

Influence of Project Characteristics on Completion of Construction Projects in Public Secondary Schools in Bungoma County, Kenya

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Abstract: *The focus of this paper was to investigate influence of project characteristics on completion of construction projects in public secondary schools in Bungoma County, Kenya. Purposive sampling was adopted in choice of study respondents (Principals and Chairpersons of Parent Teachers Association) who were subjected to Stratified sampling to ensure homogeneity of the selected sample in ensuring that samples are drawn from each region encompassed in the target population, then followed by simple random sampling technique from each region. With a sample size of 461 respondents (n=461), the study used questionnaire and interview schedules as primary data collection instruments. Both descriptive and inferential statistics were used in data analysis using SPSS version 21 software. Simple regression analysis was used to determine the direction and strength of the relationship between project characteristics and completion of construction projects in public secondary schools in Bungoma County, Kenya. The correlation coefficient (R) or the beta value β_1 of 0.627 \neq 0 at p=0.00 indicated that the hypothesis was accepted. The coefficient of determination, R-square of 0.393 implied that 39.3% of the variance in completion of construction projects was explained by project characteristics. From the results, there exists a statistically significant positive influence of project characteristics on completion of construction projects in public secondary schools. This implies project characteristics as a factor needs to be considered to guarantee the success of the completion of construction projects. The current study was done in public secondary schools in Bungoma County. Future studies are encouraged to be done in both private and public secondary schools in the whole country and compare the results. In addition, the research concentrated on education sector. Future research is encouraged to cover other sectors and compare the findings. The findings are of importance to the Ministry of Education in Kenya and other interested parties in future.*

Keywords: Project characteristics, Completion of construction projects, Public Secondary schools

1. Introduction

Project characteristics including size and value plus the weight of the network will heavily influence the project success. Other characteristics include how unique a project is, project life cycle and even how urgent the outcome of the project was. It is therefore plausible to surmise that the increase in size of a project implies increased responsibilities of administration, monitoring and technical assistance. Still the overruns seem to decline with project size, (Morris and Hough, 1987).

Projects in developing countries have over years been faced with poor implementation. Projects carried out in different parts of Africa, experience the challenge of being delivered on time. Ghana, Frimpong, Oluwaye and Crawford, (2003) identified five factors causing delays. The reasons identified include delay in payment to contractors who subsequently delay their performance. Poor management of different contracts also causes delays in project completion. Other reasons include challenges in procurement processes, little technical know-how and a rise in prices of goods or services. According to Samuel (2008), project time management should always remain a top consideration and therefore, only registered managers should handle projects. Amponsah (2012), examined that there was huge difference between what had been projected as the time a project will take and the exact time within which the project was completed. The research study carried out by Amponsah (2012), predicted that different cultural issues could have an effect on the completion of a project. However, the project did not cover

comprehensively the aspect of the person managing the project and the policy of the government.

2. Statement of the Problem

Successful project completion is hinged on the factors that affect the project and how they are managed. If they are allowed to influence the project, they will frustrate wonderful ideas while stalling other projects that already kicked off or were almost complete. It is thus important to know the different factors and learn how to handle them successfully. One of them is the schedule of a project, which can be affected by delays that emerge from different sources. There is a possibility of resources getting delayed and this will affect the kind of performance or outcome of the project. A report by the National Society of Professional Engineers (NSPE) has indicated that over 50% of the projects carried out are behind the schedule that was projected when they first began. (Yahya, 2009). The construction industry in Kenya and the public sector in general has not been efficient and effective in projects delivery.

According to Chua, Kog and Log (1999) the chances or failure of a project will depend on whether the finer details of a project are well understood and addressed professionally. It on the basis of these that this study sought to examine how project characteristics influence project completion in public secondary schools Bungoma County with an intention of making recommendations to enhance project completion. The review of related literature reveal

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that studies on completion of construction projects have been undertaken in other parts of the world with little evidence of similar study as far as Bungoma County public secondary schools is concerned yet school construction contributes significantly to learners performance. From the literature review, many of the studies done on project critical success factors and completion of projects focused on large organizations and the general construction industries and not school construction projects. Further from the literature review, most of the studies were explored through descriptive survey with very few testing hypothesis to confirm study findings further. Though Bungoma County public secondary schools have challenges in project completion, much study has not been conducted in Bungoma County on the influence of project characteristics on completion of Construction projects in public secondary schools, the central basis for this paper.

Study Objective

The objective of this study was to determine the influence of project characteristics on completion of construction projects in Bungoma County, Kenya.

Research Question

How does project characteristics influence completion of construction projects in public secondary schools in Bungoma County?

3. Literature Review

Projects are characterized of the size, value, nature of the project, the network, lifecycle and he urgency. The features will ultimately determine the success of failure of a project. Scholars have also identified that many projects that are composed of activities exceeding 100 of them would in most cases go beyond the set timelines. The increase in the size of the project would definitely have an impact on the scope of the responsibilities in terms of the administration and technicalities surrounding it. On the other hand, when the overruns are experienced there is probability the project size would decline (Morris and Hough, 1987).

In view of the importance attached to project critical success factors in project delivery, Chua, Kog and Log (1999) identified critical success factors that would influence the success or failure of a project. Success-related factors have thus been grouped into four categories which include; project characteristics as well as contractual arrangements, which is then followed by project participants, and finally an interactive process. A set of questions were used to collect data from participants who were highly experienced. Finding of the study indicate that there are different success factors which will influence the success or failure of a project. The achievement of the project objectives can also be understood in a deeper manner in order to know the real issues that influence the success of a project. A sound management system also need to be introduced in order to ensure the project is well assessed in terms of what it has been able to achieve and where it has failed to meet the set objectives. Similarly, WBG (1998), claims that effective monitoring and evaluation systems meant to review how projects performed was considered as a critical tool that was mandatory in the project management.

The process of cutting short the timeframe within which the project would be completed is a critical factor in the process of carrying out a project. Lee, Ford and Joglekar (2004) carried out a study on the effects of resource allocation policies on project duration. The study established that resource allocation was critical in the process of carrying out projects as can even affect the timeframe for different activities. Adan, Jennifer and Key (2009), agrees with the statement that project scheduling is highly important and should be given a priority. He also indicated that it was hard to redesign a project if the timelines are interfered with due to the need to reallocate the necessary resource for each project. Resources that are deployed would need to be estimated in order for them to be in the right quantity. The schedule performance would also increase phenomenally when the schedule is utilized professionally. According to Chitkara (2009), the master control estimate plus the control tools will be employed as a way of enhancing the implementation process. The top management can have the ultimate direction on what should be done in order for the resources to be allocated perfectly well. If the resources are not allocated there would be failure of accomplishing the set goals (Serman 2000). Structural control system researchers have indicated that any kind of delay will point towards a structural behavior (Udwadia *et al.*; 2003).

Delays have been experienced in different projects despite the critical need for timeliness. In most construction and other types of development projects meeting deadline schedules is usually the most important concern for managers (Lyneis, Cooper and Els (2001). Project duration is very important aspect of project as confirmed by Kogi (2013) who examined influence of effectiveness of the specific implementation of economic stimulus programme in Nairobi County. The study indicates that implementing a project based on the frameworks that are real and that they can be achieved without any delay or wastage of time. The schedule should not be devoid of the machines to be involved, the personnel and materials to be purchased. The study used survey as the methodology while self-administered questionnaire as well as simple random sampling technique. The study's suggestion is in line with (Tawil *et al.*; 2013; Aftab, Ismael and Ade 2010) who think that timely availability of resources affects time and cost performance of projects. Samuel (2008) recommends that sticking to the set timelines would contribute to the success of a project.

Focusing on the subject of project duration, Al-momani (2000) examined the cause and extent of delays in different projects such construction of homes, commercial buildings and other structures in institutions such as schools and hospitals and indicated that delays in the process of carrying out the work included increase in workload, weather, poor design, changes in the course of the implementation, harsh economic condition and poor management. The sample population was established by selecting 130 finished public projects in different regions of Jordan that were carried out from 1990 to 1997. The study focused on the delays experienced during construction and thus the data was driven from records about how the projects were carried out. The study found significant causes of project delay were poor design, change orders, weather, site conditions, late

delivery, economic conditions and increase in quantities. The findings of this study match Salleh (2009) whose research was important to the field of knowledge as it was used to indicate how lack of proper communication channels were identified as critical delay factors in the Construction projects. In Brunei Darussalam projects have failed due to slow decision making, inadequate resources and poor experience by the contractor.

Cost is one of the core considerations throughout the lifecycle of managing a project and so is one of the most important parameters and the driving force of completing a project. Despite this, project overrun is a frequent phenomenon common with nearly all projects in the construction industry (Azhar and Ahmed 2008). The problem of cost overruns is critical both in developing and developed countries and needs to be studied more to alleviate this issue in future (Angelo and Reing 2002). The trend is more severe in developing countries with the overruns sometimes exceeding 100% of the expected cost of the project.

The process of estimating the cost of a project remains to be a crucial part of task. During the cost estimation processes, there is need to make landmark decisions. The cost is characterized of the items to be purchased, their quantity, the scope of the project and the resources required as well as the type of project. In the process of setting the cost, there is need to have skills of predicting exactly even how the prices might change in the future. The cost helps in getting the value analysis and thus is used to make decisions on how to run the project. According to ISO (2010), the cost of a project must be well formulated using knowledge on what has happened in the past and forecasting what would happen in the future. A project also requires a management aspect referred to as sustainability. Through sustainable actions, it becomes easy for the project to run for a long time without any financial hitches. There is also need to ensure the planning and budgeting covers the different aspects that ensured the set goals were achieved. This is followed by a series of actions such as considering full lifecycle costs in order to make informed investment decisions. The costing also considers how affordable an investment is in terms of the long term, short term and how sustainable it will be. A good example is of how a technology can be costly at first but in the long run it would create good returns in terms of the impact (ICLEI, 1990).

Project cost control remains to be a core objective of the management. It helps in controlling the budget and ensuring the cost projected will adapt to the changes in the lineup of activities and the delays are also well covered in the budget (Chitkara, 2009). A control plan is hatched with an intention of developing a mechanism of how to cater for the extra cost in budget. This is because it will be used as a tool for the development process that ensured the budget does not go overboard neither is the quality compromised by the cost of a service or product. The project cost control team works closely with the different stakeholders in order to track down their use of cash and even how some portion of the money has already been used. In the initial stages, the working budget is prepared but it should be reviewed in the course of the implementation process. This makes the project to kick off but it was reviewed in the process of implementation in

order to make sure the changes are responsive to the cost available to fund the project (Joseph, 2010). Smaller components of the project are also to be checked closely in order to ensure they do not get left out.

The project planning stage is inclusive of a plan on how to control the cost of the project. The control measures can be injected in terms of the contingencies, direct or indirect cost. Escalation is also an allowance allowed to ensure the project is professionally handled and the cost is controlled. When the project is in the implementation stage, the control is regarded as the master control and in case there are revisions to be made, a current control estimate is also used (Chitkara, 2009). In a project, the budget stands for the financial plan on how the different activities will be funded and coordinated until the projected results are achieved. In order to ensure the plan is effective, there is need to implement it while adhering to the set budget. This was because unnecessary deviations from the budget would provide a stalemate that would escalate the budget or lead to loss of money. Kogi (2013), argues that clients or developers should be careful to ensure they always have an updated list of the financial operations in order to give the confidence that the project is being handled professionally and sustainably. The budget should also clearly indicate the sources of income and ensure that there are mechanisms in place to address the issue of delay of cash disbursement in order to avoid any inconveniences.

There are many factors that affect the cost of construction projects as has been shown by various studies conducted to address these factors. Low quality materials cause higher construction costs than expected because of the loss of materials during construction. Inability to prevent cost overruns causes many Thai construction companies to fail (Sriprasert 2000). Jahren and Ashe (1990) carried out a research aimed at identifying the predictors of time overrun rates on Naval Facilities Engineering Command (NAVFEC) construction projects. The study sample size was 576 projects. The researcher considered the cost overruns to the percentage increase of the cost of construction in relation to the construction award cost. The size of the project and the difference between the low bid and the government estimate were the predictors considered for this analysis. The size of the projects was divided into four categories. Descriptive statistics was used to determine the cost overruns on the four categories of projects. The results showed that cost overrun rate was more likely to occur on large projects more and less on smaller projects. The results were directly opposite the findings of Randolph and Rajendra (1987), who found that smaller projects had a higher percentage change in project cost. This is in line with the principle of economy of scales.

Considering the aspect of magnitude of construction cost and schedule overruns in public works projects, Prameu (2013) analyzed 363 projects of Clark County Department of public works (CCDPW) to determine cost of construction and schedule overruns in varied types of projects. Projects that were sampled were constructed from 1991-2008, with a total construction cost of \$ 1.85 billion, equivalent to 2012 cost. A one factor ANOVA test was conducted to determine whether construction cost and schedule overruns significantly varied based on types and sizes of projects. The

study established that large projects, projects of long duration had significantly high cost and schedule overruns compared to smaller projects of short duration.

Aftab, Ismael and Ade, (2010) examined significant factors affecting construction costs in Mara large construction projects in Malaysia. The study presented results of a questionnaire survey conducted among Project Management Consultant Personnel. Data was analyzed with statistical tool to establish the ranking of factors affecting construction cost. Analysis of Spearman's correlation showed that incorrect planning and scheduling by contractors had strong positive relationship with contractors poor site management and supervision, changes in scope of project had strong positive relationship with frequent design changes and vice versa. This is in line with the findings of Koushki et al (2005) who found the three main causes of construction projects cost overruns were: contractor related, material related problems and owners financial constraint.

Unexpected urgent projects can arise because of a new business opportunity or for protection against a sudden threat or to restore an asset that is severely damaged (Wearner 2006). The problem of urgency is not how to work on the "fast track". The problem is to agree what to spend to do compared with the least cost speed of delivery, with the managerial risk that is stated only qualitatively and therefore prone to different understandings. Previous studies on emergency projects have shown that initial agreement that a project is "urgent" may decline with time, as the cost of uneconomic use of resources becomes apparent (Wearner, 2006). Managers of projects and other team members who manage resources allocated for a project that was from onset defined as urgent may be blamed for using project resources uneconomically for work that does not justify it anymore. The difference between urgent projects and other projects in the industry is that urgent project demand for concentration and dedication to project work by the leadership and entire project team and stakeholders. It is important to involve all stakeholders in decision making and relay on oral commitment, make use of all usable resources optimally and accept uncertain costs immediately (Eastham, 2001).

Urgency of project work could have a bearing on completion of project. Bearing in mind that projects depend on an array of factors for it to be complete, there is need to remain agile but remember the deadline is approaching. As such, the deadlines should make be used to enhance the project and not to diminish its quality. In the case of urgency, the results would be required sooner than it was anticipated. Therefore,

the team implementing the project would have to rush to fix the urgent issues (Kernion, 1999). On the other hand, there is need to ensure even in the urgent times, the good results are produced. Bearing in mind that urgency comes during crisis, successful project implementation should have an attitude of urgency even when the crisis is absent. This helped do the work within the required time (Turner & Müller, 2003). The manager should be quick and sharp to measure the level of urgency in different situations. This helps know where to start and which resources to deploy at what time. According to Eppler and Sukowski, (2000), there is need to separate between pressure and urgency in order to avoid distorting the required value of the project. Weaner (2006) summarized critical decision and lessons learnt from the management of six different unexpected and urgent projects. The cases show how unexpected urgent work can demand the sustained involvement of top management, immediate stakeholders' interests' attention, trust in oral commitments coupled with instant acceptance of cost risks. In all the six cases what was noted was twined or double-headed leadership with an executive sponsor taking charge of management of relationships involving stakeholders, external authorities and the media while the project manager focuses on managing the executives of the project. A dedicated but temporary team was formed for each project in line with what was observed by Engwall and Svensson (2003) in a study of ad-hoc teams used in a crisis to resolve unanticipated problems within projects. None of the six cases followed the normal or "best" practices of progressively developing proposal, evaluation of benefits, costs and risks analysis as in normal for projects. All available resources were used within the practical limits of space and technically possible speeds of work. Plans and budgets were developed during the work as the needs became apparent. Authority for employment and payment of contractors and suppliers was required prior to the scope of work and its possible costs could be defined. Contractors and suppliers were employed as partners to allow all parties concentrate on needs of the project and together anticipate risks rather than despite the consequences of risks (Zhang and Flynn, 2003).

4. Conceptual Framework

Figure 2.1 below shows the interaction between project characteristics and completion of construction projects in public secondary schools in Bungoma County Kenya.

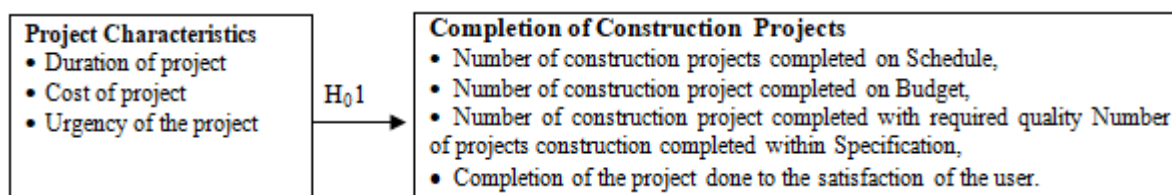


Figure 2.1: Conceptual Framework

Research methodology

The study adopted a descriptive survey method leads to an intense accuracy at the phenomena of the moment and then helps the researcher to describe precisely what is being seen.

A descriptive research design also enables generation of factual information about the study (Saunders and Thornhill, 2003) A descriptive research design is concerned with describing characteristics of a problem. A descriptive

research design is deemed appropriate for this research proposal because it helped to portray accurate profile of events and how they are. It also allowed for in-depth analysis of variables and elements of the study population as well as collection of large amounts of data in a highly efficient way. These was possible, because of the combination of both qualitative and quantitative data through interviews and questionnaires.

The County has 296 public secondary schools and 12 private schools. The literacy level is 60.5% with those attending school (15 yrs-18 yrs.) at 87.4% with secondary school enrolment of 130,907 students. The target population from which the study sample was drawn was 296 Principals and 296 PTA Chairpersons of public secondary schools and 9 Quality Assurance and Standards Officers giving a total of 601, as the target population.

Purposive sampling was adopted in choice of study respondents who were subjected to Stratified sampling to ensure homogeneity of the selected sample in ensuring that samples are drawn from each region encompassed in the target population, then followed by simple random sampling technique from each region. The sample size for this study was 461 drawn from a target population of 601 using Yamane (1967) theory of sampling.

Primary data was obtained from the questionnaires and interview schedules as research instruments. Questionnaires were used to capture data from the respondents. This instrument was used in the study because it is confidential, saves on time, has no bias and covers wide area (Mugenda and Mugenda, 2003). The questionnaire as an instrument used both closed ended and open ended questions in its structure.

The study used both descriptive and inferential statistics during data analysis. Numerical scores were awarded to closed ended questions. Descriptive statistics employed the use of means, frequencies and percentages and for inferential statistics. Quantitative data collected from respondents was coded and analyzed using Statistical Package for Social Sciences (SPSS version 21). Simple regression was used to determine the influence of project characteristics on completion of construction projects. The following table shows how the hypothesis was tested and decision rule.

5. Results

A total of 452 questionnaires were issued to the respondents out of which 320 questionnaires were correctly filled and returned. This constituted 70.8% of which was considered adequate and in line with Kothari (2004) who recommended that a return rate of more than 50% was acceptable in social science research. From the results, 16 (5%) of the respondents came from Cheptais sub county, 36(11.3%) from Kimilili sub county, 28(8.8%) were from Bungoma central sub county, 58 (18.1%) from Bungoma East sub county, 48(15%) from Bungoma South sub county, 42 (13.1%) from Bumula sub county, 50 (15.6%) were from Bungoma North sub county, 32 (10%) from Bungoma West sub county while the remaining 10 (3.1%) were from Mt

Elgon sub county. The results showed that 18 (5.6%) of the respondents were aged between 25-34 years, 39 (12.2%) were aged between 35- 44 years, 191 (59.7%) were aged between 45-54 years, 35 (10.9%) were aged between 55 – 64 years while the remaining 37(11.6%) were 65 years and above. The age of the majority of respondents is important because it is an active age that is quite productive in determining the success of any given task (Sin, 2010). Out of 320 respondents who participated in the study 246 (76.9%) were male while 74 (23.1) were female. This finding goes against gender parity as articulated in Kenyan constitution. The results shows that out of 320 respondents who participated in the study 55 (17.2%) had tertiary education, while 265 (82.8%) had university education. This shows that the level of education of the people involved in the management of projects is adequate for completion of construction projects. The results indicate that out of 320 respondents who participated in the study, 248 (77.5%) had acquired training in management of projects while 72 (22.5%) had no formal training in the same.

The objective the study sought to achieve was to assess how project characteristics influence completion of the construction projects. To achieve this, their opinion showing the level of their agreement or disagreement with the statement provided in a Likert scale of 1- 5 where: Strongly agree (SA)=5, Agree(A)= 4, Neutral or not sure (N)= 3, Disagree (D)= 2 and strongly disagree (SD) = 1. Statement one; School construction projects that take a long duration do not adhere to the schedule. Out of 320 who responded, 236 (73.8%) strongly agreed, 66(20.6%) agreed, 16(5%) were not sure, 2(0.6%) disagreed, while 0(0%) strongly disagreed. This meant majority of the respondents 318 (99.4%) agreed that school construction projects that take a long duration do not adhere to the schedule. The statement mean of 4.6750 was above the composite mean of 4.6656 meaning the duration of a school construction project has influence on its completion. Statement two; duration of school construction project affects project budget. Out of 320 respondents, 220(92%) strongly agreed, 92(28.8%) agreed, 8(2.5%) were not sure while (0%) disagreed and strongly disagreed respectively. Majority of the respondents 312(97.6%) agreed duration of school construction project affects its budget. The statement mean 4.665 was below the composite mean 4.6656 meant project duration does not influence completion of construction projects.

Statements number three; the duration of a school construction project affects its quality. Out of 320 respondents 244 (76.3%) strongly agreed, 64(20%) agree, 8(2.5%) were not sure, 4(1.3%) disagreed while 0(0%) strongly disagreed. Majority of the respondents 308(96.3%) agreed that the duration of a school construction project affects its quality whereas 4 (1.3%) disagreed. The statement mean 4.7125 was above the composite mean 4.6656. This means that the statement agrees project duration has influence on completion of construction projects. Statement number four; many school construction projects go beyond their estimated cost. Out of 320 respondents, 260 (81.3%) strongly agreed, 58(18.1%) agreed, 2 (0.6%) were not sure while 0(0%) disagreed and strongly disagreed respectively. Majority of the respondents 318 (99.4%) agreed many school construction projects go beyond their estimated cost. The mean of the statement was 4.8063 which was above the

composite mean 4.6656 .This means the cost of project has influence on completion of construction projects.

Statement number five; the cost of school construction project materials keep changing. Out of 320 respondents, 248 (77.5%) strongly agreed, 60(18.8%) agreed, 12 (3.7%) were not sure while 0(0%) disagreed and strongly disagreed respectively. Majority of the respondents 308 (96.3%) agreed the cost of school construction project material keep changing. The statement mean 4.7375 was above the composite mean 4.6656 meant cost of a project has influence on completion of construction projects. Statements number six; an urgent school construction project is difficult to meet the desired quality. Out of 320, 224 (70%) of the respondents strongly agreed, 62(19.4%) agreed, 22(6.9%) were not sure, 10(3.1%) disagreed while the remaining 2(0.6%) strongly disagreed. Majority of the respondents 286 (89.4%) agreed an urgent school construction project is difficult to meet the desired quality. The statement mean 4.55 was below the composite mean of 4.6656 thus indicating urgency of school construction project does not influence its completion.

Statement number seven; which read an urgent school construction project is likely not to satisfy its customers. Out of 320 who responded, 210 (65.6%) strongly agreed, 82(25.6%) agreed, 20(6.3%) were not sure, 4(1.3%) disagreed while the remaining 4 (1.3%) strongly disagreed. Majority of the respondents 312 (97.4%) agreed an urgent school construction project is likely not to satisfy its customers. The statement mean 4.5313 was below the composite mean 4.6656 implying it does not support influence of project characteristics on completion of construction projects.

Statements number eight; an urgent school construction project is likely to go above its budget. Out of 320 who responded, 222(69.4%) strongly agreed, 92(28.8%) agreed, 6(1.9%) were not sure while 0(0%) disagreed and strongly disagreed respectively. Majority of the respondents 314(98.1%) agreed an urgent school construction project is likely to go above its budget. The statement mean 4.6750 was above the composite mean 4.6656, implying the urgency of a school construction project has influence on its completion. Statements number nine; school construction projects required for immediate use may not be of good quality. Out of 320 who responded, 218(68.1%) strongly agreed, 88 (27.5%) agreed, 14(4.4%) were not sure, 0(0%) disagreed and strongly disagreed respectively. Majority of the respondents 306(93.6%) agreed school construction projects required for immediate use may not be of good quality. The statement mean of 4.6375 which was above the composite mean 4.6656 implying it supports influence of urgency of a project on completion of construction projects.

Hypothesis

H1: Project characteristics significantly influence completion of construction projects in public secondary schools in Bungoma County.

The test criteria was set such that the study accepts the hypothesis if the value of beta, $\beta_1 \neq 0$. Simple regression $Y_{cp} = \alpha + \beta_1 PC + e$ was used where Y_{cp} is completion of construction projects, α is the y-intercept term, PC is the project characteristics, β_1 is the beta value and e is the standard error term. The mean of project characteristics (PC) was regressed with mean of completion of construction projects (Y_{cp}) in public secondary schools in Bungoma County. This was carried out using significance of R square and Regression coefficient at 95.0% confidence level. Results were presented in table 4.1.

Table 4.1: Regression of Project Characteristics and Completion of Construction Projects.

Model's Goodness of Fit Statistics					
R	R Square	Adjusted Square	Df	F	Sig.
0.627	0.393	0.391	1	206.025	.000 ^b 3.98
Regression Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	21.547	1.047		20.576	.000
Project characteristics	.852	.059	.627	14.354	.000

a. Dependent Variable: Completion of construction projects

From table 4.1, the correlation coefficient (R) or the beta value β_1 of 0.627 \neq 0 at p=0.00 indicates there exist statistically significant linear relationship between project characteristics and completion of construction projects. The coefficients of determination, R-square (r^2) of 0.393 implies 39.3% of the variance in completion of construction projects is attributed to project characteristics. The significance value is 0.000 which is less than 0.05 means the model is statistically significant in predicting how project characteristics influence completion of construction projects. Further, an F-significance value of p = 0.000 was established showing that there is a probability of 0.00% from the regression model to reject the hypothesis.

The unstandardized regression coefficient (β_1) value of project characteristics was 21.547 with a t-test of 14.345 and significance level of $p \leq 0.001$. This indicated that a unit change in project characteristics would result to a change in completion of construction project by 14.354. At 5% level of significance and 95% level of confidence, project characteristics are significant in predicating completion of construction project. Hence, completing the equation; Completion of construction projects = 21.547+ 0.627*project characteristics+ 3.98255.

The findings on project duration on completion of construction projects in this study are in agreement with those of Lee *et al.*; (2004), who carried out a study on the effects of resource allocation policies on project duration.

Their study established that resource allocation was critical in the process of carrying out projects as can even affect the timeframe for different activities. Theodore (2009), agrees with the statement that project scheduling is highly important and should be given a priority. He also indicated that it was hard to redesign a project if the timelines are interfered with due to the need to reallocate the necessary resource for each project. The same voice on project duration was echoed by Kogi (2013) who points out the importance of implementing a project based on frameworks that are real and that they can be achieved without any delay or wastage of time.

The findings of this current study on the influence of cost on project completion are in agreement with those of Prameu (2013), who established that large projects and projects of long duration had significantly high cost and schedule overruns compared to smaller projects of short duration. This affects project completion. Further, the same was voiced by Aftab et al (2010), who examined significant factors affecting construction costs in Mara large construction projects in Malaysia. Their results showed that incorrect planning and scheduling by contractors had strong positive relationship with contractors poor site management and supervision, changes in scope of project had strong positive relationship with frequent design changes and vice versa.

In addition, the findings of the current study on urgency of project work were viewed in agreement with Kernion (1999) who noted that the team implementing the project would have to rush to fix the urgent issues. On the other hand, there is need to ensure even in the urgent times, the good results are produced. Bearing in mind that urgency comes during crisis, successful project implementation should have an attitude of urgency even when the crisis is absent. This helped do the work within the required time (Turner & Müller, 2003). The manager should be quick and sharp to measure the level of urgency in different situations. Eppler and Sukowski, (2000) noted that there is need to separate between pressure and urgency in order to avoid distorting the required value of the project.

The interview schedule carried out on quality assurance and standards officers depicted the following scenario;

“A project taking too long may not be completed well. The project will degenerate and hence attract more expenses. If schedule is adhered to, the right quality will likely be attained. A good project should be done within the given time frame to avoid watering down on quality Cheap is expensive. Long duration of projects can hamper continuous funding of a project. . If the project delays, it may be affected by fluctuation in prices.

A costly project can be of low quality depending on the expertise. If the cost of the project is too high, work may be compromised in the event of trying to lower the cost hence affecting the quality of the entire project. Urgent construction projects may not have time to cure and eventually develop cracks hence affecting the entire cost of the project since it will require frequent repairs. An urgent project is very expensive to undertake. Inadequate allocation of funds for a project by top management will yield low

quality project. Proper and timely allocation of resources is necessary for good quality projects. Change of management may interfere with the project”.

6. Conclusion

Project characteristic have statistically significant positive relationship with completion of construction project. A project taking too long may not be completed well since it will degenerate and hence attract more expenses. If schedule is adhered to, the right quality will likely be attained. A good project should be done within the given time frame to avoid watering down on quality since duration of projects can hamper continuous funding of a project. If the cost of the project is too high, work may be compromised in the event of trying to lower the cost hence affecting the quality of the entire project. Urgent construction projects may not have time to cure and eventually develop cracks hence affecting the entire cost of the project since it will require frequent repairs. Inadequate allocation of funds for a project by top management will yield low quality project. There is need for proper and timely allocation of resources is necessary for good quality projects.

7. Recommendation

Plans for projects should be availed on time to ensure timely completion of construction projects. The budget of the project should be observed to avoid cost cutting which will eventually lead to poor quality of materials and hence affecting the entire project. The time to allocate funds for a project should be within the scheduled period to avoid last minute rush which affects the quality of projects.

8. Limitations

The study was carried out in Public secondary schools in Bungoma County Kenya. Further studies are encouraged to cover other counties to check whether the findings are consistent. Further studies are encouraged to cover both public and private schools and compare the findings with the current research. The research was restricted to education sector. Further studies are encouraged to have other sectors and compare the findings. Further studies are encouraged to establish the mediating influence of Government policy on the relationship between critical success factors and completion of construction projects in Secondary schools in Kenya.

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