
INFLUENCE OF THE CRITICAL SUCCESS FACTORS ON COMPLETION OF ROAD PROJECTS IN KENYA A CASE OF KENYA NATIONAL HIGHWAYS AUTHORITY PROJECTS

NYANJONG ERICK¹, DR WERE SUSAN²

^{1,2} Jomo Kenyatta University of Science and Technology

Abstract

The purpose of the study was to determine the influence of the critical success factors on completion of road construction projects in Kenya case of Kenya National Highways Authority road projects. The specific objectives of the study were: to identify the influence of stakeholders' involvement on completion of road construction projects, to identify the influence of workers' competency on completion of road construction projects, to identify the influence of contractor's commitment on successful completion of road construction projects and to identify the influence of project planning on completion of road construction projects. This study was anchored on the following theories: Skills theory, theory of Constraints, Contingency theory, Theory of leadership and Systems theory. The literature captures various delay and success factors of the various projects for construction of some roads and buildings as per the objectives. This study employed a case study design approach. The target population in this study was KeNHA and KURA road construction projects which totals to 184. The study used a sample of 126 using stratified sampling technique from the identified study sample size of population. The researcher used questionnaire to collect primary data. The data obtained for this research was analyzed using the statistical package for social science. Data presentations were made in pie charts, bar graphs, tables, line graph and diagrams. A regression model was applied to determine the relative importance of each of the variables with respect to completion of the road construction projects. The study found that there was a strong positive relationship between stakeholders' involvement and completion of road construction projects. The study also established that that increase in workers' competency would positively affect completion of road construction projects. The study revealed that was a positive relationship between contractor's commitment and completion of road construction projects. The study found that increase in project planning would positively affect completion of road construction projects. There is need to involve the stakeholders in road construction projects as the study revealed that Stakeholders' Involvement positively affect completion of road construction projects. The study recommends that competent employees who are qualified on road construction projects should be employed. This is because the study has established a positive relationship between worker's competency and the completion of road construction projects. There is need to enhance the commitment of contractors of road construction projects. This is because the study has revealed a positive relationship between Contractor's Commitment and Completion of Road Construction Projects.

Keywords: Critical success factors, Project report, Success on a project, Transport corridor and Vision 2030.

Introduction

Many road construction projects in Kenya complete with excessive overruns in cost, disturbed schedules and with compromised quality. According to Ramanathan, Narayanan and Idrus (2012), Construction delay can be explained as to execute later than intended planned, or particular period, or later than specific time that all the concerned parties agreed for construction project, but generally project delay is defined as the time overruns either beyond the completion date specified in the contract, or beyond the date that the parties agreed upon for delivery of the project. A delay in a construction project may cause losses, or negatively affect some or all of the project parties. The effects of delay may include time overrun, cost overrun, disputes, arbitration, litigation, and total abandonment (Hussin & Omran, 2011). Some studies directly examine delays and attempt to identify their causes as well as ways to avoid them (Chism & Armstrong, 2010; Ahmed, Azhar, Castillo & Kappagantulla, 2012).

Generally, in any project the evaluation dimensions correspond to the traditional constraints of time, cost, and quality parameters. Tung (2016) defined project success as results better than expected or normally observed in terms of cost, schedule, quality, safety, and participant satisfaction. Once the influence of the critical success factors are identified, the opportunities for improving project performance within the public sector delivery of Kenyan building construction projects are discussed (Krishnan & Shu, 2011). The research will determine the relevance and applicability of these factors for the Kenyan construction Industry, culture, political system and environmental issues. In the Kenyan construction industry, project performance is traditionally evaluated using schedule, cost and quality performance, also known as the “iron triangle” (Kiran, 2012). It can be demonstrated that there is very little achievement towards the implementation of the Vision 2030 Development program as highlighted in the Economic long term development plan (2008 -2012), where only 15% percent of the total allocated projects in the plan have been implemented, with 33% on-going and 52 % in preliminary stages.

Critical success factors (CSFs) are elements that are required for an organization or project to meet its target and goals. They are critical factors or activities required to ensure the success of an organization (Weiss and Potts, 2012). According to Al-Rashid and Kartam (2014), critical success factors are those few things that must go well to ensure success for a manager in an organization, and, therefore, they represent those managerial areas, that must be given special and continual attention to achieve high performance. CSFs constitute vital subjects that have to be addressed in an organization's operating procedures for its future success. The critical factors to project success to be considered in this study were: Contractor's commitment to a project, Engineer's abilities, project planning and communication between the project parties.

Gaba (2015) indicates that research into critical success factors has been undertaken since 1967, and demonstrates the development of information on critical success factors based on empirical and theoretical studies. This proposal steps up on previous studies by investigating the influence of the success and delay factors identified. This study investigates road construction project success and delay factors in a mutual concept to examine how the critical success factors are influential in preventing construction delay and incompleteness

(Chan & Kumaraswamy, 2016). This will provide organizations involved in road construction projects with the basis on how to prevent acts that causes project to complete unsuccessfully. This research focuses on building construction projects in Kenya, which were assessed for delay factors, and examines the correlation between the critical success and delay factors identified, allowing the ranking of success factors for these construction projects. During the last four decades a number of studies have investigated factors which aid successful completion of projects, particularly those which affect project success more than others (Alaghbari, 2014). Critical success factors thus are, for any business, the limited number of areas in which results, if they are satisfactory, will ensure competitive performance. The concept of success in a construction project can be evaluated only when the evaluation dimensions are adequately defined (Damodaran, 2011).

The Kenya National Highway Authority is an autonomous road agency whose mandate is to manage, develop, rehabilitate, and maintain roads in Kenya of categories A, B and C. The head offices of KeNHA are located at BlueShield Towers, Upper Hill Nairobi (Nyandika & Ngugi, 2014). According to the Ministry of Roads, Kenya has a road network of about 177,800 km out of which only 63,575 km is classified. The classified road network has increased from 41,800 km at independence to 63,575 km today, a development rate of less than 600 km per annum. During the same period, the paved road length grew from 1,811 km to 9,273 km. It is presently estimated that about 70% (44,100 km) of the classified road network is in good condition and is maintainable while the remaining 30% (18,900 km) requires rehabilitation or reconstruction (Maina, 2015).

According to KIPRA (2015) report, KRB precisely disburses 30% annually to KeNHA of the entire fund allocated to the MoW. Many construction projects undergo cost overrun and thereby exceeding the planned contract sum. In Kenya, the number of public roads construction projects is increasing from time to time. However, it becomes difficult to complete projects in the allocated cost budget. Taking into account the scarce financial resources of the country, cost overrun is one of the major problems in Kenya. KeNHA is responsible for implementation of various mega projects of road construction and other civil works. These include: Thika Super highway constructed at a contract amount of 34.4 billion (2012), Northern bypass road project done at a cost of 4.5 billion and Eastern bypass done at a cost of 4 billion. Projects which are yet to be completed include: LAPSSET corridor project expected to use 126 billion to completion, Nairobi Outer Ring road expected to cost 7.4 billion (Supervised by KURA) and The Standard Gauge Railway that is expected to use 380 billion (RoK, 2015).

The Kenya Roads Act 2015 called for the merging of KURA and KeNHA (DFID, 2015). This research will treat projects undertaken by KURA and KeNHA to be under the same agency. Through the Kenya Roads Bill 2015 more funds were allocated to the counties and the agency as well to maintain roads in their corresponding jurisdiction. KeNHA therefore is to get 40 percent of the total collections under the fuel levy while counties to be allocated 15 per cent (MPN&D, 2016).

Statement of the Problem

Road projects in Kenya are face problems of delays in their life cycle of implementation therefore not successfully completed. According to Maina (2016), several construction projects do not complete within the planned budget, within the stipulated schedules and failing to meet the desired quality due to factors such as time inefficiency, inadequate funds and lack of advance implementation equipment. KNBS (2015) report indicate that were many projects which did not complete as expected due to client related obstacles, material unavailability, poor infrastructure, financial inadequacy and poor management abilities.

Statistics from the CBK (2015) indicate that KeNHA has been experiencing cost overruns in its Roads projects. For instance, in the construction of Thika Super Highway, the cost escalated from 26.44 billion to 34.45 billion (KIPRA, 2015). Review of the Kenya Medium-Term Plan for 2008-2012 showed that a total of 405 projects were not implemented and were subsequently dragged. In KMTP 2008-2012, only 283 projects out of a total of 808 (35% of the total), were implemented (Kenya Medium-Term Plan for 2008-2012). According to RoK (2015) report, it has been observed that cost overruns lead to stagnation of economic development and the realization of the vision 2030.

Local researchers have not focused on the critical success factors to the successful completion of these road projects. Nyandika and Ngugi (2014) did a study on effects of total quality management on performance of Companies in Kenya a case study of Inter Build Company Limited. He found that human resource management and resource management affects performance of the building company to a great extent. Maina, (2016) did a survey on challenges in the management of procurement services within Kenya Urban Roads Authority. She found that political interferences and inadequate allocations of funds hinder completion of KURA activities even though the authority fully implements procurement policies. Waihenya (2014) did a study on analysis of challenges facing project implementation a case study of Ministry of Roads Projects. It is against this background that this study sought to fill the existing research gap by establishing the critical factors to completion of road projects in Kenyan construction sector and further study their influence on the successful completion. The study was therefore motivated to fill knowledge gap by examining the influence of the critical success factors on completion of road construction projects in Kenya.

Objectives of the Study

The purpose of the study was to determine the influence of the critical success factors on completion of road construction projects in Kenya case of Kenya National Highways Authority road projects. The specific objectives of the study are:

- i. To establish the influence of stakeholders' involvement on completion of road construction projects.
- ii. To assess the influence of workers' competency on completion of road construction projects.
- iii. To examine the influence of contractor's commitment on successful completion of road construction projects.

- iv. To find out the influence of project planning on completion of road construction projects.

Theoretical Review

This part tends to highlight the various theories which are relevant to the study. According to Seddon (2008), theories are perspectives over which people make sense of their world experiences. Theory is a systematic grouping of interdependent concepts (mental images of anything formed by generalization from particulars) and principles (are generalizations or hypotheses that are tested for accuracy and appear to be true to reflect or explain reality) that give a framework to, or tie together, a significant area of knowledge. According to Holland, Light and Gibson (2009), theoretical frameworks are formulated to elaborate, predict, and understand phenomena and, in many cases, to challenge and extend existing knowledge within the limits of critical bounding assumptions. It is the structure that approves or disregards theories to a study and also expounds the need for the study. This study is based on the following theories: Skills theory, theory of Constraints, Contingency theory, Theory of leadership and Systems theory.

Skills Theory

According to Chai and Yusof (2013) seminal article on the skills approach to leadership, argued that effective leadership required three skills: technical, human and conceptual skills. Technical skill is competency, in relation to a specified knowledge, a pertaining a given area of expertise. To possess technical skills means that the individual is has abilities and have high competency with respect to the specified tasks of a project, the organization's operating procedures and their products and services (Diego, 2012). Technical skills are greatly necessary for supervisory management levels and least important for top managers. For this study, in a construction field, the engineer's technical abilities influence a lot of implementation decision that affect the project overall goals and objectives.

Human Skills are proficiency in working with others based on individual knowledge on how to relate well with people, how they operate in association, effective communication, their behaviors, attitudes and emotions (Zhu & Li, 2014). These are the abilities to insert influence on other project team members, colleagues and subordinates in the attainment of the project goals and objectives. The skill allows a project leader to influence team members to work mutually in synergy to meet project targets. Human skill competency means that project leaders understand their perspectives of different issues of the project and becomes aware of other people's views and perspectives too. It follows therefore that leaders with high interpersonal skills are to adapt their ideas to people's ideas, this enable and organization achieve their purpose faster and effectively. The project leaders with such skills are highly sentimental and show empathy to what motivates the other people in the project, create an environment of reliability and trust. Interpersonal skills are required management levels (Chan & Kumaraswamy, 2016).

According to Kumaraswamy (2011) conceptual skills make brainstorm into any situation and come up with a more desirable decision and ideas. Those who possess high levels of conceptual skills think through ideas amicably and relate it in the general perspective of the

project objectives and enhancing effectiveness in all activities (Damodaran, 2011). This theory supports project planning variable by application of the skills which are applied in any road project. Conceptual skills enable project leaders crack abstract situations and make sense of abstract ideas for their colleagues and other project team members. This ability is more relevant for top level management, less important for middle managers and supervisory managers.

Theory of Constraints

According to Chaddad and Cook (2004), a constraint, in project management, is any restriction that defines the confines of the project. Theory of Constraints is a procedure for identifying the most vital limiting factor (i.e. constraint) that dictates whether a goal/objective will be attained or not and then procedurally improving that constraint it no longer becomes a limiting factor (Al-Hazmi, 2010). Scott (2014) pioneered the Theory of Constraints (TOC) and broadcasted it globally in a 1984 novel known as *The Goal*. From then, TOC has developed widely and presently it is a critical factor in the best practices of project management. One principal feature of TOC is that it naturally ranks improvement activities. The highest ranking is always the current constraint. This theory supports workers' competency variable. The Theory of Constraints uses scientific approach in improving the constraints. It assumes that every complicated system consists of multiple interrelated tasks/activities, one of which acts as a constraint to the whole system, that is to say the constraint task is the weakest link in the entire mechanism.

Theory of Leadership

Stuckenbruck (2016) categorized that the functions of a leader into managerial and emotional functions. He stated that the managerial purpose can also be known as Cognitive functions which included giving directions and limiting options and creating constraints in a project. He gave the second category as Cathetic function which included the emotional aspects of objective-setting and creating trust and obligations to achieve the foresaid objective. This represent the same view of Aristotle's pathos, ethos, and logos, which suggested that a leader must build relationships with their subordinates, drive towards the target mission and vision and logically convince them by logic to drive a swell (Jha & Iyer, 2015). This theory supports contractor's commitment to work variable. This theory posits that leadership is key in every project. Leadership skills are vital for road projects, this helps the project to progress as planned and its objectives achieved.

Contingency Theory

The contingency theory explains that when project managers make a decision, they consider all the aspects of the current situation at hand and act on the main aspects of the existing situation. The Contingency theory was popular in the 1960s and 1970s (Borg & Gall, 2014). Path-goal theory has proved to be a popular contingency theory according to Moumani (2010). The concept is that the leader must assist the team members trace the path to their goals and assist them as well through the set of procedure. Path-goal theory further came up with four management behaviors: Participative leaders, Supportive leaders, Achievement-oriented leaders, Directive leaders. These should then be linked to subordinate and environmental contingency factors: Environmental factors: - Activity structures, Formal

authority system, and activity network. Subordinate factors: - areas of control, knowledge and perceived suitability. Boynton and Zmud (2014) recommend different leadership styles, depending on the favorability of the leadership situation. This theory supports stakeholder's involvement variable. The contingency theory suggests that an effective leader depend would be modeled based on the current existing situation at hand. This is achieved by a particular step: First step is to determine the features of the leader; the second is to examine the situation in terms of principal variables and finally choose the suitable leader for the situation at hand.

Systems Theory

A system is any set of different parts that interact to form a complex whole. Systems theory treats an organization as a system (Barney, 2011). A system can be either closed or open, though most approaches treat an organization as an open system. An open system interacts with its environment by way of inputs, throughputs, and outputs and is not affected by its environment. Project managers who comprehend systems theory acknowledge how distinct systems influence the project employees and how the employees influence the systems around them (Ifinedo, 2008). A system is made up of several of parts that operate in unison to achieve the organizational objectives and targets (Aiyetan, Smallwood & Shakantu, 2008). Systems theory is a broad perspective that allows managers to examine patterns and events in the workplace. This helps managers to coordinate programs to work as a collective whole for the overall goal or mission of the organization rather than for isolated departments. An open system consists of three essential elements. An organization receives resources such as equipment, natural resources such as employees known as Inputs. The inputs are transformed to output through the implementation process (Kamweru, 2012).

Systems theory was proposed in the 1940's by the biologist Ludwig von Bertalanffy (1968), and furthered by Ashby (1956). According to Altschuld and Thomas (2011), Systems analysis, developed independently of systems theory, and they apply system rules to assist the project manager with problems of identifying, reconstructing, optimizing, and controlling a project, while taking into account multiple objectives, constraints and resources. It aims to specify possible courses of action, together with their risks, costs and benefits. This theory supports the dependent variable which is the performance of projects which to be achieved has to work as a system. The theory emphasizes that actual systems are open and relate freely with environments and they evolve continuously due to changing situations. Systems theory focuses relationship between the elements and the forces that connects them into a whole unit. Systems concepts include: system-environment boundary, input, output, process, state, hierarchy, goal-directedness, and information.

Conceptual Framework

According to Ramanathan *et al.*, (2012), conceptual framework is the system of concepts, assumptions, expectations, beliefs, and theories that support and inform your research given as a written or visual presentation that explains either graphically, or in narrative form, the key aspects to be researched on – the key issues, concepts or variables and the presumptuous relationship between them. This is to say, the conceptual framework is the way the researcher perceive the relationship between particular variables in his study and how they interlink with each other. As such, it points out the required variables to the study. It is the

researcher’s “map” in pursuing the research. Hussin and Omran (2011) explains that conceptual framework “sets the stage” for the presentation of the particular research question that drives the investigation being reported based on the problem statement. For this study, the independent variables are the communication between the project parties, the engineer’s abilities, the contractor’s commitment to work and project planning. These factors are considered critical and this study aims at investigating their influence on the dependent variable (the successful completion of the construction projects).

Independent variables

Dependent variable

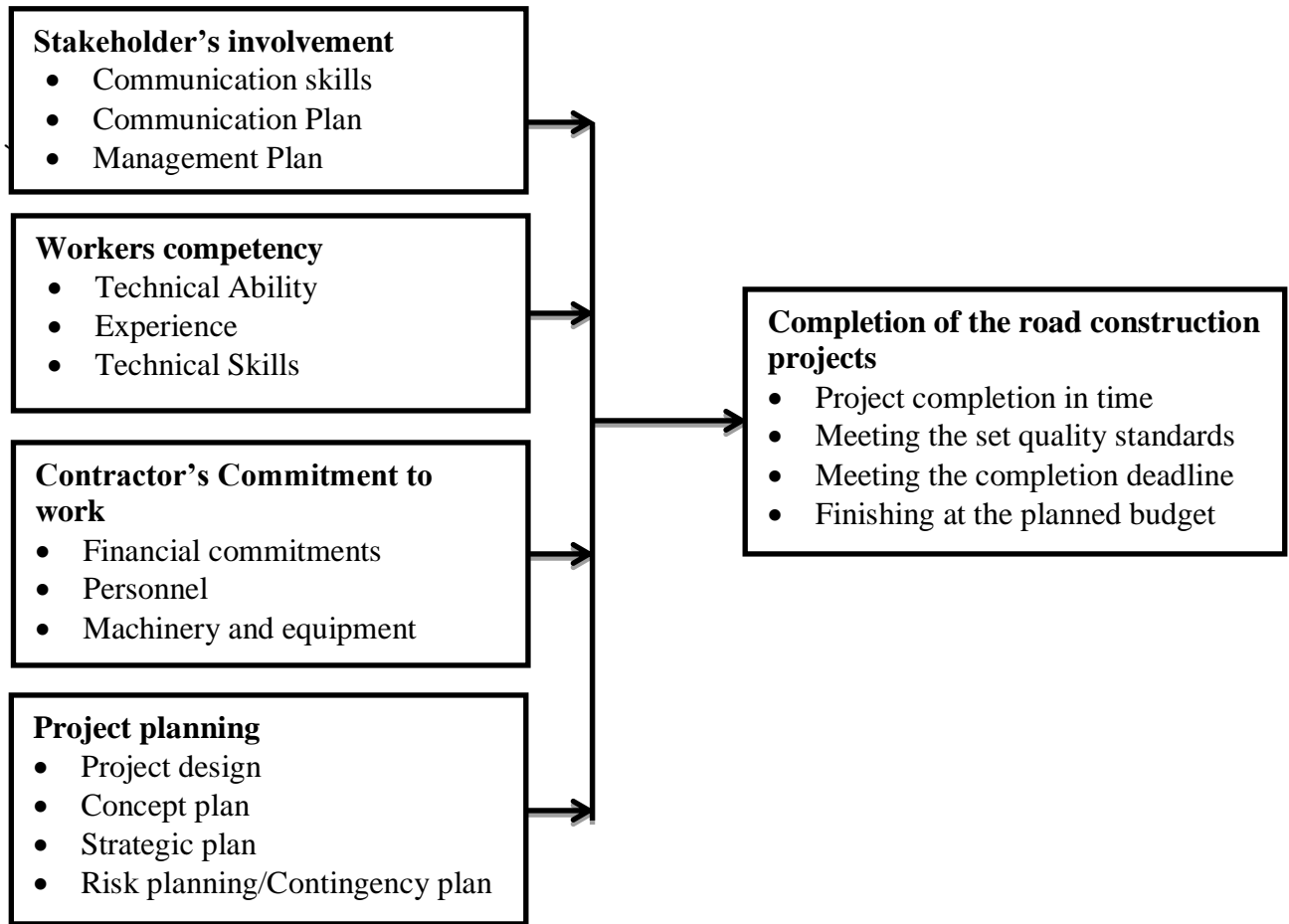


Figure 1: Conceptual Framework

Critique of the Literature

The investigation of the success factors of construction projects has attracted the interest of many researchers and many studies have been conducted, with the aim of providing contract parties with valuable insight into how to consistently achieve superior results for their projects. Although construction projects are by their nature repetitive activities, each one has its own characteristics and circumstances. The following section investigates studies that identify critical success factors leading to successful completion of projects on time, within a planned budget, in the safest manner, and with the highest quality. These studies differ in the way they approach the problem and in the way the researchers evaluate success factors.

Research Gaps

Various studies have carried out research on the factors that cause delays in projects and cost overruns ranging from project related factor, client related factors to factors that are not related to the project at all but are forces that influence the project in the long run. It is against this background that this study sought to fill the existing research gap by establishing the influence of the critical factors to successful completion of road projects in Kenyan construction sector. In spite of researches previously done concentrating on ministry of road and other road agencies, none of them have concentrated on the critical factors influencing the successful completion of these road projects in Kenya. The study is therefore motivated to fill knowledge gap by examining the influence of the CSFs in road construction projects successful completion, to determine how stakeholder's involvement efficiency between the project parties, Engineer's ability, contractor's commitment and project planning affect successful completion of road construction projects in Kenya road construction industry. This study therefore focused on the four critical factors that influence the project success and identifying how they relate with the project successful completion.

Research Methodology

Mugenda and Mugenda (2003) describe research as the development of a new body of knowledge. This study dealt with facts that have objective reality, and based on this empirical research is the process used in this study. The target population in this study will be the KeNHA and KURA road construction projects. Some projects done by KURA and KeNHA are to be selected to provide the information necessary to make a valid conclusion on the research. Therefore the target population comprised of the supervision team of KeNHA and KURA, with the respective entire implementation team of the contractor who handled the projects. The various target population is in this study were tabulated below. To calculate the sample size, we refer to Yamane's formula for finding the sample size (Yamane, 1967). By applying the Yamane's formula of sample size, with a confidence coefficient of 95% at an error of 5%, the calculation from a target population of 184. The sample size=126 respondents. The study applied stratified sampling technique from the identified study sample size of population.

Table 1: Sample distribution

The Road Agency	Population (As per the project)	Sample size (n)
KURA supervision staff	19	13
KeNHA supervision staff	15	10
Contractor project 1	62	42
Contractor project 2	57	39
Contractor project 3	31	21
Total	184	126

The researcher developed the instruments with which to collect the necessary information. The researcher used questionnaire to collect primary data. Semi structured questionnaire was used to collect data. The research with the help of two trained research assistants administered the questionnaire to the sample group to filled the questionnaire. The data obtained for this research was analyzed using the Statistical Package for Social Science

(SPSS version 20.0), excel and other relevant data manipulation tools. Data presentation is the method by which people summarize, organize and communicate information using a variety of tools, such as diagrams, distribution charts, histograms and graphs. Data presentations were made in pie charts, bar graphs, tables, line graph and diagrams. A regression model was applied to determine the relative importance of each of the variables with respect to completion of the road construction projects.

Results and Discussion

Descriptive and inferential statistics have been used to discuss the findings of the study. The study targeted a sample size of 126 respondents from which 115 filled in and returned the questionnaires making a response rate of 91.3%. This response rate was satisfactory to make conclusions for the study. The response rate was representative. According to Mugenda and Mugenda (2008), a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. Based on the assertion, the response rate was considered to excellent.

A pilot study was carried out to determine reliability of the questionnaires. The pilot study involved a sample of respondents from the target population, who were not included in the actual study. Reliability analysis was subsequently done using Cronbach’s Alpha which measured the internal consistency by establishing if certain item within a scale measures the same construct. Gliem and Gliem (2003) established the Alpha value threshold at 0.7, thus forming the study’s benchmark. Cronbach Alpha was established for every objective which formed a scale. Table 2 shows that stakeholders’ involvement had the highest reliability ($\alpha=0.856$), followed by workers’ competency ($\alpha=0.838$), contractor’s commitment ($\alpha=0.824$) and project planning ($\alpha=0.810$). This illustrates that all the four variables were reliable as their reliability values exceeded the prescribed threshold of 0.7.

Table 2: Reliability Analysis

Scale	Cronbach's Alpha	Number of Items
Stakeholder’s Involvement	0.824	12
Worker’s competency	0.838	6
Contractor’s commitment	0.856	8
Project planning	0.810	7

Correlation Analysis

The study carried out correlation matrix analysis to examine the association between the critical success factors and completion of road construction projects in Kenya. The results of Pearson Moment Correlation analysis is depicted in Table 3 and illustrates that there was a strong positive correlation $r = 0.813$ between stakeholders’ involvement and completion of road construction projects, statistically significant ($P=0.02<0.05$) at 95% confidence level; a strong correlation ($r=0.768$) between workers’ competency and completion of road construction projects, statistically significant ($P=0.04<0.05$) at 95% confidence level; weak and positive ($r=0.456$) between contractor’s commitment and successful completion of road

construction projects, statistically significant ($P=0.01<0.05$) at 95% confidence level; and a strong correlation ($r=0.692$) between project planning and completion of road construction projects, statistically significant ($P=0.02<0.05$) at 95% confidence level. This finding implies that stakeholder's involvement, worker's competency, contractor's commitment and project planning relates to completion of road construction projects.

Table 3: Pearson Correlation Results

		Completion of road project	Stakeholder involvement	Worker's Competency	Contractor's Commitment	Project Planning
Stakeholder's involvement	Pearson	0.813(*)	1			
	Correlation					
	Sig. (2-tailed)	0.02	.063			
	N	115	115			
Worker's Competency	Pearson	.768(*)	.684(*)	1		
	Correlation					
	Sig. (2-tailed)	.04	.04	0.04		
	N	115	115	115		
Contractor's commitment	Pearson	.456(*)	.704(*)	.490(*)	1	
	Correlation					
	Sig. (2-tailed)	.001	.001	.004		
	N	115	115	115	115	
Project Planning	Pearson	.692(*)	.673(*)	.516(*)	.450(*)	1
	Correlation					
	Sig. (2-tailed)	.002	.002	.02	.02	.02
	N	115	115	115	115	115

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed).

Regression Analysis

Model Summary

R squared is coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable. From the findings, the value of R squared was 0.763 an indication that there was variation of 76.3% on completion of road construction projects due to changes in stakeholder's involvement, worker's competency, contractor's commitment and project planning at 95% confidence interval. This shows that 76.3% changes of completion of road construction projects could be explained for by changes in stakeholder's involvement, worker's competency, contractor's commitment and project planning. The remaining 23.7% indicated that there are other factors, other than stakeholder's involvement, worker's competency, contractor's commitment and project planning, which affect the completion of road construction projects in Kenya. R is the correlation coefficient which shows the relationship between the study variables. From the findings, the study found that there was a strong positive relationship between the study variables as shown by 0.892.

Table 4: Model Summary

Model	R	R Square	Adjusted R Squared	Std. Error of the Estimate
1	.892	.796	.763	.00816

Analysis of Variance

From the ANOVA statistics, the processed data, which is the population parameters, had a significance level of 0.001 which shows that the data is ideal for making a conclusions on the population's parameter as the value of significance (p-value) is less than 5%. The F calculated value was greater than the F critical value (11.261> 2.454) an indication that in stakeholder's involvement , worker's competency , contractor's commitment and project planning significantly influnece completion of road construction projects. The significance value was less than 0.00, an indication that the model was statistically significant. This shows that model had goodness of fit.

Table 4.5: Analysis of Variance

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Residual	4.811	4	0.811	11.264	.000
	Regression	110.072	110	0.072		
	Total	114.883	114			

Beta Coefficients

From the above coefficients, the established regression equation was: $Y = 0.677 + 0.476 X_1 + 0.531 X_2 + 0.355 X_3 + 0.292 X_4 + 0.00816$. The equation above reveals that holding in stakeholder's involvement , worker's competency, contractor's commitment and project planning; completion of road construction project would be at 0.677

Stakeholder's Involvement and Completion of Road Construction Project

The results on Table 6 reveal that stakeholder's involvement had a significant coefficient ($\beta = 0.476$, p value=0.009). This implies that stakeholder's involvement had positive significant effect on completion of road construction projects. This is an indication that a unit increase in stakeholder's involvement will lead 0.476 increases in completion of road construction projects. Chism and Armstrong (2010) who argues that project management should involve and encourage contributions of the community form the initial identification of a project to end and ensure successful completion and sustainability.

Worker’s Competency and Completion of Road Construction Project

The finding of the study on table 4.18 reveal that worker’s competency had a significant coefficient ($\beta = 0.531$, p value=0.004). This implies that worker’s competency had positive significant effect on completion of road construction project. This is an indication that a unit increase in worker’s competency will lead to 0.531 increase in completion of road construction project. Tung (2016) who argues that workers competency is key in any project success.

Contractor’s Commitment and Completion Of Road Construction Project

The findings in table 6 further revealed that contractor’s committment had a significant coefficient ($\beta = 0.355$, p value=0.012). This implies that contractor’s committment had positive significant effect on completion of road construction project. This is an indication that a unit increase in contractor’s committment will lead to 0.355 increase in completion of road construction project. Waihenya (2014) stated that the success of the project is highly and directly attributed to the tireless commitment of the contractor because they are the implementers of the construction projects.

Project Planning And Completion of Road Construction Project

The finding of the study on table 6 reveal that project planning had a significant coefficient ($\beta = 0.292$, p value=0.020). This implies that project planning had positive significant effect on completion of road construction project. This is an indication that a unit increase in project planning will lead to 0.292 increases in completion of road construction project. Weiss and Potts (2012) argue that project planning is a discipline for stating how to complete a project within a certain timeframe, usually with defined stages, and with designated resources.

Table 6: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	β	Std. Error	Beta		
1 Constant	0.677	0.113		5.991	.001
Stakeholder’s Involvement	0.476	0.138	0.397	3.449	.009
worker’s competency	0.531	0.128	0.431	4.148	.004
contractor’s committment	0.355	0.102	0.286	3.480	.012
project planning	0.292	0.089	0.214	3.281	.020

Conclusion

The study found that there was a strong positive relationship between sstakeholders’ involvement and completion of road construction projects. The study also established that increase stakeholders’ involvement would lead to increase in completion of Road Construction Projects. From the finding the study concludes that Stakeholders’ Involvement positively affect Completion of Road Construction Projects.

The study also found that there was a strong positive relationship between workers' competency and completion of road construction projects. The study also established that that increase in workers' competency would positively affect completion of road construction projects. From the finding the study concludes that Workers' Competency of employee had positive significant effect on Completion of Road Construction Projects.

The study revealed that there was a positive relationship between contractor's commitment and completion of road construction projects. This study also found that increase in contractor's commitment would positively influence the completion of road construction projects. From the finding the study concludes that contractor's commitment had positive significant effect on completion of road construction projects. The study established that there was a strong positive relationship between project planning and completion of road construction projects. The study found that increase in project planning would positively affect completion of road construction projects. From the findings the study concludes that project planning positively affects completion of road construction projects.

Recommendations

From the findings the study recommends that there is need to involve the stakeholders in road construction projects as the study revealed that Stakeholders' Involvement positively affect completion of road construction projects. The study recommends that competent employees who are qualified on road construction projects should be employed. This is because the study has established a positive relationship between worker's competency and the completion of road construction projects.

The study recommends that there is need to enhance the commitment of contractors' of road construction projects. This is because the study has revealed a positive relationship between Contractor's Commitment and Completion of Road Construction Projects. Finally, the study recommends for proper project planning as this will facilitate successful completion of road construction projects. This is because the study has found a positive relationship between project planning and completion of road construction projects.

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