PROJECT MONITORING AND PROFITABILITY EVALUATION TECHNIQUES: ISSUES AND INSIGHTS

Prince Amaechi Nguma Iroegbu

Abstract

This paper attempts an over-view of project monitoring and profitability evaluation techniques tor construction firms. It defined project monitoring and identified it as one of the major tasks of the project managers. Also defined, is the issue of profitability evaluation which automatically is based on (he project finance, This was identified as one of the biggest problems of project managers. Again, it has been shown that profitability evaluation for construction projects should transcend the simplistic approach of relating income to expenditure owing to the peculiarities of the construction industry. It entails the explicit assessment of profit, taking into account the various factors responsible for result. A three stage — model for a pre-tendering profitability evaluation of a project was proposed aflei[1] discussing the profitability techniques. These models were expected to offer some unique advantages, which includes repeated applicability, specificity, comprehensiveness and encouragement of record keeping. Also discussed, was the need to use a set of standardized metrics to monitor every project. It was recommended that, for models afore-stated, to be effective, a high degree of commitment is required. Finally, the paper concludes that there should be a genuine concern on the part of the project managers on their monitoring skills and the corporate developers on the financial feasibility and viability of their project ventures if they are to remain competitive and successful in business as corporate developers in the area of project procurement in a developing and complex economic environment like our country, Nigeria.

Introduction

Project planning is one thing, another is project monitoring. Plans aid coordination and communication, and at the same time, provide a basis for control which automatically is based on monitoring. Monitoring is often required to satisfy requirements and to help in avoiding problems.

Most projects involve more than one person. The project plan is a way to inform everyone on the project about what is expected of them and what others will be doing (Rosenau, 1981). Plans are a vehicle to delegate portions of a given task from superior to subordinate staff of a given firm. Plans, though are basis for project control, constitute an early warning signal during project performance that there arc problems to be solved due to deviations from plan. This could easily be identified when there is an efficient project monitoring.

Project monitoring helps the project manager in very many ways. Infact, it is one of the major tasks of a project manager. For example, the project manager will determine if there is actually, a feedback based on effective communication. Through project monitoring, the manager will know when there is need for some system of fellow-up of the communications, be they face to face or written. Through monitoring, a manager will be able to know on time, when there are conflicts among staff and will be able to manage and or resolve such crises on time. Through monitoring, efficient time management and the need for motivation are actualized (Iroegbu, 1999).

On the other hand, the appraisal of profitability evaluation for a construction project can be regarded as a key role of the adjudicating team, and involves managerial judgmental evaluation based on the profitability profile arising from the profitability analysis and other intangibles such as corporate goal with regard to the particular project and the relationship of the project to the other, under execution or in offering. The profitability analysis provides a means by which the management can look ahead to the probable profit performance of the project in view.

However, profitability evaluation does not necessarily eliminate loss, as the only certain thing about the future is its certainty. As stated by Kabir and Mohemmed (2000), evaluation helps decision makers to understand more effectively the probable profit contribution of a project and hence aids them in arriving at a sound decision about the project.

Project Finance and Profitability Evaluation: Issues **and Insights**

The biggest problem of any project (property) development organization is the elements of factors of production (Nwachukwu, 2004). After an initiated project had been adjudged financially feasible in terms of structure and sources, (he next important issue in the series of feasibility question on a project will be that of financial viability (UNIDO, 1986).

To address this issue, there is the need for adequate and unbiased financial evaluation of projects using different forms or tools of investment appraisal or what experts may call measures of profitability, to determine the level of financial viability of any development project of some worth, for it to be able to attract serious minded financiers.

The appraisal of portability evaluation, according to Dingle (1997), has always been important for investors. He opines that it is getting even more important now because:

a. Large projects affect the lives of more people now than was previously the case.
b. International competition is now more severe.
c. Projects are more complex, with less opportunity to make changes easily.
d. Mistakes arc more dangerous.

Consequently, the evaluation of profitability for a construction project can be regarded as a' key role of the adjudicating team and involves managerial judgmental evaluation based on the profitability profile arising from the profitability analysis and other intangibles such as corporate goals with regard to the particular project and the relationship of the project to others under execution or in the offering. Profitability evaluation does not necessarily eliminate loss, as the only certain thing about the future is its certainty. However, it helps decision makers to understand more effectively, the probable profit contribution of a project and hence, aids them in arriving at a sound decision about the project.

Profitability Evaluation Techniques

The profitability of a thorough monitored project could be measured in very many ways. These include;

a. Payback Period (PP): According to Dent (1974), the payback period is the time it takes to pay back its initial capital outlay. It is not primarily used as a measure of profitability, but as an indicator of the degree of risk and liquidity involved in the project. By this, a project with the shortest payback period carries the least risk, since it involves the shortest period during which the capital is put at risk. It is a discounting method.

According to experts like, Olugbenga (1997), the payback period is the number of years it takes to recover the initial investment outlays through the proceeds earned by the projects. This method is simple and is the one usually adopted in practice, Olugbenga maintained.

On the other hand, its shortcoming is that it ignores completely the returns that come after the payback period. Payback period is mathematically given as:

$$\textbf{PB-}\quad \frac{\text{Total investment}}{\text{(yrs)}\quad \text{Net cash flow (per yr)}}$$

b. Net Present Value (NPV): In the Net Present Value method, the evaluation includes both the inflows and outflows the capital expended on the investment and any inflows, from selling the investment For a single project analysis, Fellows (1983), opined that the investment should be undertaken if the NPV is positive. Where a spectrum of investments, or if the capital available for investment is limited, those projects with the highest positive NPV be undertaken in descending order until the capital available is fully expended. Thus, an NPV calculation assumes the form:

NPV = (NPV of incremental net cash inflows)
(NPV of incremental net cash outflows)
\+ (NPV of terminal cash inflows)
(initial incremental capital investment).

According to Nwachukwu (2004), MPV is the difference between the present value of expected benefit or cash inflows and the present value of expected cost or cash outflows discounted by the cost of capital.

Mathematically, it is represented as;

$$NPV = \sum_{t-1}^{\wedge} \frac{Bt}{(1+r)^t} - \sum_{t=1}^{\wedge} \frac{ct}{(1+r)^t}$$

$$\sum_{t-1} \frac{Bt}{(1+r)^t} - \geq 0$$

where Bt = Cash inflow in period
ct = Cash outflow in period t
r = Discount factor corresponding to the cost of capital

The discount factor is obtained from present value table and should be equal to the lending rate of the bank or any other financial institution which the project promoters intend to use for financing the project on long-term basis. This discount factor is the opportunity cost of capital and it is the minimum of return below which the investors may not consider worthwhile to invest.

The NPV could be equal to zero, positive or negative. If it is positive, this implies that the profitability[1] of the project is greater than the opportunity cost of capital. If the result is zero, it is also acceptable, but when it is negative, the project should be dropped. However, when selecting among alternative projects, the project with the largest NPV should be chosen for implementation. Some of the advantages of NPV method are: i. It takes into account, the entire life of the project.

ii. It considers the time value of money by discounting the future inflows and outflows to their present values. Its disadvantage is hinged on the difficulty in selecting an appropriate discount factor.

c. Profitability Index (PI): The profitability index of a project is the present value of future net cash flows over the initial cash outlay (Kayode, 1979). As long as the profitability index is equal to'or greater than 1.00, the investment proposal is acceptable. In calculating the profitability index, the net rather than aggregate index is completed in order to differentiate the initial cash outlay from subsequent cash outlays, which the aggregate index does not do. The index is also used to rank projects in order to their ultimate profitability in terms of income compared with expenditure.

The profitability index is not an independent method per se, but rather an extension of the NPV method. In all the same, if the NPV is positive, a profit of some kind is made in the end, and if negative, a loss is incurred. If zero, one breaks even eventually (Dent, 1974).

d. Internal Rate of Return (IRR): The Internal Rate of Return (IRR) is the discount rate that equates the present value of cash inflows of a project with the present value of cash outflows. It is the rate at which the net present value of a project equal to zero.

The same procedure used in calculating NPV is used in calculating IRR. The only difference so to say is that in the case of NPV, a discount rate is given, whereas in IRR, several discount rates are used by trial and error until the rate at which the present values of outflows equal with inflows is determined.

The IRR, is a powerful monitoring tool used in comparing the profitability of a project not only with other similar projects but with the alternative of investing the money in something entirely different, the IRR serves as a yardstick of profitability of more general application for such comparisms. In the words of Dent (1974), IRR serves this best.

e. Probable Profit Contribution (PPC) and Mathematical Expectation (ME):The above discussed techniques of profitability evaluation are of general application in the appraisal of investments with only the Probable Profit Contribution (PPC) and perhaps, the Mathematical Expectation (ME) being relatively more relevant to construction industry. The PPC and ME, seem to

lake projects individuality for granted. Since the construction industry is quite distinguished from other types of industries, the distinctions call for more refined tools of profitability appraisal "in (he industry and such appraisals include the PPC and MB.

A 3-Stage Model: An Effective Pre-Tender Profitability Evaluation For A Project

i. First Stage: This is the initial database built based on historical information relating to previous projects. The size of information in the database should depend upon the availability of the data and intended depth of analysis. The data base is built up reviewing the firm's job records to determine what information had been recorded for each project and the format of such information. This is so, because, the lack of standard record keeping procedure may cause this procedure to be extremely time consuming. Again, all information's included in the data-base are; project number, project description, contract type, location, estimated actual cost, materials, labour, equipment, overheads, change orders, total payment profit etc.

ii. **Second Stage:** At this stage, a percentage profit should be used to determine the profitability of the various projects. The percentage profit for each project may be calculated by the following equation:

Percentage % profit (PCP) (T-C)/C x 100
Where, T = Total payment received
C ~ Total cost charged

At this stage, the objective should not be to look at profit, but to monitor as to analyze how the profit varies as a given set of characteristics vary. One way of doing this should be to consider the percentage profit as a dependent variable and the set of factors under analysis as independent variables. When a graph of the independent variable is plotted against the dependent variables, it will show how profitability varies with variation in the given set of characteristics.

iii. Third Stage: At this stage, the relevant results based on the data analysis from the previous stage should be integratedly applied to a proposed job, given its characteristics in order to establish the likely profitability of the project This according to Walpole (1982), may simply be done statistically as follows:

$$X_C = \sum_{i=1}^{k} ni \; Xi$$

For n, sample size, (1 = 1, 2,...k)
For k populations with Xi means, (I = 1, 2...X)
Where alternative jobs exist each should be evaluated similarly and the end results compared before a viable option is chosen.

Project Monitoring: The Need for Standardized Metrics

Many firms involved in construction industry use a set of standardized metrics to monitor every project. The project manager tracks the data and also reports them to the projects advisory board, if one exists.

An advisory board should consist of knowledgeable staff that are uninvolved with the projects and are peers of the project team members. The board's roles should be three fold:

1. To provide technical and programmatic advice to the project manager and team.
2. To improve the quality and consistency of product development programmes across the organization.
3. To improve an objective overview of project progress.

An advisory board should typically include senior staff, both programmatic and technical, who have experience to review and interpret project metrics. The progress of product development programmes can be monitored using a so-called dashboard. The dashboard approach can offer quick - useful assessment, provided the system displays metrics relevant to the process at hand. This method of implementation also

provides easy access to the important project metric tools at all levels of the construction firm (source: http://www. global.com ,/spb/ projmetrics. html). Infact, the importance of project monitoring cannot be over emphasized, if project profitability must be evaluated. And any project where evaluation shows a negative profitability must be a wasted project.

Recommendations

From these issues and insights, the following recommendations have been proffered:

1. For the models afore-stated to be effective, a high degree of commitment is required.
2. There should be a genuine concern on the part of the project managers as it concerns their monitoring and supervisory skills.
3. There, should also be a genuine concern on the part of corporate developers on the financial feasibility and viability of their project ventures if they are to remain competitive and successful in business as corporate developers in area of project procurement in a developing and complex-economic environment like Nigeria.

Conclusion

The monitoring of projects and techniques involved in profitability evaluation, as discussed on this paper, is to improve the managerial decision of construction firms. And to provide management with the means by which it can look at the probable profit performance of a project, and a more informed basis for adjudicating on the estimates, in order to convert them into tender. By adopting these proposals, the development of the versatility techniques of profitability evaluation will be provoked.

References

Dent, C. (1974). *Construction Cost Appraisal* London: George Godwin P. 18; pp 49-65.

Dingle, J. (1997). *Project Management, Orientation for Decision Makers.* London: Arold p. 113.

Fellows, R. (1983). *Construction on Management in Practice*^ London: Construction Press pp. l-3;"pp 2,7-227.

http://www.globaltester.eom/sp6/Projmetrics.html-Retrived2/9/2001.

Iroegbu, A. N. (1999). *The Need for Effective Management of Our Universities.* An Unpublished, (Ph.D). Dissertation, Carolina Christian University, (NC) USA.

Kabir, B & Mohammed, M. S (2000). Project Profitability Evaluation Models for Construction Firms. In J. O. Kolawole (Ed.) *Nigeria Journal of Construction Technology and Management (NJCTM)3(\).*

Kayode, M. O. (1997). *The Art of Project Evaluation*^ Ibadan: University Press. Pp. 81-90.

Nwachukwu, G. O. C. (2004). *Development Projects Financing and Financial Evaluation Models: A General Appraisal.* (University Monograph), Owerri: Imo State University.

Olugbenga, M. A. (1993). Financing Options for Mass Housing and Capital Projects. *The Quantity Surveyor J8.* pp 15-17.

Roscnau, M. D. (1981). *Successful Project Management; A Step-by-Step Approach with Practical Examples.* California: Lifetime Learning Publications.

UN1DO (1986). *Manual for Evaluation of industrial Projects.* Viena Ustria.

Walpole, R. E. (1982). *Introduction to Statistics.* New York: Macmillan