UNIT 4

PROJECT IMPLEMENTATION

Project implementation (or project execution) is the phase where *visions* and plans become reality. This is the logical conclusion, after evaluating, deciding, visioning, planning, applying for funds and finding the financial resources of a project.

Project implementation is a process whereby "project inputs are converted to project outputs". May be looked at as:

- Putting in action the activities of the project.
- Putting into practice what was proposed in the project document (i.e. transforming the project proposal into the actual project.)
- Management of the project or executing the project intentions.

Implementation is usually done by **implementing agency** (organization) that prepared the project and received funding for it.

Other organizations that participate in the implementation of the project by way of collaboration, say by according good working relationship, extending technical advice or seconding their staff to the project are referred to as **co-operating agencies.**

Project Implementation phase involves:

- Project activation, and
- Project operation

Project activation

- This means making arrangements to have the project started. It involves coordination and allocation of resources to make project operational.

Project operation

- This is practical management of a project. Here, project inputs are transformed into outputs to achieve immediate objectives.

Operation and maintenance

- To attain value and maximum returns, the district/municipality or the beneficiaries organize for the facility to have the project properly managed and maintained regularly.
- An operation and maintenance manual is prepared by the contractor and handed to the district / beneficiaries.

PROJECT MONITORING AND CONTROL WITH PERT/COST

The basic idea here is that the costs are to be measured and controlled primarily on a project basis rather than according to the functional organization of the firm. That is one of the key concepts in PERT/Cost.

In a conventional accounting system what happens is that an organization says so much has gone to materials department, so much has gone to department a, so much has gone to department b and so on irrespective of how much work the individual departments have actually done. The focus here has shifted to looking at costs on the basis of the project and specifically with regard to the activities of the project. Cost is allocated to the individual activities and accounting and subsequent monitoring is done with regard to those activities. This is the major departure that we have from conventional accounting in the PERT/Cost system and the activities or the groups of activities are in fact the micro cost centers.

Network Cost Accounting System- Responsibility for expenditure should coincide with the responsibility for managing the activities that give rise to the expenditure. It is strange that one who sanctions the expenditure has nothing to do with the activity implementation and actual cost control.

PERT/Cost system uses the notion of work packages to define the various stages in which the project ought to be monitored and also the manner in which it ought to be monitored.

A **work package** is nothing but a chunk of the project, a part of the project. It could be an activity or it could a set of activities. A project can be divided into work packages in various ways. A division of the project into too many small activities may facilitate detailed planning and scheduling and it's not convenient for cost control purposes. A division into very large chunks of work would deprive the project of the necessary detail and is not conducive to effective monitoring and control. The recommended work package should be neither too small nor too big. I mean it should be manageable.

Some of the assumptions in PERT/Costs:

It is assumed in PERT/Cost that the expenditure on a work package is uniform throughout its duration. This particular assumption may be reasonable as a number of activities are included in the work package. However if this is not reasonable the work packages could be redefined.

Project monitoring basically means we are concerned about three things. We are concerned about the performance of the project that things or activities are being done as per specifications. They are being done at these appropriate times and we are doing them within the cost.

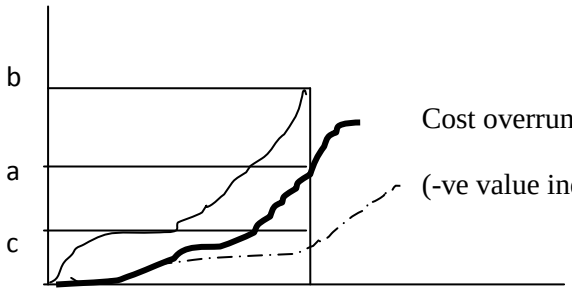
For the three indicators of project progress that is the performance, the time and the cost there has to be a common reference for purposes of measurement in comparison. The important thing is a common reference and this common reference is nothing but the original plan or the budgeted cost and value curve.

A – B- C CURVES

A: Budgeted cost schedule.

B: Actual Cost incurred till date.

C: Value of work completed till date -------



Cost overrun = (b – c) / c

(-ve value indicates under-run)

Time overrun: Horizontal distance between C and A.

There are some cost schedule control systems criteria to the 3 curves:

(a). Budgeted cost of work scheduled (BCWS)

(b). Actual cost of work performed (ACWP)

(c). Budgeted cost of work performed (BCWP)

PERFORMANCE INDICES:

Cost Performance Index-

CPI = BCWP / ACWP

= (c) / (b)

Schedule Performance Index -

SPI = BCWP / BCWS

= (c) / (a)

The budgeted cost of work performed divided by the actual cost of work performed c by b, this ratio can be calculated. If the project is performing fine this will be 1. If the project is performing better than normal it will be greater than 1 and if it's less than 1 it shows that the project is not performing well. Similarly the schedule performance index measures the relative placement of curve c with regard to a and the budgeted cost of work performed divided by the budgeted cost of work scheduled is c by a and in a same manner this can be computed.

To summarize what we can say is that PERT/Cost provides a valuable framework for project monitoring by identifying the time and cost overruns at any stage of implementation. That is the primary contribution of a PERT/Cost system. Then it uses a cost accounting system based on the project activities rather than on the function organization of the firm because all the costing is done with regard to the individual activities and based on that system we have actually worked out how the expenditure is going to take place.

Project performance, time and cost; these are the major watch words in planning and control. These can be evaluated and used to compute the time and cost overruns in a project at any stage, as we go along as we have tried to see and PERT/Cost mind you provides an aggregate measure of how the project is doing.

COMPUTERS APPLICATIONS IN PROJECT MANAGEMENT

Project Management plays a vital role in the success of any project. It encompasses the entire life cycle of the project, which includes initiation, planning, execution, control and closing of the project. Good Project Management involves successful completion of the project in time within budget and without compromising on quality poor coordination, monitoring and communication among the project team results in wastage of resources, excessive costs and delays.

Using conventional methods it is not only difficult for the Project Manager to monitor the progress of the entire process but it also prevents him from getting up to date information about the exact status of the project. This lack of up to date information about the status of various activities prevents the Project Manager from taking informed decisions leading to wastage of time and resources. This process complicates further when the Project Manager has to handle a number of projects spread over various geographic locations simultaneously.

In recent years, technological innovation in project management has significantly changed the entire scenario. Computers with the Internet have started playing a vital role in various aspects of construction. Various software tools and products act as means to foster collaboration among professionals on a project, to communicate for bids and results, and to procure necessary resources materials goods and services. While generalized Project Management Software tools like **Microsoft's MS Project** are available, specialized Project Management Software Products like **BuildPROJECT** are available to manage Project exclusive.

The greatest contribution that computers can make to project management is in the processing, presentation and communication of management information. That includes the calculation of practicable project schedules and day-to-day departmental work-to lists from critical path network diagrams for even the largest projects.

EXAMPLE:

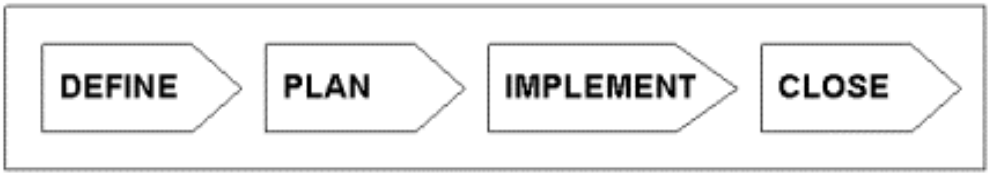
Microsoft Project is by far the most widely known and used package, with millions of users. Early versions had their faults, but later versions have overcome those difficulties and this package returns good value for its reasonable price. As part of the Microsoft Office suite of programs it is user-friendly and its core features are easy to learn. It is ideal for the very many users whose projects do not require the extended capabilities of products from the higher-end of the market, or who cannot justify the greater investment in cost and training that those more powerful systems demand.

For a project manager, effectively balancing a project's scope, cost, time and resources is an ongoing challenge. BuildPROJECT, the construction project-management tool, helps to view, analyze, and manage these project coordinates concurrently, all from a desktop. This enables the Project Manager to create schedules, plan resources, collect and document actual data and generate project status reports and MIS. The Construction Project Management Software deals with every aspect of the Life Cycle of the Construction facility. It automates various operations like Planning, Execution and Control, Resource Management, Inventory Management, Safety Management, Quality Control and Finance Management.

The software is especially helpful when multiple projects need to be managed in different locations.

CONTRACT MANAGEMENT

There are two or more different legal entities or parties involved in the project, normally in customer / contractor or contractor / sub-supplier relationships. These different parties need to sign a contract before starting implementation phase of a project.



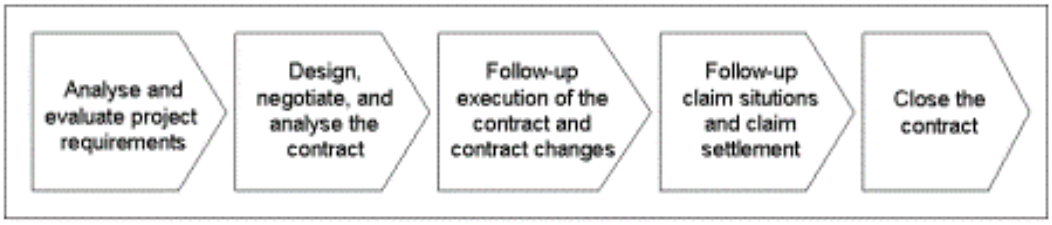
In larger projects with a customer / contractor relationship, on the side of the contractor, a proposal team will own the project management process in definition and planning phase until the contract is signed. Then, they will hand over to an implementation team. So, in the first two phases, a proposal manager is in charge who transfers the project responsibility to a project manager for implementation and closure phase.

What is a contract?

A contract is any agreement between two or more parties where one party agrees to provide certain deliveries or services, and the other party agrees to pay for those deliveries or services.

What is contract management?

Contract management is a continuous process, starting with analysis and evaluation of the customer's inquiry, and carrying on until contract closure, upon fulfillment of all contractual obligations.

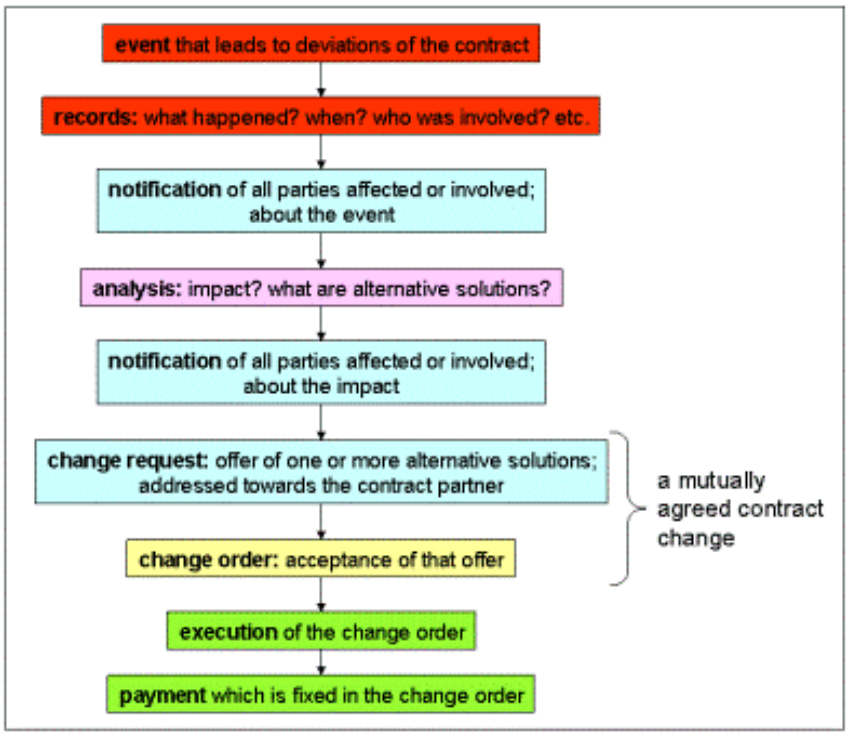


This process overview indicates that contract management activities seem to belong to the responsibilities of the project manager and the whole project team. In fact, they do; however, in larger projects where we have large contracts it is best practice to involve a full-time contract manager who brings in his professional experience, takes responsibility for that process, and ensures the contribution of all team members.

Contract preparation comprises analysis and evaluation of the other parties' requirements, a clear statement of our own requirements, and negotiation in order to reach agreement between the involved parties. After signing the contract, upon handover, the implementation team needs to analyze the contract in order to ensure that they understand what has been signed and needs to be implemented. When preparing and signing a contract in definition and planning phase, we anticipate how we want to implement the required project results, and fix this anticipation in our planning documents.

This means that all our project planning is based on assumptions on how the project environment will develop over implementation and closure phase. As a simple matter of life, these assumptions can turn out to be wrong: certain conditions can change, or certain events can happen so that changes or deviations of the plans and of the contract become necessary. Thus, it would be helpful to prepare the project plans and the contract in a way so that those necessary changes can be implemented with mutual agreement of all involved parties.

As a **tool for contract management,** we integrate a change management process into the contract.



As an essential result of this change management process we only execute a change to the contract upon successful negotiation and mutual agreement of a change order.

PROJECT PROCUREMENT MANAGEMENT

Managing project procurements and acquisitions requires the project manager to efficiently collaborate with the purchasing department on the process of planning and managing procurements. Project procurement management is a section of the Implementation Plan to determine how "the ordered products necessary for producing deliverables can be delivered on time and within the allocated budget".

Project Procurement Process [also called "Project Procurement Management Process"] is a method for establishing relationships between an organization's purchasing department and external suppliers to order, receive, review and approve all the procurement items necessary for project execution. The supplier relationships are managed on a contractual basis.

The process aims to ensure timely delivery of the purchased items which are selected and acquired according to the specifications and requirements set up by the purchasing department and approved by the project manager.

The procurement process includes five major steps, as follows:

1. **Specification.** This step involves the purchasing department in communicating with the project manager to develop and approve a list of procurement items necessary for

project implementation. The department must specify the approved items to external vendors.

2. **Selection.** This step of the project procurement process requires the department to find potential suppliers which can procure the necessary items, according to the specifications. For this purpose the department needs to set vendor selection criteria, which may include such measures as Delivery, Service Quality, Cost, and Part Performance.

3. **Contracting.** The department must communicate with the suppliers on delivery dates and payment conditions in order to ensure "on-time" delivery of the ordered items within the stated project budget. All the conditions should be listed in a procurement contract. Also a detailed delivery schedule should be negotiated with the procurers and approved by the purchasing department.

4. **Control.** Success of the procurement management process depends on how the purchasing department controls the delivery and payment processes. Through arranging regular meetings with the vendors, tracking delivery progress, reviewing the ordered items against the approved product specifications, and making necessary changes to the procurement contract, the department can control the process and ensure successful accomplishment.

5. **Measurement.** The final step of the project procurement management process refers to using a system of performance indicators and measures for assessing the effectiveness and success of the entire process. The project manager needs to set up such a system and the purchasing department needs to use it in measuring the process. Special meetings and workshops can be conducted to view KPIs, intermediate results of staged delivery, performance of procurers, adherence to product specifications, communications with suppliers, and the like. In case any deviations or gaps are revealed the department should notify the project manager and make necessary changes to the procurement plan.

PROJECT PROCUREMENT PLAN

Planning of project procurements is carried out within the procurement process and results in developing a plan. A procurement plan is a convenient tool for organizing and managing activities and tasks related to the procurement management process. A template of the plan is to be designed by the purchasing department in cooperation with the project manager. A project procurement plan should be reviewed and approved by the project manager before any supplier relationships get started.

A project procurement plan template documents contains:

- ✓ Deliverables to be procured by proposed agreements/contracts.
- ✓ Effective resource management strategies for negotiating and managing the agreements/contracts.
- ✓ The need for staged delivery and desirability of testing the procured items before introducing them into the implementation process (this item is optional).
- ✓ The chosen procurement method (payments, expressions of interest, request for price/quote, request for tender).
- ✓ Key stages of the process for selecting suppliers and vendors.
- ✓ The model of procurement funding.
- ✓ The sample of procurement contract/agreement.
- ✓ References to quality approvals, quality assurance and risk management.

POST-PROJECT ANALYSIS

A **post-project evaluation** (also called a **post-project** review or lessons learned) is an assessment of **project** results, activities, and processes that allows you to. Recognize **project** achievements and acknowledge people's work.

The **Post Project Analysis document** records the results of conducting a depth and breadth assessment of the project from its inception (envisioning phase) to completion (deployment phase).

Post project evaluation represents assessment of the project after its completion, analysing the actual, as against the projected estimates in respect of time, cost and quality specifications. The evaluation includes investigation of the variances per constituent of the project objectives (and, within such constituent, major elements of variances) leading to the assessment of the overall situation.

By the process of implementation of a project, the project owner, the financial institution involved in the project, and the project management are all enriched with abundant experience, as also the contractor employed for the project. The objective of evaluation of the project after its completion is to learn from such experience.

The details of such evaluation can be interpreted and used in different ways according to the perspectives of the concerns interested in the project. The fundamental objective, however, is the possible use of the valuable knowledge and experience gathered from the completion of the project.

The project owner as well as the project management is, on completion of the project, equipped with a store of information the invaluable database which can be retained for possible future usage.

The financial institution may find from the post project evaluation the weakness in project appraisal at the initial stage and/or lack of necessary monitoring by itself during the implementation process etc. and, thus, modify its lending policy for the future.

A contractor may achieve his scheduled targets but, in doing so, suffer severe financial loss due to inadequacy in his bidding, and, by post project evaluation, he can make use of his experience and take necessary safeguard measures in his tender for future projects.

It will appear from the above that the fundamental objective is to record the findings from the evaluation, so that the observations can be of immense help in future.

The objectives of post project evaluation also include the need for assessment of the situation on completion of the project as such evaluation may reveal the need for some corrective measures.

PROCESS OF POST PROJECT EVALUATION:

In spite of all the latest tools and techniques and helps from sophisticated automation system, the track record of larger and complex project is in general poor. There are endless instances where actual on completion of the projects are wide out of the budgets.

The process of such evaluation can be carried out in two phases:

(a) Soon after the completion of the project; and

(b) After the lapse of about two years since the completion of the project.

(A) Evaluation soon after the completion of the project:

The process of evaluation can be carried out by questioning method and include:

i. What has happened in actual?

ii. How do the actual stand as compared to projected estimates?

iii. What are the areas showing variances?

> Such variances are to be located and investigated individual area-wise. This is because considerable unfavourable variance in an area may be set-off with favourable variances in other area leading to insignificant difference between the totals of actual and estimates. Analysis of small variances ranging within seven to eight per cent may be avoided.

iv. What are the reasons for such variances and:

(1) How much of it was unavoidable and how?

(2) How much of it was avoidable:

(a) What are the reasons for such avoidable variances?

(b) What else could have been done?

(c) How and when it could have been done?

(B) Evaluation after the lapse of about two years since completion of the project: The questions include:

a. Whether the goal with regard to the technology envisaged is achieved, e.g. the quality, the capacity of the plant etc.?

b. What are the reasons for shortfalls, if any, as evaluated in (1) above. The reasons for shortfalls may include deficiencies in the plant layouts, the machineries installed, the standard of inputs etc.

c. What else could have been done to avoid the shortfalls noted as in (2) above?

d. Whether the market share as envisaged in the project is being achieved? If not, what are the reasons for missing the target?

Additionally, the process of evaluation should also aim towards the assessment of necessary corrective measures.

Report on Post Project Evaluation:

The report on post project evaluation should highlight major hurdles faced in the process of implementation of the project, and whether, such hurdles could have been avoided by taking alternative steps. The report should also include the reasons for variances in respect of Time and Cost—such variances being more than ten per cent of the projected estimates.

It is also necessary that, considering the significant overrun, the evaluation report suggests remedial measures including review of the financial viability.