

## THE APPLICATION OF PROJECT MANAGEMENT IN CONSTRUCTION PROJECTS

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### **Abstract**

Project management is critical for successful project development. A crucial responsibility of the project manager is ensuring that the client is certified and the scope of work is of high quality, within the agreed budget and time frame. In some way, project financing is completed from the time of project conception. Indeed; project financing is intertwined with project planning, analysis and selection.

Project failure is one of major causes of construction delay and claims, a survey on projects management of different types of construction projects in Kenya was conducted to find out the causes of projects failure, delays and claims as well as their importance in regard to each of the participants. The participants included 23 contractors, 19 consultants and 15 project owners. The survey identified 73 causes of project delay. Seventy six percent (76%) of the contractors and 56% of the consultants indicated that the average time and cost overrun as a result of mismanagement is between 10% and 30% of the original duration. The most common cause of delay identified by all the three category of participants is "change order". The survey concluded that 70% of projects experienced time overrun and found that 45 out of 76 projects considered because of cost implications.

**Key words:** Project management, project failure, efficiency

## 1.0 Introduction

According to Gibb Africa (2007) “project management” is used to describe the application of knowledge, skills and technique to execute projects effectively and efficiently. It is a strategic competency for organization, enabling them to tie projects result to business goals and thus, competitive advantage. Lack of right management to a large extent causes “delays” and could be defined as the time overrun either beyond completion date specified in a contract, or beyond the parties agrees upon for delivery of a project and which is a recipe for claims. This is a project slipping over its planned schedule and is considered as common problem in construction projects (Multiscope Engineers, 2003). To the owner, delay amounts to loss of revenue through lack of production facilities and rentable space or dependence on present facilities. In some cases, to the contractor delay means higher overhead costs because of longer work period, higher material costs through inflation, and due to labour cost increases (Stroutel, 2010). Completing projects on time is an indicator of efficiency, but the construction process is subject to many variables and unpredictable factors, which result from many sources. These sources include the performance of other parties, and contractual relations. However, it rarely happens that a project is completed within the specified time(Gibb Africa, 2007)

## 2.0 Materials and Methods

A questionnaire was the instrument used to evaluate the frequency of occurrence, severity and importance of the identified causes. Contractors’ information was collected from Chamber of Commerce and from list of contractors from Literature. Also, information about consultants and design engineers were collected from lists of consultants found in literature as well as from Building &Engineering Consultation Directory published by Engineering committee in the Ministry of Public Works in Kenya. Data was gathered through a survey, analyzed using SPSS to give frequency, severity and important indices, taking in the views of the owners, contractors and consultants. Agreement on the ranking of the importance of the causes of mismanagement between each of the parties was tested.

## 3.0 Results

The survey participants were 23 contractors, 19 consultants and project 15 owners. The contractors surveyed are grade 2 or above, with an average experience spanning 23 years. The consultants who participated have 21 years of experience. About 76 % of participating contractors indicated that the average mis-management of the projects they have experienced ranges between 10% to 30%.Of the participating consultants, 56% collaborated, giving the same percentage. About 25% of the consultants indicated 30-50% mismanagement of the contracts they have handled. Neither the consultants nor contractors indicated mismanagement of projects greater than 100% of contracts they have handled.

*Table 1: Factors affecting the application of project management in large civil engineering*

|    | <b>Problems</b>  | <b>Groups facing the problems</b> |
|----|--|-----------------------------------|
| 1  | Original contract duration being too short                                   | Project/owners                    |
| 2  | Legal disputes between various parties                                       | Project owners                    |
| 3  | Type of construction contract(Turnkey construction only)                     | Project owners                    |
| 4  | Type of project bidding and award(negotiation, lowest bidder)                | Project owners                    |
| 5  | Delay in progress payments by owner  | Project Owners                    |
| 6  | Delay to furnish and deliver the site to the contractor b the owner          | Project Owners                    |
| 7  | Change of orders b owner in the progress of construction                     | Project Owners                    |
| 8  | Poor communication and coordination by owner and other parties               | Project Owners                    |
| 9  | Slow decision making process by owner  | Project Owners                    |
| 10 | Unavailability of incentives for contractor to finish ahead of time schedule | Project Owners                    |
| 11 | Suspension of workers b owners   | Project Owners                    |
| 12 | Difficulties in financing project by contractor                              | Contractor                        |
| 13 | Conflicts in sub-contractors schedule in execution of project                | Contractor                        |
| 14 | Rework due to errors during construction                                     | Contractor                        |
| 15 | Conflict between contractor and other parties(consultant and owner)          | Contractor                        |
| 16 | Poor site management and supervision b contractor                            | Contractor                        |
| 17 | Poor communication and coordination by contractors and other parties         | Contractor                        |
| 18 | Ineffective planning and scheduling of project by contractor                 | Contractor                        |
| 19 | Improper construction methods implemented b contractor                       | Contractor                        |
| 20 | Delays in sub contractor's work  | Contractor                        |

According to the owners, consultants and contractors, the most frequent causes of delay are related to both contractor and labour. Results indicated that the owners that awarding of projects to the lowest bidder is one of the highest frequent factors of delay. Inputs of the contractors indicate that the most frequent causes of claims are related to the owners. Consultants, like owners award the lowest bidder to execute their projects. Generally, the lowest bidders are unqualified contractors with shortage in resources and low capabilities, which lead to low performance and which cause delay in completion of the work. The most severe causes of delay as seen by the owners were related to contractors citing shortage of labour, unqualified staff, inadequate contractor's experience and difficulties in financing property by contractor. Ineffective planning and scheduling of project by contractors and low productivity of labour was also cited by owners as severe causes of delay. They further pointed out that rework due to errors in construction, delay in payments by the owner and original contract being too short as the other severe causes of delays.

Like project owners, the consultants also attributed the most severe causes of delay to contractors. They cited difficulties in financing project by contractor, inadequate contractor's experience, shortage of labour and delay in progress payments. Delay in material delivery, poor site management and supervision by contractor, ineffective planning and scheduling of project by contractor and type of project bidding and award were other severe causes of delay according to consultants. They further attributed the severe delays to poor qualification of the contractors' technical staff, low productivity level of labour and unqualified workforce.

All the parties unanimously cited "change orders" by owner in the progress of construction as a major cause of delay. Other common causes of delay identified were: Delay in progress payments by the owner, ineffective planning and scheduling of project by contractor, or site management and supervision by contractor, shortage of labour and difficulties in financing a project by contractors.

Besides identifying the severe causes of project delays, the respondents also identified other delay causes of less importance. Changes in government regulations and laws, traffic control and restrictions at job site, effect of social and cultural factors and accidents during construction were the identified causes of less importance.

### **Discussion, Conclusions and Recommendations**

Ministry of Public Works (2000-2001) says that the conditions of contract between the commissioning institution and client that regulate their relationships. Structure of project organization constitutes independent architectural, engineering and quantity surveying as well as construction firms. This makes the construction project stand out from other projects. As an investment good, the project's product (capital) good contributes significantly to the gross capital formation of an economy. Government, directly as clients and indirectly through the fiscal and

monetary policies ,use construction industry to regulate the economy. This is vital in order to influence solvency, employment, economic growth, and to control inflation.

The nature of the construction product and the process of making decisions during its planning and construction differ very significantly from those of other sectors. Due to the differentiation of services offered by the design and construction teams, the construction of project is mainly coordinative. Design and construction organizational separation does not, in the operations, favor economies of scale, nor, in the leadership does it support the unity of command. The same has, within the profession, led to a build-up of parochial royalties to the profession which the co-operative efforts of the project organization (Nyara, 2010).Regrettably, management methods have not established themselves in this area. It is the authors' opinion the management methods are pertinent in construction project management. The industry is faced with the technical know-how of the industry and a specialist in its managerial, economic and legal aspects. The engineering approach, which emphasizes on the tools, though a recommendable attempt, is not adequate. Tools and techniques are technology based and become obsolete due to ever-changing technology. Management principles, on the other hand, provide a reliable and an all time knowledge base

To minimize the problems caused by mismanagement of construction projects. Owners ought to pay progress payment to contractors in time because delay in payments derails a contractor's ability to finance the work. It is important for project owners to minimize "change orders" during construction to avoid delays as well as avoid delay in reviewing and approving of design documents as anticipated. It is further recommended for owners to check for resources and capabilities, before awarding the contract to the lowest bidder.

It is recommended to contractors to address the issue of shortage and low productivity of labour by assigning enough laborers and giving the incentives to motivate them in improving productivity. To address the financial and cash flow problems; a contractor should manage his financial resources and plan cash flow by utilizing progress payment. To ensure proper planning and scheduling, the contractor need to ensure they are continuing processes during construction and match with the resources and time to develop the work to avoid cost overrun and disputes. It is recommended the site management and supervision issue be addressed by, ensuring that the administrative and technical staff are assigned as soon as the project is awarded to make arrangements to achieve completion within specified time with the required quality and estimated cost.

Project consultants ought to fast track the reviewing and approving of design documents. Any delay caused by a consultant engineer in checking, reviewing and

approving the design submittals prior to construction phase could delay the progress of the work. The consultants should be flexible in evaluating contractor works. Compromising between the cost and high quality should be considered. Finally the architect should produce design documents in time, to avoid delays in work completion. It is recommended that the architect works in a team to avoid mistakes and discrepancies which are common causes of delays because redoing designs.

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## References

Africa, G. (2007). Contributors to construction delay.

Maiyo and Partners Consulting Engineers. (2009). factors influencing construction time and cost overruns on high rise projects for Mau Mau/Narok Road in Kenya. Nairobi.

Mentor management. (2011). factors affecting contractor performance.

Ministry of Public Works (2000-2001). Building & Engineering Consultation Directory. Engineering Committee in the Ministry of Roads, Kenya.

Multiscope Engineers (2003). A comparative study of causes of time overruns in Kenya construction projects.

Nyara consults (2010). Construction delay: A quantitative analysis.

Stroutel Africa (2010). Delays in the construction of public utility projects in Kenya.

YMR Integrated (2012). Causes of delays in large building construction projects.