Analysis of an IT Project Using Project Management Metrics

Prepared by: H.L.N.Himanshi

January 16, 2025

Problem Description

You are managing a software development project for an e-commerce platform. The project has a total budget of $200,000 and is planned to be completed in 10 months. At the end of month 5, the following data is available:

- **Planned Value (PV):** According to the project schedule, 50% of the work should have been completed by now.
- **Earned Value (EV):** Based on actual progress, only 40% of the work has been completed.
- **Actual Cost (AC):** The total expenditure so far is $100,000.

We will use project management formulas to evaluate the performance and predict the outcomes of the project.

Step-by-Step Solution

1. Planned Value (PV)

Formula

$$\text{PV} = (\text{Planned Work Percentage}) \times (\text{Total Budget})$$

Calculation:

$$\text{PV} = 0.50 \times 200,000 = 100,000$$

2. Earned Value (EV)

Formula

$$\text{EV} = (\text{Completed Work Percentage}) \times (\text{Total Budget})$$

Calculation:

$$\text{EV} = 0.40 \times 200,000 = 80,000$$

3. Schedule Performance Index (SPI)

Formula

$$\text{SPI} = \frac{\text{EV}}{\text{PV}}$$

Calculation:

$$\text{SPI} = \frac{80,000}{100,000} = 0.8$$

Interpretation: The project is behind schedule (SPI < 1).

4. Cost Performance Index (CPI)

Formula

$$\text{CPI} = \frac{\text{EV}}{\text{AC}}$$

Calculation:

$$\text{CPI} = \frac{80,000}{100,000} = 0.8$$

Interpretation: The project is over budget (CPI < 1).

5. Estimate to Complete (ETC)

Formula

$$\text{ETC} = \frac{\text{BAC} - \text{EV}}{\text{CPI}}$$

Calculation:

$$\text{ETC} = \frac{200,000 - 80,000}{0.8} = \frac{120,000}{0.8} = 150,000$$

Interpretation: The remaining cost to complete the project is estimated at \$150,000.

6. Estimate at Completion (EAC)

Formula

$$\text{EAC} = \frac{\text{BAC}}{\text{CPI}}$$

Calculation:

$$\text{EAC} = \frac{200,000}{0.8} = 250,000$$

Interpretation: The total project cost at completion is estimated to be \$250,000, exceeding the budget by \$50,000.

7. Variance at Completion (VAC)

Formula

$$\text{VAC} = \text{BAC} - \text{EAC}$$

Calculation:

$$\text{VAC} = 200,000 - 250,000 = -50,000$$

Interpretation: The project is expected to exceed the budget by \$50,000.

8. Cost Variance (CV)

Formula

$$\text{CV} = \text{EV} - \text{AC}$$

Calculation:

$$\text{CV} = 80,000 - 100,000 = -20,000$$

Interpretation: The project has overspent by \$20,000 so far.

9. Schedule Variance (SV)

Formula

$$\text{SV} = \text{EV} - \text{PV}$$

Calculation:

$$\text{SV} = 80,000 - 100,000 = -20,000$$

Interpretation: The project is $20,000 behind schedule.

Conclusion

The project is both behind schedule and over budget. Specifically:

- **SPI:** The project is progressing at 80% of the planned schedule.
- **CPI:** The project is delivering only 80% of the value for each dollar spent.
- **EAC:** The total cost at completion is projected to be $250,000, exceeding the budget by $50,000.
- **Recommendations:** Reassess resource allocation, address delays, and optimize budget usage.