

PMI-CAPM®
Certified Associate
Project Manager

4

4. Costs

4 Processes

Costs - Table of contents

Processes

- [1. Plan Cost Management](#)
- [2. Estimate Costs](#)
- [3. Determine Budget](#)
- [4. Control Costs](#)

Definitions & Notes

- [Difference: Cost Baseline vs Cost Budget](#)
- [Difference: Triangular Distribution vs Beta Distribution](#)
- [Earned Value Analysis](#)
- [Formulas](#)
- [Difference: Forecast Reporting vs Progress Report vs Trend Report vs Earned Value Report](#)
- [Difference: ROM vs Budget vs Definitive Estimate](#)
- [Project values](#)

1. Plan Cost Management

Plan how to plan, manage,
control costs

Planning



Plan Cost Management

Input



- Project Charter
- Project Management Plan
- EEFs
- OPAs

T&Tools



- Expert judgment
- Analytical techniques
- Meetings

Output



- Cost Management Plan

2. Estimate Costs

Estimate how much money is needed by the project work

Planning



Estimate Costs

Input



- Project Management Plan
 - Cost Management Plan
 - Quality Management Plan
 - Scope Baseline
- Project Documents
 - Lesson Learned Register
 - Project schedule
 - Resource requirements
 - Risk Register..
- EEFs
- OPAs

T&Tools



- Analogous estimations
- Parametric estimations
- 3-points estimate
- Bottom-up estimate
- Data Analysis
 - Alternative Analysis
 - Reserve Analysis
- PMIS - Software
- Decision Making
- Estimate Ranges
 - ROM (-25 +75%)
 - Budget (-10 +25%)
 - Definitive (+-10% o -5 +10%)

Output



- Cost estimates
- Basis of estimates
- Change requests
- Project documents updates

3. Determine Budget

Find out the Cost Baseline
(cost + contingency reserves)

Planning



Determine Budget

Input



- Business Case (ROI)
- Business Benefits Plan
- Cost Management Plan
- Cost estimates
- Basis of estimates
- Project schedule
- Risk Register
- Agreements / contracts
- OPAs

T&Tools



- Expert judgment
- Cost Aggregation
- Reserve analysis
- Historical Information Reviews
- Financing

Output



- Cost Baseline
- Project documents updates
 - Cost estimates
 - Risk register
 - Project schedule

4. Control Costs

Monitor costs vs Cost
Baseline

**Monitor
& Control**



Control Costs

Input



- Work Performance Data
- Project Management Plan
 - Cost Management Plan
 - Cost Baseline
 - Performance Measurement Baseline
- Lesson Learned Register
- OPAs

T&Tools



- Data Analysis
 - Earned Value Analysis
 - Reserve Analysis
 - Trend Analysis
 - Variance Analysis

Output



- Work Performance Informations
- Cost Forecasts
- Change Requests
- Project Management Plan updates
- Project documents updates

Which is the difference between... ?

Cost Baseline

VS

Cost Budget / Project Budget

Includes Contingency Reserves

A cost baseline is an **approved time-phased budget** that will be used to measure and monitor cost performance.

Cost Baseline + Management Reserves

Management reserves are **extra funds budgeted for unplanned project changes**. The project budget is the **total amount that the organization should have available** in order to complete the project.

What is the difference between... ?

**Triangular
Distribution**

VS

**Beta
Distribution**

$$(O+M+P) / 3$$

$$(O+4M+P) / 6$$

They are both Techniques & Tools for Activities Estimation
(3-points estimation)

- O = Optimistic
- M = Most Likely
- P = Pessimistic

What is **Earned Value Analysis**?

Earned Value **measure the project performance vs scope, costs and schedule baselines** (Performance Measurement Baseline).

AC	Actual Cost
PV	Planned Value
EV	Earned Value
BAC	Budget at Completion
EAC	Estimate at Completion
ETC	Estimate to Complete

Formulas

	Name	Description	Formula
AC	Actual Cost	The current actual cost incurred for the completed work	
PV	Planned Value	The estimated value of work that is currently planned to be accomplished	
EV	Earned Value	The estimated value of work that has been accomplished	
CV	Cost Variance		$CV = EV - AC$
SV	Schedule Variance		$SV = EV - PV$
CPI	Cost Performance Index	A measure of the cost efficiency of budgeted resources expressed as the ratio of earned value to actual cost CPI values > 1.0 indicate a project is under planned cost CPI values = 1.0 indicate a project is on planned cost CPI values < 1.0 indicate a project is over planned cost	$CPI = EV / AC$
SPI	Schedule Performance Index	A measure of schedule efficiency expressed as the ratio of earned value to planned value SPI > 1 means the project is ahead of schedule SPI = 1 means the project is on schedule SPI < 1 means the project is behind schedule	$SPI = EV / PV$
BAC	Budget at Completion	The Cost Baseline = how much we plan to spend for total project	
EAC	Estimate at Completion	Based on now, how much money we expected to be the total cost the project ⇒ the current expectation of the total project cost	$EAC = AC + (BAC - EV)$
ETC	Estimate to Complete	From now on, how much money is missing to finish the project ⇒ the current forecasted cost to finish the project	$ETC = EAC - AC$
VAC	Variance at Completion	The difference between the planned cost of the project and what I expect today it will cost ⇒ the amount of budget deficit or surplus, expressed as the difference between the budget at completion and the estimate at completion Positive = Under planned cost Neutral = On planned cost Negative = Over planned cost	$VAC = BAC - EAC$
TCPI	To Complete Performance Index	The efficiency needed to finish the project on budget, shows the project manager the rate that must be sustained for the remaining work in order to stay on budget ⇒ the ratio between budgeted cost of work remaining and money remaining TCPI > 1.0 is harder to complete TCPI = 1.0 is same to complete TCPI < 1.0 is easier to complete	$TCPI = (BAC - EV) / (BAC - AC)$

Which is the difference between... ?

**Forecasting
Report**

VS

**Progress
Report**

VS

**Trend
Report**

VS

**Earned Value
Report**

When needing to review
the project's future
status and performance

When needing to know what
has been accomplished on
the project thus far

When needing to examine
the past results of the
project to see if its
performance is improving
or not

When needing to to
assess the project's
performance based on its
scope, cost, and schedule
measures

Which is the difference between... ?

**Rough order
of magnitude -
ROM -
Estimate**

VS

**Budget
Estimate**

VS

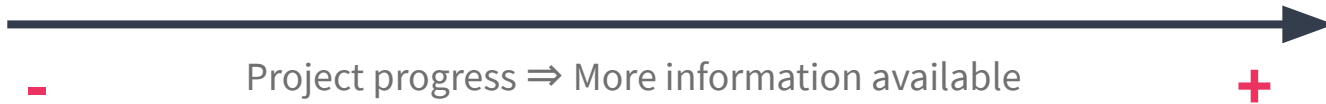
**Definitive
Estimate**

-25% / +75%

-10% / +25%

+ -10%

-5% / +10%



Project values to compare...

Name	Description	What to Choose
Internal rate of return (IRR)	The rate of growth a project is expected to generate	The company should choose the project with the highest IRR
Present value	The value today of future cash flows	
Net present value (NPV)	Used to analyze the profitability of a project	
Payback period	The length of time required to recoup the cost of a project	The company should choose the project with the shortest payback period
Benefit-cost ratio (BCR)	Identify the relationship between the cost and benefits of a proposed project. The BCR is calculated by dividing the total discounted value of the benefits by the total discounted value of the costs BCR > 1 the benefits are greater than the costs BCR = 1 the costs and benefits are equal BCR < 1 the costs are greater than the benefits	

To compare projects in order to select the best project to initiate



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THANK YOU
