Earned Value Method (EVM):

also known as Earned Value Analysis.

- It is a mtd that allows the project manager to measure the amount of work actually performed on a project
- Earned value is also called as Budgeted cost of work performed completed.
- It is used to measure project performance & progress

* 3 IIPs to EV Method:-

i) Planned Value (Budgeted Cost of Work Scheduled - BCWS):-

- ~~Value~~ amount of work that ~~was~~ is planned to be completed at a specific ~~point in~~ time

Formula:- Total project Budget * Planned % of work completed

ii) Actual Cost (AC) (Actual Cost of Work Performed):

- it represents the actual amount of money spent on the work completed ~~by~~ for a specific time.

Formula:-

AC:- Sum of all actual costs incurred for the work performed.

iii) Earned Value (EV) (Budgeted cost of work performed) BCWP):-

- represents value of work that has been actually completed at a given point in time, based on the project budget.

EV:- Total project Budget * Actual % of work completed.

Variance Analysis:-

- There are two basic expressions of variance, schedule variance & cost variance.

i) Schedule Variance (SV):-

it measures the schedule which is at how much the schedule is ahead or behind in terms of budgeted cost.

$$SV = EV - PV$$

EV (Earned value):- Budgeted cost of work actually completed.

PV (Planned value):- Budgeted cost of work planned or scheduled to complete.

if $SV > 0$, project work is ahead of schedule.

$SV < 0$, project is behind of schedule. (less work completed than planned)

$SV = 0$, project is on schedule.

ii) Cost Variance:-

- It measures difference b/t budgeted cost of work completed (EV) and actual cost incurred (AC).
- It helps to find out whether a project is under budget or over budget.

$$CV = EV - AC.$$

where,

EV = budgeted cost of actual work completed

AC = Actual amount spent on the work completed.

if CV > 0 → project is under budget (spending less than planned)
CV < 0 → Project is over budget (spending more than planned)
CV = 0 → Project is exactly on budget.

* Performance Analysis:-
- Another analysis that can be done by using EVM is SPI & CPI

1) Schedule Performance Index:-
- It is a measure of schedule efficiency on a project. i.e. how efficiently the project is progressing compared to the planned schedule.
- it is ratio of Earned Value (EV) to the planned value (PV)

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

where,
EV = Budgeted cost of actual work completed
PV = Budgeted cost of planned or scheduled work.

if
SPI = 1.0 → project is on schedule.
SPI > 1.0 → project is ahead of schedule
SPI < 1.0 → project is behind schedule.