

PROJECT SCOPE DEFINITION AND PERFORMANCE OF GOVERNMENT CONSTRUCTION PROJECTS IN KENYA

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ABSTRACT

Background: Construction project failures are increasingly reported around the globe and achieving success in construction projects is becoming extremely difficult in today's turbulent environment. Despite the current developments in project management processes and tools, the project success rate has failed to significantly improve due to poor scope definition which have to lead to cost overruns and schedule overruns. The purpose of this study was to examine the relationship between scope definition and performance of government construction projects in Kenya.

Methodology: The study was pegged on the theory of constraints. The study adopted a combination of cross-section design and descriptive design. The target population was the construction projects undertaken by the key government agencies within the ministry of transport, infrastructure, housing, and urban development. There were 320 construction projects a sample of 178 projects was used. The unit of analysis was the construction projects while the unit of observation was the project managers. The primary data was collected using a semi-structured questionnaire and it was analyzed using both descriptive and inferential statistics using SPSS version 24.

Findings: The coefficient of determination showed that scope definition explained 38.4 % variation in the performance of government construction projects. The study found that scope definition had a positive and significant effect on project performance.

Recommendations: The study recommends that project managers ought to embrace scope definition at the initial stages of the project by deriving well-articulated project objectives, clear project deliverables and scope creep mitigation measures this will ensure that the project management team has a pathway of what needs to be achieved and this reduces the cases of schedule and cost overruns in a project.

Keywords: *Scope definition, government construction projects, Project performance*

1.1 BACKGROUND OF THE STUDY

The construction industry has been growing at a steady pace globally. According to Townsend (2018), global construction grows at a rate of USD 0.3 trillion annually. Hence the growth is projected at USD 10.3 trillion in 2018 compared to USD 7.4 Trillion in 2010. Globally the construction industry suffers from many problems and complex issues in performance such as cost, time, and safety (Abukuse & Kisimbii, 2019). The construction projects in Kenya have been experiencing delays, due to inadequate pre-planning, and poor scope definition which has led to cost overruns and schedule overruns according to the economic survey conducted by the Kenya National Bureau of Statistics (2018) the value of construction projects completed in 2018 decreased from Ksh 3.8 billion in 2017 to 2.3 billion. A study conducted by Verzuh (2015) found that a major contribution to unsuccessful projects is the lack of understanding or defining project and product scope at the start of the project. A properly defined and managed scope leads to delivering a quality product, at an agreed cost and within specified schedules to the stakeholders. According to Fageha and Aibinu (2017), a clear project scope definition can alleviate the potential for cost overruns while inadequate project planning and poor scope definition can lead to expensive changes, delays, rework, and cost overruns, schedule overruns, and project failure. Project scope definition is instrumental in enhancing the success of the project, but this is possible when the project team were involved in the definition process including deriving the objectives and deliverables (Lukhele et al., 2021). A properly defined and managed scope leads to delivering a quality product, in agreed cost and within specified schedules to the stakeholders (Mirza et al., 2013). Hence studying the influence of scope definition on the project performance is essential in unlocking the success of government construction projects in Kenya.

1.2 STATEMENT OF THE PROBLEM

The construction industry has experienced exponential growth and it has a big impact on the economy of all countries (Emmett & Langston, 2019). In spite of the high importance of the sector, construction projects failures are increasingly reported around the globe with 30% of projects been cancelled midstream, while 50% of the completed projects end up to 190% over budget and 220% late. The construction projects have been experiencing delays, due to inadequate pre-planning, and poor scope definition which have led to cost overruns and schedule overruns, according to the economic survey conducted by Kenya National Bureau of statistics (2018) the value of construction projects completed in 2018 decreased from ksh 3.8 billion in 2017 to 2.3 billion and 52% of the projects were not completed within the projected budget and 33% were not completed within the planned schedule while 22% of the projects had errors identified during the project initiation phase yet they were implemented. Mkuni (2016) conducted a study on the role of project initiation on completion of projects and established that scope definition influenced project performance. According to Fageha and Aibinu (2017), a clear project scope definition can alleviate the potential for cost overruns while inadequate project planning and poor scope definition can lead to expensive changes, delays, rework, and cost overruns, schedule overruns, and project failure. Project scope definition is instrumental in enhancing the success of the project. Despite the importance of the scope definition on project success, few studies have sufficiently focused on influence of scope definition on project performance. Hence this study aimed at bridging the existing gaps by examining the influence of scope definition on performance of government construction projects in Kenya.

1.3 SPECIFIC OBJECTIVES

- i. To determine the relationship between scope definition and performance of government construction projects in Kenya.
- ii. To examine the moderating effect of the resource mobilization on the relationship between scope definition and performance of government construction projects in Kenya.

2.1 THEORETICAL REVIEW

According to Bwisa (2015), a theoretical framework is a logical structure of meaning that guides the development of a study by providing the shape and support while a theoretical framework is a group of ideas providing guidance to a research project as it interrelates theories involved in the research question. This study was guided by the theory of Constraints.

2.1.1 Theory of Constraints

The theory of constraints was developed by Guru Eliyahu M. Goldratt in 1984. Eliyahu developed the theory of constraints to help organizations decide what to change, find a desirable new condition and how to trigger the change. It is used to establish how managers can effectively manage organizations based on the assumptions of system thinking and constraint management (Quesado & Branco, 2017). Projects are difficult to manage because they involve uncertainty, and involve three different and opposing commitments i.e. due date, budget, and content (Gupta & Boyd, 2008). The constraints of projects are; scope (a measure of quality), cost and time - have their respective effects on projects' performance but since these elements have some correlation, one constraint bears an effect on the other two, eventually affecting projects deliverables to a greater extent (Orouji, 2016). Project managers should take time to define project scope by defining project boundaries, listing the features and concluding the set of project deliverables. According to Verzuh (2015) inadequate definition of the scope at the start of the project led to project failure. A properly defined and managed scope leads to delivering a quality product, in agreed cost and within specified schedules to the stake-holders.

2.2 EMPIRICAL REVIEW

Banda Jr and Pretorius (2016) conducted a study on scope definition and performance of development projects in Malawi. The study employed mixed methods. 12 projects were sampled using purposive sampling. Interview schedules and questionnaires were used to obtain data. The study findings revealed that there was a significant correlation between scope definition and Successful rollout of rural roads construction projects in Malawi. Well-defined projects recorded good performance and poorly-defined projects showed poor performance. Mirza et al. (2013) analyzed the significance of scope in project success. The methodology used entailed review of existing literature. According to the study, many projects start with good ideas, huge investments and great efforts. However, most of them do not achieve much success. A major contribution to unsuccessful projects is the lack of understanding or defining project and product scope at the start of the project. A properly defined and managed scope leads to delivering a quality product, in agreed cost and within specified schedules to the stakeholders.

2.3 CONCEPTUAL FRAMEWORK

According to Gregory (2020) a conceptual framework is a system of concepts, assumptions, expectations, beliefs and theories that support and inform research.

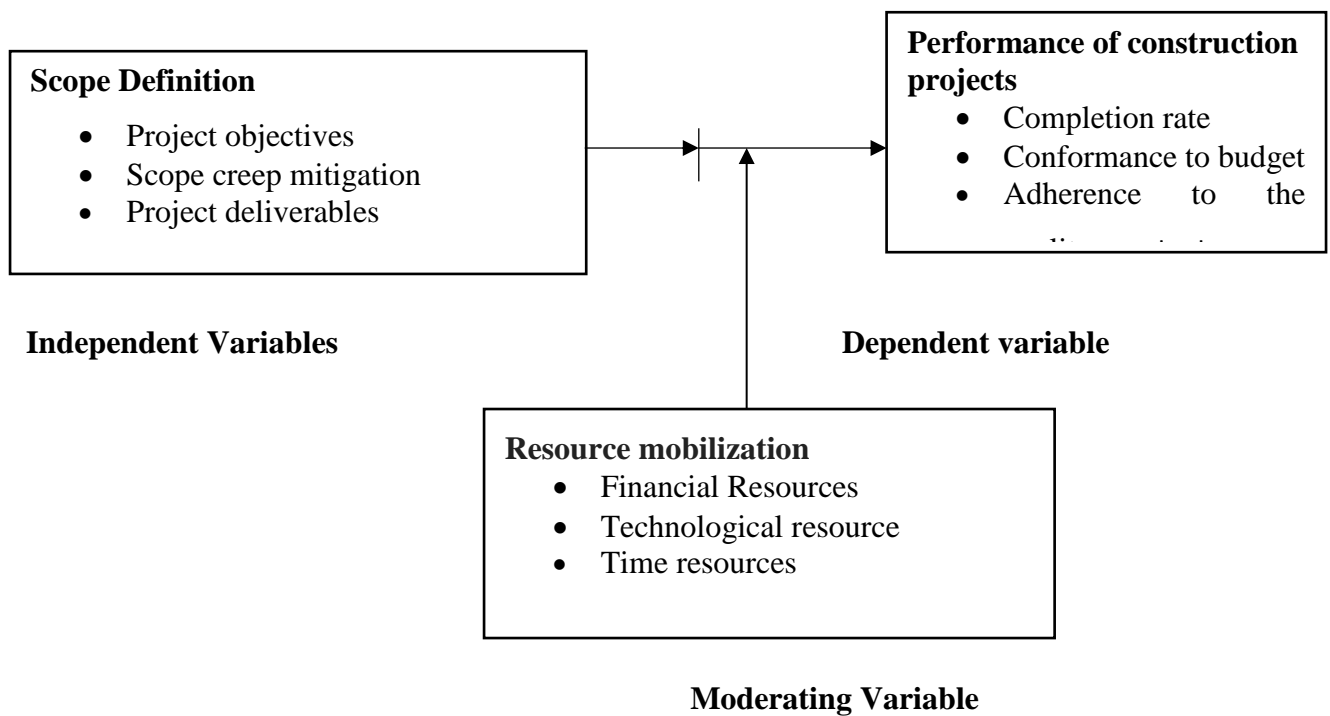


Figure: 1 Conceptual framework

3.0 RESEARCH METHODOLOGY

The study adopted a combination of descriptive research design and a cross sectional survey design and positivism research philosophy. The target population was the construction projects that had been implemented by the key government agencies within the Ministry of Transport, Infrastructure, and Housing and Urban Development from 2015 to 2020. There were 320 construction projects. The sample size was 178 construction projects. The unit of analysis was the construction projects that had been completed by the key government agencies in the ministry of transport and Infrastructure, in the last five years. The unit of observation were the project managers, who were purposively selected as respondents since they represent the three key interests on a project namely; business interest, supplier interest and user interests. Data was collected using questionnaires. Data was analyzed by using descriptive and inferential statistics.

4.0 RESEARCH RESULTS AND DISCUSSION

The study sought to determine the effect of scope definition on performance of government construction project in Kenya. Specifically, the study focused on project objectives, scope creep mitigation and project deliverables.

4.1 REGRESSION ANALYSIS

A linear regression model was used to explain the relationship between scope definition and performance of construction projects. The output was presented in form of a model summary, the ANOVA results and the regression coefficient.

4.1.1 Model Summary

As the results portray, the R-square for the model was 0.384. This implies that through project scope definition, the variation of project performance will be up to 38.4%. This shows that when project scope definition is embraced, a positive increase in the performance of the construction projects will be achieved.

Table: 1 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.620 ^a	.384	.380	.60908

4.1.2 ANOVA

As the results portray, the F-statistic for the variable is 96.734, at a significant level of $0.000 < 0.05$. This is an indication that the model is statistically significant in predicting the relationship between project scope definition and project performance. It is also an indication that there could a significant relationship between variables.

Table 2: ANOVA Results

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	35.886	1	35.886	96.734	.000 ^b
Residual	57.501	155	.371		
Total	93.387	156			

4.1.3 Beta Coefficients

As the results reveal, the regression coefficient for the project scope definition is 0.793. This implies that a unit change in the project scope definition would influence the performance of the construction projects by 0.793 units. The t-value for the variable is $9.835 > 2.0$ while the P-value is $0.000 < 0.05$. This implies that the project scope definition has a significant influence on the performance of construction projects in Kenya. The specific model was; where Y was project performance and X1 was scope definition

$$Y = 0.497 + 0.793X1$$

Table 3: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.497	.269		1.849	.066
Project Scope Definition	.793	.081	.620	9.835	.000

4.1.4 Moderation Effect of Resource Mobilization

The regression coefficient after moderation in table 4 show the interaction scope definition and resource mobilization. The Beta coefficient for the interaction effect of project scope definition and resource mobilization was 0.049 at a significant level of 0.006 and with a t-value of 2.767. This implies resource mobilization has a significant moderating effect on the relationship between project scope definition and performance of construction projects in Kenya.

$$Y = 0.786 + 0.049X_1Z$$

Table 4: Moderation Effect of resource Mobilization

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	.786	.267		2.945	.004
Project Scope Definition*Resource Mobilization	.049	.018	.184	2.767	.006

5.0 CONCLUSION OF THE STUDY

The alignment of the project objectives and ensuring the existence of any creep in the project scope is effectively mitigated are some of the aspects of project scope definition. The study concluded that the project scope definition was effectively carried out in most of the projects where the objectives were derived early before the projects were implemented, and the deliverables aligned with the objectives. The study concluded that the project scope definition played a significant and positive role in promoting the performance of construction projects. The results further revealed that the moderation effect of resource mobilization and project scope definition had a significant and positive impact on the performance of construction projects in Kenya.

6.0 RECOMMENDATION OF THE STUDY

The project managers and other heads of the construction projects have the duty of ensuring that the projects are implemented as per the planned scope. To ensure this, they ought to embrace definition of project scope right at the initial stages of the project by deriving well-articulated project objectives and setting clear derivable which align to the objectives of the project. By defining the project scope, it implies that the project management have a framework and pathway of what the project ought to achieve, hence making it easier to successfully implement the project.

The study recommends that stakeholders should be involved in the definition of project and product scope to ensure they requirements and expectations are put into consideration when defining the scope this will ensure project acceptance by the stakeholders and reduces cases of scope creep.

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