

CHAPTER- 5 ESTIMATING PROJECT TIMES & COSTS

ESTIMATING:

Def- "Estimating is the process of forecasting or approximating the time and cost of completing project deliverables."

* CLASSIFICATION OF ESTIMATION:

Estimated process are frequently a classified as;

(i) Top-down

(ii) Bottom-up

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Top-down estimates are usually done by senior management and these estimates are derive from analogy, Group Consensus or mathematical relationships.

(ii) - Bottom-Up:

Bottom-up estimates are typically performed by the people who are doing the work. their estimates are based on estimates of elements found in the WBS.

IMPORTANCE OF ESTIMATING TIME & COST:

- To support good decisions
- To. schedule work
- To determine how long the project should take
- To determine whether the project is worth doing
- To establish cash flow needs.

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FACTORS INFLUENCING THE QUALITY OF ESTIMATES:

Past Experience is a good starting point for developing time and cost estimates, But past experience estimates must almost always be refined by other considerations.

Factors related to the uniqueness of the project will have a strong influence on the accuracy of estimates. Project, People & external factors all need to be considered to improve quality of estimates for project time and cost.

(i) - PLANNING HORIZON:

The quality of estimates depends upon the planning horizon: Estimates of Current events are close to 100% accurate but are reduced for more distant events. Concept-phase to actual work-package phase.

(ii) - PROJECT DURATION:

Long-duration projects increase the uncertainty in estimates. and short-duration projects are in good estimates.

(iii) - PEOPLE:

The people factor can also introduce errors in estimating time and cost. Accuracy of estimates depends upon the skills of the people making the estimates.

A close-match of the people skills with the tasks.

(iv) - PROJECT STRUCTURE & ORGANIZATION:

Which project management structure is chosen to manage the projects will influence time and cost. Matrix structures will use widely to reduce the cost.

(v) - PADDING ESTIMATES :

In some cases people are inclined to pad estimates. That is consider some additional % of the time and cost actually.

(vi) - ORGANIZATIONAL CULTURE :

Culture significantly influence the project estimates. Some organizations take too padding estimates & some think that detail estimates takes too much time.

(vii) OTHER FACTORS :

Equipment downtime can alter time estimates. National holidays, vacations legal limits can influence the project estimates. Project priority can influence resource assignment & impact time & cost.

ESTIMATING GUIDELINES :

Managers recognize time, cost & resource estimates must be accurate if project planning, scheduling & controlling are to be effective. Managers can follow SEVEN guidelines to develop useful work package estimates.

(i) RESPONSIBILITY :

At the work package level, estimates should be made by the person(s) most familiar with the task. Draw on their expertise. Those responsible for getting the job done on schedule & within budget are usually first-line supervisors or technicians.

(2) - USE SEVERAL PEOPLE:

when several peoples of relevant experience and knowledge of the task are used. people bring different biases based on their experience.

(iii) - NORMAL CONDITIONS:

when the task Time, cost and resource estimates are determine, they are based on Normal conditions, efficient methods & an normal level of resources.

e.g; * If the normal workday is Eight-hours the time estimate should be based on eight-hour day.

* If the normal workday in Two shifts, the estimation also based on Two shifts.

(iv) - TIME UNITS:

specific Time units to use should be selected early in the development phase of project network. Estimates of time must consider whether normal time is represented by

- * Calendar Days
- * work days
- * work weeks
- * Person days
- * Single shifts
- * Hours
- * minutes

INDEPENDENCE:

Estimators should treat each task as independent of other tasks that might be integrated by the WBS. Also the time for each task should be considered independently of other activities.

(vi) - CONTINGENCIES:

The estimates should assume normal or average conditions even though every work package will not materialized as planned.

(vii) - ADDING RISK ASSESSMENT:

Some tasks carry more time and cost risks than others. As to identify the degree of risk lets stakeholders consider alternative methods and alter process decisions.

METHODS FOR ESTIMATING TIME & COST:(i) CONSENSUS METHOD:

This method simply uses the pooled experience of senior / middle managers to estimate the total project duration & cost. This includes the meetings where experts discuss, argue & ultimately reach a decision as to their best Guess Estimates.

Delphi Methods use to make these macro estimates.

These are Rough-cut & typically occur in the Conceptual stage of the project.

(ii) - RATIO METHODS:

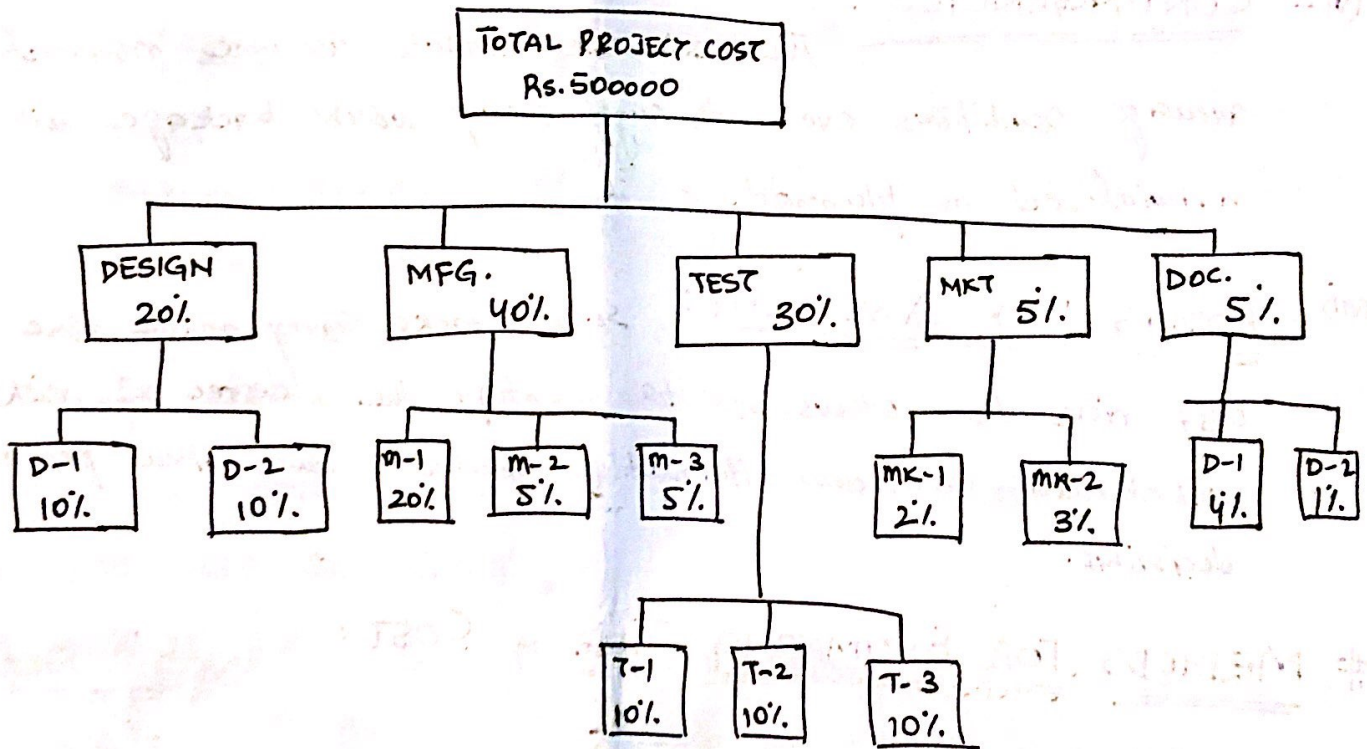
Top management usually use the Ratio, surrogate to estimate project time and cost.

$$2700 \text{ Sq}^{(14)} @ \text{Rs. } 160 / \text{Sq}$$

$$\text{Total estimate } 2700 \times 160 = \text{Rs. } 432000$$

(iii) - APPORTION METHOD:

This method is an extension to the ratio method. and use on projects closely follow the past projects in features and cost.

(iv) LEARNING CURVES:

Some projects requires that the same tasks, group of tasks on product be repeated several time. Managers known intuitively that the time to perform a task improves with repetitions. this will use to reduction in time to perform the tasks. this also known as Improvement Curves, Experience Curve, Industrial progress curve.

TEMPLATE METHOD :

(7)

If the project is similar to the past projects, the cost from past projects can be used as a starting point for the new project. The estimates of time and cost are used for the small Template / work package. Sum-up to the complete project.

(vi) - RANGE ESTIMATING :

Range Estimating works best when work packages have significant uncertainty associated with the time or cost to complete.

TASK	LOW	AVG.	HIGH	RANGE
1. Approval	1	2	3	2
2. Design Packing	4	7	12	8
3. Design Bottle logo	5	6	10	7
4. Design Brochure	6	7	12	8

(vii) - PHASE ESTIMATES :

This is a hybrid method and is used when an unusual amount of uncertainty surrounds a project and it is impractical to estimate time and cost for the entire project. It consists of two parts as;

- * Detailed Estimates
- * Macro Estimates

PHASE	NEED 1	SPECIFICATION 2	DESIGN 3	PRODUCE 4	DELIVER 5
1		Macro-estimates			
2		Detail Estimate	macro estimate		
3			Detail	macro estimate	
4				Detail	macro
5					Detail

LEVEL OF DETAIL:

Level of Detail is different for different level of management. At any level the detail should be no more than is necessary and sufficiently. Top-management interest usually center on the Total project and major milestone events that mark major accomplishment.

First-line managers focus on the low level and then the level of one work-package in the level.

TYPE OF COSTS:

There are THREE types of costs linked to project as.

1. Direct Cost
2. Direct Project Overhead Cost
3. General & Admin overhead Cost

(i) DIRECT COST:

these are Labor, Material, Equipment.

DIRECT PROJECT OVERHEAD COST :

Salary of Project Manager
 Rental space for Project Team
 Transportation for project site

(iii). G&A OVERHEAD :

The cost of Top-management, Marketing cost
 Cost includes other than the project-line. Accounting etc.

	Rs.
Direct Cost	89000
Project Direct	20,000
	<hr/>
Total Direct cost	100000
20% G&A cost	20,000
	<hr/>
Total cost	120,000
Profit 20%	24000
	<hr/>
Total Bid	144000

CREATING A DATABASE FOR ESTIMATING :