



Methods of Estimation

Introduction



Generally , estimating methodologies commonly fall into two broad categories:

Conceptual

Deterministic

Conceptual Estimation

- Prepared by using engineering concepts and avoiding the counting of individual pieces.
- Generally made in the early phases of a project
- The forecast of project costs that is performed before any Significant amount of information is available from detailed design

Conceptual estimation methodologies

- End product unit
- Physical dimension method
- Capacity factor method
- Ratio or factor method
- Parametric method

End product unit

- Used when the estimator has enough historical data available from similar projects to relate (capacity units) of a project to its construction costs
- This allows an estimate to be prepared relatively quickly, knowing only the end-product unit capacity of the proposed project

Physical dimension method

- Somewhat similar to the end-products units method is the physical dimensions estimating methodology.
- The method uses the physical dimensions (length, area, volume, etc.) of the item being estimated as the driving factor.

For example, a building estimate may be based on square feet/meters or cubic volume of the building; whereas pipelines, roadways, or railroads may be based on a linear basis.

Capacity factor method

- In which the cost of a new facility is derived from the cost of a similar facility of a known (but usually different) capacity.
- The ratio of costs between two similar facilities of different capacities equals the ratio of the capacities multiplied by an exponent

$$\$/B/\$/A = (\text{Cap B}/\text{Cap A})^e$$

where

- » $\$/B$ is the cost of the facility being estimated,
- » $\$/A$ is the known cost of a similar facility,
- » Cap B is the capacity of the facility being estimated,
- » Cap A is the capacity of the similar facility, and
- » “e” is the exponent or proration factor.

Ratio or factor method

- Used in situations where the total cost of an item or facility can be reliably estimated from the cost of a primary component
- For example, this method is commonly used in estimating the cost of process and chemical plants, where the cost of the specialized process equipment makes up a significant portion of the total project cost. This is often referred to as “equipment factor” estimating

Parametric method

- A parametric cost model is an extremely useful tool for preparing early conceptual estimates
- Little technical data or engineering deliverables to provide a basis for using more detailed estimating methods
- It is a mathematical representation of cost relationships that provide a logical and predictable correlation
- The use of modern computer technology (including popular spreadsheet programs) makes the process tolerable, and much easier

Deterministic Estimation

- In which each component of a project surveyed and priced using unit prices
- This prepared to support final budget authorization, contractor bid tenders, cost control during project execution, and change orders

Continue

- The following steps comprise the activities undertaken during
 - preparation of a detailed estimate:
 - prepare project estimate basis and schedule,
 - prepare direct field cost (DFC) estimate
 - prepare indirect field cost (IFC) estimate
 - prepare home office cost (HOC) estimate
 - prepare escalation estimates
 - review/validate new scope costs