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ABSTRACT

This study investigated the influence of project planning on implementation of road construction projects in Kilifi County. The target population comprised of 150 with a sample size of 109. The study focused on the project management team, monitoring officers, project engineers, financial officers and auditors and consultants and contractors. This study adopted descriptive research design. Stratified random sampling method was used to select relevant respondents from across the board in the various categories of the three roads agencies in Kilifi County. Structured questionnaires were used to collect primary data from respondents. Secondary data was obtained from related materials in the internet, project management journals, white papers, periodicals and books relevant to the study. Quantitative data was analyzed using SPSS version 25. Descriptive statistics was used and multiple regression analysis was used to predict the effect of project schedule, project budget, project quality and project communication on implementation of road construction projects in Kilifi County. Based on the findings, regression and spearman's correlation results indicated that there is a positive and significant relationship between project schedule, project budget, project quality, project communication and implementation of road construction projects in Kilifi County. The study recommended that the application of CPM as a simple network and resource-loading could help to reduce construction project delays. Secondly, cost overruns should be traced back to root causes that are often associated with the preliminary phases, project planning or design, that such root causes include; poor estimation of quantities, design variations or errors, project schedule changes, scope changes, unexpected site conditions, rising costs of materials and labour and or unforeseen events. Thirdly, part of the audit should include a review of the project staff understanding of the quality parameters or metrics and skills expertise and knowledge of the people in charge of producing or delivering the project. Lastly, project team members should use a variety of communication methods to deliver project information, including meetings, telephone calls, email, voicemail and websites.

Key Terms: *Project Budget, Project Communication, Project planning, Project Quality, Project Schedule*

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INTRODUCTION

Infrastructure development globally plays a crucial role in determining the overall productivity and development of a country's economy. Investments made on building international class infrastructure serve as major catalyst towards attracting local and foreign investors (Ahmed, 2017). According to Iyer and Jha (2016), poor quality infrastructure pushes firms away from a location more often than good infrastructure will attract them. Projects remain the tools of choice for policy makers in international development. In developing nations, road projects are some of the largest donor-funded projects and the largest cause of resettlement. Vandevoorde and Vanhoucke (2016) opine that the development of roads has been extensively supported as poverty mitigation instrument by donor institutions. It is argued that road construction projects are the key to raising living standards. By cutting down on transport costs, roads are expected to generate market activity, affect input and output prices and nurture economic connections.

Transport costs alone are 63 percent higher in Africa than in developed nations, hampering its competitiveness in the international and local marketplaces. Challenges in project success are shared challenges in the road construction sector not only with an endless price to culture but also with incapacitating special effects on the constricting parties (Nkwachukwu, Ibeawachi& Okoli, 2016). The interruption delay in the considerable success of road construction projects is an international issue. For example, though assessing the development and statistics of 28 highway projects throughout the period 1996-1999 in Jordan, Battaineh (2016) perceived that the regular ratio of real achievement time to the strategic agreement period is 160.5% for road constructions. Additional academicians also state that the period edge for main road construction projects internationally to spread road construction begin stage have been experiential to series from 10-30 years (Barke, 2015).

The Kenyan transport sector comprise of five transportation modes: roads, rail, air, maritime transport and pipeline Assessment. The Kenyan Road network comprises of 63,300 km of classified roads and 114,500 km of unclassified roads. About 14% of the classified road network (9,100 km) is paved, the rest being of gravel or earth surface. Road transport is the leading mode of transport in Kenya, accounting for about 85% of the total domestic transportation (Gwaya, 2015). The government of Kenya (GoK) discharges its mandate in road infrastructural development through two key ministries - Ministry of Transport and Infrastructure as well as the Ministry of Environment, Water and Natural resources. The Ministry of Transport and Infrastructure of Kenya discharges this mandate through four key parastatals namely; The Kenya Roads Board (KRB), The Kenya National Highways Authority (KeNHA), the Kenya Rural Roads Authority (KeRRA) and the Kenya Urban Roads Authority (KURA). Kenya Roads Board is mandated with accessing for funds through the Central Government and allocation of these funds on need basis to the other sister Authorities (Wanjira & Ngari, 2018).

Developments in the road construction industry in Kenya are increasing in size, technology complexity, interdependencies, and variations in demands from clients. The road network in Kenya at independence was 45,000 km out of which only approximately 2000 km were paved while the rest was mainly earth. The Kenya road sub-sector has been largely dominated by road expansion and upgrading programmes since the year 2009, when the Kenya Vision 2030 was launched. Given the road network size, traffic composition and projected future growth rates, the demand for road infrastructure investment in Kenya is very high and exceeds the country's budgetary financing capacity (Kenya Rural Roads Authority, 2018).

In Kenya, the contribution of the infrastructure sector to GDP was 19.1 per cent in 2012 (Kenya Economic Report, 2014). Road construction, is a major component of infrastructure development, and as such is always in the upper percentile of funding amongst development projects in Kenya; funding is estimated at not less than 10 per cent of

the national budget. Thus, the Ministry of Roads plays an important role in the attainment of "Kenya vision 2030" goals, Millennium Development Goals (MDGs) and Kenya's Economic Recovery Strategy for wealth and Employment Creation Strategy (ERS) through the provision of basic infrastructure facilities to the public by developing, maintaining, rehabilitating and managing of road networks in the country (Aguya & Muturi, 2016).

Poor infrastructure was identified under the Economic Recovery Strategy (ERS) for Wealth and Employment Creation 2003-07 as a major constraint to doing business. Likewise, the Kenya Vision 2030 recognizes infrastructure as an enabler for sustained development under the economic pillar (Aguya & Muturi, 2016). Due to the importance of roads in socio-economic development of the country, the government has in the recent past steadily increased budget allocation to the road sub-sector. However, road projects in Kenya have been facing various challenges, which include delay in completion, cost overruns, demolition of residential and businesses houses and abortive works (Maina, 2018).

Statement of the Problem

KPMG report (2018) noted that on average only 39.4 percent of the road infrastructure projects implemented by KeNHA in coasts were completed within the budgeted cost and scheduled time. The report also indicated that only 35 percent of the road projects in coast region undertaken by firms contracted by KeNHA met the desired quality standards. According to ADB (2017), Kenya attained an overall rating of 49 percent on implementation of road projects funded during the period 2012 to 2017 as compared to Uganda's and Tanzania's rating of 59.5 percent and 70.1 percent respectively. This shows that among the three East African countries rated by OED, Kenya was rated the poorest in road projects implementation.

In Kilifi County, road allocation in 2015/2017 financial year was 1.5 billion. Auditor general's 2016/2017 report revealed delay in completion of projects such as upgrading of Malindi Township roads to Bitumen, contract amount 222,113,018 million, project stalled and was late by 9 months, Eden Rock Road, contracted amount 1million, contract expired when the work was 70% complete, Ngala – HGM-Kisumu Ndogo, a 3 km road contracted amount 183,963,340 million, paid only 73,369,448 million, project stalled after upgrading only 0.9km (KNBS, 2016). The auditor general also found that the KES 5 billion rehabilitation of Bachuma Gate-Maji yaChumvi section of Mombasa Road was going on at a slow rate. The project was awarded to China Dalian International Economic and Technical Corporation Group Company limited started in November 2014 to be completed within two years (Talukhaba, 2019). However, a monthly progress report since June 2016 showed that the percentage of physical works completed was 20 percent with percentage of time elapsed at 79 percent, which may lead to escalation of costs in interest payments (Talukhaba, 2019; KNBS, 2019).

According to Kenya Transporters Association (KTA) report (2017), the construction of Mariakani-Kaloleni-Mavueni road by KeNHA which is an alternative bypass for tourists visiting Tsavo National Park from the North Coast, the works on this road dragged for more than seven years. The report further says that the contractors ignored the ministry's procedure and schedule, hence contributing to the delay in completion of the project. This confirms earlier observations by Aguya and Muturi (2016) that many projects fail due to weak project planning by management. KeNHA further acknowledged that the construction of the Kilifi – Kaloleni road funded by the Government at a cost of approximately Sh2.3 billion experienced time overruns during it implementation to the extent that the slow pace of constructing of this road agitated transporters to protest against the government blaming it for slow pace in completing the road section (Ochenge, 2018).

Reviews of past researches investigated in Kenya on performance of road construction projects show that the studies assessed other contextual issues that impacted road construction projects but not project planning (Mwangi, 2016; Njenga, 2015; Wairimu,

2016, Ogutu & Muturi, 2017). These studies focused on financial capability. skilled manpower, information technology, stakeholder participation, procurement procedures and communication. Kibuchi and Muchungu (2015) studied the contribution of human factors in the performance of road construction projects in Kenya. Wambui *et al.* (2015) examined the factors that affect completion of road construction projects in Nairobi. From the researches done previously, a lot has been discussed, both literarilly and emperically, on the dynamics that contribute towards the accomplishments, or otherwise, of performance of road construction projects. Nonetheless, little or no evident study has been conducted on the effect of project planning on implementation of road construction projects. It against this backdrop that this study sought investigated the influence of project planning on implementation of road construction projects in Kilifi County.

Research Objectives

The general objective of this study was to examine the influence of project planning on implementation of road construction projects in Kilifi County. The specific objectives;

- To establish the influence of project schedule on implementation of road construction projects in Kilifi County.
- To determine the influence of project budget on implementation of road construction projects in Kilifi County.
- To examine the influence of project quality on implementation of road construction projects in Kilifi County.
- To evaluate the influence of project communication on implementation of road construction projects in Kilifi County.

The study was guided by the following hypotheses

- **H_{01}:** Project schedule has no significant influence on implementation of road construction projects in Kilifi County.
- **H_{02}:** Project budget has no significant influence on implementation of road construction projects in Kilifi County.
- **H_{03}:** Project Quality has no significant influence on implementation of road construction projects in Kilifi County.
- **H_{04}:** Project communication has no significant influence on implementation of road construction projects in Kilifi County.

LITERATURE REVIEW

Theoretical Review

Scheduling Theory

Scheduling theory was introduced by Richard Ernest Bellman in 1954. According to this theory, a scheduling problem is defined by three components: a description of a set of resources, a description of a set of tasks and a description of a desired objective (Abeyasinghe, Greenwood & Johansen, 2017). Antill and Woodhead (2019) assert that scheduling theory dictates that schedule planners should always consider the following when undertaking project scheduling; divisible load scheduling, scheduling checkpoints for fault-tolerance, resource allocation in virtualized environments, scheduling mixed parallel applications, scheduling applications on volatile resources and scheduling for energy savings.

In competitive environments, where construction and infrastructure projects are taking place, planning and scheduling are vital to understanding project performance (De Snoo, Van Wezel &Jorna, 2017). More specifically, both processes have to be addressed correctly and efficiently to ensure that projects meet their objectives (Demeulemeester&Herroelen, 2016; Laslo, 2016). Furthermore, these processes are fundamental in the life cycle of construction projects as they involve the selection of the most appropriate techniques and tools, the definition and organization of a myriad of activities, and the estimation and allocation of the most economical deployment of resources (Ahuja & Thiruvengadam, 2017).

Olawale and Sun (2015) argued that planning and scheduling are time-cost oriented processes and, hence, constitute a challenge to project managers and planners when managing their applications.

Scheduling represents a significant task within project management. Scheduling must take into account the trade-offs between time and cost based on the consumption of resources while minimizing project duration (Yang, 2017a). Planning for resources must ensure the development of reliable schedules. Project managers and schedulers are accountable for planning that incorporates sufficient management coordination, correct sequences (Winch & Kelsey, 2016). Talukhaba (2019) stated that construction organizations with dispersed projects need coordinated approaches to planning, scheduling, and control more than organizations with a single or few projects at any one time. A possible obstacle to such coordinated approaches is the nature of decision flows in project organizations.

Scheduling cannot succeed without knowledge of the work being planned. Moreover, an incomplete planning process might impair the worth of schedules and, hence, lead to an uncontrolled flow of project progress (Thomsett, 2016). According to Pinto and Covin (2016), tracking of project schedules cannot be achieved properly unless effective controls are in place. Shash and Ahcom (2016) stated that project planning represents a proactive step in detecting and correcting deviations from the schedule. In this respect, separation between the two processes could lead to overlapping and partial duplication in resolving resource constraints in the schedule. Chua and Godinot (2016) noted that a well-defined work breakdown structure (WBS) in the planning phase improves the interfaces between parties and thus allows for more dynamic, as well as functional, schedules.

Scheduling theory resonates well with the first variable of scheduling planning. This theory can be used to shed light on how to strengthen the current link between the practice of project planning and scheduling. Moreover, this theory can provide new insights for project managers and practitioners towards new management strategies and tools needed to improve the understanding of schedule planning concept in current practices of road construction projects.

Theory of Constraints

The theory of constraints is an overall management philosophy introduced by Goldratt (1984). It aims at helping organizations continually achieve their goals; that is, improvement in performance of their projects. It outlines four main constraints that hinder the performance of projects. The constraints are; scope of the project, cost of the project, quality and time within which the project is to be completed (Woeppel, 2016). According to Ikeziri*et al.* (2019), the theory proposes continued development on the identified constraint to a point in which it does no longer limit goal attainment.

The fundamental thesis of TOC is that constraints have negative effects on the performance of any project. The theory of constraints advocates that project managers should focus on effectively managing these constraints (Ikeziri et al., 2019). According to Levinson (2019), about 40 percent of the road projects constructed in Europe suffered from these constraints. The theory also challenges managers to be creative in finding strategies that will enable the firm to achieve quality infrastructure projects despite the presence of project constraints (Idoko, 2017).

Gersup (2016) argues that most of the constraints faced by projects originate from policies and inadequate physical resources. The theory of constraints emphasizes optimum performance within the existing constraints. It provides a framework of activities that managers should undertake in the course of managing projects. The theory of constraints can thus be characterized as a set of concepts, principles and measurements that focus attention on the logistical tools that make project work to flow smoothly (Dokata, 2017).

Eric, Debra and James (2015) in their study on the effects of project management competencies in project performance noted that in order to improve efficiency and effectiveness in the performance of road infrastructure projects, the project manager should work on the project constraints. Armit and Schoemaker (2017) in their study on performance of projects, argued that Critical Chain Project

Management (CCPM) is an application of theory of constraints to projects. It is a method of planning and managing project execution designed to deal with uncertainties inherent in managing projects while taking into consideration limited availability of resources. The resources could be physical, human skills as well as management and support capacity. The primary constraints to project management are: cost, time, and scope. The study further asserted that the theory is a tool that helps project managers identify constraints and adopt solutions to infrastructure systems.

This theory is relevant in this study as it brings into the surface the constraints that inhibit performance of road infrastructure projects. The constraints are scope of the project, project cost, quality and time within which the project should be completed. This theory resonates well with three variables of this study which are; project budget, project schedule and project quality.

Conceptual Framework

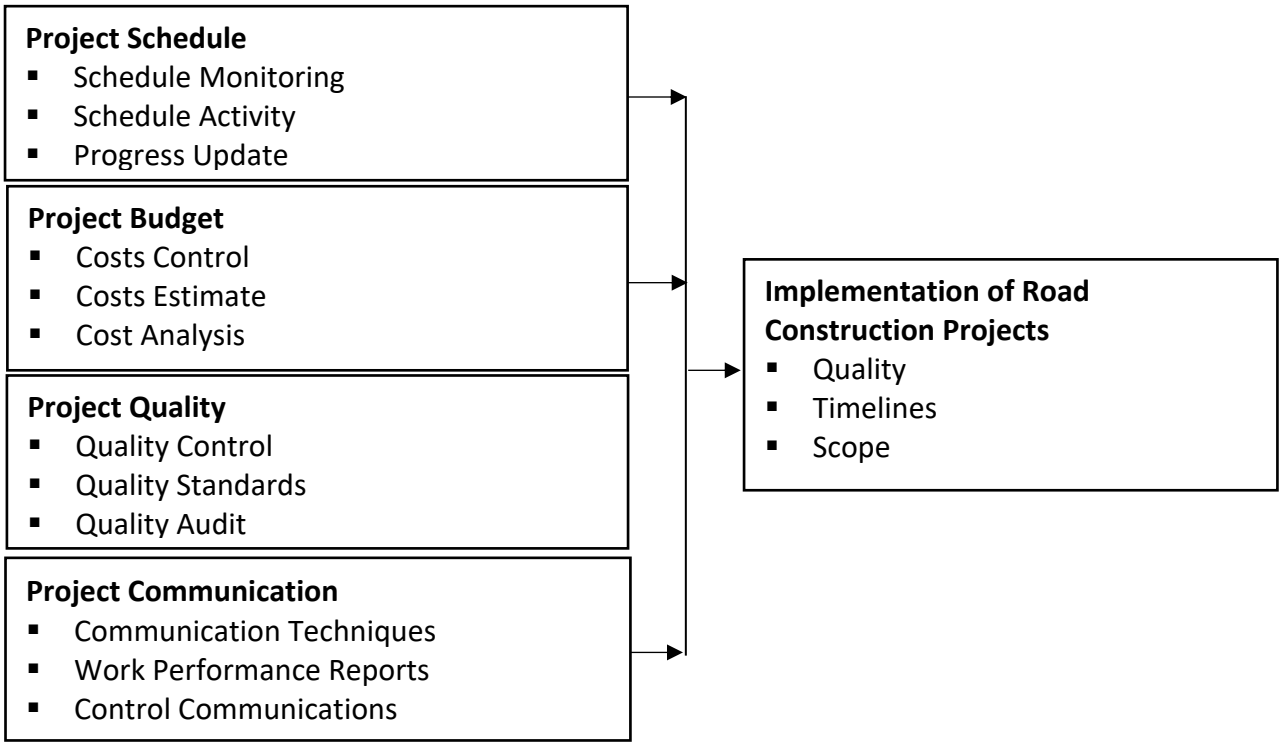

Figure 1: Conceptual Framework

Review of Literature Variables

Project Schedule: According to Chan, Scott and Chan (2016), the result of project planning is a project schedule. It's a definition of a set of starting and finishing times of project activities. A project schedule is not just a valuable instrument in communication and coordination of processes with external partners in the company's inbound or outbound supply chain. It also serves both the planning of project activities and a related resource assignment to each activity considering some measure of performance as well as the planning of external activities (Clough, Sears & Sears, 2015). Dubois and Rothwell (2016) opine that a schedule can be understood as source of information for advanced booking of key staff or equipment which especially refers to a multi project environment. Furthermore, on the basis of a reliable schedule external activities are planned, such as delivering data for material

procurement, preventive maintenance or the delivery of orders to internal or external customers. In the company's environment cooperation between the actors in the supply chain includes the settlement of agreements on time windows for the work by subcontractors and especially the agreement on the delivery of material, the planning of supporting activities (setups, supporting personnel), the settlement for due dates for the delivery of project results and cash flow projections based on a schedule for budgeting (Faridi & El-Sayegh, 2015).

Project Budget: Management of construction cost is one of the important tasks for achieving a successful project completion. Unfortunately, it is very seldom that effective cost management could be achieved and often a significant amount of cost overrun has to be experienced (Ofori, 2016). Thus, the availability of an accurate project estimates and a project budget will be essential if the project is to be delivered within the project budget. That estimation and planning have to be done at the planning stage. By failing to keep an eye on the actual costs while the project is in progress, the completion of the project within the budget will not be possible (Omeno& Sang, 2018).

Project Quality: Part of defining quality involves developing a quality plan and a quality checklist that will be used during the implementation phase of road construction projects. This check list will ensure the project team and other actors are delivering the project outputs according to the quality requirements (Conti, 2015). According to Butler (2017), once the project has defined the quality standards and quality characteristics, it will create a project quality plan that describes all the quality definitions and standards relevant to the project, it will highlight the standards that must be followed to comply to regulatory requirements setup by the donor, the organization and external agencies such as the local government and professional organizations.

Project Communication: According to Gidado (2016), preparing the project communication assists the project team in identifying internal and external stakeholders and enhances communication among all parties involved in the project. The project manager leads the project development team to prepare a communication plan to ensure that an effective communication strategy is built into the project delivery process. The plan is a framework and should be a living, evolving document that can be revised when appropriate. The communication plan is part of the project management plan (Idoko, 2017). Lee and Kim (2018) contend that a good communication plan includes a conflict management strategy which is designed to make issues between stakeholders more manageable. Project managers therefore minimize conflicts and resolve issues through constant communication with the project sponsors, project team members and other project stakeholders. The sentiments by Lee and Kim is supported by various authors who also argue that having effective communication plans, clear information distribution paths, project progress reporting, and mechanisms of effective sharing of information among project management teams and between project parties, clients and other significant stakeholders are important and therefore, communication must be planned for as a resource in projects similar to other resource like time, money, people and equipment. The influence of communication not planned for on construction project may result to project underperformance and subsequently makes the project in question to overruns in-terms of time,

cost and quality (Dokata, 2017; Gyula, 2017; Ikeziri*et al.,* 2019).

Implementation of Road Construction Projects: Project implementation can be explained using two success concepts; project management success and product success. The first concept focuses upon the successful accomplishment of the project time, cost and quality, which can be measured in terms of meeting the project budget, schedule, and conformance to functional and technical specifications respectively. The later concept deals with the effects of the project's final product with three key components which are; to satisfy the project goal, purpose and stakeholders (Ahmed, 2017). Another criterion for evaluating project performance is by firstly relating to the owner, users, stakeholders, and the general public (looks at projects from macro view point of overall goals of functionality and benefits) and secondly the developer and the contractor; the groups of people who look at project performance from the micro viewpoint of completion time, cost, quality, safety and profitability (Akhwale& Ombui, 2018).

METHODOLOGY

This study adopted descriptive research design. The descriptive survey design was considered appropriate for the study because survey is concerned with describing, recording, analyzing and reporting conditions that exists or existed. Survey method is widely used to obtain data useful in evaluating present practices and in providing basis for decisions (Ghauri &Gronhaug, 2018). The study targeted the project management team, monitoring officers, project engineers, financial officers and auditors and consultants and contractors charged with responsibilities of planning and implementations KeNHA road projects in Kilifi County all totaling to 150.

Stratified random sampling method was used to select relevant respondents from across the board in the various categories of the three roads agencies in Kilifi County. Bryman & Bell (2015) argue that stratified random sampling is where a given number of cases are randomly selected from each population sub-group. It thus ensures inclusion in the sample of subgroups which otherwise could be omitted entirely by other sampling methods (Mesa, 2016). In this case, stratification was based on three roads agencies. According to Kothari (2014), a sample of about 10% to 30% of a population can often give a reliable data. According to Theuri (2015) this approach gives an assurance of equitable distribution of targeted population's characteristics through the selection of persons for the study. Slovene's formula was used to determine the sample size of 109 (at 95% confidence level and $\alpha = 0.05$).

Both descriptive and inferential statistics was used to analyze the data. Quantitative methods of data analysis were used to analyze the research variables. A Likert scale was adopted to provide a measure for quantitative data. The scale helped to minimize the subjectivity and made it possible to use quantitative analysis. The numbers in the scale were ordered such that they indicated the presence or absence of the characteristic to be measured. SPSS version 25 was utilized for descriptive and inferential statistics.

FINDINGs

In total, 109 survey questionnaires were distributed to the respondents. Out of the 109 respondents in the sample, valid responses were received from 102 respondents. This represented 94% of response rate. According to Ghauri and Gronhaug (2018), a 50% response rate is considered to be adequate, 60% to be good, while a 70% and above rate is considered to be very good. Therefore, a 94% response rate from this study is considered to be very good and satisfactory. The high response rate was realized, because of the constant reminders of potential respondents through phone calls, emails and follow ups by research assistants. This could also be attributed to the research topic which was eye catching.

Inferential Statistics

Spearman Rank Correlation Analysis

This section covers the results of Spearman rank correlation analysis which outlines the relationship between each of the variables that characterize implementation of road construction projects in Kilifi County as shown in Table 4.10. The significance of the correlation was tested at 95% confidence level which is equivalent to 0.05 level of significance. The correlation between project schedule and implementation of road construction projects was established to have a positive and significant relationship ($r = 0.291$; $p < 0.05$). These results were interpreted to mean that enhancing project schedule was likely to result in improved implementation of road construction projects in Kilifi County.

The correlation between project budget and implementation of road construction projects was established to have a positive, strong and significant relationship ($r = 0.902$; $p < 0.05$). These results were interpreted to mean that enhancing project budget was likely to result in improved implementation of road construction projects in Kilifi County. The study further revealed that there existed positive, strong and significant relationship between project quality and implementation of road construction projects ($r = 0.809$; $p < 0.05$). These results were interpreted to mean that enhancing project quality was likely to result in improved implementation of road construction projects in Kilifi County.

Moreover, the study revealed that there existed positive, strong and significant relationship between project communication and implementation of road construction projects ($r = 0.489$; $p < 0.05$). These results were interpreted to mean that enhancing project communication was likely to result in improved implementation of road construction projects in Kilifi County.

Table 1: Spearman's (rho) Correlations matrix for Study Variables

			X1	X2	X3	X4	Y
Spearman's rho	**X1**	Correlation Coefficient	1.000	.384**	.342**	.196*	.291**
		Sig. (2-tailed)	.	.000	.000	.048	.003
		N	102	102	102	102	102
	X2	Correlation Coefficient	.384**	1.000	.716**	.422**	.902**
		Sig. (2-tailed)	.000	.	.000	.000	.000
		N	102	102	102	102	102
	X3	Correlation Coefficient	.342**	.716**	1.000	.518**	.809**
		Sig. (2-tailed)	.000	.000	.	.000	.000
		N	102	102	102	102	102
	X4	Correlation Coefficient	.196*	.422**	.518**	1.000	.489**
		Sig. (2-tailed)	.048	.000	.000	.	.000
		N	102	102	102	102	102
	Y	Correlation Coefficient	.291**	.902**	.809**	.489**	1.000
		Sig. (2-tailed)	.003	.000	.000	.000	.
		N	102	102	102	102	102

Key: Y= Implementation of Road Construction Projects, X1= Project Schedule, X2= Project Budget, X3= Project Quality, X4= Project Communication.

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

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

Regression Analysis

Model Summary

Regression analysis was conducted to empirically determine whether predictors (project communication, project schedule, project budget and project quality) were a significant determinant of implementation of road construction projects. Regression results in table 2 indicated the goodness of fit for the regression between the predictors and dependent variable (implementation of road construction projects). An R square of 0.889 indicates that 88.9% of the variations in implementation of road construction projects are explained by the variations in project communication, project schedule, project budget and project quality. This implies that 11.1% of the unexplained variations in implementation of road construction projects is accounted for by the other variables.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.943[a]	.889	.884	.09534

a. Predictors: (Constant), Project Communication, Project Schedule, Project Budget, Project Quality

Analysis of Variance (ANOVA)

Table 3 provides the results on the analysis of the variance (ANOVA). The results indicate that the overall model was statistically significant. This was supported by an F statistic of 193.883 and the reported p value (0.000) which was less than the conventional probability of 0.05 significance level. These results imply that the independent variables are good predictors of implementation of road construction projects.

Table 3: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.049	4	1.762	193.883	.000[b]
	Residual	.882	97	.009		
	Total	7.930	101			

a. Dependent Variable: Implementation of Road Construction Projects

b. b. Predictors: (Constant), Project Communication, Project Schedule, Project Budget, Project Quality

Regression Coefficients

From table 4, the results indicated that project schedule (with β= 0.094, p value 0.000), project budget (with β=0.701, p value 0.000), project quality (with β=0.279, p value 0.000)and project communication (with β= 0.120, p value 0.000)are statistically significant in explainingimplementation of road construction projects in Kilifi County.Further, Model 1 in Table 4 illustrates that a unit point improvement in project schedule led to a 0.071 point improvement in implementation of road construction projects in Kilifi County, a unit point improvement in project budget led to a 0.679 point improvement in implementation of road construction projects in Kilifi County, a unit point improvement in project quality led to a 0.225 point improvement in implementation of road construction projects in Kilifi County, a unit point improvement in project community led to a 0.095 point improvement in implementation of road construction projects in Kilifi County.

Project schedule had a positive and significant effect on implementation of road construction projects (H_{02}:β_2= 0), since t = 2.577, p-value =.011). We therefore reject the null hypothesis and conclude that project schedule has a significanteffect on implementation of road construction projects. Project budget had a positive and significant effect on implementation of road construction projects (H_{02}:β_2= 0), since t = 15.500, p-value =.000). We therefore reject the null hypothesis and conclude that project budget has a significanteffect on implementation of road construction projects.

Project quality had a positive and significant effect on implementation of road construction projects (H_{02}:β_2= 0), since t = 5.879, p-value =.000). We therefore reject the null hypothesis and conclude that project quality has a significanteffect on implementation of road construction projects. Project communication had a positive and significant effect on implementation of road construction projects (H_{02}:β_2= 0), since t = 2.850, p-value =.005). We therefore reject the null hypothesis and conclude that project communication has a significanteffect on implementation of road construction projects.

Table 4: Multiple Regression (Coefficients)

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.322	.155		2.079	.040
	Project Schedule	.071	.027	.094	2.577	.011
	Project Budget	.679	.044	.701	15.500	.000
	Project Quality	.225	.038	.279	5.879	.000
	Project Communication	.095	.033	.120	2.850	.005

a. Dependent Variable: Implementation of Road Construction Projects

$Y = 0.322 + 0.071X_1 + 0.679X_2 + 0.225X_3 + 0.095X_4$

Where:

Y = Implementation of Road Construction Projects

β_0= Constant

X_1= Project Schedule

X_2= Project Budget

X_3= Project Quality

X_4= Project Communication

e_i= Stochastic term

CONCLUSIONS

The study concludes that activity updates are input on a monthly basis into the online project-scheduling tool. Scheduling and resource allocation is applied to reduce construction project delays.Network techniques are used to define precedence relations between the discrete activities.Schedule is managed and controlled based on the progress information provided in the reporting period.Schedule is monitored and compared against the schedule baseline.Schedule development process is iterated prior to determination of the project schedule.Progress updates are input on a monthly basis into the online project-scheduling tool

The study established that budget planning is crucial in achieving the completion of projects. The major contributors of cost overrun are material and construction costs. Project budget control data helps project management in adequate decision-making. Budget planning can be used effectively for evaluating the project budget. Budget estimating technique provides an indication of the probable budget of road construction project. Cost overrun has an impact on implementation of road construction project. Only appropriate project changes are included in a revised cost baseline.

The study established that quality monitoring systems play a significant role in quality conformance of road infrastructure projects. Quality control measurements has been adopted to analyze and evaluate the quality of the different processes. Use of checklist ensures the delivery of project outputs according to the quality requirements. Quality audit is used to review how the project is using its internal processes to achieve the deliverables. Quality assurance is focused on providing confidence that quality requirements will be fulfilled. Quality management structure is able to achieve quality performance without imposing unsustainable burdens

The study concluded that effective communication, consultation and information-sharing between the

client, designer and constructor are vital to project success. Project conflicts are resolved through constant communication with the project stakeholders. Variety of communication methods are used to deliver project information. A well-constructed and implemented communication plan leads to smooth project operations. Communication matrix is used to track project implementation. Communication and consultation with stakeholders takes place whenever necessary.

RECOMMENDATIONS

- Project teams need to organize and complete road construction projects in a timely, quality and financially responsible manner. To keep projects on track, set realistic time frames, assign resources appropriately and manage quality to decrease product errors. In addition, the application of CPM as a simple network and resource-loading could help to reduce construction project delays. Network techniques force project participants to break down the project into smaller pieces of work and define precedence relations between the discrete activities. Based on the schedule considering limited resources, critical resources can be identified and resources can be leveled as well as managed, especially if there is more than one project to run.
- One of the most common reasons for road construction project failures is cost overrun. Cost overruns can be traced back to root causes that are often associated with the preliminary phases, project planning or design, that such root causes include; poor estimation of quantities, design variations or errors, project schedule changes, scope changes, unexpected site conditions, rising costs of materials and labour (largely due to inflation), and or unforeseen events.
- Project quality measures that meet expectations at every step of the way ensures that project managers and team members address problems as they arise and don't wait until the end. Effective project managers should understand that ensuring quality control involves managing risks and exploiting opportunities to speed up the schedule. In addition, part of the audit should include a review of the project staff understanding of the quality parameters or metrics, and skills expertise and knowledge of the people in charge of producing or delivering the project.
- Project team members should use a variety of communication methods to deliver project information, including meetings, telephone calls, email, voicemail, and websites. Meetings in particular are often the most effective way to distribute information to project stakeholders. Before planning a meeting, the project manager or assigned team member should consider the communication objectives carefully and choose a meeting format that will meet the objectives.

Areas for Further Research

The study sought to investigate influence of project planning on implementation of road construction projects in Kilifi County. This research, however, concentrated on only four aspects of project planning namely; project schedule, project budget, project quality and project communication. There are other aspects of project planning which can only be explored through further research such as project scope so as to determine tits effect on implementation of road construction projects in Kilifi County. This study focused only on implementation of road construction projects in Kilifi County, more research should also be carried out on this topic in a different county so as to compare the findings in this research especially to extend the research on perspectives of project planning related practices and to cover more geographical locations to other countries especially in Africa and counties in Kenya.

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