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Factors Influencing Completion Time of Water Projects in Trans Nzoia County

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Abstract: This study sought to assess the factors that influence completion time of the water projects in Trans Nzoia County.The specific objective of the study was to establish the influence of financial procedures on project completion time. The study delimited to water companies in Trans Nzoia County. The target population included the senior management of the water companies, the middle level managers and employees of the companies. Since the employees of the water companies were not many, all the employees made the sample during data collection. The justification of this study lied on the premise that minimal studies had been done in the local front to find out the factors that influenced completion of projects on time. The study adopted a descriptive survey design. Self-administered questionnaires and interviews were used to collect primary data while content analysis of relevant project completion time documents from the water company were used to collect secondary data. Questionnaires were administered to officers purposively sampled from management, involved in the completion time of the water projects in the study. Descriptive statistics and regression analysis through Statistical Package for Social Science (SPSS) were used to analyze data and present the findings in the form of charts, graphs, and tables. Financial procedures were followed in most cases and that project financial progress reports were reviewed frequently. It was concluded that Project financial procedures was found to be positively related on project completion time. The study recommended that the management of water projects in Trans Nzoia County should strictly adhere to Project financial procedures which the study found to be positively correlated to project completion time.
Keywords: Completion Time, Financial Procedures, Water Projects.

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Introduction

According to Aon (2012), a project refers a series of task, arranged in a defined sequence or relationship that produces predefined output or effect and it always has a start and an end. In his writing, Aon looks at a project like a football hit from one point of the goal and aimed at achieving the objective immediately it enters the opponent's goal; adding up to a score. He goes ahead to define the other major element of projects implementation that is called

Construction Project Management (CPM).Ideally, projects are supposed to run continuously without delays and the responsibilities to keep this in check lies squarely with the project manager and other stakeholders who are linked directly with the projects. Within the project team there should be an outlined strict mechanism discouraging parties to the project from laxity that may lead to stalling or delays (Oyewobi *et al.*, 2011).

According to Nyamwaro (2011), Construction project delivery is affected by many factors. Every investor wants to be sure of the project time and cost. This is because challenges that may affect project completion have far reaching effects ultimately on the owners' interest. Chism and Armstrong (2010) in study carried in USA aver that in the current economic landscape, project owners are scaling down or eliminating capital construction projects due to lack of financing, uncertainty over costs, and concerns about potential delays that could impact the feasibility basis of projects. While in a study carried out in the UK Fapohunda and Stephenson (2010) state that in construction, conflicts exists between the projects' stated objectives with regard to the appropriateness of cost time and quality. They also identify the distinct knowledge management areas for project managers' efficient performance to include among others project time management, which includes providing an effective project schedule for project delivery besides actually delivering on the schedule.

By its basic definition, a project comprises a defined period to completion, a limited budget, and a specified set of performance characteristics (Kerzner, 2002). Construction contract time of a project is defined as the time allocated to complete the actual project construction starting from the time of tender award to the time of delivery of the project in the state described in the contract (Garrett and Rendon, 2005). The project time frame as a variable is fixed by consideration of time required to procure various materials and equipment used in the project, labor deployment and capability, Finance flow, Predictable weather and managerial ability to drive the project (Porters and Michael, 1985).According to Kumar (2006), in order to define PMIS, it must be principally divided into the three facets that constitute it which are; management, information, and systems. In furthering his ideas, Kumar simply defines management as the process through which managers plan, organize, initiate and control operations within their businesses. Essentially, a management can only exist when there are subjects or workers to be managed (Al-Zhrani, 2010). Kumar also states that information generally refers to analyzed data. In other words, information (with regards to business) results from data that is analyzed using business statutes, principles and theories advanced by various macroeconomists. PMIS are important building blocks of efficient and effective project management and have considerably changed from been just scheduling applications to complex information systems that cover wide range of project processes while addressing multitude of stakeholders (Kaiser and Ahlemann, 2010).

Timely Completion of Projects

Project success has been measured in a variety of ways. While the measurement of project success has focused on tangibles, current thinking is that ultimately, project success is best judged by the stakeholders, especially the primary sponsor, (Turner and Zolin, 2012). As Shenhar, Levy and Dvir (1997) note, assessing success is time-dependent: "As time goes by, it matters less whether the project has met its resource constraints; in most cases, after about one year it is completely irrelevant. In contrast, after project completion the second dimension, impact on the customer and customer satisfaction, becomes more relevant."A report published by the world bank on the state of redoing the major urban roads in the Tennessee Valley USA after the deadly Tsunamis insisted on only two major factors that will be central in determining the time a project will take to be effectively constructed. The two

aspects key to every construction contract according to the World Bank (2012) are time and money. According to Dissanayaka and Kumaraswamy (1998), with the items of time and money, the essence of a construction contract can be defined. For a specified sum of money, a road construction contractor for example will be required to perform within the specified period of time (Chism and Armstrong, 2010). When every investor ventures in a construction project therefore they invest money within a specified time and expect the investment to repay itself.

Building on that work, Shenhar and Dvir (2007) suggested a model of success based on five dimensions, judged over different timescales, Turner and Zolin (2012) suggest that at the end of the project you judge success by whether the scope is completed within the constraints of time and cost, and the project's output is delivered to specification, in the months following the project success is judged by whether the output performs as required and gives the desired benefit; and in the years following the project success is judged by whether the organization achieves higher order strategic objectives that improve organizational performance.

Traditional measures of project success focused on the so-called iron triangle; completing the defined scope of work to specification, and meeting the time and budget goals, (Atkinson, 1999). Munns and Bjeirmi (1996) noted that much of the project management literature considers "projects end when they are delivered to the customer." They continued, "That is the point at which project management ends. They do not consider the wider criteria which will affect the project once in use." This focus on the end date of the project is understandable from a project and project manager's stand point. The definitions of a project imply an end date; at that, time the project manager is likely to be released or move on to another project. In addition, the reward structure in many organizations encourages the project manager to finish the project on cost and time and nothing else, (Turner, 2009).

The literature has also examined the wider impact of projects on the business. Shenhar *et al.*, (1997) note of the three traditional dimensions of project efficiency: time, budget and scope, scope has the largest role, as it also has an impact on the customer and their satisfaction. They note, "Similarly, project managers must be mindful to the business aspects of their company. They can no longer avoid looking at the big picture and just concentrate on getting the job done. They must understand the business environment and view their project as part of the company's struggle for competitive advantage, revenues, and profit." This view was reiterated by Jugdev and Müller (2005), who reviewed the project success literature over the past 40 years and found that a more holistic approach to measuring success was becoming more in evidence.

Researchers increasingly measure success by impact on the organization rather than success at only meeting the triple constraint. Thomas *et al.*, (2008) state that measuring project success in not straightforward. "Examples abound where the original objectives of the project are not met, but the client was highly satisfied. There are other examples where the initial project objectives were met, but the client was quite unhappy with the results." Collyer and Warren (2009) cite the movie Titanic, which was touted as a late, over budget flop but went on to be the first film to generate more than $1 billion. Munns and Bjeirmi (1996) also note that a project can be a success despite a poor project management performance. Similarly, Cooke-Davies (2002) differentiates between project management success, where the project is well managed to finish the desired scope within time and cost, and project success, where the project achieves its business objectives. The importance of broader success measures for projects is now the norm.

Indeed Hussin and Omran (2012) states that 70% of the projects abandoned in Malaysian transport construction projects were due to financial problems of developers, contractors, the local and national governments, stakeholders like the donors and many more. In a similar study carried out by Piper (2011) in Malaysia and Madagascar, he found out that between 1999 to 2007 up to 71% of the roads and other construction projects that in a way failed or took longer than planned for or changed the dates of commencement than the planned dates were as a result of squeezed financial allocation and the contractual times agreements that were never practical. Citing the repair of the main road linking the major international airport in Madagascar and the capital city's CBD took long by 3 years between 2008 and 2011 due to limited financial resources and the then political unrests due to coups.

In Kenya, there are enough cases of project failure to meet project timely completion in the construction projects. It has been contented that the diverse and multifaceted natures of construction projects make it "difficult to plan for, forecast, manage and control" (Ganiyu and Zubairu, 2010). As a construction project is an investment that should in the end makes economic sense, there is therefore the need for the construction professionals to offer tangible solutions in terms of overcoming construction delays. Projects are strategic activities "initiated to create economic value and competitive advantage" (Olatunji, 2010). Key to financing projects is sustainability. The traditional forms of financing projects have been equity and debt. However in the recent past innovative ways of financing projects have come up and these include special project vehicle, venture capital etc. Construction projects are also funded by multilateral bodies and foreign aid.

Contributions to the delay emanating from the government/owner of these road projects can include late release of funds. If the owner/government does not pay the services of the contractor in time, then the project implementation may greatly be affected by contractors' poor cash flow. This will affect the contractors' ability to ensure sustained supply of the construction materials. Clearly therefore, owners' financial position will greatly affect project finance flows and which will influence construction project completion. Olatunji (2010) identifies project finance as one of the constraints or circumstances/situations, which outside the immediate control of parties to the contract agreement but still affect the smooth flow of scheduled activities. Many observers agree that if payment by project owner is slow, the contractor may begin to commit fewer resources to a project, and may even ease work if cash flows become a problem.

Method

The study adopted a descriptive design. This type of design is quite appropriate for gathering information, summarizing, presenting and interpreting for the purpose of clarification (Orodho, 2002). The target population of the study consisted of the senior management of the Water Company, middle level managers and junior staff, totaling to 60.Since the study population in this study is small, (60) the study adopted a survey sampling method hence; the whole population will be used as a sample in data collection.The research instrument that was used in this study for data collection was questionnaires. The researcher obtained an introduction letter from JKUAT, and obtained a research permit from the National Council for Science and Technology and innovations. The researcher established the reliability of the research instruments before proceeding to the field to collect data. The questionnaire was administered to the senior managers who were not involved in the final study. This study was descriptive survey and hence descriptive data analysis methods were suitable. Descriptive analysis describes a phenomenon in statistical terms as it happens or in an ex-post-facto sense. It was therefore analysed both qualitatively and quantitatively using the Statistical

Package for Social Scientists (SPSS) version 20. The collected questionnaires were first checked for completeness and then coded as per the research questions. Qualitative data analysis was used to summarize Information gathered from interviews and secondary data into relevant themes according to the research questions. The mass of words generated by the open ended questions in the questionnaires were be qualitatively and thematically analysed and added into the summary of themes. Quantitative data were analysed using descriptive statistics calculated as proportions, frequencies and percentages.

Discussion

Project Financial Procedures on Completion Time

Financial procedures are a set of instructions that any stakeholder, including new members of the committee or staff, can use to find out exactly: what tasks need to be done; who will do these tasks; and who will ensure the tasks are done properly. During the execution of a project, procedures for project control and record keeping become indispensable tools to managers and other participants in the construction process. These tools serve the dual purpose of recording the financial transactions that occur as well as giving managers an indication of the progress and problems associated with a project. The problems of project control are aptly summed up in an old definition of a project as "any collection of vaguely related activities that are ninety percent complete, over budget and late (Zoll, 1979).

The study sought to assess the influence of financial procedures on completion time of the water projects in Trans Nzoia County. The findings are presented in a five point Likerts scale where SA=strongly agree, A=agree, N=neutral, D=disagree, SD=strongly disagree and T=total.

From table 1 below, the respondents were asked whether financial procedures must be followed good results by the stakeholders. The distribution of findings showed that 14.0 percent of the respondents strongly agreed, 41.0 percent of them agreed, 28.0 percent of the respondents were neutral, 10.0 percent disagreed while 7.0 percent of them strongly disagreed. These findings implied that financial procedures must be followed good results by the stakeholders.The respondents were also asked whether project financial progress reports must reviewed frequently. The distribution of the responses indicated that 33.0 percent of the respondents strongly agreed to the statement, 31.0 percent of them agreed, 2.0 percent of them were neutral, 18.0 percent of them disagreed while 16.0 percent of them strongly disagreed to the statement. These findings implied that project financial progress reports must review frequently.

The respondents were also asked whether good financial procedures must be timely. The distribution of the responses indicated that 25.0 percent of the respondents strongly agreed to the statement, 36.0 percent of them agreed, 4.0 percent of them were neutral, 21.0 percent of them disagreed while 14.0 percent of them strongly disagreed to the statement. These findings implied that good financial procedures must be timely.The respondents were further asked whether quality must be followed for achievement of result.

The distribution of the responses indicated that 33.0 percent of the respondents strongly agreed to the statement, 23.0 percent of them agreed, 10.0 percent of them were neutral while 22.0 percent and 12.0 percent of them disagreed strongly and disagreed to the statement respectively of quality must be followed for achievement of result. These findings implied that quality must be followed for achievement of result.The respondents were further asked whether the process must be accurate and clear to the stakeholders.

The distribution of the responses indicated that 43.0 percent of the respondents strongly agreed to the statement, 20.0 percent of them agreed, 3.0 percent of them were neutral, 20.0 percent of them disagreed while 15.0 percent of them strongly disagreed to the statement respectively. These findings implied that the process must be accurate and clear to the stakeholders.

The respondents were asked whether project financial procedures state the steps to follow to the completion of good result. The distribution of the responses indicated that 41.0 percent of the respondents strongly agreed to the statement, 21.0 percent of them agreed, 13.0 percent of them were neutral, another 9.0.0 percent of them disagreed while 4.0 them strongly disagreed to the statement respectively. These findings implied that project financial procedures states the steps to follow to the completion of good result.

Table 1. Project financial procedures on completion time

Statements	%	SA	A	N	D	SD
Financial procedures must be followed for good results	%	14.0	41.0	28.0	10.0	7.0
Project financial progress reports must reviewed frequently	%	33.0	31.0	2.0	18.0	16.0
Good financial procedures must be timely	%	25.0	36.0	4.0	21.0	14.0
Quality must be followed for achievement of result	%	37.0	23.0	10.0	22.0	12.0
The process must be accurate and clear to the stakeholders	%	42.0	20.0	3.0	20.0	15.0
Project financial procedures states the steps to follow to the completion of good result	%	41.0	31.0	13.0	9.0	4.0

Multiple Linear Regressions

Multiple linear regressions were computed at 95 percent confidence interval (0.05 margin error) to show the multiple linear relationships between the independent and dependent variables of the study.

Coefficient of Determination (R^2)

Table 2 shows that the coefficient of correlation (R) is positive 0.624. This means that there is a positive correlation between factors that influence completion time of the water projects in Trans Nzoia County.

The coefficient of determination (R Square) indicates that 28.2% of completion time of the water projects in Trans Nzoia County is influenced by factors. The adjusted R^2 however, indicates that 24.3% of completion time of the water projects in Trans Nzoia County is influenced by factors leaving 76.7% to be influenced by other factors that were not captured in this study.

Table 2. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.624[a]	.282	.243	4.01213
a. Predictors: (Constant), project financial procedures, project fund disbursement, project management information system				

Analysis of Variance

Table 3 shows the Analysis of Variance (ANOVA). The p-value is 0.000, which is< 0.05 indicates that the model is statistically significant in predicting how factors influence completion time of the water projects in Trans Nzoia County. The results also indicate that the independent variables are predictors of the dependent variable.

Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	48.433	8.901		58.422	.000
	Project financial procedures	.743	.209	.612	3.954	.000

Hypothesis One: Project financial procedures do not have a significant influence on project completion time

From the table above, project financial procedures (β = 0.743) was found to be positively related on project completion time in Trans Nzoia county. From t-test analysis, the t -value was found to be 3.954 and the ρ -value 0.000. Statistically, this null hypothesis was rejected because ρ<0.05. Thus, the study accepted the alternative hypothesis and it concluded that project financial procedures affects project completion time in Trans Nzoia County.

Conclusion

Based on the findings the study concluded the following as follows;

Project financial procedures (β = 0.743) was found to be positively related onproject completion time in Trans Nzoia County. From t-test analysis, the t -value was found to be 3.954 and the ρ-value 0.000. Statistically, this null hypothesis was rejected because ρ<0.05. Thus, the study accepted the alternative hypothesis and it concluded that project financial procedures affects project completion time in Trans Nzoia County.

Recommendations

Based on the findings, the study recommended the following:

Policy Recommendations

The government should develop a clear to guide financial procedures affecting water projects. The policy too should address fund disbursement schedules since they directly affect project completion time.

Management Recommendations

The management of water projects in Trans Nzoia County should strictly adhere to Project financial procedures, which the study found to be positively correlated to project completion time.

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