (CAG) Annual General Audit Report of Development Projects for the Financial Year 2021/22 highlights the necessity for stakeholders to take corrective action by identifying significant gaps in numerous projects and offering suggestions for improvement (Msenga, 2021).

According to a study by Kisamo and Mokaya (2019), projects are hampered by a lack of planning abilities that are necessary for successful planning; because project planning is dangerous and complex, different skill sets are needed for successful project execution and management. The study came to the conclusion that having the necessary professional and technical abilities for project management is crucial to guaranteeing any project's success. In a similar vein, Kavishe and Chileshe (2018) looked into the difficulties in implementing Public Private Partnership (PPP) in housing projects in Tanzania's Dar es Salaam City. The results also showed how the general management and oversight of PPP projects are impacted by a lack of PM expertise. The PPPs' post-implementation and operation features also brought to light a number of concerns around who is responsible for running the housing properties.

According to the previously cited research, project management techniques have become increasingly popular as a means of enhancing the performance of building projects. Mgawe and Masanja (2018) used the National Housing Corporation (NHC) as a case study to investigate how procurement practices affect Tanzanian construction project performance. In a similar vein, Kajumulo (2023) carried out research on the identification and evaluation of critical components for enhancing Tanzanian construction management performance. The study identified seven critical elements for enhancing construction management: problem-solving capabilities, project manager leadership abilities, site climate, equipment and material costs, project construction timeline, site condition issues, and a shortage of skilled and qualified personnel. Although there is a dearth of empirical information, it is concerning that the county's road building projects have had delays, failed to satisfy quality requirements, and exceeded their budget forecasts. Based on this premise, the current study aimed to determine how project management techniques affected Tanzanian infrastructure development projects' performance.

1.2 Research Objectives

i. To ascertain how planning affects government construction projects' performance in Tanzania's Arusha, Dar es Salaam, Dodoma, Morogooro, and Pwani regions.
ii. To ascertain how resource scheduling affects government construction projects' performance in Tanzania's Dar es Salaam and Dodoma regions.
iii. To evaluate how project communication affects government construction projects in Tanzania's Arusha, Dar es Salaam, Dodoma, Morogooro, and Pwani regions.
iv. To investigate how government construction projects in Tanzania function in relation to project monitoring and evaluation.

II. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 A theory of construction management

This theory that was developed by Radosavljevic and Bennett (2012), is an initiative for the provision of the foundation of construction management which highlights the necessary actions which help construction projects and firms to be efficient. It takes on the challenge of creating a precise, tightly defined model of construction management (CM), using five clearly differentiated methods for the delivery of building and construction projects. This is an ambitious and intellectually rigorous effort to bring fresh perspectives to the field of construction project management. Radosavljevic and Bennett (2012, p. 77) posit that "projects have a number of interacting teams where outcomes in the future depend on the number of involved teams, the quality of relationships between interacting teams and their performance variability"

2.1.2 A Theory of Built Environment

The theory was developed in the 1980s and it addresses all aspects of human being lives including the buildings we are living in, the water and electricity distribution systems and transportation systems (i.e. the roads and bridges) we use to move from place to another. Built environment examples include roads, urban spaces, cities, walkways, buildings, parks among others (Bates et al., 2023).

2.1.3 Resource Mobilization Theory

The resource mobilization theory was developed by McCarthy and Zald (1977). According to this theory, social movement organizations (SMOs) can acquire the resources they need via producing resources themselves, collect the resources of their members, or obtain from external. The resource mobilization theory insists on optimal and effective utilization of resources. In addition, resource mobilization theorists investigate at how the resources of the organizations impact their activities.

2.2 Empirical Review

2.2.1 Project Planning and Government Construction Projects' Performance

Construction projects need to be managed properly and efficiently in order to have better success. Thus, project managers need to have applied knowledge and skills in all aspects of management, namely planning, organizing, staffing, directing, coordinating, reporting, and budgeting. In their empirical study of local NGOs in Mogadishu, Dahie et al., (2017), found a statstically significant and positive correlation between project success (i.e. dependent variable) and the three constructs or independent variables, namely; managing human resources, feasibility study, and planning activities. Quality is considered as an important aspect for any service or product offered to customers. There are quality key performances indicators (KPIs) which are used to measure compliance to quality, thus project managers need to increase their awareness to project management practices. A study by Irefin (2013) indicates a significant relationship between project management and project quality. The author recommends for considering management skills and strategies in planning and implementation of construction projects. Similarly, research findings by Akewushola et al. (2012) revealed that there was a relationship between project quality and business success and technical success.

2.2.2 Resource Scheduling and Government Construction Projects' Performance

Construction companies engage themselves in unique projects such as roads, bridges, houses, schools, hospitals, railways, seaports, airports, etc. they rely upon essential skills by project managers for their sustainable business success. As such project managers need to have knowledge and technical expertise so has manage projects in an effective and efficient manner. The research findings by Elmezain et al. (2021) of five construction firm Egypt revealed that project manager's skills (i.e. human, technical, political, and conceptual) are significantly and positively associated with project success. However, the research findings did not reveal any relationship between product managers' age and project success. There is a need of involving key stakeholders in course of designing and planning the project, monitoring, controlling and evaluation phases. Stakeholders' involvement must be done as early as possible, especially during initiation phase when conducting situational analysis. The overall regression analysis results by Njau and Omwenga (2019) revealed that resource planning, project monitoring, top management support, and communication all had a significant and positive effect on the effective implementation of construction projects in Kenya.

2.2.3 Project Communication and Government Construction Projects

Project communication plays a critical role in ensuring that information is shared accurately and timely among project managers, contractors, consultants, and government agencies, thus enhancing coordination and decision-making. As such, project managers need to possess strong communication and interpersonal skills to manage diverse teams and

stakeholders efficiently. Satoinong et al., (2024) reveal that effective communication significantly improves team integration and project performance in construction projects. Similarly, Doloi (2013) found that communication among stakeholders positively influences project success by reducing delays and improving coordination. There is a need to involve key stakeholders in all stages of the project lifecycle, including planning, implementation, monitoring, and evaluation, to ensure alignment and minimize conflicts. However, Sambasivan and Soon (2007) found that although communication contributes to project performance, other factors such as financial constraints and poor planning may have a greater impact on project delays.

2.2.4 Project Monitoring and Evaluation and Government Construction Projects

Good contract management, risk management, government regulations, early design, proper decision making, and site supervision are among the important factors for good project's performance Mwakio et al., (2020) research on public housing projects in Mombasa County, Kenya, found a significant positive correlation between project planning, funding, risk planning, and the overall performance of such initiatives. Mwakio et al. (2020, pp. 1560-1561) concluded that "inappropriate risk identification, assessment and ranking leads to project delays or failure in case a risk materialises, risk planning and allocation of resources to mitigate against risks reduces occurrence of project failure, and that inadequately monitoring and control of risks due to lack of competent staff to take corrective measure leads to project failure". While prior research has examined the connection between project management practices and outcomes in both private and public sectors, or explored emerging trends in construction performance models, other studies have concentrated on identifying key factors to enhance construction management in Tanzania. Some have also assessed how procurement methods affect construction project performance in the country. In contrast, this study focuses specifically on evaluating the performance of public construction projects across five regions in Tanzania.

III. METHODOLOGY

3.1 Research Design

A descriptive research design was employed in order to examine the relationship between project management practices and the performance of public construction projects in Tanzania, taking Arusha, Dar es Salaam, Dodoma, Morogooro and Pwani regions as our case studies. Kothari (2004, p. 37) posits that "descriptive research studies are those studies which are concerned with describing the characteristics of a particular individual, or of a group". Thus, the descriptive design enabled the researcher to collect data that were able to describe the phenomena.

3.2 Study Area

The study took place in the United Republic of Tanzania. The study five regions namely; Arusha, Dar es Salaam, Dodoma, Morogooro, and Pwani regions.

3.3 Target Population

The Universe of the study covered public construction projects in Arusha, Dar es Salaam, Dodoma, Morogooro and Pwani regions as its population. The sampling was selected by using convenient sampling. The population targeted in this study was public construction projects in those regions. The investigation involved the projects managers, supervisors, and the contractors.

3.4 Sample Design

The sampling frame for this study comprised of 105 respondents. The sample was acquired from the National Construction Council (NCC). Depending on the nature of the population, both simple random sampling and purposive sampling were used to select our sample which included the project manager, supervisor, and contractor from each unit of study. Random sampling were used to select units of study to be involved whereas purposive sampling were used because the study needs to involve people who very well informed and have a deeper understanding about the project (Kothari, 2005).

3.5 Data Collection Instrument

Closed and open-ended questions were used to get information from street vendors. These questionnaires were self-administered to the respondents. The method gave more freedoms to respondents so that they can be free to give their views and opinion regarding the subject of the investigation.

3.6 Validity and Reliability of the Instrument

Instruments' validity refers to the extent or degree to which that instrument measures what it is supposed to measure (Kimberlin, 2008). For the purpose of collecting valid and relevant data, the questionnaires were examined by

research experts, including key informants and research supervisor. Reliability of research instruments refers to the consistency of results of those instruments when administered by different persons (Mohamad et al., 2015). Reliability tests were carried out via questionnaires. This study used the internal consistency method so as to ensure reliability. Cronbach's alpha coefficient was calculated to determine the correlation between different items under study. We obtained a coefficient equal to 0.85, which was considered to be sufficient.

3.7 Data Collection Methods

In this study, both primary and secondary data were used and the information were obtained through interview guide and questionnaire.

3.8 Data Analysis and Presentation

In the first stage, we undertook data cleaning, classification, and coding in order to facilitate analysis. In the second stage, we used inferential and descriptive statistics to analyse the data to be collected. Analysis of data was done with the help of SPSS (Version 25.0). The study mainly collected quantitative data, and therefore we adopted quantitative analysis in order to attain the goals of the study. Descriptive (frequencies, percentages, mean and standard deviation) and inferential statistics (regression model) were adopted to analyse the data. The regression model was utilized to establish a significant difference between the independent and the dependent variables. Data will be presented using mainly tables.
Inferential statistics will be done through a regression model.

$Y_{i=} \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$ …….. Eq 3.1
Where:

Y = project performance
β_0 - constant term
X_1 - planning
X_2 -resource scheduling
X_3 - communication
X_4 - monitoring and evaluation
β_1, β_2, $\beta_3$and β_4 are the independent variables' coefficients
Ɛ - standard error term

3.9 Ethical Considerations

In order to guarantee that the research investigation was conducted according to the ethical standards and practices, the research obtained an introductory letter from the Institute. The researcher ensured the voluntary participation of all the respondents, and the data collection instruments, the questionnaires, did not contain personally identifiable information (PIN). Furthermore, the research notified the participants that the research is purely for academic reasons, and the results will be solely used for academic reasons.

IV. FINDINGS & DISCUSSIONS

4.1 Descriptive Analysis Results

This section presents descriptive analysis on the data which were obtained from the respondents in relationship with the dependent variable and independent variables. We used the mean and standard deviation to describe the data. In this regard, the strong approval of the statements by majority of the respondents was represented by the high mean whereas the degree of dispersion from the mean was represented by the standard deviation.

4.1.1 Planning and Government Construction Projects' Performance

In this aspect, this study sought to determine the effects of project planning on government construction projects' performance in the regions of Arusha, Dar es Salaam, Dodoma, Morogoro and Pwani.Various statements/information were included in the questionnaire to show the level of project planning on the selected projects. Table 1 summarizes the level of agreement of the respondents on aspects related to project planning regarding the performance of construction projects in those regions.

Table 1
Project Planning and Project Performance

Statements	Mean	Std. Dev.
Clearly setting deadlines for the project in the project's initial plan is critical to the performance of the projects	4.32	0.188
Clearly setting deliverables in the project's initial plan affects the overall delivery of the project	4.13	0.339
Clearly setting roles and responsibilities for the project team improves the performance of the project	4.51	0.034
Clear stakeholder needs assessment and analysis contributes to the success of the project	4.11	0.311
Having SMART project objectives assist in the successful delivery of the project	4.48	0.007

The results in Table 1 show that most of the interviewed participants approved that clearly setting roles and responsibilities for the project team improves the performance of the project as shown by the average score of 4.51 and minimum standard deviation of 0.034. It is evident that most of the respondents agreed that having SMART project objectives assist in the successful delivery of the project as shown by the mean score of 4.49 and very low standard deviation of 0.006. Clearly setting deadlines for the project in the project's initial plan is critical to the performance of the projects as indicated by a mean score of 4.33 with a standard deviation of 0.187. The respondent was more accepting that clearly setting deliverables in the project's initial plan affects the overall delivery of the project as shown by the average score of 4.14 and the level deviation of 0.338. Respondents agreed that clear stakeholder needs assessment and analysis contributes to the success of the project as indicated by a mean score of 4.12 with a standard deviation of 0.310. Therefore, it is clear that project planning practices were being done effectively in the regions of Arusha, Dar es Salaam, Dodoma, Morogoro and Pwani.

4.1.2 Resource Scheduling and Government Construction Projects' Performance

The researcher asked the participants to explain their level of consistency in the information related to how resource scheduling affects the performance of construction projects in Arusha, Dar es Salaam, Dodoma, Morogoro and the Coast. Several resource planning indicators were used, and the results are presented in Table 2.

Table 2
Resource Scheduling and Project Performance

Statements	Mean	Std. Dev.
Effective allocation and division of work among the available personnel affects project performance	3.17	1.966
Clearly setting roles for the individuals, teams, tasks, or departments improve the performance of the project	4.34	0.515
Clear budgetary allocation for all project activities helps in the overall management of project costs	4.38	0.997
Sufficient budgets for the project activities, teams, or departments improve project cost management	4.51	0.840
Proper allocation of project equipment facilitates smooth operations and successful project completion	4.59	0.684

The results in Table 2 indicate that some participants strongly agreed that the completion of the project was done without worrying about insufficient resources and that the project manager was able to predict cost as shown by the average score of 4.59 and 4.51, respectively. Moreover, more participants agreed that the project was properly managed and that there were sufficient funds planned to complete the project as indicated by an average score of 4.38 and 4.35, respectively. Lastly, the respondents were neutral on the statement that the cost of the project was estimated as shown by a mean of 3.17 and a standard deviation of 1.966. In general, it is clear from the research findings presented that proper resource planning was done as demonstrated by accurate cost estimates and on-time completion of project without any struggle.

4.1.3 Project Communication and Government Construction Projects' Performance

The study sought to establish the effect of communication on project performance. We used a combination of different indicators to determine the responses based on various statements as indicated in Table 3.

Table 3
Communication and Project Performance

Statements	Mean	Std. Dev.
The formality of communication between the project teams contributes to the project success	4.20	0.789
There is often adequate level of communication in overall project matters	3.95	0.745
Adequate and timely feedback to contractors, project managers, and supervisors is a major boost in project performance	4.08	0.806
Information management contributes to the overall success of the project	4.12	0.595
Clarity in all communications influence the overall project success	4.07	0.738

The research results as presented in Table 3 indicated that majority of participants strongly agreed that the formality of communication contributes to the project success. as depicted by mean score 4.20 and a standard deviation of 0.789. Respondent also agreed Information management contributes to the overall success of the project as shown by mean score of 4.12. Also, respondents agreed that adequate and timely feedback to contractors, project managers, and supervisors is a major boost in project performance as indicated by mean score of 4.08. Alternatively, clarity in all communications influences the overall project success as shown by mean score of 4.07. Furthermore, respondent agreed that there is often adequate level of communication in overall project matters as depicted by mean score of 3.95.

4.1.4 Project Monitoring and Evaluation and Government Construction Projects' Performance

The study aimed to determine the effect of project monitoring and evaluation on project performance in five regions in Tanzania. The results were presented in Table 4.

Table 4

Project Monitoring and Evaluation and Project Performance

Statements	Mean	Std. Dev.
The use of the appropriate monitoring tools contributes to effective project time and cost management	4.56	0.198
Sufficient budgetary allocation for the monitoring and evaluation improves the project performance	4.59	0.127
Continuous evaluation can improve the performance of a project	4.70	0.455
Skilled monitoring and evaluation personnel affect the quality of the M&E results	3.17	0.454

The results in the Table 4 indicate that majority of the respondents agreed that continuous evaluation can improve the performance of a project as depicted by mean score of 4.70 and a standard deviation of 0.455; Sufficient budgetary allocation for the monitoring and evaluation improves the project performance as shown by mean score of 4.59 and low standard deviation of 0.127. The use of the appropriate monitoring tools contributes to effective project time and cost management as illustrated by mean score of 4.56 and a standard deviation of 0.198. Further, respondents were neutral that skilled monitoring and evaluation personnel affect the quality of the M&E results as illustrated by mean score of 3.17 and a standard deviation of 0.454. This is an indication that on average projects are monitored and evaluated as plan.

4.1.6 Government Construction Projects' Performance

The study sought to establish the level of government construction projects' performance in the four regions in Tanzania. Table 5 summarizes participants' level of agreement on various statements presented to them.

Table 5

Projects Performance

Statements	Mean	Std. Dev.
Level of quality service delivery is an indicator of project performance	4.76	0.157
Timely delivery of project deliverables determines the performance of a project	4.66	0.230
Lack of reworks or work revisions is an important determinant of overall satisfaction with the project	4.34	0.043
Delivery of projects within budget signal successful projects	4.32	0.033

Findings in Table 5 illustrates that greater part of the respondents agreed that the level of quality service delivery is an indicator of project performance as depicted by mean score 4.76 and a standard deviation of 0.157. Further, respondent also strongly agreed that timely delivery of project deliverables determines the performance of a project as shown by mean score of 4.66 and a standard deviation of 0.230. Furthermore, respondents approved that lack of reworks or work revisions is an important determinant of overall satisfaction with the project as illustrated by mean score of 4.34 and standard deviation of 0.043. Also, respondents affirmed that delivery of projects within budget signal successful projects s illustrated by mean score of 4.32 and standard deviation of 0.033.

4.2 Inferential Analysis

This section investigates the correlation between variables, presents analysis of variance, the model summary, and the coefficients of the independent variables.

4.2.1 Correlation Analysis

The study was undertaken to determine the correlation between the independent variables (project planning, resource scheduling, communication, and project monitoring and evaluation) and the dependent variable (project

performance). We calculated the correlation (strength) between the study variables and their findings by using the Pearson's coefficient of correlation (r). The findings are presented in Table 6.

Table 6
Correlation Analysis

		Performance construction projects	Project Planning	Resource Scheduling	Communication	Project Monitoring & Evaluation
Performance construction projects	Pearson Correlation	1				
	Sig. (2-tailed)					
Project Planning	Pearson Correlation	.533	1			
	Sig. (2-tailed)	.0032				
Resource Scheduling	Pearson Correlation	.6143	.3421	1		
	Sig. (2-tailed)	.0021	.0014			
Communication	Pearson Correlation	.7470	.1240	.0621	1	
	Sig. (2-tailed)	.0043	.0120	.0043		
Project Monitoring & Evaluation	Pearson Correlation	.5310	.3420	.0000	.1660	
	Sig. (2-tailed)	.0172	.0031	1.000	.0031	1

From the study findings in Table 6, performance of construction projects and project planning had a positive correlation as shown by a correlation of 0.533. It was also clear that there was a positive correlation between performance of construction projects and resource scheduling with a correlation of 0.6143. The performance of construction projects and communication had a positive correlation with a correlation value of 0.747 while a positive correlation was also found between performance of construction projects and project monitoring and evaluation with a correlation value of 0.5310.

4.2.2 Regression Analysis

The multiple regression analysis was conducted in order to determine the change in the dependent variable (i.e. performance of construction projects) because of change in the four independent variables (i.e. project planning, communication, resource scheduling, and project monitoring and evaluation).

4.3 Model Summary

The model summary was used to present the coefficient of determination, which described the extent to which the variation in the dependent variable could be explained by changes in the independent variables. It can also be expressed as the percentage of variance in the dependent variable (performance of construction projects) that is explained by all four independent variables in the study (project planning, communication, resource scheduling, and project monitoring and evaluation). The results were presented in Table 7.

Table 7
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.790[a]	.633	.566	.50129

a. Predictors: (Constant), Time management, Material Usage Planning , Human Resource Planning , Financial Resource Planning

The four independent variables (project planning, communication, resource scheduling, and project monitoring and evaluation) contributes to 56.6% on performance of construction projects as represented by the adjusted R^2. Subsequently, the other factors which were not considered in this study contribute to 43.4% on performance of projects. The coefficient of correlation value of 0.790 indicates that there was a positive strong correlation between independent and dependent variables.

4.4 Analysis of Variance

The study sought to establish the overall significance. The results were presented in the Table 8.

Table 8
Analysis of Variance (ANOVA)

Source of Variation	Sum of Squares (SS)	df	Mean Square (MS)	F	Sig. (p-value)
Regression	142.771	4	35.69	49.7728	0.000
Residual (Error)	14.645	101	0.145		
Total	157.416	105			

The findings in the Table 8 indicate that the overall model was significant. The overall model was significant as shown by a calculated F statistic of 49.7728 (p-value=0.000). Thus, the critical F statistic was less than the calculated F statistics. The findings indicated that the variables: project planning, communication, resource scheduling, and project monitoring and evaluation are good predictors of performance of construction projects.

4.5 Regression Coefficients

The study coefficients of independent variables are presented in Table 9. The coefficients indicate the direction and change of dependent variable because of change in the independent variables.

Table 9
Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std. Error	Beta		
Constant	1.318	1.352		1.624	0.368
Project Planning	0.568	0.320	0.173	4.343	.0287
Resource Scheduling	0.741	0.166	0.211	3.533	.0296
Communication	0.795	0.332	0.068	3.543	.0213
Project Monitoring & Evaluation	0.630	0.255	0.149	3.459	.0258

As per the SPSS generated Table 9, the equation

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$ becomes:

$Y = 1.318 + 0.568X_1 + 0.795X_2 + 0.630X_3 + 0.741X_4$

Using the regression equation above and holding all factors constant (project planning, communication, resource scheduling, and project monitoring and evaluation) performance of construction projects will be 1.318. The findings in Table 9 indicate an increase in project planning will significantly increase project performance. The study concurs with a study by Ngundo and James (2018) who faound that project planning had a significant positive influence in the implementation of government projects in Machakos County, in Kenya.

The results further indicate that an increase in resource scheduling will significantly lead to an increase in project performance. The study is consistent with a study by Evas (2023) who found that there was a significant and positive relationship between resource planning and project performance. The study found a positive correlation between financial resource planning (i.e. forecasting, budgeting, and plans for money) and material resource planning (i.e. order placement, planned procurement and monitoring of placed orders) and project performance. The findings in Table 9 show that an increase in communication will lead to an increase in project performance. The study findings affirms the findings of a study by Akintelu et al. (2023) who found that a project communication plan had a strong positive relationship with project delivery and success. Thus, it is recommended that project commmucation plan need to be in place and well monitored and controlled. The results in Table 9 also indicate that an increase in project monitoring and evaluation will lead to an increase in project performance. The study findings concur with that of Jahaf (2021) that revealed that there was a significant positive relationship between monitoring & evaluation skills and the performance of the projects.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

The study aimed at finding out effect of project management practices on performance of government construction projects in Arusha, Dar es Salaam, Dodoma, Morogoro and Pwani regions, Tanzannia. Based on the study findings we made the following conclusions. The study found that there is a need for government organisations and institutions to have proper project management that aims at improving performance of construction projects. The study concluded that project management positively and significantly contributes to performance of the construction projects.

The study found that resource scheduling (including effective allocation of available personnel, clear budgetary allocation for all project activities, and proper allocation of project equipment) play an influential role in the performance of construction projects. The study concludes that resource scheduling has a positive and significant effect on performance of construction projects in Tanzania. The study results indicated that project communication management had positive and significant effect on project performance in the construction industry in Tanzania. It can be concluded that when a firm has efficient communication system and proper communication management plan, it will increase chances of performing better. Finally, the study findings revealed that there was significant positive relationship between project monitoring and evaluation with the performance of the projects. It can be concluded that when a firm has monitoring and evaluation mechanism in place, it will increase the chance of rectifying deviations and hence have effective performance.

5.2 Recommendations

The study recommends that firms should have a project management plan which will be initiated by the project managers to be used as a project tool/devise in the execution and monitoring phases. It is expected that the plan will define the project's goals and objectives based on the organization's mission and vision statement. The project plan should also outline all the resource requirements for the project and identify the risks and opportunities in the project. The study also suggests that project managers should define the entire project process and create a communication matrix in project planning so that it is easy for all stakeholders to understand what is required from them. Communication plans should be considered as an important tool in construction companies in Tanzania for improving project performance. A formal communication plan should be developed to determine how stakeholder feedback and actions will be managed and improved to complete projects on time.

The study further suggests that in order for all stakeholders to feel the ownership of the project, they should be involved and consulted with the project management team at all stages of project implementation. Therefore, stakeholders should participate in project decision-making, project design and project monitoring and evaluation. The project manager should promote project ownership and stakeholder sustainability to bring about positive project performance. The study recommended that all project managers must maintain a balance between overstaffing and understaffing and make sure that they have a sufficient number of project team members. They need to have manageable amount of materials and equipment for use during project implementation/execution. The study also suggest that government entities must continually assess their financial situation in order to optimally utilize financial resource in an efficient manner.

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