



**INFLUENCE OF RESOURCE MANAGEMENT PRACTICES ON TIMELY COMPLETION OF ROAD PROJECTS
IMPLEMENTED BY THE COUNTY GOVERNMENT OF KAKAMEGA COUNTY, KENYA**

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¹ Koyi W. M., ² Miroga, J., & ³ Otinga, H.

¹ Msc. Student, Jomo Kenyatta University of Agriculture & Technology [JKUAT], Kenya

² Doctor, Lecturer, Jomo Kenyatta University of Agriculture & Technology [JKUAT], Kenya

³ Doctor, Lecturer, Jomo Kenyatta University of Agriculture & Technology [JKUAT], Kenya

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ABSTRACT

The aim of this study was the assessment of how practices of managing resources are affecting timely completion of road projects implemented by the County Government of Kakamega County, Kenya. This study determined how planning and scheduling factors affect timely completion road projects in Kakamega County. The study was guided by the theory of planning and resource based view theory. A descriptive survey design was adopted in this research. Selection of the sample was done using stratified random sampling. Structured questionnaires were utilized in gathering of primary data. Analysis of quantitative data was done using descriptive and inferential statistics with use of Statistical Package for Social Sciences. A multiple linear regression model aided in indicating links between practices of managing resources and performance of road projects within the county of Kakamega. Both resource planning and resource scheduling were found to have a positive and significant influence on timely completion of road projects implemented by County Government of Kakamega. This implied project resources management practices are significant predictor of timely completion of road projects. The study concluded that a key benefit to resource planning is that it helps organisations to fulfill task specifications efficiently. Successful resource scheduling allows in different ways to solve problems related to resource availability and job efficiency. The study recommended that project managers should use backward scheduling techniques when the date of delivery is set and the work has to be planned or scheduled to meet the deadline. The study suggested that further studies should be carried out on how project resource management practices affect the performance of road projects in other Counties in Kenya.

Key Words: Resource Planning, Resource Scheduling, Implementation of Government Projects

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INTRODUCTION

Projects of infrastructure among them road projects have a crucial role within societies of converging the economic development need and most importantly to change the citizens' quality of life (Onyango, Bwisa, & Orwa, 2017). The central role of public infrastructural projects in sustaining development is acknowledged in Chapter 27 of the 21st agenda of United Nations (UN Charter 1945). Likewise, the Kenya Vision 2030 recognizes infrastructure as an enabler for sustained development under the economic pillar. According to Mbaabu (2012), when there exists roads which are good and functioning properly, it greatly in enhancing growth in economy, reduces the rate of poverty, creates employment and wealth within the country.

Generally, road infrastructure projects being carried out by counties are of high quality, thus they allocate a lot of resources like materials, time, manpower, machines and space (Kumari & Vikranth, 2012). Major road infrastructure works in these counties involve heavy investments in terms of funds, utilizing technology of high quality and they require a model which is more advanced and supple in effectively managing the resources (Pojani & Stead, 2015). This is very crucial given that counties are implementing multiple projects and hence there is competition for limited resources among tasks in different projects. The adoption of advanced resource management methods ensures effective and reasonable allocation of the finite resources and that their ratios of use are increased (Blichfeldt & Eskerod, 2008). According to Pinha and Ahluwalia (2019), poor management of resources result to an overrun of costs and slippage in schedule in most projects of public infrastructure.

This is basically defined by criteria of budget, deliverables and time (Thomas & Fernandez, 2008). Recent studies have, however proved that project success is multidimensional and broadens the focus of performance to incorporate characteristics such as project management performance (Ika, 2009). Thus, success within a project is a concept which is

multidimensional, with dimensions such as business, technical, behavioral, strategic and behavioral being interrelated (Cao & Hoffman, 2011). Performance within a project as Chen et al. (2004) notes, is based upon the set timelines, its effectiveness and efficiency. Efficiency is noted by smooth operations within the team members and how resources such as cost and time are adhered to whereas effectiveness is quality of work that is being generated and whether objectives of the project are being met (Sundqvist, Backlund, & Chronér, 2014). Literature on management of projects look at performance of project as that which meets the schedule, efficiency of operations, goals and budget (Zidane & Olsson, 2017). Other indicators of project performance as outlined by Ali, Al-Sulaihi, and Al-Gahtani (2013) include satisfaction within clients, change of clients, performance of the business, environmental impact, minimum conflicts and disputes, health and safety.

Many construction projects in both developed and developing countries suffer from schedule performance due to many contributing factors. For example construction industry in the Gaza Strip suffered from many problems and complex issues in performance. That is, construction of 14 dwelling units at Rafah Area suffered from poor schedule performance because of delay for about 110 days. There were many realistic reasons such as closures, amendment of drawings and amendment of the design. In addition, there are other different reasons affecting construction projects performance in the Gaza strip such as poor management and leadership; inappropriate participants; poor relations and coordination; absence of motivation, control, monitor or decision making systems; inadequate infrastructure, political problems; cultural problems and economic conditions (UNRWA, 2010).

In India, the devolution of major road infrastructure projects led to development of India from a LDC to middle developed country in the early 1980s. In his study on the state of development in Asian countries, Alsuwaidi (2011)

argues that India's development was tied to decentralization of its development projects. However, he argues that there is differentiated rate of development in India from one devolved unit to another due to various reasons chief among them resources constraints.

In Kenya, there was a study by World Bank in 2014 on how the county governments were implementing projects which were funded by the government of Dutch and International Monetary Fund (IMF) in Nandi, Kisii, Murang'a and Kwale counties. Findings showed that only 21% of these development endeavors were effectively and efficiently finalized between 2013 and 2014. There was a failure of 48.25% within these counties on matters of re- carpeting of existent roads which were in bad condition. Nevertheless, a Devolution Annual Report (2015) produced by the Kenyan Government and United Nations Development Programme (UNDP) recognized a tremendous improvement when it comes to projects related to infrastructure following the promulgation of the new constitution in Kenya. Despite this, according to report by the devolution ministry in 2016, implementation of these projects across the counties was 55% unsuccessful as a result of several outstanding issues like insufficient finances allocated to such projects and inconsiderate utilization of available resources. This is in support of a Government of Kenya report of 2013 that revealed that 49.21% of the planned county development projects could not be achieved due to some unnecessary issues that could otherwise be avoided.

The county has a total of 3500 km road network of which 260 km is of bituminous standard while gravel surface covers 1,701.7 km and the earth surface covers 1389.3 km. Most roads in the county are not passable although a number of sub-counties have made efforts to have all of them regularly maintained. A number of government and other stakeholders have tried to ensure that the roads are in good state. The current government agencies include KeNHA, KeRRA, KURA, county government

and the national government. On the other hand, there are other major non-state actors involved in road maintenance including sugar companies such as Mumias Sugar, West Kenya Sugar Company.

There is need for more stakeholders to come on board so as to improve the state of these roads through regular maintenance, storm water management, maintenance of road boundaries amongst other activities. All stakeholders in different sectors need to harmonise their activities to avoid destruction and interference of other physical infrastructure along these roads. There are 30 km of railway line with two railway stations; however, they are rarely used due to frequent vandalism. The county has two air strips, one in Kakamega and the other in Mumias. There is need to upgrade and expand the airstrips within the county and revive the railway transport. Improved infrastructure will enhance accessibility to markets and reduce costs of production.

Statement of the Problem

Timely completion of road construction projects is fundamental if the project objectives and success is to be achieved within the stipulated cost, time, scope and quality. However, many construction projects are notorious for failing to complete in time due to cost and time overruns saddled with scope creep and poor communication protocols (Guerin, 2012). In this regard, road construction projects' timely completion has recently attracted serious attention from researchers, financing clientele, practitioners in the construction industry, and road users. According to Kagiri and Wainaina (2016), major projects in the devolved units in Kenya have failed or taken long than they could do because of both the internal and external factors in the counties.

Further, road construction projects in all the 47 counties has never been a success to a tune of 55% due to various prevailing constraints like lack of sufficient projects finances, politicization of development projects, insecurity in some counties, poor state of enabling infrastructure, poor technology and low levels of community

participation. KNBS (2020) report indicated that more than 70.0% of projects in Kakamega County are not timely completed as expected due to client related obstacles, material unavailability, poor infrastructure, natural calamities, financial inadequacy and poor management abilities. In Kakamega County for example, the road terminal joining Kisumu was carpeted with Ksh.110 million that came from the revenue of about 4.1billion that was collected by the Kakamega county government but took too long to be completed among other county roads (World Bank, 2017).

The major challenges highlighted in the Annual Development Plan 2017/2018 and CIDP 2018-2022 as affecting the meeting of the county project targets included insufficient resources in undertaking of major priorities but with the expensive nature of projects, weak M&E system for tracking the implementation of projects and value for money directed to these projects, delays in disbursement of funds which slowed project works as well as poor deployment of funds, equipment and staff in an optimal manner in efforts to evade the starving of key areas of priority while directing much resources in non-priority areas. This called for the urgent investigation of the project resource management and how it influenced timely completion of road in Kakamega County.

Ochieng (2014) study examined the influence of resource management practices on performance of projects in global system of mobile communications companies in Kenya and found that awareness on importance of resource management is carried out among GSM companies in Kenya. However, the study used qualitative data does not provide conclusive findings. Umulisa, Mbabazize and Shukla (2015) study examined the effects of project resource planning practices on project performance of Agaseke Project in Kigali, Rwanda and found that all project resource planning practices studied had a positive significant relationship on project performance. However, project resource planning practices alone doesnot affect project performance. Ndayisaba and Mulyungi (2018) study investigated

the effect of resources management on project success implementation and revealed that resources management has an influence of on project success implementation of strengthening livelihoods in rural Rwanda project Muhanga district. However, the study used cross-sectional research design that uses a small sample size and hence not representative of whole population. Therefore, this study investigated the influence of project resource planning and scheduling on the timely completion of road projects implemented by the County Government of Kakamega County, Kenya.

Objective of the Study

The main objective of this study was to examine influence of resource management practices on timely completion of road projects implemented by the county government of Kakamega County, Kenya. The study was guided by the following specific objectives;

- To establish the influence of resource planning on the timely completion of road projects implemented by the County Government of Kakamega County, Kenya
- To determine the influence of resource scheduling on the timely completion of road projects implemented by the County Government of Kakamega County, Kenya

This study tested the following null hypotheses

- H_01 : Resource planning does not significantly determine the timely completion of road projects implemented by the County Government of Kakamega County, Kenya.
- H_02 : Resource scheduling does not significantly determine the timely completion of road projects implemented by the County Government of Kakamega County, Kenya

LITERATURE REVIEW

Resource Based View Theory

This is a theory by Barney (1991) which indicates that the possession of resources which are strategic provides a given organization with a superb chance of creating a competitive advantage over their

rivals. This competitive edge can aid the organization in enjoyment of unassailable profits as when compared to similar competing groups. Managers of projects have a role of utilizing resources which are made available throughout the cycle stages of a project in ensuring their success as compared to implementation of projects of other institutions as follows; identification and classification of the resources within the firm, estimation of capabilities and vulnerabilities in relation to their rivals, identification of opportunities in ensuring that resources are utilized in a better way, identification of capabilities of the firm, assessing the ability of resources to generate rent and how capable they are in terms of maintaining sustainability, selection of a the best resource exploitation strategy within the firm in relation to its rivals and identification of gaps in the resources that need to be bridged (Johnstone & Brennan, 1996). This theory is an exploration of the desire for the right form of planning and implementation of projects on the basis of availability of resources. Based on this, management makes use of the readily obtainable resources and utilizing them for maximum success of projects in place. This theory is thus fundamental as it stresses on the correct form of scheduling of project resources towards ensuring that timely completion of road projects.

Planning Theory

The planning theory of projects is thoroughly described from the point of view of different knowledge areas in the PMBOK Guide. The planning processes are structured into core processes and facilitating processes, Koskela, Lauri & Gregory, (2002). There are ten core processes: scope planning, scope definition, activity definition, resource planning, activity sequencing, activity duration estimating, cost estimating, and schedule development, cost budgeting and project plan development. The output from these processes, the project plans, makes up an input to the executing processes.

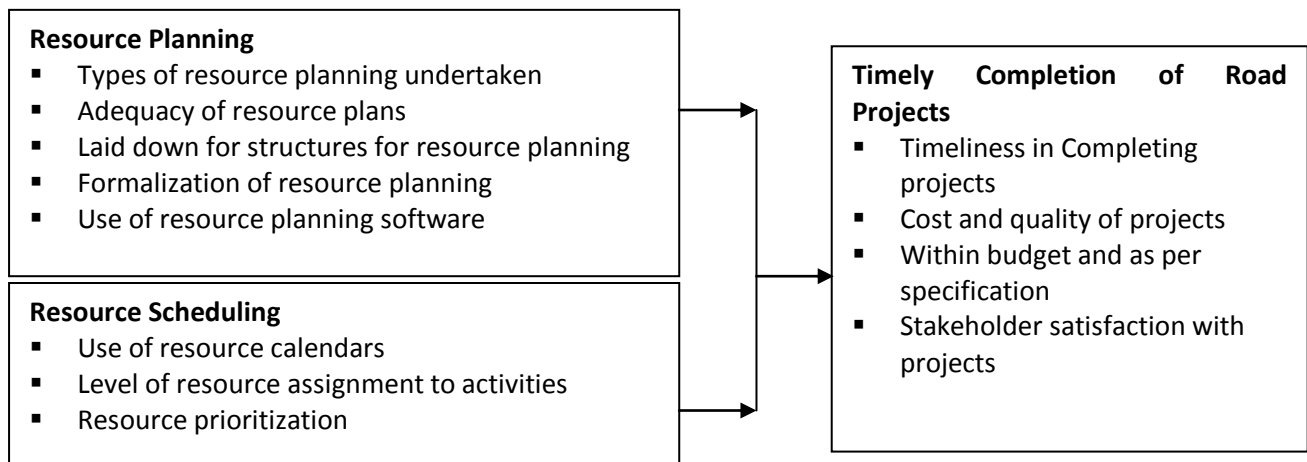
The planning processes dominate the scene in the

PMBOK Guide: in addition to the ten planning processes, there is only one executing process and two controlling processes. The emphasis is on planning, with little offered on executing especially. Comparison to theories in the general field of operations reveals that the perspective is that of management-as planning, Johnston & Brennan, (1996).

Here, it is assumed that the organization consists of a management part and an effect or part. Management at the operations level is seen to consist of the centralized creation, revision and implementation of plans. This approach to management views a strong causal connection between the actions of management and outcomes of the organization. By assuming that translating a plan into action is the simple process of issuing "orders", it takes plan production to be essentially synonymous with action, (Koskela, Lauri & Gregory, 2002). There is another approach to management, called management-as-organizing, which has been presented as a counterpart to management-as-planning (Johnston & Brennan, 1996).

Here it is assumed that human activity is inherently situated, i.e. a response to the situation in question. Thus, the structured nature of the environment may contribute to purposeful acting. Another important difference to the management-as-planning model is that the agent consists of interacting sub-units, i.e. they are capable of sensing, planning and acting. Instead on central representation, it is assumed here that there are several representations for different sub-units (Koskela et al., 2002).

The theory is important in this study because an organisation's ability to gather, alter and exploit resources can be fundamental to success. Resources are often controlled by organisations not in the control of the organisation needing them, meaning that strategies must be carefully considered in order to maintain open access to resources. The study was used to investigate role of resource planning on timely completion of road projects.



Independent Variables

Dependent Variables

Figure 1: Conceptual Framework

Empirical Review

A study by Abu El-alkass (2012) on the analysis of the system of managing resources of construction for contractors of the Gaza strip asserted that equipment planning in projects was necessitated by the need to establish the numerous types of equipment and their sizes which were either on direct purchase or on rent which aided in the control of the cost of the equipment in construction projects. It was also noted that planning of labor helped the contractors in maintaining the right number of employees at the right time with the capability to execute project tasks which were aimed at ensuring success of the project. The study highlighted that labor accounted for around 40%, which was an approximate cost in huge projects, hence maximization of productivity of labor termed as a requirement. However, this study was undertaken in a different setting hence there cannot be generalization of these findings in fitting the case of the county of Kakamega.

Kumari and Vikranth (2012) undertook a study on planning of resources of the construction of highway projects of India. A survey was conducted. The study found that these projects suffered from underutilized resources which were attributed to lack of detailed and thorough planning and absurd decision making in site management. The study found that resource planning in most of these

projects was confined to planning of time resources but planning on how the resources would be mobilized and utilized and planning according to resource capacity and availability was not considered. According to the study, material planning reduced the level of unnecessary wastage and ensured that all the required material for all project phases were available. The findings also demonstrated that manpower planning was fundamental in the achievement of project objectives since it ensured that in executing the projects, the right number and kind of project team, within the correct timing and place, and those capable of completing the project tasks in an effective and efficient manner was available. However, this study was a case study using a purposive sampling technique.

Dong, Li, Zhao, Li, and Yan (2008) conducted an assessment of resource scheduling in multi-software projects. The study utilized a comparative study design. The assessment revealed that resource scheduling was fundamental in providing project schedules that were effective besides enhancing efficiency in using project resources. It was emphasized that failure to perform resource scheduling would result to inefficiency in utilizing project resources and heightened costs. According to the research, resource scheduling provided a better view of how the project ought to be

implemented which was attained through the placement of schedules within activities of the project, for instance the date for commencement and completion of the tasks and resources required to perform them. However, the contextual setting of this study varies from the one being focused. Also this study utilized comparative design of study, which varies from the descriptive one being relied upon.

Memon and Zin (2011) analyzed the degree to which resource-driven scheduling was being implemented within the construction sector in Malaysia. A survey was undertaken. It was articulated that resource scheduling ensured that project activities were scheduled in a way that project deadlines were achieved utilizing the defined resource availability limits. The study discovered an increased usage commercial packages in undertaking resource scheduling among the firms including Microsoft Project and Primavera Project Planner. Some of the resource scheduling practices which were being implemented on an average extent encompassed resource calendars, assignment of resources to activities, resource priority, leveling, smoothing, stretching and also resource splitting. The study recognized that given that the time span for each project activity depended on resource availability, project challenges were experienced when project work proceeded without considering the manner in which labour, equipment and material constraints would affect the scheduling of the activities. However, a survey design was used which has challenges in validity and reliability of results.

METHODOLOGY

This study utilized descriptive survey design. That is, a descriptive survey design helps the researcher to collect information that describe, explore and help the investigator understand social life. The target populations (those cases that contain the desired information) were prequalified contractors in

Kakamega County, county public works officers, employees from County Transport and Infrastructure department, and Government road engineers from National Construction authority (NCA), Kakamega Region. The study's sample size was determined using Taro Yamane's proportional sampling technique formula. The study used structured (close ended) questionnaire to get uniform responses from respondents. The data collection tool adopted was a 5-point likert scale where the respondents selected their appropriate response from the structured questionnaires. The quantitative data collected was analyzed by Statistical Package for Social Sciences (SPSS) version 24 where descriptive and inferential statistics was computed. Descriptive statistics were presented through percentages, means, standard deviations and frequencies. For variable relationships, correlation analysis and linear regression analysis were computed.

FINDINGS AND DISCUSSIONS

Results of Descriptive Analysis

The descriptive statistics presented in this section were summated responses on the statements measuring the study's variables using Likert scale with values ranging from 5 to 1; that is; 5=Strongly Agree, 4=Agree, 3= Uncertain, 2=Disagree and 1= Strongly Disagree. The results were presented in the table form showing frequencies of responses as per each statement and its corresponding percentage score in brackets, means and standard deviations. Analysis of descriptive data was also presented in terms of Mean (M) and Standard Deviation (SD). The results were presented as per the study specific variables as follows.

Resource Planning

The respondents were given a list of statements related to resource planning in the road projects undertaken within the county state to state their level of agreement. The results were as shown in Table 1.

Table 1: Resource Planning

Statement	5	4	3	2	1	Mean	SD
There is thorough planning of all the resources used in carrying out road projects in the county.	28 (39.4)	37 (52.1)	3 (4.2)	2 (2.8)	1 (1.4)	4.25	0.79
The resource plans adhered to throughout the road project cycles within the county are very adequate.	12 (16.9)	44 (62)	8 (11.3)	4 (5.6)	3 (4.2)	3.82	0.93
There are established structures that guide project management teams when planning for road project resources within the county.	12 (16.9)	35 (49.3)	10 (14.1)	9 (12.7)	5 (7)	3.56	1.13
The entire process for project resource planning in the county is highly formalized.	3 (4.2)	46 (64.8)	8 (11.3)	10 (14.1)	4 (5.6)	3.48	0.98
The use of resource planning softwares/computer packages has been adopted by project management teams in the county.	14 (19.7)	31 (43.7)	19 (26.8)	5 (7)	2 (2.8)	3.70	0.96
Average Score (N=71)	19.4	54.4	13.5	8.5	4.2	3.76	0.96

From the results in Table 1, the average mean of 3.76 indicated that resource planning affects timely completion of roads in Kakamega County with a standard deviation of 0.792. 19.4% of the respondent strongly agreed, 54.4% agreed, 13.5% neutral, 8.5% disagreed and 4.2% strongly disagreed. A study by Abu El-alkass (2012) on the analysis of the system of managing resources of construction for contractors of the Gaza strip asserted that equipment planning in projects was necessitated by the need to establish the numerous types of equipment and their sizes which were either on direct purchase or on rent which aided in the control of the cost of the equipment in construction projects.

From the results in Table 1, the mean of 4.25 indicated that there is thorough planning of all the resources used in carrying out road projects in the county to a greater extent with a significance variance of 0.79. 52.1% of the respondent agreed, 39.4% agreed, 2.8% disagreed and 1.4% strongly disagreed. These findings agreed with Kumari and Vikranth (2012) study findings on planning of resources of the construction of highway projects of India. A survey was conducted. The study found

that these projects suffered from underutilized resources which were attributed to lack of detailed and thorough planning and absurd decision making in site management.

The mean of 3.82 indicated that the resource plans adhered to throughout the road project cycles within the county are very adequate with a significance variance of 0.93. This statement was strongly agreed by 16.9% of the respondents, 62.0% agreed, 11.3% neutral, 5.6% disagreed and 4.2% strongly disagreed. This is in agreement with a research by Shadrack (2018) on issues affecting practices of planning of resources in the construction sector within Kenya with a shift to contractors of the county of Nairobi and discovered that even though resource planning in the industry was used to a great extent, much of it was non-structured.

Resource Scheduling

The respondents were further given a list of statements related to resource scheduling in the road projects undertaken within the county state to state their level of agreement. The results are as shown in Table 2.

Table 2: Resource Scheduling

Statement	5	4	3	2	1	Mean	SD
The resources available are always considered throughout the process of scheduling when implementing county road projects.	6 (8.5)	26 (36.6)	26 (36.6)	9 (12.7)	4 (5.6)	3.30	0.99
There is extensive use of resource calendars when undertaking road projects in the county.	10 (14.1)	31 (43.7)	21 (29.6)	7 (9.9)	2 (2.8)	3.56	0.95
There is efficient assignment of resource to different project activities throughout road project cycles in the county.	47 (66.2)	15 (21.1)	4 (5.6)	3 (4.2)	2 (2.8)	4.44	0.98
Project managers have always successfully reorganized road project tasks and resources so as to achieve project objectives under limited resources and budget constraints.	29 (40.8)	26 (36.6)	5 (7)	5 (7)	6 (8.5)	3.94	1.24
There has been efficient prioritization of resources in cases of competing resource demands.	23 (32.4)	19 (26.8)	3 (4.2)	12 (16.9)	14 (19.7)	3.35	1.56
Average Score (N=71)	32.4	33.0	16.6	10.1	7.9	3.72	1.15

From the results in Table 2, the average mean of 3.72 indicated that resource scheduling affects timely completion of road projects in Kakamega County, Kenya with a standard deviation of 1.15. 32.4% strongly agreed on this statement, 33.0% agreed, 16.6% neutral, 10.1% disagreed and 7.9% strongly disagreed. Joshi and Patil (2013) assessed resource scheduling in projects of construction with a case study design being utilized. It was noted that for a project to be completed successfully, project resource scheduling was very critical task since it allowed for innovative planning of project activities that was limited by the resources that were available. The study found that resource scheduling reduced the unforeseen project losses which might occur as a result of large variances in the utilization of resources.

From the results in Table 2, the mean of 4.44 indicated that there is efficient assignment of resource to different project activities throughout road project cycles in the county with a significance variance of 1.02. 66.2% strongly agreed on this statement, 21.1% agreed, 5.6% neutral and 2.8% strongly disagreed and 4.2% disagreed. These findings concur with the findings of Dong, Li, Zhao,

Li, and Yan (2008) who conducted an assessment of resource scheduling in multi software projects and revealed that resource scheduling was fundamental in providing project schedules that were effective besides enhancing efficiency in using project resources.

The mean of 3.94 indicated to a moderate extent on the statement that project managers have always successfully reorganized road project tasks and resources so as to achieve project objectives under limited resources and budget constraints with a significance variance of 1.24. 40.8% strongly agreed on this statement, 36.6% agreed, 7.0% neutral and 7.0% disagreed. This is in disagreement with Memon and Zin (2011) study findings that analyzed the degree to which resource-driven scheduling was being implemented within the construction sector in Malaysia and that study articulated that resource scheduling ensured that project activities were scheduled in a way that project deadlines were achieved utilizing the defined resource availability limits.

Timely Completion of Road Projects

The study sought to investigate timely completion

of road projects in Kakamega County, Kenya due to resource management practices and the findings

are presented as under. The results were as shown in Table 3.

Table 3: Timely Completion of Road Projects

Statement	5	4	3	2	1	Mean	SD
Residents are satisfied with timely completion of road projects	21 (29.6)	19 (26.8)	11 (15.5)	9 (12.7)	11 (15.5)	3.42	1.43
There is timely completion of roads in regard to set quality standards and roadproject specifications	21 (29.6)	27 (38)	8 (11.3)	11 (15.5)	4 (5.6)	3.70	1.21
County road construction projects in the area are well done and completely within the projected time and cost	11 (15.5)	22 (31)	23 (32.4)	11 (15.5)	4 (5.6)	3.35	1.10
County road construction project deliverables are done in time	12 (16.9)	19 (26.8)	24 (33.8)	13 (18.3)	3 (4.2)	3.34	1.09
Road construction time overruns are well catered for	14 (19.7)	24 (33.8)	20 (28.2)	6 (8.5)	7 (9.9)	3.45	1.19
Average Score (N=71)	22.3	31.3	24.2	14.1	8.2	3.45	1.21

From the results in Table 3, the average mean of 3.45 indicated that resource management practices affects timely completion of road projects in Kakamega County, Kenya to a moderate extent with a standard deviation of 1.21. This was strongly agreed by 22.2%, 31.3% agreed, 24.2% neutral, 14.1% disagreed and 8.2% strongly disagreed. According to Maserang (2012) on basis of project management, managing of resources is developing of techniques, processes and philosophies of the most appropriate approach of allotting resources to activities or tasks of a given project.

The mean of 3.70 indicated that there is timely completion of roads in regard to set quality standards and road project specifications. This was strongly agreed by 29.6%, 38.0% agreed, 11.3% neutral, 15.5% disagreed and 5.6% strongly disagreed. This finding is in support with Watt (2007) who indicates that management of resources is the deployment of resources of the organization effectively and efficiently at the time they are required.

The study observed that road construction time overruns is well catered for as shown by mean of 3.45 with standard deviation of 1.19. This was strongly agreed by 19.7%, 33.8% agreed, 28.2%

neutral and 8.5% disagreed. Li, Nie, Yang, and Wang (2017) highlight project resource availability, planning, allocation, balance, and coordination as crucial aspects of resource management especially in multi-project management.

Residents are satisfied with timely completion of road projects was indicated to a lower extent as shown by mean of 3.42 and a standard deviation of 1.43. This statement was strongly agreed by 29.6% of the respondents, 26.8% agreed, 12.7% disagreed and 15.5% strongly disagreed. This is in line with Adek (2016) who emphasizes the crucial need of managers of projects of monitoring the flow and utilization of utilities in the entire life cycle of the project to ensure the timely making of necessary changes in allocation of resources.

Inferential Analysis

Direct Linear Influence of Resource planning on Timely completion of road projects

The first objective was to establish the influence of resource planning on the timely completion of road projects implemented by the County Government of Kakamega County, Kenya. Direct linear regression was used to test the direct influence of resource planning on timely completion of road projects in Kakamega County. The results were shown table 4.

Table 4: Direct Influence of Resource planning on Timely completion of road projects

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.557 ^a	.311	.301	.31831	.311	31.100	1	69	.000

ANOVA ^b						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.151	1	3.151	31.100	.000 ^b
	Residual	6.991	69	.101		
	Total	10.142	70			

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	1.237	.441		2.807	.006
	Resource planning	.729	.131	.557	5.577	.000

a. Dependent Variable: Timely completion of road projects

As in indicated in table 4, the model summary showed that $R^2 = 0.311$; implying that 31.1% variations in the timely completion of road projects in Kakamega County is account for by resource planning while other factors not in the study model accounts for 68.9% of variation in timely completion of road projects in Kakamega County. This variation is significant as indicated by $F(1,69)=31.100$, $P=0.000$ implying that resource planning is significant predictor of timely completion of road projects.

Further, coefficient analysis showed that resource planning has positive significant influence on timely completion of road projects in Kakamega County ($\beta = 0.729$, $P=0.000$). This implied that a single increase in resource planning will lead to 0.729 units increase in the timely completion of road projects in Kakamega County. Therefore, the linear regression equation was;

$$(i) y = 1.237 + 0.729X_1$$

Where;

y = timely completion of road projects in Kakamega

County.

X_1 = resource planning

The results were supported by Umulisa, Mbabazize and Shukla (2015) assessed the effects of Project resources planning on project performance. The results revealed that resource planning practices influenced the performance of Agaseke project. Human resource planning practices such as teamwork and training of the project members on handcraft making influenced project performance. The positive relationship between teamwork, training of the project members on handcraft making and project performance was significant. This implies that increasing teamwork within the project and training project members would lead to an increase in project performance. The study revealed that there the project members worked as team and were trained on handcraft making.

Linear Influence of Resource scheduling on Timely completion of road projects

The second objective was to determine the influence of resource scheduling on the timely

completion of road projects implemented by the County Government of Kakamega County, Kenya. Direct linear regression was used to test the direct

influence of resource scheduling on timely completion of road projects in Kakamega County. The results were shown table 5.

Table 5: Direct Influence of Resource scheduling on Timely completion of road projects

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change
						F Change	df1	df2	
1	.576 ^a	.332	.322	.31336	.332	34.286	1	69	.000
ANOVA ^b									
Model	Sum of Squares		df	Mean Square	F	Sig.			
1	Regression	3.367	1	3.367	34.286	.000 ^b			
	Residual	6.775	69	.098					
	Total	10.142	70						
Coefficients ^a									
Model		Unstandardized Coefficients		Standardized Coefficients		T	Sig.		
		B	Std. Error	Beta					
1	(Constant)	1.473	.380			3.881	.000		
	Resource scheduling	.658	.112	.576		5.855	.000		

a. Dependent Variable: Timely completion of road projects

From table 5, the model summary showed that $R^2 = 0.332$; implying that 32.2% variations in the timely completion of road projects in Kakamega County is explained by resource scheduling while other factors not in the study model accounted for 67.8% of variation in timely completion of road projects in Kakamega County. This coefficient of determination is significant as indicated by $F(1,69) = 34.286$, $P=0.000$ implying that resource scheduling is significant predictor of timely completion of road projects.

Further, coefficient analysis shows that resource scheduling has positive significant influence on timely completion of road projects in Kakamega County ($\beta = 0.658$, $P=0.000$). This implies that a unit increase in resource scheduling will lead to 0.658 units increase in the timely completion of road projects in Kakamega County. Therefore, the linear regression equation is;

$$(ii) y = 1.473 + 0.658X_2$$

Where;

y = timely completion of road projects in Kakamega County.

X_2 = Resource Scheduling

The results concurred with Obegi and Kimutai (2017) assess resource scheduling and project performance of international not-for-profit organizations in Nairobi County, Kenya. The major findings of the research included: There exists periodic budget monitoring to measure expenditures against budget; Project staff complete their assignments as allocated; A number of project changes are made during implementation; Project equipment is assigned to staff for use during project implementation; The organization measures its project performance periodically and; There exists a supporting learning environment in the organization.

Testing of Study Hypotheses

Study hypothesis one stated that resource planning does not significantly determine the timely completion of road projects implemented by the County Government of Kakamega County, Kenya. Results indicate that resource planning significantly influence timely completion of road projects in Kakamega County. Hypothesis one is therefore rejected. The results indicate that that a unit increase in resource planning will lead to 0.304 units decrease in the timely completion of road projects in Kakamega County. This is in line with Kumari and Vikranth (2012) study found that these projects suffered from underutilized resources which were attributed to lack of detailed and thorough planning and absurd decision making in site management. Secondly, study hypothesis two stated that resource scheduling does not affect the timely completion of road projects in Kakamega County. Results indicate that resource scheduling significantly influence timely completion of road projects in Kakamega County. Hypothesis two was therefore rejected. The results indicated that that a unit increases in resource scheduling will lead to 0.344 unit decrease in the timely completion of road projects in Kakamega County. This was in agreement with Dong et al. (2008) study that revealed that resource scheduling was fundamental in providing project schedules that were effective besides enhancing efficiency in using project resources.

CONCLUSIONS AND RECOMMENDATIONS

The study concluded that resource planning influence timely completion of road projects implemented by the County Government of Kakamega County, Kenya. The first null hypothesis was rejected. The study concluded on resource planning that a key benefit to resource planning is that it helps organizations' to fulfill task specifications efficiently. Project managers should recognize skill shortages or criteria for learning, helping to mitigate potential possible asset tensions or negative effects. Planning requires people to be assigned to work on the basis of a number of

specific factors such as their capacity, expertise and position for project managers will always be certain that they have the right person for the right job.

The study concluded that resource scheduling influence timely completion of road projects implemented by the County Government of Kakamega County, Kenya. The second null hypothesis was rejected. The study concluded on resource scheduling that successful resource scheduling allows in different ways to solve problems related to resource availability and job efficiency. The allocation of capital lets you coordinate all things to prepare and complete the project efficiently. Efficient use of assets to accomplish the projects on time and within the allotted budget is an important aspect of any project scheduling management.

The study recommended on resource planning that according to job and efficiency requirement, more workers during busy hours, and fewer staff at slower times. Planning should be such as to cope efficiently with the project's needs, should be focused on the best use of the assets' expertise, should be achieved well in advance and should take into account the satisfaction and confidence of the workers at the same time.

The study recommended that different approach to task scaling and planning on asset management. Of example, ahead thinking techniques can be used if a specific project date is established and the assignments are used to decide the timetable and the corresponding deadlines of completion. Additionally, project managers can use backward scheduling techniques when the date of delivery is set and the work has to be planned or scheduled to meet the deadline. Schedules were set and projected throughout the life cycle of the project. The project should begin with a specified planning strategy and this method is likely to change as the plan progresses and changes take place. The aim is to stay informed and agile and to resolve as quickly as possible all scheduling issues.

Areas of Further Studies

The current study focused on assessing the effect of project resource management practices on timely completion road projects in Kakamega County, Kenya specifically on how resource planning, resource scheduling, resource allocation and

resource monitoring affects timely completion of road projects. Therefore, further studies should be carried out on how project resource management practices affect the performance of road projects in Kakamega County, Kenya.

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