International Journal of Thesis Projects and Dissertations (IJTPD)
Vol. 2, Issue 3, pp: (37-43), Month: July - September 2014, Available at: www.researchpublish.com

AN ESSENTIAL INPUT TO THE SUCCESS OF A PROJECT

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Abstract: **Most capital construction projects fail to meet expectations of completing within budgets, on the planned schedule and ensuring quality of work. If projects are not performing effectively or completing successfully, the impact may be felt throughout the organization. The strategic plan designed via the use of projects toward business objectives, becomes ineffective. Various studies have been conducted to examine the factors responsible for the success and/or failures of projects, specifically, the factors that cause project costs over runs. A common finding of most studies is that project management failure, is largely responsible for the failure of projects. While most of the factors cited to be responsible for project failures cannot be underestimated; this paper is of the view that, tackling a central issue that leads to construction costs overruns is of utmost importance. The purpose of this study is thus to determine how effective execution plans, specifically, how a well-developed and implemented "Execution Plan (EP)" can positively impact the success of the construction phase of a project, and hence the success of the entire project.**

Keywords: **Project management, Execution Plan (EP).**

I. INTRODUCTION

The success of a project is of paramount importance to every organization. However, many projects go over budgets, behind the planned schedule and in most cases, lack the expected quality or accuracy that customers or owners desire. Methods of standardization designed to improve upon project performance and for managing projects have been available for almost forty years. In spite of the fact that these standardizations have been implemented by organizations such as the Project Management Institute (PMI), projects continue to fail to meet their desired objectives (Norrie and Walker 2004).

A plethora of studies have also been conducted into the factors responsible for the success or failure of projects. Most studies conclude that the problem of poor cost management and overruns have been responsible for project failures. The World Bank for instance reported that 63% of the1778 construction projects financed faced poor performance with overrun in budget at an average of 40% (Ameh and Zujo et al 2010).

Ali and Kamaruzzaman (2010) through questionnaire survey in different projects at Klang Valley found that the main factors that contribute to cost overruns include inaccurate/poor estimation of original cost, construction cost underestimation, improper planning, poor project management, lack of experience, poor contract management, inflation of project costs, high cost of machineries, fluctuation in price of raw materials, unforeseen site conditions, insufficient fund, obsolete/unsuitable construction equipments and methods and mistake in design.

Elbeik & Thomas (1998) identified some factors that managers in organizations see as critical for the success of a project. These include: clearly defined projects objectives, good planning and control methods, good management support, enough time and resources, commitment by all team members, high user involvement, good communications, appropriate project organization structure and culture. M. Xaba in his research of May 2011 cited Bauer, Hammoud and Kerzner who discussed some of the reasons for the high rate of project management failure (Bauer, 2006; Hammoud, 2008 & Kerzner, 2002). A crucial failure causal factor, according to Hammoud, is the fact that, most project managers implement projects out of alignment with business strategy.

The project manager, on whose hands rests the responsibility of ensuring the success of the project, has the herculean task of effectively coordinating the activities of various departments, stakeholders as well as processes. A project that may end up "under budgeted" may not be considered and issue. On the contrary, however, when a project ends over-budgeted, it

raises an eyebrow and brings into question the integrity of the project team and hence the project manager in particular. Besides, performance information may not be available or inaccurate when a project fails. Executive decision-making may be negatively impacted, and the results of these solution implementations may be sub-optimal.

Referencing from above, we notice that various factors come into play to ensure the success of a project. The project manager needs to possess an array of skills under his/her domain. Besides, the project team, under proper guidance, needs to consist of a variety of skilled and experienced personnel.

A well-developed scope and schedule or baseline of the project coupled with a well-organized Project Management Office (PMO) to give the needed support to the project team is also of utmost importance to the success of the project. Besides, a well-structured back-up plans to handle the impact of external constraints is another factor that cannot be ignored, if success of the project is to be ensured.

In a full capital Engineering, Procurement and Construction Management (EPCM) environment, a project is incomplete unless the construction phase has been fully completed. The success of the construction phase of the project is thus of high priority to the success of the entire project. Well documented Execution Plans are major requirements for construction execution. In the light of this, an attempt is made to analyze how an effective execution plans, specifically; a well-developed and implemented "Construction Execution Plan" can positively impact the success of a project.

II. PAPER ORGANIZATION

This paper is structured along these lines. Section one is devoted to the introduction. The statement of the problem, highlighting the importance and/or relevance of the paper, is devoted to the next section. Section four takes a look at the objective(s) of the paper.
Section five of the paper deals with the introduction and discussion or an attempt to achieve the objective(s) of the paper. This section is preceded by some literature surveys, where a look is taken at some academic discussions related to the topic, followed by the introduction and discussion of the main objective of the paper. The main findings and conclusion will occupy the last section.

III. STATEMENT OF THE PROBLEM

Cost overruns may not necessarily lead to project failure if the project can obtain sufficient funding to cover its excess costs. However, the economic viability of the project, which was assessed using the erroneously estimated costs, would be different if the risk of cost overruns was built-in the evaluation analysis (Joseph Berechman and Qing December 7, 2006)

It must be noted, however, that most projects fail due to excessive cost overruns and mainly from construction cost overruns. Whereas the percentage of construction cost overruns to overall project overruns may differ from industry to industry, anecdotal reports confirm that about 60% of overall project cost overruns are attributable to construction cost overruns.

Olawale and Sun (2010) reported that many construction projects still suffer cost overruns. Only 41% of respondent participating in survey experienced cost overrun less than 10% of their projects costs. This indicates about 59% of respondents experienced cost overrun more than 10%. In Ghana, 75% of the projects exceeded the original project cost whereas only 25% were completed within the budget (Frimpong et al., 2003). Sriprasert (2000) pointed out that cost overrun is caused by ineffective construction management and poorly established cost.

Mohamed K El-Choum (1995); developed a model to analyze factors of construction cost overruns, with particular interest in urban infrastructure rehabilitation projects. The results of his study seemed to suggest

that the key parameters which significantly impact construction cost overruns are morale/motivation, social influence, processing modification, feedback procedure, activity sequencing, design changes, documentation, estimate preparation, improper supervision, and legal problems.

Whereas some of these factors enumerated so far cannot be underestimated, one must also note that tackling the root cause(s) of construction cost overruns is a key step to ensuring the success of the construction phase of the project, and hence the success of the entire project.

From the above discussions so far, it is evident that any organization that is able to develop, improve upon its processes/plans and implement them to the maximum; stands a better chance of succeeding in managing its projects successfully.

A study into how a construction execution plan (a subset or a key component of the Project Execution Plan (See List of Figure 1) can, if efficiently developed and effectively implemented, positively impact the success of a project. The construction execution plan is as essential to the success of any project, as a hub is central to a wheel.

As alluded to previously, the percentage of construction budget to total project budget may be project and industry specific, however, no matter how well or successful the other phases of the project are implemented; the entire project will be a failure if the implementation of the construction phase fails-hence the impact of a construction execution plan on the success of a project is of utmost importance.

IV. PAPER OBJECTIVES

It is often said that projects experience cost overrun because most owners and contractor organizations lack a practical and disciplined approach to ensure project success. From the statement of the problem above, however, one can argue that this statement may be partially true, and not usually the case. The approaches may be in existence, however, how efficient they are, and how effectively they are implemented are some of the issues or fundamental questions needful of examination and address.

A project may fail to meet the expectations of completing within budget, on schedule and producing the level of quality desired. Besides, how to minimize risks on projects is also very crucial to the overall success of the project.

The broad objective of this paper is to analyze the factors that impact the success or failure of projects. In discussing the broad objective, general factors that impact the success or otherwise of the project is looked at, through literature surveys. The specific objective of the paper will examine the impact a well-developed and implemented "Construction Execution Plan" can have on the successful completion of a project.

In most capital projects, the construction segment of the project takes a greater proportion of the entire project budget (Kerridge, A.E. and Vervalin, C. H, 1986). It is acknowledged that the percentage of construction cost to total project cost is "project dependent", however, it cannot be denied that if construction is not completed, the success of the project cannot be measured by any standards.

The ability on the part of the project team to effectively execute the construction plan means, the project team shall have made the greatest possible contribution to ensuring the success of the entire project. Factors that determine the success or failure of the project will be looked at. This will be followed by a short literature survey on the topic under discussion. The construction execution plan will be discussed; its importance to the overall success of a project will be espoused.

V. OVERVIEW OF FACTORS RESPONSIBLE FOR PROJECT SUCCESS / FAILURE

Project management success is multi-faceted and depends largely on the degree to which time, cost, scope, customer requirements, and deliverable related information is received by project managers on a timely basis and in regard to the degree of information accuracy (Business Improvement Architects, 2006).

This definition of project management success expands the previous triple constraint model (e.g., time, cost, and scope) and triad of critical components (e.g., people, processes, and technology) posited by Kissler (1991). The quality, timeliness, and accuracy of project management information were discussed by Bauer, Hammoud and Kerzner (2008). Hammoud posited that one of the causal factors related to the 97.5% rate of global business project failures was related to project managers not implementing projects that align with current business strategy (i.e., mission, vision, strategic management goals). More specifically, Hammoud hypothesized that project management failure was directly related to organizational change and change management strategies.

Germaine to the study of Hammoud et al, Pomfret (2008) investigated the relationships between leadership characteristics and practices, and project performance among 96 North American automotive project managers. Pomfret expanded a research by Kloppenborg and Opfer (2002) that indicated transformational leadership styles by project managers resulted in increased project management success as compared to transactional leadership characteristics. The Leadership Practices Inventory (LPI) survey instrument by Kouzes and Posner (2002) was used in the Pomfret study. The results of the study found no statistically significant relationships between project managers' leadership practices and project performance measured by project managers' performance scores (i.e., performance evaluations).

The inconclusiveness and limitations of the Pomfert study prompted another study by Kloppenborg and Opfer's (2002), to conduct a study into whether leadership characteristics may have an influence on project management success or lack

thereof. Both sets of researchers advocated for future research to examine additional metrics of leadership between project managers.

In a mixed-method doctoral research study by Tabernik (2008), project management skills were evaluated among a cohort of 336 healthcare Information Technology (IT) project managers. The study investigated the relationship between project management skills and perceived importance to healthcare project success based on the research by Shenhar and Dvir (2007) that indicated only 28% of all healthcare IT projects were successful. A list of 21 behavioral and technical skills (e.g., diplomacy, interviewing, directing, patience, assertiveness, leadership, programming, speaking, writing, listening, empathy, sales, politics, management, training, cooperation, functional application knowledge, organizational communications, analysis and design, non-verbal communications, and sensitivity.

Based on the above contemporary project management research studies and recommendations for future research, it was concluded that the type of organizational change (Hammoud, 2008), leadership characteristics (Pomfret, 2008), and management competencies (Bauer, 2006; Tabernik, 2008) all impact project management success. One causal factor that may be linked between these and other project management success factors identified, but not currently posited in the published literature related to this topic may be related to the quality, timeliness, and accuracy of project management information received.

It is worthy of note that most of these studies above dwell much on the "soft skills" development aspect of project managers, and how they positively impact the success of projects and not much on processes and/or plans. Projects do not succeed only because project managers posses excellent soft skills

Allen C. Hamilton, 2003 indicated that one of the aspects of a project that is within the control of the project team is planning. Projects may be worth millions/billions of dollars in cost, take years of development/construction, but they need a plan of how they are to be executed

According to the Project Management Institute, the project execution plan helps guide the execution of the project, document the assumptions, constraints, and alternatives, provide a tool to communicate with stakeholders, establish project milestones and deliverables, set scope, cost, and schedule baselines for progress measurement and control

A well-developed project execution plan can help in effectively managing all contractors and sub-contractors on the same page during the planning, design, construction and post-construction phases of a construction project, so that the end result is achieved with the highest quality and the least amount of waiting on the part of the customer.

VI. THE IMPORTANCE OF CONSTRUCTION EXECUTION PLAN TO SUCCESS OF PROJECT

Most projects fail because of lack of proper scope definition. The CEP does not only deal with the scope of the project, it also, drills down to the scope of the construction work per Work Breakdown Structure (WBS) structure as per contract breakdown. This ensures that every specific activity is completed on time according to the construction schedule.

The CEP also gives guidelines to the contractor to ensure that sufficient management and supervisory personnel are present at the work site for all construction, pre and commissioning activities. The management and supervisory personnel also extend their services beyond normal working hours, to ensure efficient direct management, control and co-ordination of own activities. This results in a situation where activities performed by sub-contractors and suppliers become efficient. Communication is expedited to site personnel thereby ensuring efficiency in work delivery.

The CEP has a workforce plan which details relevant information about the best construction team to be assembled to ensure that efficient work is performed. Plans regarding issues like promotion of workers safety, comparable wages and compensation, skills assessment and resourcing, craft and supervisor training, craft certification and standardization etc help in assembling the best construction crew to complete construction work as scheduled. Besides, these measures mentioned above enhance the productivity of work done and eventually the success of the project.

The CEP has as one of its components a construction methodology which spells out the type of materials to be used, how the construction work will be conducted-how installations and erections should be completed. When construction should begin, what processes can be allowed to be implemented on the field and which processes will not be permitted on site. The synergy of all these plans/strategies and processes ensures efficiency and hence the successful completion of the project.

The selection of contractors and sub-contractors according to a well-defined plan permits the best and/or reputable firms to be employed. The track records of the best selected contractors and sub-contractors in advance, prevents the propensity

of having to interrupt the flow of work on field and sustain productivity which is very crucial in completing construction work on schedule. This reduces schedule creep and hence avoids the concomitant risks of such delays.

The CEP outlines many other issues related to site such as site security organization and facilities, site Health, Safety and Environment (HSE), site management plan, site planning and progress systems. The smooth flow of work will result from these laid down plans and hence help expedite construction work.

VII. CONCLUSION

Many studies have been conducted to look into the factors that lead to project success or failure. Common among the causes of project success or failures include inaccurate/poor estimation of original cost, construction cost underestimation, improper planning, poor project management, lack of experience, poor contract management, inflation of project costs, high cost of machineries, fluctuation in price of raw materials, unforeseen site conditions, insufficient fund, obsolete/unsuitable construction equipment's and methods and Mistake in design.

Such factors can be categorized under two main areas-internal and external. External factors such as political, economic or environmental factors may usually not be under the control of an organization. Internally however, management can develop and implement efficient plans and strategies. The paper has shown that a well-developed and implemented construction execution plan is at the heart of the success of a project.

A well-developed and implemented Construction Execution Plan (CEP) addresses issues pertaining to construction management, which in turn helps avoid scope and schedule creep right from the beginning of the construction phase.

This paper also shows that choosing the best construction contractor or sub-contractor is of vital importance to the successful completion of construction work. If a plan is not set out to achieve the selection of a contractor with a track record, the project is bound to fail. The assembling of the best crew to complete individual tasks on the construction phase is of paramount importance to the success of the project.

All things being equal, a positive correlation exists between a well-developed and implemented construction execution plan in advance and the success of the project. Project managers should therefore, not exert more energy only on developing their soft skills like communication, negotiation, but also must devote resources to developing the best construction execution plans.

Sample Project Execution Plan
Definition
1.1 Project Background and Overview
1.2 Business Objectives
1.3 Project Objectives
1.4 Project Constraints
1.5 Project Scope
1.6 Project Scope Inclusions
1.7 Project Scope Exclusions
1.8 Project Assumptions
1.9 Project Deliverable
1.10 Project Completion
2.Approach
2.1 Project Summary
2.2 The Project Schedule
2.3 Project work break down
2.4 Project Activities
3.0 Project Cost / Budget
4. Project Management Plan
4.1 Project Structure
4.2 Meeting Structure
4.3 Project Human Resource Plan

4.4 Project Communication Plan
4.5 Document Management
4.6 Project Risk Management Plan
4.7 Change Management Plan
4.8 Issue Management Plan
4.9 Quality Management Plan
5.0 Escalation Procedure
6.0 Documents Signoff
Appendix A-Project Schedule
Appendix B-Project Risk Management Procedure
Appendix C-Project Change Control procedure
Appendix D-Project issues procedure

Sample Construction Execution Plan

1.0 Project Details - Scope of Works: Description/Overview
2.0 Construction Methodology Main features of the project (concrete structures, pipework, plant installation)
3.0 Contracting Method and Scope 3.1 Local Subcontractors – the following works are planned to be subcontracted to local area subcontractors where possible 3.2 Subcontractors – the following works are planned to be subcontracted to subcontractors 3.3 Construction scope: 3.4 Procurement Strategy
4.0 Project Milestone Schedule
5.0 Construction Sequence and Execution
6.0 Management Personnel Staffing Plan (Construction Phase)
7.0 Construction Site Office Requirements
8.0 Construction Facilities Requirements
9.0 Construction utilities and services requirements
10.0 Construction site conditions
11.0 Construction skills requirements
12.0 Construction equipment and specialist tools requirements
13.0 Construction Site Rules
14.0 Construction Loss Management (Health & Safety)
15.0 Construction Quality and Testing
16.0 Constructability Review
17.0 Commissioning & Startup Support

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