

Important PMP/CAPM Formulas

👤 Mudassir Iqbal 📅 May 22, 2023 📁 PMP Concepts 💬 No comments

1. Earned Value Management (EVM)

Definitions and Concept

- EV = Earned Value Management
- SV = Schedule Variance
- PV = Planned Value
- AC = Actual Cost
- CPI = Cost Performance Index : Behind/Over Budget > 1 > Ahead/Under of Budget
- SPI = Schedule Performance Index : Behind Schedule > 1 > Ahead of Schedule
- ETC = Estimate to Complete
- EAC = Estimate at completion (Forecasted Value based on performance)
- VAC = Variance at Completion (forecasted)

Formulas

- $SV = EV - PV$
- $CV = EV - AC$
- $SPI = EV / PV$
- $CPI = EV / AC$
- $ETC = (BAC - EV) / CPI$
- $EAC = AC + ETC$
- $EAC = AC + (BAC - EV)$: If future work will be completed at the planned rate
- $EAC = BAC / CPI$: If the CPI is expected to be the same for the remainder of the project
- $VAC = BAC - EAC$
- $TCPI = (BAC - EV) / (BAC - AC)$

2. Network Diagrams

- Activity Duration = EF-ES+1
- Total Float (TF) = LS - ES
- TF = LF - EF
- Free Float (FF) = $ES_{(Successor)} - ES_{(Present)} - Dur_{(Present)}$

3. Project Estimation

- E (PERT Analysis/BETA Distribution) = $(O + P + 4 * M) / 6$
- PERT Standard Deviation $\sigma = (P - O) / 6$
- E (3-Point Estimate) = $(O + P + M) / 3$
- $Var = \sigma^2$

[Standard Deviation/PERT Analysis](#) [Download](#)

4. Project Selection Methods

- Present Value $PV = FV / (1 + r)^n$
- Future Value $FV = PV * (1 + r)^n$
- $NPV = \sum PV$ (This is sum of all PV)
- ROI = Return / Investment
- BCR = Benefits / Costs
- Payback Period = Initial Investment / Periodic CashFlow

5. Expect Monetary Value (EMV)

- $EMV_{(R)} = P * I$
- $EMV_{(P)} = \sum EMV_{(R)}$
- Net Benefit = $EMV_{(P)} - Cost$

6. Communication Channels

- $C = n * (n - 1) / 2$

7. Procurement Management (Point of Total Assumption)

- Pt. of Total Assumption (PTA) = $CP - TP / Buyer's Share Ratio + TC$

8. Risk Probability

- Expected Monetary Value (EMV) = Probability * Impact : always <1

9. Values

1 Sigma = 68.26%

2 Sigma = 95.46%

3 Sigma = 99.73%

6 Sigma = 99.99% (3.4 defects in one million)

Control Limits = 3 Sigma from Mean

Rough Order of Magnitude (ROM) = -25% to +75%

Preliminary Estimate = -15% to 25%

Budget Estimate = -10% to +25%

Definitive Estimate = -5% to +10%

Preto Chart = 80/20

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I am the founder of Know Your Project (KYP) IT Consulting and Training Company. We are based in Pakistan but work extensively with middle-market businesses directly in the European, Middle East and South Asia Regions, as well as through partnerships with multinational companies like yours. I have personally delivered several digital change projects across many sectors globally - including construction, technology, finance, manufacturing, warehousing, logistics, telecommunication. My areas of expertise are concerned with Business Process Re-engineering (BPR), IT Governance and Assurance, PMO Setup, and Business and IT Agility. I also have substantial experience strategizing ERP implementations and have been working with Oracle, SAP, Microsoft Dynamics and Odoo for the best part of my professional life. Both nationally and internationally, I'm also providing in-depth, high-caliber executive development and training in various fields, covering topics such as project planning, project management, leading teams, cultural change. I'm a passionate writer and speaker on the topics of Digital Transformation, CIO, ERP and Project Management.

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