Earned vs Burned: Your Window into Improving Project Health

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Current project management methodologies tout the "earned vs burned" means of measurement as a way of understanding your project's overall health. But there seems to be some level of confusion around what this concept means, and how it can be used most effectively. Today we'll try to clear up some of that confusion and also provide some real-world best practices for spotting potential project trends that may need to be course corrected.

What is Earned vs Burned?

Earned vs burned is simply the comparison of how much work (measured either in costs or labor-hours, aka "man-hours") has been earned, and how much has been spent, or burned, to get that work done. Let's take a simple example. Say we've been hired to install fencing along a roadway, and we've measured that there are 3,000 Linear Feet (LF) of fencing to be installed. We've also estimated that we can install 100 feet per day. Our estimate for the work is therefore based on the following assumptions:

- Installing 3,000 LF of fencing
- With two carpenters, each making $35 per hour, expected to perform the work
- **This will take 30 days:** 3,000 LF @100 LF per day. (For this example, we won't be expecting to work any overtime, and we will assume that any materials will be supplied by the project owner just for the sake of simplicity.)
- Which gives us a total budget of 480 labor-hours (Two carpenters x 8 hours per day x 30 days), and a cost budget of $16,800 (480 labor-hours at $35 per hour).

At the end of the first day, we install 80 linear feet of fencing, and have our two carpenters there for the 8-hour duration. The "burned" element of our equation should be pretty straight-forward: We "burned" 16 labor-hours at a cost of $35 per hour, or $560.

But what about the "earned" component of our equation? Well, since we installed 80 feet and based on our total of 3,000 feet, we have completed 2.67% of the work. We have now "earned" 2.67% of our budgets for costs and hours.

Earned Value Formula = Percent Complete x Budgeted Amount

In our example, we have earned 12.8 (2.67% x 480) labor-hours, and $448.56 (2.67% x $16,800) in costs. Another way of saying this is that we should have spent 12.8 labor-hours, and $448.56 in costs to have completed this much work.

Now, let's compare our earned vs burned ratio. For labor-hours, we have earned 12.8 and burned 16. Expressed as a ratio that comes out to 12.8/16 = .8. For costs, we have earned $448.56 and burned 560. Expressed as a ratio this comes out to 448.56/560 = .8 as well. Generally speaking, these ratios are designed so that a value above one is good i.e., we're earning more that we're burning. Conversely, a value less than one means there are opportunities to improve. In our case, we're at .8 for both costs and labor-hours, so we definitely have opportunities for improvement.

What Business Value Is Provided?

A clever project manager may look at our .8 ratio and understand that we've still got 2,920 LF of fencing to install out of our total of 3,000. Maybe there was a one-time anomaly that occurred, like the materials weren't immediately available for installation, or perhaps there was a weather delay. Nonetheless, we still have plenty of work remaining in front of us to have a fighting chance of bringing this in on time and under budget.

At the end of day two, the team installed 125 feet of fencing. They "burned" the same amount of costs and hours, but "earned" substantially more than on day one. In this case, the metrics for day two are much better. Our earned analysis is computed the same way as it was for day one. Since we installed 125 LF, we completed 4.17% of the work (125 feet out of our total of 3,000). Also, 4.17% of our cost budget would be $700.56 and 4.17% of our labor-hours budget would be 20 hours.

Compared to our "burned" cost values, we come to a ratio of $700.56/$560 = 1.25. Compared to our "burned" labor-hours, we come to a ratio of 20/16 = 1.25.

Earned vs burned analyses can also help project teams identify trends early on in the execution of a project. As we have seen, the more time we have to solve a problem, the more likely we can affect the outcome.

Industry Best Practices for Using Earned Value Management

In our example, we had easily measurable quantities. This is key to being able to effectively plan for the work, and to accurately record progress. A good rule of thumb should be to try to remove as much subjectivity around completion percentages as possible and to rely more on objective measurements.

Another best practice is to build "learning curve" or "ramp-up" assumptions into the estimate. In our simple example, our productivity could have ramped-up with the understanding that there may have been a delay such as adverse weather conditions or an allowance of time early on for logistics associated with bringing materials.

A detailed Work Breakdown Structure (WBS) is therefore a key to good project management practices. The WBS should contain all items on a project that are to be tracked and/or have any budgetary values associated with them.

This detailed WBS is also key to understanding how different scopes of work compare to each other, and how each contributes toward the project's overall percent completion. In some cases, where we expect to self-perform the majority of the work, weighting individual work activities based on labor-hours may be a truer gauge of the level of the work. In the role of a general contractor, however, when much of the work will be performed by third parties, it may make sense to weight work activities on their costs. This provides an understandable roll-up throughout the project's WBS elements.

Finally, using benchmarks from actual completed projects, as well as previous estimates, can be a way to reduce project surprises.

By having access to organized and normalized data, estimate teams can leverage past performance metrics while still producing competitive project proposals. And by understanding and using the earned vs burned method of calculating costs and value, you stand to enjoy a clearer picture — and opportunity for — healthier projects now and in the future.

About the Author

Since 1998, Rick Deans has worked with InEight customers in more than 35 countries to help identify innovative solutions that address their biggest project management pain points. As executive vice president of industry engagement, Rick leads InEight's efforts to engage with its most strategic customers through the Industry Advisory Group (IAG). An engaging public speaker, he leads workshops on the value of InEight's product portfolio and is active in many industry associations. Prior to InEight, Rick advised software companies on talent acquisition and retention.

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