Abstract

From a management perspective, the key to a successful project lies in its perfect planning and complete execution. An excellent project plan minimizes the risks and, consequently, results in a smooth project execution. In addition, proper cost and time control as well as zero project changes during the execution stage enable a project to be implemented according to schedule.

In planning a project, it is crucial that the plan be detailed enough, as the details of the plan will impact subsequent phases; however, in executing a project, the key lies in the completeness of project execution. A detailed plan makes it easier for the team to identify potential risks of the project, enhance its feasibility, and minimize any project changes that may be required during the execution stage. If a project is not well planned and fails to identify all potential risks, it will require constant adjustments during the project execution that will directly increase the project cost and completion time. The drawback of having such a detailed plan is that it takes longer time to formulate, which also affects the overall project cost and the time required for completion. Thus, professionals are constantly trying to strike a balance between perfect planning and cost-effective execution.

In this study, a mathematical model is proposed that can achieve the abovementioned objective. Taking into consideration planning time, cost, and level of changes, the model proposed can determine enough project planning details that minimizes overall cost.