

1 EARNED VALUE

Earned value is often perceived as a difficult and overly confusing method for managing Projects. Essentially the term Earned Value is a calculation of how a Project is performing in terms of budget.

Earned Value = % Progress x Budget

The budget can have different types of units e.g. £GBP and Hrs.
When the units are £ then the formula is:

Earned Value = % Progress x Budgeted Cost

Let's demonstrate this using an example.

Example 1

A Project has been set up to build a garden wall, 5 bricks high and 20 bricks long (100 bricks in total). The plan is to lay 40 bricks in week 1. The cost of each brick is £1.50.

The project budget is £100. After 1 week the progress is measured and 30 bricks have been laid. What is the Earned Value?

Progress = 30/ 100 (bricks) = 30%, Budget = £100

Earned Value = 30% x £100 = £30

This gives us an understanding of the term Earned Value, however in practical terms this is not useful for assisting with Project Management unless we look at two other elements used in Earned Value Analysis (EVA), they are the **Planned Value** and **Actual costs to date**.

1.1 EARNED VALUE ANALYSIS

Earned Value Analysis incorporates 2 indexes to help us make an informed decision on Schedule Performance and Cost Performance. The indexes are:

- Schedule Performance Index (SPI) = Earned Value/ Planned Value
- Cost Performance Index (CPI) = Earned Value/ Actual Costs to Date

If either index equals or is greater than 1.0 then the projects schedule or cost performance is on track. If either is less than 1.0 then the Project Manager is made aware that performance is dropping and there is a problem!

1.1.1 Planned Value

The Planned Value is the value of the work that has been planned to be completed up to the date that progress is measured.

Planned Value = the Planned Progress x Budgeted Cost

For the wall, the Plan is to lay 40 bricks in week 1.

The Planned Value = 40/100 x £100 = £40.

We are now able to make an informed decision on whether the project is going to finish on time using Earned Value Analysis (EVA). EVA is an enabler.

The SPI = Earned Value/ Planned Value = 30/40 = 0.75.

The project is 0.25 or 25% **behind schedule**.
It is likely that the wall be not be completed on time.

1.1.2 Actual Cost to Date

The actual cost to date is the total cost up to the date progress is measured.

Actual cost to date = Invoices + Accruals

For the wall Cost to date = the number of bricks laid x price per brick.
Cost to date = 30 x 1.50 = £45

The CPI for this project = Earned Value/ Actual cost to date = 40/45 = 0.89

CPI is less than 1, so the project is **over budget**. It is overspending.

1.2 EARNED VALUE MANAGEMENT (EVM)

The APM Body of knowledge defines EVM to be:

“A project control process based on a structured approach to planning, cost collection and performance measurement. It facilitates the integration of project scope, time and cost objectives and the establishment of a baseline plan for performance measurement”

EVM utilises the calculations used in EVA as part of a bigger process. As we know projects are usually more difficult than building a garden wall. In order to be able to perform effective EVA the Project manager needs access to accurate performance data based on real events. This data is typically derived from project team members and sub contractors and needs to be communicated to the project board, project team and other stake holders.

The following elements of Project Management are essential for EVM to be effective:

- A Work Breakdown Structure (WBS)
- Responsibility defined in an Organisational Breakdown Structure (OBS)
- The budget phased overtime in a schedule to produce the BCWS (Planned Value)
- A method of measuring achievement
- Project Controls Software
- Baseline plans/ schedules
- Cost Collection, including correct identification of direct and indirect costs
- The collection of performance date (Progress), analysed on a periodic basis
- Forecasts for remaining work
- Change Control Management