

FACTORS AFFECTING THE PERFORMANCE OF ROAD CONSTRUCTION PROJECTS IN UASIN GISHU COUNTY, KENYA.

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Abstract

This study entailed the process of examining and carrying out a survey on county government officers, registered contractors, consultants and regulatory body officials in Uasin Gishu County. The descriptive survey method was adopted for this research and data was obtained by means of survey using questionnaires. A sample size of 82 respondent drawn from a population of 454 was used in this research work which includes: county project manager, finance manager, auditor, inspectors, Quantity Surveyors, Civil Engineers, and some of the regulatory officials. Population characteristics include gender, education level, the number of years in practice, department of work, the values of project and professional qualifications. The purposive random sampling method was used to select individuals for the study. Data was collected by means of questionnaires. Primary Data involved data collected from respondents' responses to the questionnaires. Oral responses was also be obtained where necessary. Secondary Data involved data collected from textbooks, journals, articles, reports from within and outside the road project construction industry and the internet. Descriptive and inferential statistics was used to analyze the data collected by using the Statistical Package for the Social Sciences (SPSS) version 23 for analysis. In inferential statistics, regression analysis was used to determine the relationship between variables. The result revealed a low satisfaction level in county managerial functions in regard to planning, organizing, staffing, coordination and controlling of the project activities. Risks and uncertainty hindered the performance. Public policies and regulations and mismanagement of project funds contributed to poor performance of the road construction project in Uasin-Gishu County. The conclusion is that managerial functions, project risks and uncertainty, public policies and regulations and management of financial resources all had a positive influence on performance of road construction projects. The recommendations for improvement in performance include: to consider political and environmental risks in cost estimation; to develop monitoring and control mechanism; to establish project safety systems; to use competition to allocate performance-based subsidies contract, which allow for better value for money; to simplify accounting and report system and to make the financial and audit reports available to the project stakeholders for their individual scrutiny.

Keyword: Management functions, Performance, Project management, Risk and uncertainty, Public policies and regulations and Road.

Introduction

The success of road construction project depends on its performance, which is measured base on timely completion of the project, within the budget, required quality standards and customers' satisfaction (Omran, 2012). Project is a complex, non-routine, one-time effort limited by time, budget and resource and performance specifications designed to meet customer needs. The study is aimed at investigating the factors that affect the performance of road project in Uasin-Gishu County. Performance is about how well something can be done and to measure project performance in terms of time, cost, quality and client satisfaction, a number of factors affecting project performance indicators was considered. These factors include; managerial activities, project risks and uncertainty, public policies and regulations and management of financial resources. The County Government of Uasin Gishu banks on better roads as a force to speed up development in all sectors. Uasin Gishu County is a county in the rift valley province of Kenya. Since the country adopted its Vision 2030 strategy, the emphasis has been placed on trade, industrial expansion and infrastructure development, with the aim of not only providing a stable economic environment but also transforming and solidifying the country as a middle-income economy (Kenya's Vision 2030). The County enjoys a significant length of good road network comprising of 310 (33%) kilometers of bitumen surface, 549 (14%) kilometers of marrum and 377 (53%) kilometers of earth surface (UGCG, 2016).

The department of Roads, Transport and Public Works is vested with the responsibility of providing holistic and integrated transport system as well as operating and maintaining an efficient, safe and cost-effective transport system. It is in charge of opening up new roads, maintaining the existing ones and tarmacking of all the roads devolved to the County. However, the performance of the Uasin-gishu county road projects has not been satisfactory despite its potential for growth and development. Roads accessibility in the County still remains poor. Most feeder roads are rugged and impassable, making it hard to communicate and move produce from the rural areas to the markets. The rugged nature of the roads also leads to high vehicle maintenance costs which ultimately translating into high transport costs (Kokeluk, 2013). The roads are in poor condition with most areas being beyond routine maintenance operations. Some of the roads were constructed to bitumen standards over 20 years ago, and are not adequately maintained; despite a continuous increase in the traffic volume.

Globally, road project managers strive to deliver successful projects, and often there exist an absence of standard benchmarks for evaluating the road projects performance and success. In Australia, infrastructure review carried out by PriceWaterhouseCoopers (2008) on major infrastructure deliver found out that a Successful infrastructure delivery requires full attention to the detail and the overarching concept of projects at each stage of project development, approval, construction, and operation. There is no winning formula, but there are several essential elements that help to improve project success and minimize the probability and consequences of unintended adverse project outcomes. Road construction is complex in nature because it contains large number of parties as clients, contractors, consultants, stakeholders, shareholders and regulators. The complexity, uncertainty and dynamics of most road construction projects in most developed countries such as America and Europe create difficulties for even the best project managers (Chan & Kumaraswamy, 2011). Decision milestones are used to anticipate outcomes, risk management is done to prevent disasters and sequential iteration is employed to ensure that

the desired facilities are available, yet projects still end up with schedule delays, budget overruns and compromised specifications (Meyer *et al.*, 2002).

In Brazil, the low efficiency of planning activities, monitoring systems, administrative and operational burdensome procedures in preparing and executing public investment programs are also part of factors influencing low performance of road project in Brazil (Lancelot 2010). In Swaziland, more than too often: planning of road investments based on economic and technical criteria remains indicative; the quality of engineering designs remains unsatisfactory; the procurement and management of contracts remain a big challenge to project managers. In business relations, as stated by Kaklauskas *et al.*, (2010), the global economic crisis is brought about by distrust of other stakeholders. Trust reinforces the relationships of the critical stakeholder that often determine the success of a project (Brewer& Strahorn 2012). Smyth *et al.*, (2010) note that trust provides an important resource for creating greater probability and certainty.

In Uganda Annual Monitoring Report reported that, the National Roads Maintenance implemented by UNRA Stations was affected by: inadequate and untimely release of funds for force account; delays in the procurement of contractors for the term and periodic maintenance contracts; and inadequate mechanical imprest budget compared to the rate of breakdown of the old equipment The Republic of Uganda, (2015). The problems affecting Ghanaian contractors and consultants were researched by Ofori (2014) and found that challenges are the same as those noted generally in reports on construction industries in other third world countries. The challenges identified by Ofori (2014) as particularly influencing the performance of Ghanaian contractors include lack of ability to obtain adequate working capital, insufficient organization, inadequate engineering competence and poor workmanship.

The audit report of the Controller and Auditor General of the united republic of Tanzania (Ludovick, 2010) shows that, the road works system in Tanzania is not managed efficiently and timely. Plans and budgets are often revised, resulting in significant delays and cost overruns. Consultants are the ones who determine their own schedule, have multiple roles and are not managed well. All put together indicates that ten roads built and audited were not produced in a way that best serves the public interest. The audit report further stated that management of consultants by the client is not adequate. There is lack of monitoring mechanism of these consultants who are involved in planning, preparation and design and in controlling activities of the road constructions like supervision, monitoring, inspections and evaluation of the works done by contractors. Weak quality control systems resulted in early wear and tear necessitating repair and maintenance soon after the completion of construction works.

In Kenya, the construction process is executed by various professionals of diverse training and skills, namely: land surveyors, project managers, architects and designers, quantity surveyors, engineers, contractors, builders, estate and marketing agents and facility managers (Buildafrique Consulting Limited, 2011). The professional and regulatory bodies that govern the works of these professionals in the Kenya construction industry include: Board of Registration of Architects and Quantity Surveyors (BORAQS), Architectural Association of Kenya (AAK), Institute of Quantity Surveyors of Kenya (IQSK), National Environmental Management Authority (NEMA), Uasin Gishu County Government (UGCG), Ministry of Public Works (MoPW) and Engineers Registration Board (ERB). Prior to the Reforms of 2006 in the Roads

Sub-Sector, the uncertainties, duplication of roles and inconsistency in the road asset management system largely contributed to poor state of roads in the country. This was mainly due to the fact that several Ministries concurrently exercised road management responsibilities through some of their departments and agencies (Ministry of Roads, policy paper, 2012). It further stated that, most road management agencies employed inefficient operational procedures under bureaucratic civil service regulations and lacked clarity in the legal, operational and structural relationships amongst themselves.

Uasin Gishu has an extensive road network comprising of over 300 kilometers of tarmac roads, 549 kilometers of marrum and 377 kilometers of earth roads. The existence of good and well-functioning road network is vital for economic growth, poverty reduction, and wealth and employment creation. The infrastructure has been given the highest priority to ensure that the main road projects under the economic pillar are implemented, the Ministry of Roads Service Charter (2008) stated that, there is a need for improvement of road construction performance because the road transport carries about 80% of all cargoes and passengers in the country. 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, and poor quality (Maina, 2012). Despite immense allocation of the fund by the government in all its financial budget, the county government still faces the challenges with poor performance of the road construction projects. However, its encouraged to note that the government has continued to strengthen the county economy and political forum with the introduction of performance contracts which aims at improving the service delivery of the contractors to the public. The research was undertaken to suggest ways to improve performance of road construction projects in Uasin Gishu County.

Statement of the Problem

The County enjoys a significant length of good road network comprising of 310 (33%) kilometers of bitumen surface, 549 (14%) kilometers of marrum and 377 (53%) kilometers of earth surface and the development and maintenance of roads are encouraged due to its influence on socio-economic growth and poverty reduction. It has positively influence production costs, employment creation, access to market, reduced transport cost and increase investment in the county.

Despite this, roads, transport & public works (RTPW) in Uasin-Gishu County government suffers poor performance of road construction projects. Hence, most feeder roads remain rugged and impassable, making it hard to communicate and move produce from the rural areas to the markets (Uasin-Gishu County Government (UGCG), 2016). The rugged nature of the roads also leads to high vehicle maintenance costs which ultimately translating into high transport costs. The road physical conditions including the surface, road shoulders, roadside drainage, road furniture and culvert crossings have been poorly constructed and rehabilitated and without proper drainage, water collects and stagnates on the roads causing deep gullies and eventual collapse (The World Bank 2015). Poor planning and supervision of the project by the management and hiring incompetent contractors is another important factor leading to the poor performance of roads construction projects in the County (UGCG, 2016). Kokeluk, (2013) on his blog on Uasin Gishu Insight stated that the roads are impassable not because there is no provision of funds from the central government but because the funds intended for construction and maintenance ends up in individual pocket through white elephant projects.

The regulatory environment in Kenya has been hostile to project contractors and impeded it (World Economic Forum, & Boston Consulting Group, 2015). Excessive regulations have hindered entrepreneurial activity, as project companies spend more time and resources complying with rules and regulations (The World Bank 2013). The road construction projects are complex in its nature because it comprises large numbers of parties as owners (clients), contractors, consultants, stakeholders, and regulators. Complexity, uncertainty and dynamics creates difficulties for even the best project managers (Chan & Kumaraswamy, 2011). The contracted road are of low quality and only last between 2-5 years before maintenance because of shoddy works characterized by mismanagement of project funds, managerial function, risks and uncertainty of the project and public policies and regulations influencing performance of road construction projects in Kenya. Poor performance in road project affects governments, consultants, contractors, suppliers and the overall economic and social transformation subsequently affecting national and global development. Several researches have been done on construction project performance aimed at improvement, but the problem continues to manifest itself. Hence this study is set to identify factors affecting the performance of the road construction projects in Uasin-Gishu County by delivering a successful project on time, within the budget, in accordance with specifications and to stakeholders' satisfaction. Finally, the paper will formulate a number of recommendations in order to bridge the gap between the different perceptions thus improving the level of road projects performance.

Study Objectives

To find out the factors affecting the performance of road construction projects in Uasin-Gishu County. The study was guided by the following objective

- i. To determine the effect of managerial functions on the performance of road construction project in Uasin-Gishu County
- ii. To examine the effect of project risks and uncertainty on the performance of road construction project in Uasin-Gishu County
- iii. To establish the effects of public policies and regulations on the performance of road construction project in Uasin-Gishu County
- iv. To find out the effects of management of financial resources on the performance of road construction project in Uasin-Gishu County

Theoretical Review

These are explanations about the phenomenon and Marriam (2001) asserted that theoretical framework provides the researcher the lens to view the world. Evenett and Hoekman, (2008), theories can be classified according to their scope, function, structure and levels. A theory is an accepted fact that attempt to provide plausible or rational explanation of cause and effect relationship among a group of observed phenomena (Kothari, 2004). Some of the relevant theories are discussed below.

Management Theory of Henri Fayol

Henri Fayol's management theory (1917) is a simple model of how management interacts with personnel. Fayol believed that management had five principle roles: to forecast and plan, to organize, to command, to co-ordinate, and to control. Forecasting and planning is the act of anticipating the future and acting accordingly. Planning must take the organization's available

resources and flexibility of personnel into consideration as this will guarantee continuity (Van Vliet 2011). Organization is the development of the institution's resources, both material and human. This means that there must be sufficient capital, staff and raw materials so that the organization can run smoothly and that it can build a good working structure (Hodge *et al.*, 2003). Commanding is keeping the institution's actions and processes running. When given orders and clear working instructions, employees will know exactly what is required of them. Return from all employees will be optimized if they are given concrete instructions with respect to the activities that must be carried out by them. Successful managers have integrity, communicate clearly and base their decisions on regular audits. They are capable of motivating a team and encouraging employees to take initiative. Co-ordination is the alignment and harmonization of the group's efforts. When all activities are harmonized, the organization will function better. Coordination therefore aims at stimulating motivation and discipline within the group dynamics (Van Vliet 2011). This requires clear communication and good leadership. Finally, control means that the above activities were performed in accordance with appropriate rules and procedures. By verifying whether everything is going according to plan, the organization knows exactly whether the activities are carried out in conformity with the plan (Wren *et al.*, 2002). This management theory by Henri Fayol (1917) supports the management functions variable of the research study by recognizing key managerial functions that a project manager should adopt while implementing the project from the initial stage to closure of the project so as to minimize on project risks and deliver project result on time, within the budget and according to client specification.

The Theory of Constraints (TOC)

Eli Goldratt (Goldratt, 1984) started the Theory of Constraints (TOC), and based this management theory that every system has at least one constraint limiting it from getting more of what it strives for. If this were not true, then the system would produce infinite output. The theory implies that every project no matter how well it performs, has at least one constraint that limits its performance. It also explains that a project can only have only one constraint a time and that other areas of weakness are non-constraints until they become the weakest link. (Ricketts 2008) The TOC has been applied to production planning, production control, project management, supply chain management, accounting and performance measurement, and other areas of business as well as such not-for-profit facilities as hospitals and military depots. These constraints determine the performance of the project whether they are acknowledged or not. Therefore, it is in a manager's best interest to identify and reduce the project constraints within the organization.

The TOC is both descriptive and prescriptive in nature; it not only describes the cause of system constraints, but also provides guidance on how to resolve them. This theory refers to systems in organizations as chains. As the adage goes, 'A chain is only as strong as its weakest link' and this is what the theory of constraints reflects. A system is a collection of interrelated, independent processes that work together to turn inputs into outputs in the pursuit of some goal (Jostarndt, 2007). The weakest link is the constraint that prevents the project from doing any better at achieving its goal. This theory supports the risks and uncertainty variable under study. The theory can be applied to factors that contribute to the performance of road projects. The presence of any one factor in the project will cause performance. Therefore, it is the responsibility of the project teams to identify such factors and seek ways to avoid or minimize

them for effective completion of projects. The theory will help the county project manager to focus improvement efforts where they will have the greatest immediate impact on the bottom-line and provide a reliable process that insists on project improvement.

Public Interest Theory

The Public Interest Theory is an economic theory first developed by Arthur Cecil Pigou (1932) that holds that regulation is supplied in response to the demand of the public for the correction of inefficient or inequitable market practices. Regulation is assumed initially to benefit society as a whole rather than particular vested interest. The regulatory body is considered to represent the interest of the society in which it operates rather than the private interest of the regulators. It further explains that regulation seeks the protection and benefit of the public at large. In most societies there is a basic presumption that people should be able to go about their own business in their own interests. In the course of this they will interact with other people and influence and be influenced by their activities. However, there are further influences on people's activities: when governments, regulators and others seek to intervene in the public interest.

Christensen (2010) in her study on Public interest regulation reconsidered stated that even regulation devised to correct negative externalities like environmental protection, drug and food safety regulation and consumer protection in this view is easily thwarted to serve particularistic interests. Thus, any idea of 'good regulation' is futile, or to quote William Niskanen (2016): 'Good regulation is no regulation.' So, if politicians are not held up by private interests, self-serving bureaucrats are captured by them. The study hypothesizes that politicians will be tempted to give in to short-term concerns if sound regulatory policy runs against their electoral interests. The theory argues that this is particularly relevant when private entrepreneurs invest in long-term projects; if they cannot trust politicians to keep the regulatory regime in force at the time of the investment decision, they run the political risk that the value of their investment is eroded by politicians acting opportunistically (Hantke-Domas, 2003). This theory supports the public policies and regulations variable under study by helping us to understand how project managers, county government and political forces operates in a system characterized by power struggle. The theory will help the project manager to identify possible causes of project failure and to summarize possible regulatory solutions.

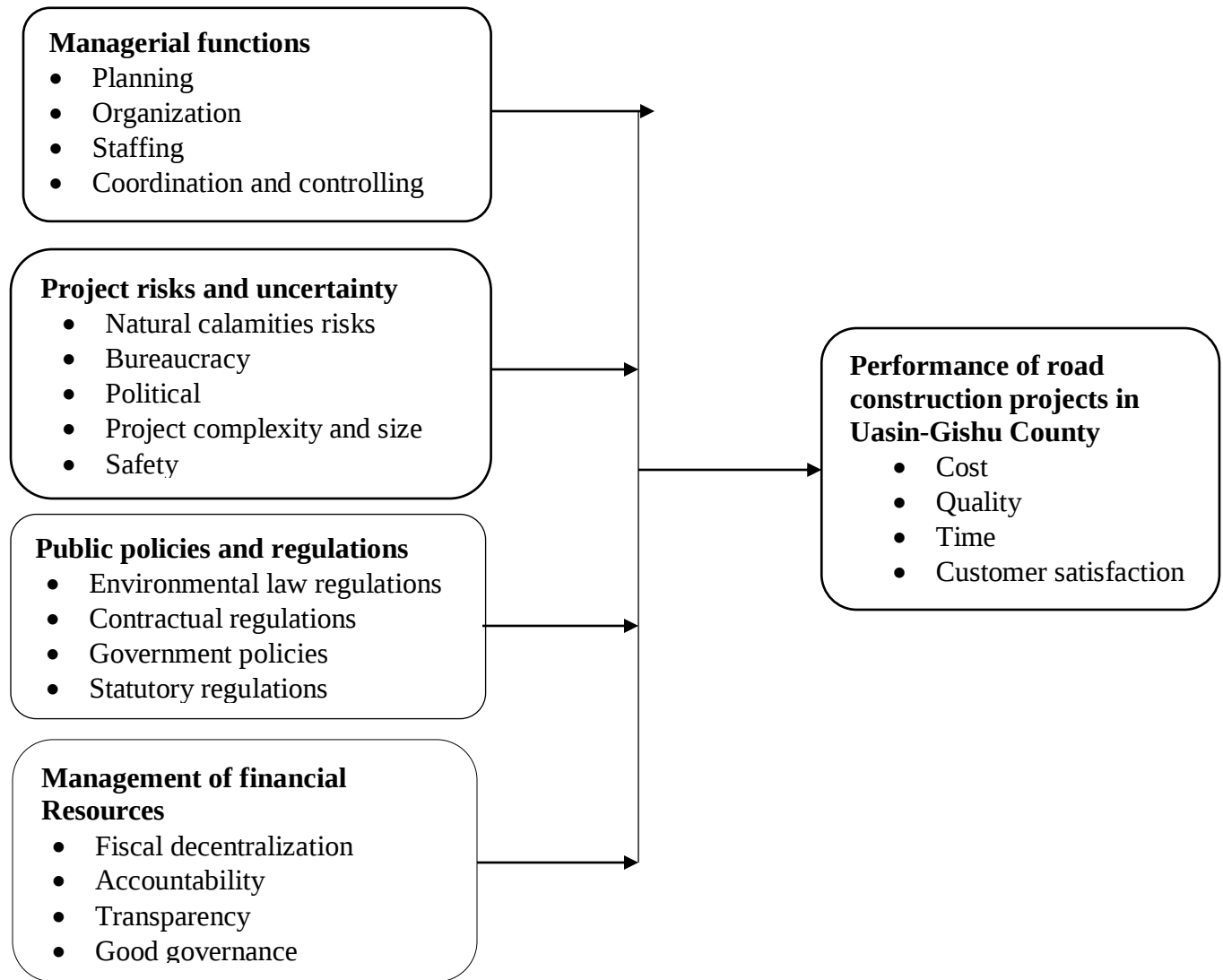
Financial Distress Theory

This theory is characterized by decline in the project performance, value and failure (Opler and Titman, 1994). Financial distress is a condition where a company cannot meet, or has difficulty paying off, its financial obligations to its creditors, typically due to high fixed costs, illiquid assets or revenues sensitive to economic downturns. A company under financial distress can incur costs related to the situation, such as more expensive financing, opportunity costs of projects and less productive employees. Employees of a distressed firm usually have lower morale and higher stress caused by the increased chance of bankruptcy, which would force them out of their jobs (investopedia, n.d.). This theory is important when addressing financial challenges affecting the successful performance of the road projects. The county road projects financial management practices have a gap as they do not operate within budgets, have weak internal controls; they do not follow their financial policies and audit their accounts.

The performance of road construction projects has been declining and there is need to track and ensure they improve. This theory is focused on the performance of road construction projects which leads to the fourth research question which focuses on how management of financial resources affect the performance of the road projects in Uasin Gishu County. This theory will therefore guide in the understanding of the important role that management of financial resources plays in the survival and success of the project.

Conceptual Framework

Miles and Huberman (1994 p. 18) defined a conceptual framework as a visual or written product, one that “explains, either graphically or in narrative form, the main things to be studied—the key factors, concepts, or variables—and the presumed relationships among them” (Miles & Huberman, 1994,). Conceptual framework is a scheme of concepts/ variables which the study operationalizes in order to achieve the set objectives. A variable being the measurable characteristic that assumes different values among the subjects, independent variables are the ones that the study manipulates in order to determine their effects on another variable. The dependent variable attempts to indicate the total influence arising from the effects of the independent variables. It therefore varies as a function of the independent variables (Mugenda & Mugenda, 2003). This is illustrated in figure 1 below. The independent variables in this are managerial functions, project risks and uncertainty, public policies and regulations, management of financial resources and how they influence the performance of road construction projects in Uasin-Gishu County.



Independent Variables

Dependent Variable

**Figure 1: Conceptual framework
Research Gap**

Various related studies have been conducted in relation to factors that affects the performance of road construction projects. However, the results obtained are inconclusive or even contradictory. Consequently, many researchers have concluded that more research is needed in that area. Kibuchi and Muchungu (2012) studied the contribution of human factors in the performance of construction projects in Kenya. Nyangilo (2012) did a research on an assessment of the organization structure and leadership effects on construction projects' performance in Kenya. Lepartobiko (2012) studied the factors that influence success in large construction projects. Gacheru and Diang'a (2015) studied the regulation of building contractors in Kenya and challenges of enforcing the National Construction Authority mandate. In citation of previous study, little attention is being paid on poor performance of road projects in Uasin-Gishu County. From these studies that have been done on performance of construction projects, there is need for

future studies on the following areas: effects of financial support on performance of road projects and factors affecting the selection of appropriate methods of financing projects.

Research Methodology

The study adopted descriptive research design to obtain quantitative data from response from the questionnaires. The target population was focused on the county government project officers the Ministry of Roads transport and Public Works, in Uasin-Gishu County: project managers/team, contractors, consultants (licensed architectural and designers, engineers, quantity/land surveyor firms) and regulatory bodies officials. The target population of 454 which included the county government officers including project managers, savory's, constructions inspectors, financial managers and auditors; registered road works contractors; registered consultants including engineers, architect, and surveyors and regulatory bodies inspection official from the following regulatory body: Board of Registration of Architects and Quantity Surveyors (BORAQS), Architectural Association of Kenya (AAK), Institute of Quantity Surveyors of Kenya (IQSK), National Environmental Management Authority (NEMA), Uasin Gishu County Government (NCG), Ministry of Public Works (MoPW) and Engineers Registration Board (ERB). A sample size that surpasses the threshold of 30 respondents for a normal distribution is adequate for a study (Warner, 2015). This study will therefore have a sample size of 82 respondents drawn from among the employees of county government, contractors, consultants and regulatory bodies' officials in Uasin Gishu County. Nassiuma, (2000) formula was adopted to calculate the sample size.

Table 1: Sampling Frame & Sampling Size

Categories	Population	percentage	Sample size
County project officers	29	6.4	5
Contractors	112	24.7	20
Consultants	306	67.4	55
Regulatory bodies officials	7	1.5	2
Total	454	100	82

The study used simple random sampling and the selection of participants was done through purposive sampling technique. The researcher determined the data collection approach largely by identifying the type of information needed (Cooper & Schindler, 2003). The questionnaire was designed in such a way that each question in the questionnaire addressed the specific objectives. Interview guide helps the researcher direct the conversation toward the topics and issues you want to learn about. The researcher personally administered the questionnaires and collect the filled in questionnaire before leaving each of the selected respondents. The study collected both primary and secondary data. The main data collection instruments used to collect data included questionnaires containing open-ended and closed-ended questions with the quantitative section of the instrument utilizing an ordinal scale format. The collected data was analyzed using both quantitative and qualitative data analysis methods. Quantitative method involved both descriptive and inferential analysis. Descriptive analysis such as frequencies and percentages was used to present quantitative data in form of tables and graphs.

Data from questionnaire was coded and entered into the computer using Statistical Package for Social Science (SPSS V 23.0). This involved coding both closed ended items in order to run

simple descriptive analyses to get reports on data status. Descriptive statistics involves the use of absolute and relative (percentages) frequencies, measures of central tendency and dispersion (mean and standard deviation respectively). For open ended questions, the study made use of content analysis to analyze. In addition, multiple regression analysis, Correlations and stepwise linear regression was used to determine the relationship between independent and dependent variables.

Results and Discussion

The analysis provided the descriptive statistic, mean and the standard deviation and the outcomes presented in a form of frequency tables, graphs and charts. The questionnaires were distributed to 82 purposively selected respondents of which 79 were completed and returned. This represented 96 percent response rate. This response rate is considered satisfactory to make conclusions for the study. Mugenda and Mugenda (2003) observed that a 50% response rate is adequate, 60% good and above, while 70% is rated very good. The recorded high response rate can be attributed to the data collection procedures, where the researcher pre-notified the potential participants of the intended survey, utilized a self-administered questionnaire where the questionnaire were collected immediately after the respondent has answered all the questions.

A pilot study was carried out in order to determine reliability of the questionnaires. Reliability of the questionnaires was then evaluated through Cronbach's Alpha which measures the internal consistency. The Alpha measures internal consistency by establishing if certain item measures the same construct. Kimberlin & Winterstein, 2008 established the Alpha value threshold at 0.7 as the minimum for Cronbachs alpha test which the study benchmarked against. Cronbach Alpha was established for every objective in order to determine if each scale (objective) would produce consistent results should the research be done later on.

Table 2: Reliability Test Results

Study Variable	Test Items	Alpha Coefficients
Managerial functions	8	0.756
Project risk and uncertainty	7	0.745
Public policies and regulations	8	0.746
Management of financial resources	5	0.751
Road construction project performance	4	0.752
Average Reliability		0.756

Table 2 shows that all the scales were significant, having an alpha above the prescribed threshold of 0.7. Managerial functions had the highest reliability ($\alpha=0.756$) followed by Road construction project performance ($\alpha=0.752$), then management of financial resources ($\alpha=0.751$), while public policies and regulations and project risk and uncertainty had the lowest ($\alpha=0.746$ and 0.745) respectively. The study thus found that the analysis was reliable and could be used for further analysis.

Correlations Analysis

The Spearman's product-moment correlation coefficient (or Spearman's correlation coefficient for short) is a measure of the strength of a linear association between two variables and is denoted by r . Spearman's correlation was used to measure the degree of association between variables under consideration i.e. independent variables and the dependent variables. Spearman's correlation coefficients range from -1 to +1. Negative values indicates negative correlation and positive values indicates positive correlation where Spearman's coefficient <0.3 indicates weak correlation, Spearman's coefficient $>0.3<0.5$ indicates moderate correlation and Spearman's coefficient >0.5 indicates strong correlation. The findings are shown as in the Table 3 below presents the Pearson correlations for the relationships between the various constituents and the performance of road construction projects in Uasin-Gishu County, Kenyan.

Table 3: Pearson correlations

		Performance of road construction Projects	Managerial activities	Project risks and uncertainty	Public policies and regulations	management of financial resources
Performance of road construction Projects	Pearson Correlation	1				
	Sig. (2- tailed)					
Managerial activities	Pearson Correlation	0.7134	1			
	Sig. (2- tailed)	.013				
Project risks and uncertainty	Pearson Correlation	0.7318	0.547	1		
	Sig. (2- tailed)	.027	.000			
Public policies and regulations	Pearson Correlation	0.6933	0.684	0.539	1	
	Sig. (2- tailed)	.002	.076	.032		
management of financial resources	Pearson Correlation	0.7723	0.682	0.629	0.572	1
	Sig. (2- tailed)	.011	.003	.061	.214	

Results in Table 3 show that managerial functions has a positive and significant relationship with performance. This is represented by a significant value of 0.013 and a correlation value of 0.7134. Project risks and uncertainty was also found to have a significant value 0.027 and a strong correlation value of 0.7318. Public regulations and policies was also found to have a significant value 0.002 and a weak correlation value of 0.6933. Management of financial resources was also found to have a significant value of 0.011 and a strong correlation value of 0.77723.

Regression Analysis

Model Summary

The coefficient of determination is a measure of how well a statistical model is likely to forecast future outcomes. The r^2 is the square of the sample correlation coefficient between outcomes and predicted values. Therefore it defines the degree to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable, in this case the performance of road construction projects, that is explained by all the four independent variables (managerial functions, project risks and uncertainty, public regulations and policies, financial resources). This is presented in table 4 below.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.9116a	.83103	.8218	.5987

The results showed a correlation value (R) of .83103 which depicts that there is a good linear dependence between the independent and dependent variables. With an adjusted R-squared of 0.8218, the model shows that financial management, Managerial activities, Public policies and regulations, Project risks and uncertainty explain 83.1 percent of the variations in the Performance of road constructions projects while 16.9 percent is explained by other factors not included in the model. According to Howell (2002), measures of goodness of fit typically summarize the discrepancy between observed values and the values expected under the model in question.

As presented in Table 5, ANOVA statistics was conducted at 95% confidence level to determine the differences in the means of the dependent and independent variables to show whether a relationship exists between the two. According to Katz (2006) Regression analysis generates an equation to describe the statistical relationship between one or more predictor variables and the response variable.

Table 5: Analysis of Variance (ANOVA)

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	5.929	4	1.482	4.135	.022b
Residual	26.524	74	0.358		
Total	32.453	78			

From the findings in Table 4.18 the results show that the model had an F ratio of 4.135 and the p value was $0.022 < 0.05$, implying that the F ratio was statistically significant, therefore the overall regression model for all the four variables is statistically significant and can be used for prediction purposes at 95 % significance level, this further indicate that the variables used in this study are statistically significant.

Beta coefficient

A correlation coefficient is a coefficient that illustrates a quantitative measure of some type of correlation and dependence, meaning statistical relationships between two or more random variables or observed data values (Mugenda & Mugenda 2009). The study in table 4.19 show that all the predictor variables managerial functions, project risks and uncertainty, public policies

and regulations and management of financial resources were shown to have a positive association between them at a significant level and hence included in the analysis.

Table 6: Beta coefficient

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
(Constant)	0.723	.774		0.934	.034
Managerial functions	0.749	.179	.226	4.184	.015
Project risks and uncertainty	0.732	.170	.363	4.306	.002
Public policies and regulations	0.654	.178	.270	3.674	.020
Management of financial resources	0.797	.327	.359	2.437	.023

The regression model above has established that taking all the independent variables into account notably; (X1) managerial functions, (X2) project risks and uncertainty, (X3) public policies and regulations and (X4) management of financial resources constant at Zero influences (Y) performance of road construction project

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e,$$

$$Y = 0.723 + 0.749X_1 + 0.732X_2 + 0.654X_3 + 0.797X_4 + \varepsilon$$

The results presented also shows that taking all other independent variables at zero, a unit increase in management of financial resources to 0.797 increase in performance of road construction projects, a unit increase in managerial functions leads to a 0.749 increase in performance of road construction projects; a unit increase in project risks and uncertainty leads to 0.732 increase in performance of road construction projects and a unit increase in public policies and regulations leads to 0.654 increase in performance of road construction projects and From the inferences findings it can be concluded that management of financial resources, managerial functions, project risks and uncertainty and public policies and regulations influences performance of road construction projects.

Conclusions

The study revealed a low satisfaction levels in county managerial function in regard to planning, organization, staffing, coordination and controlling on how road construction project activities are managed. The results indicated that the use of advanced project planning software would help improve performance by making work flow easier; having project execution plan would help improve performance; effective communication, training, clear definition of role and responsibility and team familiarity of the PEP would improve performance of work by motivating employees' performance to the best of their ability; employing skilled project team would improve performance; sound conflict resolution management and encouraging the team to initiate authorized change order would improve performance.

The result divulged that performance of the road project in the county is affected by various risks and uncertainty. Among them include natural calamities risks, bureaucracy risk, County government political influence, project size and complexity. The study also revealed that incorporating contingency funds into the project finance plan would improve the performance of the road construction projects in the county. The County lacked monitoring and controlling mechanism and in controlling activities of the road constructions like supervision, monitoring,

inspections and evaluation of the works done by contractors instead of employing external evaluator. Weak quality control systems resulted in early wear and tear necessitating repair and maintenance soon after the completion of construction works. Performance in the road construction projects is enhanced when risk management is carried out at all stages.

From the findings, it can be deduced that whereas public regulations and policies form a key constituent to the performance of the road construction project, vital loopholes exist on existing laws and policies with respect to their applicability in and support to improve road construction projects. The result revealed that the issuance of work permit and license takes time and expensive, there is no involvement of the project stakeholders in policies formulation, the regulatory bodies inadequately enforce the law and majority of the respondent were neutral on the statement that contractors honors their contractual obligations.

Respondents were further asked to briefly provide their opinion on how county policies and regulations can be improved in order to increase road construction project performance. A myriad of responses remarked that lead experts. would create an EIA template for others to fill out so actual onsite measurements would not have to be taken, and information about one project could just be copied into the template and pass for information about a new project. In addition, the experts are pressured to return an EIA study that seeks to increase the cost of the project by as little as possible, or face non-payment by the proponent. Apart from the potentially coercive relationship between the proponent and the lead expert, lead experts themselves cut corners.

Lastly, financial records gives a real picture of the project status such that if someone wants to know if the project is ailing, then financial records will disclose all the information about the project. The study disclosed that devolution and county politics influences the allocation of funds to construction project since the central government still remains in control of the county budget. The study revealed that insufficient budget, inherited debt from the local government, corruption, mismanagement of fund, complexity of the accounting system, lack of transparency and accountability affected the performance of the road construction project in the county. In addition, project financial statement and audit report are not made available for the stakeholder's individual scrutiny. It is concluded that the project shareholders were sure of how the project funds were being planned and used. Lack of this documents means that project stakeholders not only do not know how the county government stated would use the fund; they do not know how the county government used the project funds. Therefore, project stakeholder cannot hold county governments financially accountable if there is no documentation against which accountability can be gauged.

Recommendations

They should be more interested in conformance to project specification to overcome disputes, time, and cost performance problems. County project team are urged to be more interested in sequencing of work according to schedule and to ensure every project is implemented within a framework of public policies and regulation set by the government. There is a need for county to employ experts in management or improving the abilities of project manager responsible of management and supervision of site by training courses.

The county project team should consider county political and project environment risks in their cost estimation to overcome poor road construction performance. There is need for adequate contingency allowances in order to cover increases in the budget. Safety systems should be

established for improving the productivity performance of road construction projects in the county. Greater application of health and safety factors are necessary to overcome problems of safety performance. All possible risk and uncertainty should be identified, assessed, analyzed and distributed amongst the stakeholders involved or those that can get involved according to their capacity, competency and characteristics. There is need to develop a risk monitoring, controlling and mitigation instruments in response to the risks associated with road projects. These instruments cover political and commercial risks and help to mitigate this risk. There is need for continuous monitoring and controlling of the road projects at all stages of the project life cycle.

It is recommended that the county government to use competition to allocate performance-based subsidies contract, which allow for better value for money. Additionally, county government need to develop a performance measurement framework and modeling system in order to measure performance of road construction projects. Furthermore, the county should understand that large infrastructure projects tend to be more visible and have important political implications, thereby exposing them to political interference.

The study recommended that county should seek feedback from the stakeholders for every project they undertake to enable them to determine its effectiveness. There is need for simple accounting and report system that can be understood by stakeholders and yet it represent the status of the project finances. Sound project financial management provides; essential information needed by those who manage, implement and supervise projects, including government oversight agencies, donors there is need for sound financial resource management as it is a deterrent to fraud and corruption, since it provides internal controls and the ability to quickly identify unusual occurrences and deviations. The financial and audit reports should be made available to the stakeholders for their independent scrutiny on how their money was spent on the project. Therefore, increasing accountability, accuracy and accountability of project finances. The county government should understand that the lack of budget reporting facilitates embezzlement. The fact that most county governments are not accounting for funds, as per the Public Finance Management Act 2012 (PFMA), provides leeway for unauthorized spending by county governments.

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