Project Management Budgeting Tips

Every successful project begins with two things: inspiration and an adequate budget. Ideas power innovation, but without a solid plan detailing what you need and how much you'll need to spend, even the most brilliant and high-flying project plan may never leave the ground.

Effective project management budgeting is the cornerstone of effective project management.

Creating a precise, yet agile, budget doesn't just happen on its own.

By putting in a bit of labor up front, you can create accurate and useful estimates to provide guidance over the life of the entire project, and ensure your actual costs hew as closely to your estimated project costs as possible while still achieving project deliverables.

Why Project Management Budgeting Matters

Almost inevitably, every project manager will eventually find themselves caught

between the rock of limited resources and the hard place of project scope, ambitions, and budget.

Making strategic project budgeting part of the project planning stage gives you, and your team members, room to breathe—and adapt the budget as necessary to meet evolving project requirements.

Beginning with estimates and incorporating careful monitoring and adjustments throughout the entire project schedule, project budgeting ensures both simple and complex projects are completed to produce value for your company.

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Best Practices for Project Management Budgeting

Regardless of project size, project budget, and project scope, following some basic tips makes it easier for project management professionals to combine value management with project budgeting.

Understand the Terminology—and Math

Before you can create an appropriate project budget plan, you'll need a firm grip on the key terms and formulae that inform the process across a project's life cycle.

- **Activities:** Components of a project contributing to the completion and eventual value of a project while generating costs.
- **Actual Cost (AC):** The actual amount spent on a project so far.
- **Budget at Completion (BAC):** Also known as *Budgeted Cost of Work Scheduled*, or BCWS, this is the amount originally budgeted for a project.
- **Budget Timeline:** A detailed calendar of all project activities and their associated costs. The budget timeline is used to schedule strategic

transfers of money required to meet the project schedule, as balanced against other business needs. Timing is of the essence in project management budgeting, as transferring cash too early can restrict cash flow for other business activities, generate additional costs in the form of interest charges if the money funding the project is borrowed, or both.

- **Cost Aggregation:** Totaling project costs by category or activity.
- **Cost of Quality:** The amount of capital necessary to complete the project as planned, at the level of quality specified and within the timeframe required. It is the sum total of all quality-related activities within the budget.
- **Cost Performance Index (CPI):** This is the ratio of earned value to actual cost. It is expressed using the formula **EV ÷ AC = CPI**.
- **Cost Variance (CV):** This amount represents the amount remaining after actual cost is deducted from earned value. Negative cost variance indicates a project is over budget; a positive cost variance means the project is under budget. It is expressed using the formula **EV – AC = CPI**.
- **Cost Variance Typicality:** Costs at any given stage of a project can either be *typical* (expected and usual) or *atypical* (unexpected and isolated). Atypical costs usually affect only part of a project, while typical costs are ongoing.
- **Earned Value (EV):** The total estimated value of work completed on a project so far. Also known as *Budgeted Cost of Work Performed* (BCWP).
- **Estimate at Completion (EAC):** The total cost of a project, after adjustments. It is expressed using the formula **AC + ETC = EAC**.
- **Estimate to Complete (ETC_A):** The amount required to complete a project with *atypical early cost variance*. It is expressed by the formula **(BAC – EV) ÷ CPI = ETC**.
- **Estimate to Complete (ETC_T):** The amount required to complete a project with *typical early cost variance*. It is expressed by the formula **BAC – EV = ETC**.
- **Final Budget (FB):** The sum of the actual cost of a project so far and the remaining ETC value. Expressed using the formula **AC + ETC = FB**.
- **Planned Value (PV):** The total amount of work expected to be completed on a project so far. Distinct from EV, as PV represents anticipated values, and EV represents the actual value of the work completed at a given stage of a project.

- **Reserve Analysis:** A pre-calculated amount of cash set aside to protect against project overruns.
    - **Contingency reserves** are part of the budget and used as needed to cover unplanned, but anticipated as likely, expenses.
    - **Management reserves** are funds made available at the discretion of management to address changes in project scope. They are not considered part of the budget baseline and are not considered likely to be used, but are included in the total project budget.
- **Resource Cost Rates:** The specific and itemized amounts paid for labor and materials on a project.
- **Schedule Performance Index (SPI):** A metric used to compare earned value to planned value. It is expressed as a ratio using the formula **EV ÷ PV = SPI**.
- **Schedule Variance (SV):** The monetary difference between earned value and planned value. It is expressed using the formula **EV – PV = SV**.
- **Vendor Bid Analysis:** The process of evaluating the bids submitted by all the vendors seeking to supply a project and selecting those who will best fit the time, quality, and performance standards of the project.

Measure, Then Cut

Informed, detailed, and strategic estimates are the foundation of a successful budget.

They make it possible to track the efficacy and value-creation efficiency of entire project over the course of its completion.

Estimates begin in the wide-angle and narrow as you gather more detailed information.

The first estimate, made without much detailed knowledge, is often called a *ballpark estimate* or a *rough order of magnitude estimate*.

You can further refine your estimate using more advanced methods as you establish the scope, complexity, and time frame for your project.

One of the most useful ways to “measure before you cut” is to use existing similar projects to provide a framework of estimated costs for the new one.

They need not be identical, as you can scale (i.e., adjust) the particulars and parameters to match the needs of the current project.

The most common methods for establishing estimates in this way include:

Analogous Estimates

Let's say your current project is providing computer hardware and software for the marketing department at your company.

Last year, the accounting department, which has roughly the same number of end users and hardware/software needs comparable in both complexity and price to those of the marketing team, installed brand-new hardware and software for its staff.

The actual software and some of the hardware will be different, but because the two projects are similar—which is to say, *analogous*—in both scope and complexity, the accounting team's project can provide a good starting point for estimating the costs of, and value generated by, your new project.

More advanced (and precise) analogous estimation is possible if your company uses the *Darnall-Preston Complexity Index* (DPCI) to evaluate its past and current projects. This system evaluates projects based on four components:

1. **External Factors:** The basic attributes outlining the project at its inception, e.g. size, timeline, and available/required resources.
2. **Internal Factors:** The relative clarity of attributes defined by the project team, e.g. scope, organizational complexity, and the expectations and obligations of both the team and the stakeholders requesting the project.
3. **Technological Factors:** The familiarity of the team completing the project with the technology required to do so, as well as the relative newness of the technology within the organization.
4. **Environmental Factors:** The legal, cultural, political, and ecological considerations affecting the execution of the project and its associated activities.

Projects evaluated using the DPCI provide a useful and detailed basis of comparison for review by management and other stakeholders, while also providing reliable reference for financial forecasts.

To return to the example project, let us assume the accounting PCs and software totaled $125,000 for hardware, software, and training.

The marketing PCs have slightly higher per-unit costs, but the software licensing is roughly the same, as are training costs.

Beginning with a ballpark estimate of $130,000 for the marketing upgrade would be both reasonable and readily justifiable.

Parametric Estimates

For projects that rely on a set of activities shared by many other projects, itemized per-unit costs will be readily available.

Factors such as size, location, power demand, etc. are *parameters*, or factors that can be measured and used in calculations to determine an estimate.

In the computer upgrade example, parameters such as processor type and speed, amount of RAM, and hard drive size and type—standardized across all machines performing similar functions—can be used to calculate a per-unit cost estimate for each PC and, by extension, an estimate of total hardware costs.

Bottom-Up Estimates

More accurate (but also more time-consuming) than other estimation methods, bottom-up estimation identifies each activity within a project and assigns a cost to the labor and materials required to complete it.

The “bottom” in “bottom-up estimates” refers to the practice of identifying specific per-unit costs at the lowest level of the project hierarchy and building up from those amounts to establish estimates for higher levels and the project as a whole.

Let us continue with the computer upgrade example. The estimated budget for a specific activity in the project—in this case, the per-unit cost of a single PC—might look something like this:

Category	Description	Quantity	Unit Price	Cost

Hardware	Optical Mouse	1	$7.28	$7.28
Hardware	Processor	1	$538.72	$538.72
Hardware	DRAM (4 GB)	4	$87.45	$349.80
Hardware	Case	1	$68.24	$68.24
Hardware	Hard Drive (4TB)	2	$93.17	$186.34
Hardware	Monitor (27″)	2	$138.59	$277.18
Hardware	Motherboard	1	$227.56	$227.56
Hardware	USB Keyboard	1	$14.99	$14.99
Hardware	Speakers	1	$25.95	$25.95
Hardware	Sound Card (64-bit, 7.1)	1	$87.25	$87.25
Hardware	Video Card (6 GB)	2	$256.75	$513.50
Software	Operating System	1	$97.35	$97.35
Software	Design Suite	1	$729.76	$729.76
Office Supplies	Mouse Pad	1	$1.99	$1.99
			Total:	$3,125.87

The per-unit cost of each PC is $3,125.87. This can be added to other costs within the same activity—provisioning, labor for IT staff to install, etc.—to calculate a total activity cost for the category “PC Purchase and Installation,” with installation a separate sub-category that can be refined on its own as needed.

Activity-Based Estimates

Building on bottom-up estimates, activity-based estimates combine vendor, labor, and material costs for each activity in a clear hierarchy in order to simplify calculation and granulation.

Harness the Power of Artificial Intelligence

Once you have your estimates, the next step is monitoring the performance of your project relative to your budget.

Managing cash flow and evaluating the project's adherence to the budget requires (but is not limited to):

- Reserve Analysis
- Earned Value Analysis
- Schedule Variance Calculations
- ETC Calculations
- EAC Calculations
- Budget Timeline Calculations and Adjustments

All of these tasks are greatly simplified by the use of a procurement solution with built-in project management software and budgeting capabilities.

Automatic tracking of all project costs, as well as cloud-based document and data management, means your project team will have on-demand access to all the cost data for the project on mobile devices and desktop computers, making monitoring, adjustments, and forecasting much easier than finagling with spreadsheets and manual calculations.

Make Every Dollar Count

The best budget is one that's agile and comprehensive enough to fund even the most complex project.

To succeed, project management professionals need to dig deep, fine-tuning estimates and carefully monitoring ongoing projects to ensure actual costs remain within their project's budget.

By applying the proper techniques and leveraging the power of technology, you can make sure every project is a cost-effective source of value for your business.

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