HUMANITARIAN ACADEMY · HUMANITAIRES JOBS

Mini MBA Project Management and AI: PMP, PRINCE2, Agile and PMD Pro applied to humanitarian work

Course handout · Week 7 : Budget, cost monitoring and earned value

A programme of exactly 3 months (12 weeks, 144 hours) to manage humanitarian projects with the main methodologies and artificial intelligence: project cycle, PMBOK and PMP, PRINCE2, Agile (Scrum, Kanban) and hybrid approaches, Project DPro (PMD Pro), logical framework, theory of change and results-based management, planning and critical path, donor budget and earned value, risks and stakeholders, MEAL, donor reporting, change management, leadership and closure. At every step, AI (Claude, Gemini, Copilot and project management tools) is used methodically, protecting the data of the people we serve. Corrected numerical exercises, three monthly exams with case studies, and a verifiable diploma from the Humanitarian Academy. Independent preparation programme: it does not award the PMP, PRINCE2 or PMD Pro certifications, which are obtained through the official exams.

https://humanitairejobs.org/en/academy/mini-mba-gestion-projet-ia/semaine-7/

Free document from the Humanitarian Academy. It may be printed and shared freely for training purposes, without modification.

Week 7 : Budget, cost monitoring and earned value

Objectives

- Build a project budget that complies with donor rules: direct costs, support costs, indirect costs, reserves.
- Monitor budget consumption (burn rate, variances, forecasts) and justify reallocations.
- Calculate and interpret earned value indicators (PV, EV, AC, CPI, SPI, EAC) and use AI for analysis without exposing sensitive data.

Building a donor budget

A project budget is built **from the WBS and the schedule** (bottom-up): each work package receives quantities and unit costs. The main categories, depending on donors:

- **Direct programme costs**: goods distributed, cash transfers, works, training;
- **Staff**: salaries and on-costs, with the percentage of time of each post on the project;
- **Direct support costs**: vehicles, field offices, communications, security, shared pro rata;
- **Indirect costs** (overheads, often 7% for the European Union and several UN agencies, variable elsewhere): not justified line by line;
- **Reserves**: some donors accept a limited contingency line, others do not.

A budget must be **realistic** (verified market prices, prudent exchange rates, inflation), **consistent** with the logframe (each output has resources), **compliant** (eligible expenditure) and accompanied by a **budget narrative** explaining the calculations.

Budget monitoring and burn rate

Each month, the project manager compares with finance: budget, actual expenditure, commitments (orders placed not yet paid) and forecast to completion. The **burn rate** = expenditure ÷ budget. It only makes sense compared with elapsed time and actual progress.

Example. In month 6 of 12, a project has spent 45% of its budget. Is that good? You cannot say without knowing what has been *achieved*: if only 30% of outputs are delivered, the project is spending too fast for what it produces. That is what earned value measures.

Reallocations between lines are regulated: often free below a threshold (for example 15% or 20% of a heading depending on the contract), subject to approval above it. Significant underspending is also a problem: it signals a delay and may lead to a reduction in funding.

Earned value management

Earned value management (EVM) combines scope, time and cost. Three measures, at a given date:

- **Planned value (PV)**: the budget of the work that should have been done by that date;
- **Earned value (EV)**: the budget of the work actually done;
- **Actual cost (AC)**: what that work actually cost.

From these we derive:

- **Cost variance** CV = EV − AC (negative = overrun); **cost performance index** CPI = EV ÷ AC (below 1 = paying more than the value produced);
- **Schedule variance** SV = EV − PV (negative = delay); **schedule performance index** SPI = EV ÷ PV;
- **Budget at completion** (BAC): the total budget;
- **Estimate at completion** EAC = BAC ÷ CPI if current performance continues; **estimate to complete** = EAC − AC; **variance at completion** = BAC − EAC;
- **To-complete performance index** (TCPI) = (BAC − EV) ÷ (BAC − AC): the cost performance needed to finish within budget.

A complete example

Cash and livelihoods project, BAC = USD 600,000, 12 months. At the end of month 6: PV = 300,000; the outputs actually delivered are worth EV = 240,000; actual expenditure is AC = 270,000.

- CV = 240,000 − 270,000 = −USD 30,000: cost overrun;
- CPI = 240,000 ÷ 270,000 ≈ 0.89: each dollar spent produces 0.89 dollars of planned value;
- SV = 240,000 − 300,000 = −USD 60,000: delay; SPI = 0.80;
- EAC = 600,000 ÷ 0.89 ≈ USD 675,000 (exact calculation: 600,000 × 270,000 ÷ 240,000 = 675,000); variance at completion = −USD 75,000;
- TCPI = (600,000 − 240,000) ÷ (600,000 − 270,000) = 360,000 ÷ 330,000 ≈ 1.09: you would need to be 9% more efficient than planned until the end to stay within budget, which is rarely realistic.

Decision: analyse the causes (higher prices? underestimated transfer fees? registration delays?), present options to the board (reduce an output, find savings, request a revision from the donor), and inform the donor early rather than in the final report.

Measuring earned value in a humanitarian project

The difficulty is measuring **EV**. Common methods:

- **Units completed**: 120 latrines out of 300 built = 40% of the package value;
- **Weighted milestones**: 20% at design, 50% at provisional acceptance, 30% at final acceptance;
- **50/50 or 0/100 rule** for small packages: 50% at start, 50% at finish;
- **Estimated percentage**: to be avoided unless based on verifiable criteria.

Careful: earned value measures what is delivered, not the effect on people. A project can have a CPI of 1 and produce no change if outputs are poorly targeted. Earned value is therefore combined with outcome indicator tracking (week 9).

Analysing the budget with AI, safely

An AI assistant can:

- check the **consistency** of a budget: lines with no link to the logframe, inconsistent quantities, wrong totals;
- explain **variances** from a budget-versus-actual table and draft a first explanatory note;
- calculate earned value indicators and produce a chart in a spreadsheet;
- write a clear **budget narrative** from your assumptions.

Precautions: use the tool approved by your organisation (detailed budgets contain salaries and contractual information); remove names and individual salaries; redo key calculations in the spreadsheet; never let AI "find" unit costs: they come from your quotes, market surveys and previous purchases.

Exercise: earned value of a nutrition project

Situation. Nutrition project of the fictitious NGO Shifa: BAC = EUR 400,000, 10 months. At the end of month 4: PV = EUR 160,000; EV = EUR 176,000; AC = EUR 200,000.

Task. 1) Calculate CV, CPI, SV and SPI. 2) Calculate the EAC if cost performance continues. 3) Is the project ahead or behind? Under or over budget? 4) What should be said to the board?

Answer. 1) CV = 176,000 − 200,000 = −EUR 24,000; CPI = 176,000 ÷ 200,000 = 0.88; SV = 176,000 − 160,000 = +EUR 16,000; SPI = 1.10. 2) EAC = 400,000 ÷ 0.88 ≈ EUR 454,545, a foreseeable overrun of about EUR 54,500. 3) Ahead of schedule (SPI 1.10) but over budget (CPI 0.88). 4) Being ahead does not justify the extra cost: find the cause (overtime to accelerate? input prices?), arbitrate between speed and cost, and present options before the overrun is confirmed.

Key takeaways

- The budget is built from the WBS and the schedule, with verified prices and a budget narrative.
- The burn rate only makes sense compared with actual progress.
- CV = EV − AC; CPI = EV ÷ AC; SV = EV − PV; SPI = EV ÷ PV; EAC = BAC ÷ CPI.
- A CPI below 1 signals an overrun; an SPI below 1, a delay; inform the donor early.
- AI checks consistency and explains variances; unit costs come from your quotes, not from it.

Quiz

1. EV = 90,000, AC = 100,000. The CPI is:
   A. 1.11
   B. 0.90
   C. 10,000
   D. −10,000

2. An SPI of 0.75 means the project is:
   A. Behind schedule
   B. Ahead of schedule
   C. Under budget
   D. 75% complete

3. BAC = 500,000 and CPI = 0.80. The EAC is:
   A. 400,000
   B. 580,000
   C. 500,000
   D. 625,000

4. Earned value (EV) corresponds to:
   A. Actual expenditure
   B. The total budget
   C. The budget of the work actually done
   D. The budget of the work planned to date

5. The unit costs in a budget must come from:
   A. Quotes, market surveys and previous purchases
   B. An AI estimate
   C. Another NGO's budget
   D. The donor's maximum amount

Quiz answers : 1. B · 2. A · 3. D · 4. C · 5. A