

PROJECT CONTROL AS A TECHNIQUE FOR ORGANISATIONAL EFFICIENCY: A CASE STUDY OF SELECTED FIRMS IN DELTA STATE, NIGERIA

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Abstract

The focus of this study is to investigate Project Control as a technique for achieving organizational efficiency. Efficient Management of project demands that project should be executed according to specification. This further requires control in the areas of time, quality, and cost. Control enables project managers to check variances, and possible reasons for deviation. This work seeks to address the problems of operational inefficiency in terms of deviation from project cost allocation, project time allocation resulting to delay, and finally deviation from required quality. To achieve the set objectives from a population of 125 employees, a sample size of 96 respondents was gathered from two companies in Warri, Delta State, and analysed using percentage. Based on the analysis, the following findings emerged; Project control measures operational efficiency in the areas of time, cost and quality. In the face of the above findings, the study concludes that Time plays a major role in organizational performance. Consequently, absence of project schedule and proper time management will negatively affect organizational operational efficiency. The impact of project cost control cannot be overemphasized. Without cost control project goals may not be accomplished, as working out of the approved budget is detrimental. Quality control enables the comparison of performance against set standard, to correct possible deviation from project objectives. Also, the following recommendations emerged 'in achieving success in project management, Project control should be a major concern of project managers. Suitable control plan should be formulated in advance, together with suitable information system to aid effective project control. More than that, project control in the area of cost, time and quality should be integrated in the managerial process to avoid deviations, and thus, achieving efficiency, and optimal performance.

Keywords: Organisational Efficiency, Nigeria, Project Control

1. INTRODUCTION

For development to take place in the society, and corporate organizations, there is a great need for quality project to be executed. When a project has been appraised in terms of economic, social and financial viability, it is as a matter of necessity to ensure its execution to specification in terms of quality, time and cost. (Kifordu and Ogbo, 2015). This calls for project control to avoid unnecessary deviations. According to Nagarajan (2012), "the term Control refers to verifying if the project progresses as per the plan and regulate the deviations found, if any." In other words, control is a means of regulating the activities of a project to ensure that it is mutually and satisfactorily completed. Also, Ward (2000) defined project control as "series of related events linked with taking decisions concerning present issues based on the past and future project activities". All of these are normally on the basis of observation and the gathering of project performance data with the aim of guaranteeing that project execution is successful.

The successful and satisfactory execution of a project is a measure of operational efficiency of a

project company. A project that is completed out of specified quality and time amount to a breach of contract. Nagarajan (2012) has stated: "Delay in project implementation invariably results in cost- overrun, delayed project implementation means delay in getting return on the investment made". Also, a project that is executed out of project cost estimate is detrimental to profitability. And profitability being the major aim of business is a measure of operational efficiency. In achieving organizational efficiency therefore, project managers should be committed to "doing things right" in relation to inputs such as time, cost, etc. To be efficient according to Mullins (2010), "the manager must attend therefore to the input requirements of the job. This is to ensure that the input will result to planned performance when compared to actual performance."

2. STATEMENT OF THE PROBLEM

One major problem which this study seeks to address is that of operational inefficiency in project execution. This problem results from the following

sub-problems: Firstly is the problem of improper use of time. Every project is time bound. However, in executing a project, most project companies fail to put time limit into cognizance leading to delay and loss of fund, because the more a project is delayed, the more funds are committed. Secondly, there is the problem of cost control. In every project, there is cost allocation or budget which carefully states the financial plan of a project work. Most organizations fail to properly plan work within cost allocation, thereby causing profitability problem. Finally, there is the problem of project satisfaction in terms of quality. Project organizations face rejection of completed project as a result low quality work. Some of the completed project cannot stand the test of time because of poor quality materials. This has led to poor performance and loss of corporate image.

3. RESEARCH QUESTIONS

The study will look into the following research questions:

- To what extent does project time control affect operational efficiency?
- To what extent does cost control affect project performance?
- To what extent does quality control affect operational efficiency?

4. OBJECTIVES OF THE STUDY

The following are the objectives of this study:

- To determine the extent to which time control affect operational efficiency.
- To ascertain the extent to which cost control affect project performance.
- To determine the extent to which quality control affect operational efficiency

5. THEORETICAL FOUNDATION

Project control from Chandra (2006) perspective, comprises a constant performance appraisal against the organisational goals with an effort to locate the causes of variance, and a commitment to put adverse deviation on check. Control is one of the best ways to ensure optimal performance, hence, Shellabear (2005) sees performance management as a form of employee control. In managing project, control cannot be undervalued. Eromafuru (2011) posits that, framework for effective control, planning and monitoring are checks against any possible failure. The human element makes it a sine-qua-non to correct deviations, which invariably enable the project objectives to be realised. It is also the human resource that is responsible for the control of the organization for optimal performance. In view of this, Ewurum and Oludare (2010) observed that, "*It is an acceptable fact that the human resources inevitably control the destiny of any business*". In control, project managers monitor physical performance, and a wide range of disparate factors. The authors went further to state the major functions of project control as follow: (i) Ensuring constant monitoring of standards of performance and (ii) It seriously encourages team members in a project to strive towards the achievement of project goals. Consequently, Schwalbe (2007) succinctly writes that "*Monitoring and Controlling involves the*

measurement of project progress". In line with stated goals, there is always a need to constantly monitor deviation from planned goal, in order to take remedial actions to harmonise the project progress pace according to plan.

Without close supervision and control, there is a likelihood that project personnel may deviate from the required standard. This, as a matter of fact, affects organizational performance. In monitoring and controlling projects, project managers cannot succeed without reliable information. In this regard, Nagarajan (2012) posits that, "*project can be controlled by gathering the required information from the project information system and comparing the actual performance with the planned performance. When deviations between the actual performance and the planned performance are noticed, immediate corrective actions are to be taken to realign the project back on the right track*".

Project Control and monitoring is carried out all through the period of a project in terms of time, cost and quality. According to Nagarajan (2012), "Control systems are designed to monitor three major factors, viz., cost, time and quality parameters." Control also takes place in the areas of cost by ensuring that the project budget is followed judiciously. And finally, is quality parameter. This of course is a major criterion of determining project success.

6. PROJECT TIME MANAGEMENT

Every project is time bound, therefore, it is imperative to complete a given project within the time frame. Delay in project completion amounts to inefficiency, and consequently result to poor performance. Schwalbe (2007), defined project time management as "*the necessary stages required and carried out to ensure timely completion of a project*". He went further to enumerate the main processes involved in project time management as follows:

- Activities of definition: This process clearly states the key activities that the project team groups and investors must carry out to produce the project deliverables. The main outputs of this process are the list of activities, characteristics, ground-breaking outlay schedule list and the required change.
- Activity sequencing: This describes the identification and documentation of the relationship between project activities. This process has a project schedule network flow chart algorithm, requested changes, updates to the activity list and attributes as the expected outputs.
- Activity resources estimating: This involves making of project estimate of the resources such as people, material, equipment that will be needed to accomplish a particular project. The main outputs here include a resource breakdown structure, required changes, resource calendars, and updates to activity, and activity resource requirements.
- Activity duration estimating: This estimate the work periods scheduled for project activities. The outputs here are activity duration evaluations and updates checks to activity attributes.
- Schedule development: This has to do with activity sequence analysis, the estimate of activity resource and duration to create the project schedule. The outputs here schedules in project, baseline, model data, requested changes, the particular

activity calendar, activity attributes, updates to resources requirements, and the project management plan.

- **Schedule Control:** This is a unique process that controls and manages changes to the project schedule. Outputs elements include evaluation of performance, changes required, proposed remedial actions, organizational process assets, the list of activities and characteristic, and the plan of the project management.

7. PROJECT COST MANAGEMENT

A project cost is the total amount of money required by a project for its completion. According to Horngren et al. as quoted by Schwalbe (2007); "Financial experts usually, defines cost as a component of resource sacrificed or forgone in an undertaken to achieve a specific objective" That is, for a project to be completed the project company needs to sacrifice some fund. Ward (2000) noted that project cost management is a "sub unit of project management that includes the processes required to ensure that the project is completed within an approved budget which consists of resource planning, cost estimating, cost budgeting, and cost control." Furthermore, Schwalbe (2007) is of the view that project cost management to include the procedures necessary to ensure that a project team completes a project within a stipulated time period according to budget.

8. PROJECT COST MANAGEMENT PROCESS

According to Schwalbe (2007), there are three project cost management processes. These are:

- **Cost estimate** - This has to do with the estimation of cost that is required for resources necessary to complete a project.
- **Cost Budgeting** - This is concern with the allocation of total cost to accommodate successfully an individual's work items.
- **Cost Control** - This deals with checking and controlling of deviations to approved budget of project plan.

9. PROJECT QUALITY MANAGEMENT

Quality in project management is of paramount important as it measures performance. International Organisation for Standard as cited by Schwalbe (2007) sees quality as the whole features of a thing that bear on its capability to fulfil specified or implicit needs.

According to Ward (2000) Project quality management is a "part of project management that consists of processes required to ensure that the project will satisfy its objectives. It includes quality planning, quality assurance, and quality control."

10. QUALITY MANAGEMENT PROCESSES

- **Quality planning:** This is the plan of relevant quality standard to be adopted in the project.
- **Quality assurance:** This is periodic evaluation of project performance to ensure that the project meets up to standard.

- **Quality control:** This is the monitoring of project activities and results to avoid deviations from standard

11. APPROACHES TO PROJECT CONTROL

The following approaches are used for project control;

11.1. Variance analysis approach

Variance analysis seeks to monitor and control a project for differences in the budgeted cost and the actual cost. That is, in controlling a project in terms of variance, the project manager's focus is to determine the degree of variability in terms of what is budgeted for and the actual cost. According to Chandra (2006) "the traditional approach to project control involves a measurement of the actual cost with estimated cost to determine the divergence." The divergence analysis enables the project manager to know whether more or less resources were used on the project within a given time frame.

11.2. Performance Analysis Approach

This is a systematic analysis which seeks to adopt analytical framework in analyzing performance based on

- **Budgeted cost for work performed (BWP):** This is made up of three parts:
 - a. Estimates for work package successfully done,
 - b. Budgets estimates related to the work- in - progress completed,
 - c. Overhead budgets
- **Budgeted cost for work scheduled (BCWS):** This is made up of:
 - a. Budget estimates for all work packages scheduled to be completed
 - b. Budgets estimates for the portion of in-process work, scheduled to be accomplished
 - c. Budgets estimates for the overheads of the period.

- **Actual Cost of Work Performed (ACWP):** This is the real cost expended for completing the work executed within a specified period of time.

- **Budgeted Cost for total work (BCTW):** This indicates the aggregate budgeted cost for the whole project work.

- **Additional Cost for total work (ACC):** This is additional estimate for project completion. Based the above information, a project can be checked as follows:

$Cost\ variance = BCWP - ACWP$

$Schedule\ variance\ in\ Cost\ terms = BCWP - BCWS$

$Cost\ performance\ index = BCWP / ACWP$

$Schedule\ performance\ index = BCWP / BCWS$

$Estimated\ Cost\ performance\ index = BCTW / (ACWP + ACC)$

12. AN ILLUSTRATION OF PERFORMANCE ANALYSIS

A project was begun on 1st January 20X0 and was expected to be completed by September 20X0. The Project is being reviewed on 30th June, 20X0 when the following information has been developed:

	N
Budgeted Cost for Work Scheduled (BCWS)	1, 500,000
Budgeted Cost for Work Performed (BCWP)	1,400,000
Actual Cost of Work Performed (ACWP)	1, 600,000
Budgeted Cost for total Work (BCTW)	2,500,000
Additional Cost for Completion (ACC)	1,200,000

13. ANALYSIS

Cost variance = BCWP - ACWP
 = 1,400,000-1,600,000
 = -200,000

Schedule variance in cost terms = BCWP — BCWS
 = 1,400,000 - 1,500,000
 = - 100,000

Cost performance index BCWP/ACWP
 = 1,400,000
 1,600,000
 = 0.875

Schedule performance index = BCWP/BCWS
 = 1,400,000
 1,500,000
 = 0.933

Estimated cost performance = BCTW
 (ACWP + ACC)
 = 2,500,000
 (1,600,000+1,200,000)
 = 0.89

In performance analysis, Chandra (2006) listed the following questions to be clarified:

- *“Is the project seen as a whole (and its individual parts) on, ahead, or behind schedule? If there is a discrepancy, where did it occur, why did it occur, who is responsible for it, and what would be its implications?”*
- *Has the cost of the project seen as a whole (and its individual parts) been as per budget estimates, less or more than the budget estimates? If there is a discrepancy, where did it occur, why did it occur, who is responsible for it, and what would be its implications?”*
- *What is the trend of performance? What would be the likely final outcome: cost and completion date for the project and its individual parts?”*

14. REQUIREMENTS OF A GOOD CONTROL SYSTEM

Nagarajan (2012) has listed the following as the prerequisites for a good control system:

- It must be easy to understand by those who use it.
- It must be easy to extract data/information by those who use the system and the control must act as indicator for pointing out deviations

• It must be reduced to the form of tables/graphs/chart so that it will offer a visual display of the happenings. Since visual displays are easy for interpretation, this feature will improve the utility of the control system.

• The control system should report deviations (of time, cost and quality) from the plan on a timely basis and must have the capacity to anticipate or predict deviations so that timely action can be taken to correct the deviations.

• The control system is to be designed by the active participation of all of the major executives of the project team so that the system can satisfy the actual requirements.

15. THEORETICAL FRAMEWORK

This work is based on the learning curve theory. According to Schwalbe (2007), this theory states that, “When many particular parts of items are produced repetitively, the unit cost (UC) of those items falls in a steady pattern as additional units are manufactured. The relevance of this theory to this study is that it helps and guide cost estimation of projects requiring the development of large quantity of things by reducing cost. In addition, learning curve theory extends to the number of time measured that it takes to finalise some task. For instance, when a new employee performs a particular task for the first time, it may take ten times longer than required compare to an already experienced employee. Improvement, efficiency and productivity increases with less cost on a given task. This relates to project time management. In other words, to save time for the organization, project managers should assign a specific task to a particular employee for a reasonable time period as it also leads to specialization and experience, which invariably gives room for quality output.

16. RESEARCH METHODOLOGY

A quantitative survey method was used. The population for the study comprised of 125 staff of Gomene Projects Limited and SG Jones Limited in Warri, Delta State, Nigeria. As preliminary investigation, the study worked with a sample size of 96 staff selected from Gomene Project Limited and SG Jones Limited. Questionnaires were developed and distributed to the selected 96 staff members of Gomene Project limited and SG Jones Limited. All questionnaires were completed and returned by the respondents, which represents a 100% response rate.

17. RESULTS

Table 1. The extents to which project time control affect operational efficiency

Variable	Response	% of Response
High	50	52
Moderate	26	27
low	20	21
None	-	-
Total	96	100

Source: Field Survey, 2015

The table above indicates the high number of respondents, i.e., 52% supports notion that project time control affects operational efficiency, while 27%

is moderate, while the remaining 21% is low on the claim.

Table 2. The extents to which project cost control affect project performance

Variable	Response	% of Response
High	58	60
Moderate	22	23
low	16	17
None	-	-
Total	96	100

Source: field Survey, 2015

Again, the above table shows that project cost control affects project performance as it has high

response of 60% that supports the above claim, while 23% is moderate, and 17% is low on the claim.

Table 3. The extents to which project quality control affect operational efficiency

Variable	Response	% of Response
High	56	58
Moderate	26	27
low	14	15
None	-	-
Total	96	100

Source: Field survey, 2015

The table above indicates that 58% of respondents strongly support the claim that project quality control affects operational efficiency, while 27% is moderate, the remaining 15% is low on the claim.

That is, suitable time control plan should be formulated in advance, together with suitable information system to aid effective project control.

- In the area of cost, project managers should forecast in advance information that relate to the project completion, and also update the cost management plan.

- Finally, quality control system should be designed jointly, and judiciously monitored. That is, both management and the project team should set the standard to be achieved; quality should be integrated in the managerial process to avoid deviations, and thus, achieving efficiency, and optimal performance.

18. FINDINGS AND DISCUSSION

- Table 1 show that 52% of the respondents favour the assertion that "Project time control affects operational efficiency". In other words, when there is delay in project completion, it affects profitability because as more time is wasted more money is involved. In support of the above finding, Nagarajan (2012) has stated: "Delay in project implementation invariably results in cost-overrun, delayed project implementation means delay in getting return on the investment made".

- Cost control has impact on project performance according to Table 2, as 60% of respondents highly supported the claim. This involves proper budgeting and planning. In other words, when project managers work out of the budgeted cost, it may definitely affect other things which may invariably hinder performance and profitability.

- It was also found in table 3 that project quality control affects operational efficiency as 58% of respondents supported the claim. Hence, with control, a project is monitored against any possible deviations. In support of this, Eromafuru (2011) posits that, framework for effective control, planning and monitoring are checks against any possible failure.

19. RECOMMENDATIONS

In the face of the above findings, the study recommends:

- In achieving success in terms time, project managers, should develop a schedule for the project.

20. CONCLUSION

In conclusion, time plays a major role in organizational performance. Consequently, absence of project schedule and proper time management will negatively affect organizational operational efficiency. The impact of project cost control cannot be overemphasized. Without cost control, project goals may not be accomplished, as working out of the approved budget becomes problematic. Quality control enables the comparison of performance against set standard, to correct possible deviation from project objectives.

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