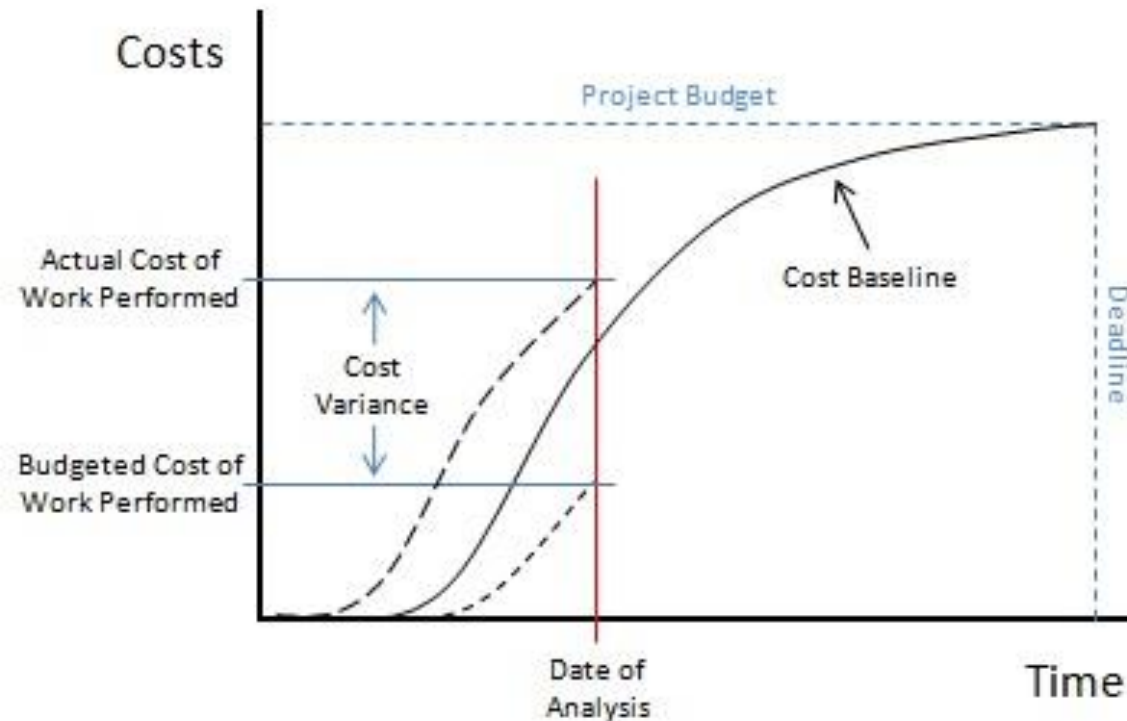


IT Projects Management 1100-ZPOUEN
Information technology laboratory (LI) Winter
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PROJECT COST MANGMENT



Cost management is the process of estimating, allocating, and controlling project costs.

he cost management process allows a business to predict future expenses to reduce the chances of budget overrun. Projected costs are calculated during the planning phase of a project and must be approved before work begins.

Why is cost management important in project management?

Without a detailed budget, you cannot effectively map out the resources needed for your project. For example, if you are renovating an office building, you need to hire an architect, pay for building materials, and agree upon hourly rates for construction workers. To do this, you need to accurately estimate all costs and ensure you have the budget to cover them.

What are the benefits of cost management in project management?

Three of the key benefits:

- **Prevents overruns:** By allotting costs in the early planning stages, project managers ensure they don't overspend on specific areas.
- **Avoids risk:** A good budget will have a risk allowance to ensure project success is not compromised if unforeseen costs arise.
- **Aids future planning:** Cost reports can help with resource optimization. This can lead to more accurate budgets in the future.

By implementing efficient cost management practices, project managers can:

- Set clear expectations with stakeholders.
- Control scope creep by leveraging transparencies established with the customer.
- Track progress and respond with corrective action at a quick pace.
- Maintain expected margin, increase ROI, and avoid losing money on the project.
- Generate data to benchmark for future projects and track long-term cost trends.

What are the challenges of cost management?

Cost project management can be tricky. Here are three challenges that frequently crop up:

- Lack of resources
- Inaccurate estimation
- Outdated technology

Who is responsible for cost management in a project?

Project managers are responsible for cost project management. As part of their role, they must estimate total costs, plan the budget, monitor spend, and prepare for potential risks.

Which project tools help with cost management in project management?

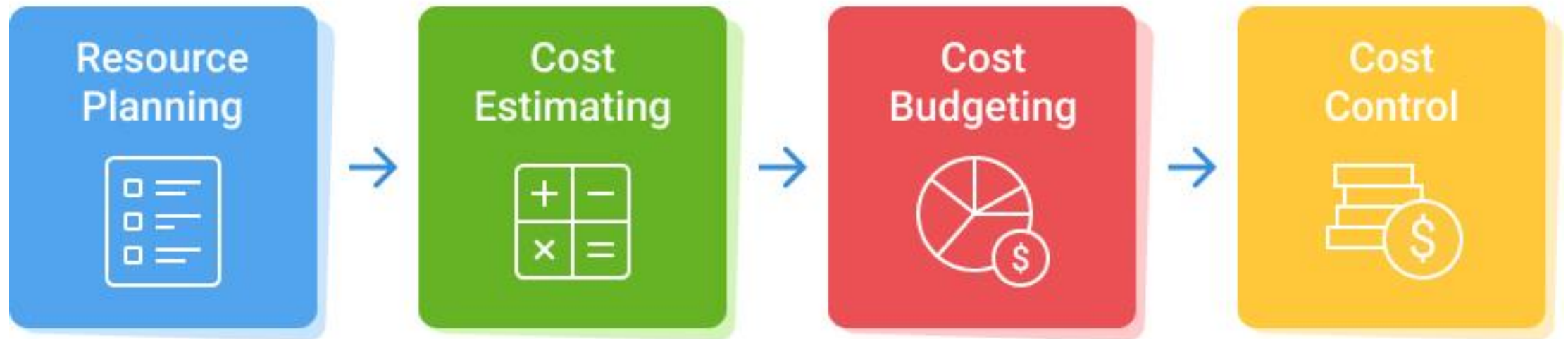
Budgeting: For effective cost project management, you need an accurate budget. This requires a budgeting tool to track costs using custom hourly rates and tailored financial fields.

Time tracking software: This is particularly useful when trying to estimate resource cost. When team members log hours using a task timer, project managers can use this data to determine how long a certain task takes and allocate resources accordingly.

Reporting and analytics tools: For real-time insights into their cost management process, project managers should generate weekly reports with detailed charts and graphs. Analytics dashboards can also be created for a project portfolio overview.

The Four Steps in Project Cost Management

Cost Management: Four Primary Phases



1) Resource planning is the process of identifying the resources required to execute a project and take it to completion. Examples of resources are people (such as employees and contractors) and equipment (such as infrastructure, large construction vehicles and other specialized equipment in limited supply).

Resource planning is done at the beginning of a project, before any actual work begins.

A few tips to consider during the process:

- Consider historical data—past schedules and effort—before determining sub-tasks and the corresponding resources.
- Take feedback from SMEs and team members—a collaborative approach works well especially in projects that do not have past data to use.
- Assess the impact of time on resource requirements. For instance, a resource may be available only after a few months, dragging the project's schedule. This could have an impact on cost estimation.

2. Cost Estimation

Cost estimation is the process of quantifying the costs associated with all the resources required to execute the project. To perform cost calculations, we need the following information:

- Resource requirements (output from the previous step)
- Price of each resource (e.g., staffing cost per hour, vendor hiring costs, server procurement costs, material rates per unit, etc.)
- Duration that each resource is required
- List of assumptions
- Potential risks
- Past project costs and industry benchmarks, if any
- Insight into the company's financial health and reporting structures

The greater the deviation between estimation and actual costs, the less likely it is for a project to succeed. However, there are many estimation models to choose from. Analogous estimation is a good choice if you have plenty of historical cost data from similar projects. Some organizations prefer mathematical approaches such as parametric modeling or program evaluation and review technique (PERT).

3. Cost Budgeting

Cost budgeting can be viewed as part of estimation or as its own separate process. Budgeting is the process of allocating costs to a certain chunk of the project, such as individual tasks or modules, for a specific time period. Budgets include contingency reserves allocated to manage unexpected costs.

For example, let's say the total costs estimated for a project that runs over three years is \$2 million. However, since the budget allocation is a function of time, the project manager decides to consider just the first two quarters for now. They identify the work items to be completed and allocate a budget of, say, \$35,000 for this time period, and these work items. The project manager uses the WBS and some of the estimation methods to arrive at this number.

4. Cost Control

Cost control is the process of measuring cost variances from the baseline and taking appropriate action, such as increasing the budget allocated or reducing the scope of work, to correct that gap. Cost control is a continuous process done throughout the project lifecycle. The emphasis here is as much on timely and clear reporting as measuring.

Earned value management (EVM) is one of the most popular approaches to measuring cost performance.

Let's take an example.

At the end of a week, you measure the progress of task X and find that it's 25% complete. Now, how do you assess if you are on track to meet the task budget?

First, a project manager calculates the planned value for this task (at the planning stage). Let's say, Task 'X' has a budget of \$4000 and is expected to be 50% complete by the week.

Planned value (PV) of task X by the week = $\$4000 * 0.5 = \2000

Earned value (EV) of task X by the week = $\$4000 * 0.25 = \1000

Now, you also determine the actual cost (AC) of the work, which involves other variables such as equipment and material costs (say, \$800).

Schedule variance = $EV - PV = \$1000 - \$2000 = -\$1000$.

Cost variance = $EV - AC = \$1000 - \$800 = \$200$.

The negative schedule variance indicates that the task is falling behind, but the **positive cost variance indicates that it's under budget.**

While dealing with hundreds of tasks in huge projects, cost control can provide the level of transparency that decision makers require to respond quickly to the situation.

Project Cost Software

Let's look at a few advantages of using project cost management software:

- Automation of cumbersome quantitative analysis during estimation and measurement helps avoid manual errors
- Integration of data across planning, estimation, budgeting, and control enables continuous monitoring and quick, proactive responses, rather than one-off interventions
- Decision-making is made easier as cost software helps evaluate alternate solutions using scenario forecasting and what-if analysis
- Clear and easy reporting in the form of dashboards and other rich UIs
- The complexity of multicurrency management in projects across different geographical locations is simplified with project cost software
- Many project cost solutions allow third-party integrations, so data can be pooled and analyzed
- Benchmarking and standardization are possible with the availability of performance data across multiple projects.

Key Project Cost Metrics

Estimate to Complete (ETC)

The ETC is a measurement of the forecast of the costs remaining for project completion. This figure is calculated by adding estimated labor and non-labor costs required to complete the project.

Estimate at Completion (EAC)

The EAC metric is calculated by combining the present cost with ETC Cost. Comparing EAC with other metrics can determine if the project is running within budget and on time. Since project statuses can experience fluctuations over time, managing EAC is an essential process.

Cost Variance

This metric measures the budgeted amount minus the money spent. If the value is positive, then the project is within budget. However, a negative result means that you've spent more than was initially allocated. This metric is used to assess overall progress. It goes without saying that if you have used up 30% of your budget in the first two months of a one-year project, there may be an issue.

Project Profitability

In the case of billable projects, every manager hopes their project turns a profit for the company. Analyzing how profitable the work is can be arrived by calculating the net profit and net profit margin.

Project profit is measured with the following formula:

$$\text{Project Profit} = \text{Project Revenue} - \text{Project Costs}$$

The net profit margin is the ratio of net profits to revenues. This result is a percentage that shows how much of the revenue translates to profit. The formula for net profit margins is as follows:

$$\text{Net Profit Margin} = \frac{\text{Total Revenue} - \text{Total Costs}}{\text{Revenue}} \times 100$$

The net profit margin reveals the accurate profit generated after accounting for all expenses. This metric can be tracked over time to help forecast profits.

QUESTIONS AND ANSWERS

1. A project has a 60% chance of a \$100,000 profit and a 40 percent of a US \$100,000 loss. The Expected Monetary Value for the project is:

1. \$100,000 profit
2. \$60,000 loss
3. \$ 20,000 profit
4. \$40,000 loss

Expected Monetary Value (EMV) is computed by $EMV = Probability \times Impact$.

Compute both positive and negative values and then add them:

$0.6 \times \$100,000 = \$60,000$ $0.4 \times \$100,000 = \$40,000$ $EMV = \$60,000 - \$40,000 = \$20,000$
profit

2.

If a risk event has a 90 percent chance of occurring, and the consequences will be the US \$ 10,000, what does the US \$9,000 represent?

- 1. Risk value
- 2. Present value
- 3. Expected monetary value
- 4. Contingency budget

$$\text{EMV} = .9 \times \$ 10,000 = \$ 9,000$$