

Effective Front-End Project Management – A Key Element in Achieving Project Success in Developing Countries

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Abstract

Good project management at the early stages of a project (the “front-end”) has been found to provide potentially significant opportunities for eliminating, or reducing, several problems that prevent the achievement of project success. Front-end project management is particularly relevant in developing countries where the achievement of project success often poses a special challenge to project managers due to inherent factors of uncertainty and unpredictability in the operating environment of projects. This paper presents an operating framework for achieving project success in developing countries through the implementation of front-end project management. Factors influencing project management at the front end are discussed. Strategies for applying front-end project management to projects in developing countries are also outlined.

Keywords: *Project management, project planning, project performance, developing countries.*

INTRODUCTION

The project environment in many developing countries presents special challenges for project managers that almost presuppose extensive cost and time overruns even before a project commences. These challenges arise mainly from inherent risks such as political instability, excessively bureaucratic contract procedures, and lack of adequate infrastructure such as transportation networks, electricity supply, and telecommunications systems. In recognition of these unique problems, previous research studies have suggested that there is a need to develop ‘appropriate’ management tools and techniques specifically tailored to the project environment of developing countries (Faniran 1999).

The front-end of the project can be defined as the early project stages when crucial and binding decisions are made about: (1) the project’s feasibility, and (2) strategies for executing the project. Resources expended during these early ‘front-end’ stages of a project, constitute approximately 1%-3% of the total project cost (Morgan, 1987). Nevertheless, although the costs incurred during these early project stages are minimal compared to the total costs expended on the project, effective management of the front-end activities can save enormous time and money downstream in the project. The purpose of this paper is

therefore to discuss the concept of 'front-end' project management and its significance for improving project performance in developing countries.

FRONT-END PROJECT MANAGEMENT

The activities that constitute the process of delivering a project can be classified into distinct phases representing the stages through which a project progresses from initiation to completion. While the definition of the project phases varies according to the type of project, a generic definition for a typical project would include the following:

1. *Concept* - Project formulation, feasibility studies (a decision to proceed is made at the end of this phase);
2. *Development* - Product design, cost and schedule details, specification of contract terms and conditions (major contracts are let at the end of this phase);
3. *Execution* - Implementation of project work in accordance with contract terms and conditions (the project product is substantially complete at the end of this phase); and
4. *Completion* - Project closure, handover of project product, post-implementation audit (the project product is in operation at the end of this phase).

A characteristic of the project life-cycle is that the ability to influence project outcomes (such as cost/time performance and the overall value of the project product) is highest at the earliest phases of the project and decreases rapidly in the final phases. Similarly, the cost of making changes to any aspect of the project is lowest at the earliest phases of the project and increases rapidly in the final phases. Figure 1 illustrates the concept of the level of influence.

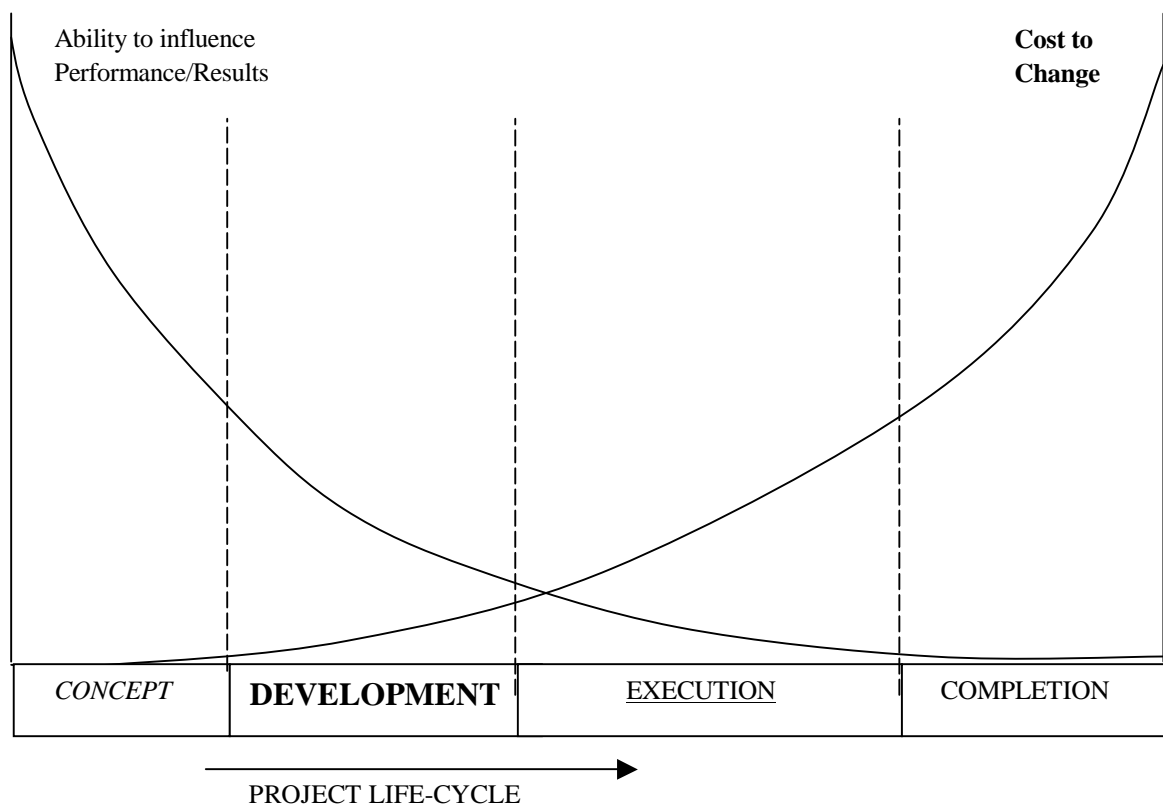


Figure 1: Level of Influence on Project Outcome

As can be seen from Figure 1, decisions and commitments made during the early project phases have significantly high levels of influence on subsequent project expenditures and project implementation strategies. At the onset of the project, the decision whether or not to proceed with implementing the project has a 100% level of influence on subsequent project outcomes. Once a commitment has been to proceed with implementing the project, further decision-making is required to define the project scope (including the design of the project product) and the contractual and technical strategies that will be used in project implementation. As decisions and commitments continue to evolve the remaining level of influence on eventual project outcomes continues to reduce drastically. In one of the earliest studies of the level of influence concept, Paulson (1976) estimated that by the time project execution commences the level of influence would have dropped to about 25% of the original. This 25% represents the control that the organization executing the project exerts through actions such as productive use of labour, innovative uses of equipment and methods, and wise materials procurement practices. The cost to change any aspect of the project is low at the early stages, but increases rapidly in the final stages. The early phases of the project delivery process are therefore the biggest opportunity areas to build in value, reduce overall project costs, reduce the potential for expensive changes later on in the project, and minimize the probability of project failure.

Front-end project management is based on the premise that it is absolutely critical to do thorough homework before embarking on a project of any size. This applies to all the participants in a project, irrespective of their individual interest in the project. While a contractor might not be involved in project activities such as its formulation and feasibility studies, the tendering period and the construction planning process are front-end activities, which, if properly managed, can influence the achievement of a project outcome that is satisfactory to both the contractor and the client. Technical and financial consultants will have similar front-end activities, which need to be effectively managed if desired project outcomes were to be achieved.

ESSENTIAL FRONT-END PROJECT MANAGEMENT ACTIVITIES

Kharbanda and Pinto (1996), in an extensive investigation of the managerial factors responsible for project failures, identified poor project definition and poor project planning – front-end project management activities – as the two major causes of project failure. According to Smith et al (1998), the identification of the strategic needs of project stakeholders is a significant stage in the development process. Smith et al describe the project definition stage (which they term project initiation) as the stage where the stakeholders' needs, objectives and requirements are clarified into the definition of a project, or projects. The project may be a construction project; new building, extensions, renovations, refurbishment, recycling, or a combination of these. In many cases a non-construction solution may be a better solution and this may involve reorganising or reforming present and future activities into organisational arrangements. These may include proposals for outsourcing, sub-contracting, devolution/delegation, privatisation and other management methods that resolve and dissolve the problem being analysed. When the strategic analysis of needs has been rigorously and conscientiously pursued then it should result in a clearer view of goals, a better definition of 'real' needs and a strategic decision that recommends the best means to achieve the identified goals. The broad-based national enquiry set up to review procurement and contractual arrangements in the U.K. construction industry (Latham 1994) also made significant statements supporting the need for project definition as a significant stage in the project delivery process:

“Formulation of a project strategy by the client is the first building block to a successful and cost effective scheme. The route to be followed is:

- The client perceives a need for a new construction or refurbishment.
- An internal assessment is made which considers the benefits, risks and financial constraints. It lists options for carrying out the project.
- Those options are put in order of benefits and feasibility.
- At that point, the client takes a decision in principle as to whether the project is necessary or feasible at all.” (Latham, 1994: 13).

Project planning is the process of determining appropriate objectives for the achievement of predetermined project objectives. The significance of the planning process in improving project performance in both developed and developing countries has long been recognized by project management researchers and practitioners (Arditi, 1985; Laufer and Tucker 1987; Ogunlana and Olomolaiye 1990; Syal et al 1992; Faniran et al. 1994). According to Kharbanda and Pinto (1996), most, if not all, major failures on projects can be traced to inadequate planning, inaccurate planning, and/or blind adherence to originally formulated plans regardless of how the environment has changed in the interim. Kharbanda and Pinto also classified planning errors into two distinct categories:

1. *Negative errors* – referring to faulty or bad plans that lead to physical results which are often substantially modified, reversed, or even abandoned.
2. *Positive errors* – comprising acceptable action steps taken in the wrong direction.

A major reason why poor planning continues to be a major source of project failure, despite the widespread recognition of its significance, is the emphasis given to the development of intricate control mechanisms by project planners at the expense of determining appropriate execution strategies. Often project managers and those responsible for the planning of projects associate project planning with the development of detailed schedules which can be used later as a basis for controlling project progress. Results from previous research studies however have shown that in order to improve planning effectiveness, the focus in project planning needs to be shifted to the determination of appropriate execution strategies on the basis of a systematic evaluation of alternatives (Faniran et al 1994; 1998).

BENEFITS OF FRONT END PROJECT MANAGEMENT FOR PROJECTS IN DEVELOPING COUNTRIES

Several research studies have investigated the factors that affect successful project performance in developing countries. Arditi et al (1985) investigated the factors responsible for delays in public projects in Turkey. Their study found contract negotiations, materials shortages and finance to be the three most significant factors affecting successful project performance in Turkey. Dlakwa and Culpin (1990) examined the reasons for overrun in public sector projects in Nigeria. Their study found finance-related factors (monthly payment difficulties and contractors' financial difficulties) to be the most significant factors affecting successful project performance in Nigeria. A similar study undertaken by Faniran (1999) also found finance to be the most significant factor affecting successful project performance in Nigeria. In Faniran (1999)'s study, material shortages and equipment failure were ranked as the second and third most significant factors affecting successful project performance in Nigeria. Ogunlana et al (1996) investigated delays in highrise building projects in Thailand. Their study found materials shortages to be the most significant factor affecting the success of highrise construction projects in Thailand. Poor contractor management, labourers/tradesmen shortages and waiting for information were all equally ranked as the second most significant factors affecting project performance in Ogunlana et al (1996's) study. Other factors such as frequent change orders, poor workmanship, poor weather, poor initial assessment and evaluation, and poor planning have also been found to be generic features of poorly performed construction projects, irrespective of where the projects are located.

The results of the studies highlighted above show clearly that good project management at the front end would have overcome or reduced most of the problems that were identified to be affecting the successful performance of projects in developing countries. Ogunlana et al (1996) recommended that it would benefit the construction process if the parties to the project spend more time on front end planning. A discussion of how good front end project management could have overcome or reduced some of the highlighted problems follows.

- *Finance* - Inadequate access to short or long term funding to finance projects has often been cited as a major problem facing contracting organizations in developing countries. This often leads to the stoppage of work on project sites until sufficient finance is available to resume project activities. At

the earliest stages of a project, the relevant research and investigation into financing arrangements should be carried out concurrently with other work as part of an overall strategy for executing the project. A high confidence level for securing all necessary funding should be established prior to proceeding with the project. Where necessary, the earliest possible involvement of financial expertise should be sought at the front end of the project.

- *Equipment failure* - In defining project execution strategies (i.e. 'how' to implement the project) at the front end, the potential of this type of problem will have been identified. In the overall project plan, contingency plans for addressing, and significantly reducing, this type of problem will have been established.
- *Material shortages* - As with the previous item, the potential of this type of problem will have been identified while defining project execution strategies at the front end. In the overall project plan, contingency plans will have been established that will significantly reduce this type of problem.
- *Labour supply* - Again, as with previous items, this problem should be recognized in the front end and proper allowances made in the project plan. The availability of skilled labour is a long-term problem though, and can be overcome through effective training, recruitment, and where necessary, importation.
- *Incompetent/inadequate contractors* - A good pre-selection or pre-qualification exercise will overcome most of the problems with incompetent and inadequate contractors. Viable tender methods should be established at the front end that takes full account of all relevant factors rather than just focusing on letting work to the lowest bidder.
- *Contractual disputes* - A lot of contractual disputes in projects in developing countries stem from unclear objectives and poor definition of requirements. This goes right back to the front end. If the project objectives are not made clear at the start, and the requirements well defined, then subsidiary objectives and requirements will also not be clear.
- *Poor workmanship* - The establishment of appropriate inspection methods and quality control procedures in the project plan will significantly reduce this type of problem.
- *Design changes* - The establishment, at the front end, of clear procedures for managing and controlling changes to any part of the project will ensure that any changes necessary will have minimal impact on a project.
- *Poor weather* - Severe weather conditions that are the norm in a project location and which have the potential to impact the project should be taken into account in the project planning at the front end. However, it is a different situation if, due to delay, certain parts of the project start that are being executed externally start in the rainy season instead of the planned start in the dry season. The effects of such situations should be recognized in the contingency plans developed as part of the overall project plan. Occasionally there will be severe
- *Poor initial assessment and evaluation and poor planning* - If the front end project management activities are not properly organized and managed, then there is a high likelihood that the assessment and evaluation of the project will not be done properly, and similarly neither will the planning. The significance of the front-end project management activities needs to be properly recognized and adequate resources invested in the activities. This initial expense will certainly lead to enormous time and cost savings, and a higher probability of eventual project success.

IMPLEMENTING FRONT-END PROJECT MANAGEMENT

Obtaining the benefits of effective front-end project management requires the selection of a suitable project manager as soon as possible after approval has been given for a project. Morgan (1987) defined the front-end of a project as that period when time, money and human resources are expended on a project without any guarantee of return. As such, the best project management available is required during this period to ensure that the resources are expended as effectively as possible in a manner that will give the highest probability of return.

The project manager should be vested with the appropriate responsibility and authority to make vital decisions. Early selection of a suitable project ensures that there is strong leadership, proper information, clear objectives and sound decision-making right from the start of the project, and help to avoid

unproductive expenditure of money, resources and time. One of the first tasks of the project manager should be to develop a work plan for the front-end project management activities. The front-end work plan should incorporate the following tasks:

- Defining the purpose of the project (expectations/requirements of the client);
- Determining how the project purpose will be achieved (procurement strategies, operational processes and key resources that will be required to achieve the project objectives);
- Investigating financing arrangements for funding the project;
- Identification of constraints to achieving the project objectives (risk identification and analysis);
- Developing project procedures (e.g. reporting and review procedures, responsibility areas, authority to spend money etc); and
- Definition of project termination points to ensure that expenditure of time, resources and money is not wasted.

CONCLUSION

Problems affecting the successful performance of projects in developing countries can be overcome or significantly reduced by effectively managing the front-end activities of the project delivery process. The main front-end project processes that have been found in previous studies to significantly affect project performance are the project definition and project planning phases. These processes involve identifying project stakeholder needs, defining solutions for addressing the identified needs, and developing sufficiently detailed plans that describe the modalities (i.e. 'how') for implementing a project. The upstream investment of adequate resources in the organization and management of front end provides a solid foundation for downstream project success. This is particularly relevant in developing countries where the project environment is often characterised by uncertainty and unpredictability.

REFERENCES

1. Arditi, D. (1985). Construction productivity improvement. *Journal of the Construction Division, ASCE*. Vol. 111, pp 1-4.
2. Arditi, D., Akan, G.T., and Gurdamar, S. (1985). Reasons for delays in public projects in Turkey. *Construction Management and Economics*. Vol. 3, pp 171-181.
3. Dlakwa, M.M. and Culpin, M.F. (1990). Reasons for overrun in public sector projects in Nigeria. *International Journal of Project Management*. Vol. 8, No. 4, pp 237-241.
4. Faniran, O.O. (1999) The role of construction project planning in improving project delivery in developing countries. *Proceedings of the 2nd International Conference on Construction Industry Development, and 1st Conference of CIB TG 29 on Construction in Developing Countries, 27-29 October, School of Building and Real Estate, National University of Singapore.*
5. Faniran, O.O., Oluwoye, J.O. and Lenard, D. (1994). Effective construction planning. *Construction Management and Economics*, Vol. 12, pp 485-499.
6. Faniran, O.O., Oluwoye, J.O. and Lenard, D. (1994). Interactions between construction planning and influence factors. *Journal of Construction Engineering and Management, ASCE*, Vol. 124, No. 4, pp 245-256.
7. Kharbanda, O.P. and Pinto, J.K. (1996). *What made Gertie gallop? Learning from project failures*. Von Nostrand Reinhold, NY.
8. Laufer, A. and Tucker, R.L. (1987). Is construction project planning really doing its job? A critical examination of focus, role and process. *Construction Management and Economics*, Vol. 5, pp 243-266.
9. Morgan, B.V. (1987). Benefits of project management at the front end. *Project Management*, Vol. 5, No. 2, pp 102-119.
10. Ogunlana, S.O. and Olomolaiye, P.O. (1989). A survey of site management practices on some selected sites in Nigeria. *Building Environment*, Vol 24 No. 2, pp 191-196.

11. Ogunlana, S.O., Promkuntong, K. and Jearkjirm, V. (1996). Construction delays in a fast-growing economy: comparing Thailand with other economies. *International Journal of Project Management*, Vol. 14, No. 1, pp. 37-45.
12. Paulson, B.C. (1976). Designing to reduce construction costs. *Journal of the Construction Division, ASCE*. Vol. 102, No. CO4, pp 587-592.
13. Smith, J., Jackson, N. and Wyatt, R. (1998). Strategic Needs Analysis: Searching for Viable Solutions. Plenary Paper, *Proceedings of the COBRA Construction and Building Research Conference 1998*, 2 -3 September 1998, Oxford Brookes University, The Royal Institute of Chartered Surveyors, London, Volume1, pp. 60 -66.
14. Syal, M.G., Grobler, F. Willenbrock, J.H. and Parfitt, M.K. (1992). Construction Project Planning Process Model for Small-Medium Builders. *Journal of Construction Engineering and Management*. Vol. 118, No. 4, pp 651-666.