Earned Value Calculation

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Project Overview

This project involves the planning and execution of a new mobile phone model at a mobile phone company. The project is divided into four phases, each lasting 4 months, with a budget of 220,000 euros allocated per phase.

Currently, the project is facing some challenges: it is two weeks behind schedule, with a total of 8.5 months having elapsed. Additionally, there is a cost overrun of 12

In the following sections, the earned value calculation will be presented to assess the project's performance and determine the necessary adjustments to keep it on track.

Given Information

- **Project Phases**: 4 Phases

- **Duration per Phase**: 4 Months

- **Total Budget (BAC)**: $BAC = 880,000\,euros$

- **Budget per Phase**: 220,000 euros

- **Time Elapsed**: 8.5 months

- **Cost Overrun**: 12%

1. Budget at Completion (BAC)

The Budget at Completion (BAC) is the total project budget:

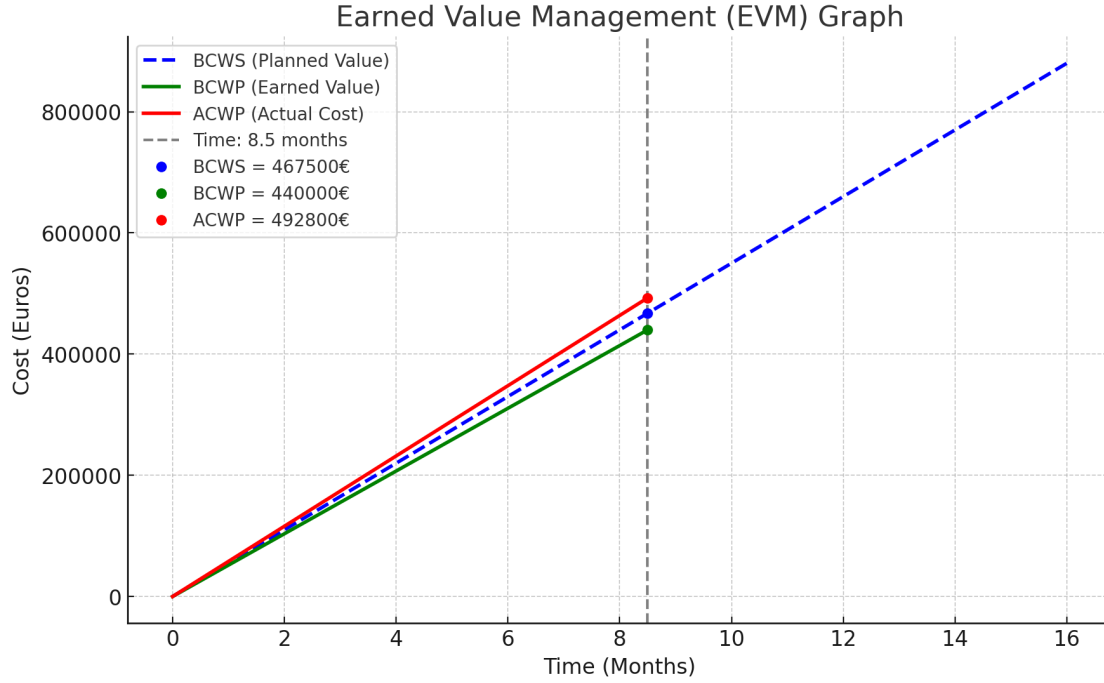$$BAC = 220,000\,euros/phase \times 4\,phases = 880,000\,euros$$

Figure 1: Project Schedule

2. BCWS (Budget Cost of Work Scheduled or Planned Value) at 8.5 Months

The Planned Value (BCWS) is calculated as follows:

$$\text{BCWS} = (220,000\,\text{euros} \times 2) + \left(220,000\,\text{euros} \times \left(\frac{0.5}{4} = 0.125\right)\right)$$

$$= 440,000\,\text{euros} + 27,500\,\text{euros}$$

$$= 467,500\,\text{euros}$$

The expression $\frac{0.5}{4}$ is used to calculate the proportion of work planned to be completed by 8.5 months into the project:

3. ACWP (Actual Cost of Work Performed)

The Actual Cost (ACWP) includes the cost overrun of 12%. It is calculated as:

$$\text{ACWP} = 440,000\,\text{euros} \times (1 + 0.12) = 440,000 \times 1.12 = 492,800\,\text{euros}$$

4. BCWP (Earned Value)

The Earned Value (BCWP) is the value of work completed and is calculated as follows:

$$BCWP = BAC \times \text{Percentage of Work Completed}$$

Given that:

- $BAC = 880,000$ euros

- Percentage of Work Completed $= 50\% = 0.50$

Thus, the calculation is:

$$BCWP = 880,000 \text{ euros} \times 0.50 = 440,000 \text{ euros}$$

Therefore, the BCWP is $440,000$ euros, indicating the value of the work completed by the 8.5-month mark.

5. CV (Cost Variance)

The Cost Variance (CV) is calculated as:

$$CV = BCWP - ACWP$$

$$CV = 440,000 - 492,800 = -52,800 \text{ euros}$$

A negative CV indicates that the project is over budget.

6. SV (Schedule Variance)

The Schedule Variance (SV) is calculated as:

$$SV = BCWP - BCWS$$

$$SV = 440,000 - 467,500 = -27,500 \text{ euros}$$

A negative SV is unfavorable indicating that the project is behind schedule.

7. CPI (Cost Performance Index)

The Cost Performance Index (CPI) is calculated as:

$$\text{CPI} = \frac{\text{BCWP}}{\text{ACWP}}$$

$$\text{CPI} = \frac{440,000}{492,800} = 0.8926$$

A CPI of less than 1 means the project is not cost-efficient.

8. EAC (Estimate at Completion)

The Estimate at Completion (EAC) is calculated as:

$$\text{EAC} = \text{ACWP} + (\text{BAC} - \text{BCWP})$$

$$\text{EAC} = 492,800 + (880,000 - 440,000) = 492,800 + 440,000 = 932,800 \, \text{euros}$$

This means the project is expected to cost 932,800 euros to complete, which is 52,800 euros over the original budget.

Summary of Calculations

Calculation	Value
BAC (Budget at Completion)	880,000 euros
BCWS (Planned Value)	467,500 euros
ACWP (Actual Cost)	492,800 euros
BCWP (Earned Value)	440,000 euros
CV (Cost Variance)	-52,800 euros
SV (Schedule Variance)	-27,500 euros
CPI (Cost Performance Index)	0.8926
EAC (Estimate at Completion)	932,800 euros

Table 1: Summary of Earned Value Calculations