Name:- Jahanzeb Khan

I.D:- 6870

Section:- C

Subject:- Construction Management

Department:- BE (civil)

Teacher:- Dr. engr. Muhammad Zeeshan Ahad

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Q No 1 :-

Given data:-

Number of communication channels = 6

Additional stake holders = 2

Required data:-

Identify the number of communication channels after increasing the scope of work=?

Solution:-

As we know that;

$$\text{Number of communication channel} = \frac{n(n-1)}{2}$$

The number of people involed in six communication channels =>

$$6 = \frac{n(n-1)}{2}$$

$$12 = n(n-1) = n^2 - n$$

$$n^2 - n - 12 = 0$$

$n^2 - 4n + 3n - 12 = 0$

$n(n-4) + 3(n-4) = 0$

$(n-4)(n+3) = 0$

$n - 4 = 0$, $n + 3 = 0$

$n = 4$ $n = -3$

So the number of people involed = 4
As; There are additional stake holders so total number of people are:

$n = 4 + 2$

$n = 6$

Now, the required communication channel =>

$$\Rightarrow \frac{6^3(6-1)}{2} = 3(5)$$

New communication channel = 15 Ans.

Q NO2A Given data:-

For a project of 10 package; for each planned value, Actual cost and presentege of completion is given:.

Required data:-

Calculate:

- Earned value.
- Cost variance.
- Schedule Variance.
- Cost performance index.
- Schedule performance index.

Work Package	BCWS P.V ($)	ACWP A.C ($)	% progress	BCWP E.V ($)	cost variance	Schedule variance	cost perfor. index	Schedule perfor. index
1	100,000	120,000	100	100,000	-20000	0	0.83	1
2	100,000	1,0000	100	100,000	-10000	0	0.91	1
3	100,000	80000	90	90,000	10000	-10000	1.13	0.9
4	100,000	125000	80	80,000	-45000	-20000	0.64	0.8
5	100,000	75000	50	50,000	-25000	-50000	0.67	0.5
6	100,000	0	0	0	0	-100000	0	0
7	100,000	0	0	0	0	-100000	0	0
8	100,000	0	0	0	0	-100000	0	0
9	100,000	0	0	0	0	-100000	0	0
10	100,000	0	0	0	0	-100000	0	0

Comment:-

On the basis of CPI:-

According to thumb Rules;

- Work package 1, 2, 4 and 5 are over budget because CPI value is less than 100%.

- Workpackage 3 is under budget because CPI value is greater than 100%.

On the basis of SPI:-

According to thumb Rules;

- Work package 1 and 2 are on the schedule.

- Work package 3, 4, and 5 are Behind schedule.

Q No3:-

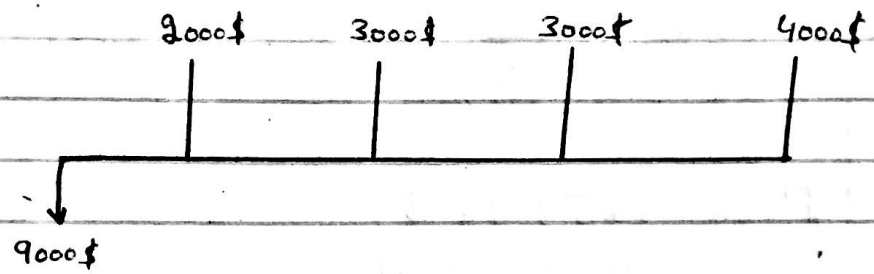
Answer:

Given data:-

⇒ Initial investment = 9000 $

⇒ Discount rate = r = 10 %

⇒ The expected cash flow for next four years is



Required data:-

⇒ Net Present value = NPV = ?

⇒ Comment on the result.

Solution:-

$$NPV = -C_0 + \frac{C_1}{1+r} + \frac{C_2}{(1+r)^2} + \cdots\cdots + \frac{C_T}{(1+r)^T}$$

$P_{V0} = -C_0$

$P_{V0} = -9000$

$$P_{V1} = \frac{C_1}{1+r} = \left(\frac{2000}{1+\frac{10}{100}}\right)$$

$\boxed{P_{V1} = 1818.18\ \$}$

$-C_0$ = initial investment

C = Cash flow

r = Discount rate

T = Time

$C_1 = 2000$

$C_2 = 3000$

$C_3 = 3000$

$C_4 = 4000$

$$PV_2 = \frac{C_2}{(1+r)^2} = \frac{3000}{\left(1+\frac{10}{100}\right)^2}$$

$$\boxed{PV_2 = 2479.34\ \$}$$

$$PV_3 = \frac{C_3}{(1+r)^3}$$

$$= \frac{3000}{\left(1+\frac{10}{100}\right)^3}$$

$$\boxed{PV_3 = 2253.94\ \$}$$

$$PV_4 = \frac{C_4}{(1+r)^4} = \frac{4000}{\left(1+\frac{10}{100}\right)^4}$$

$$\boxed{PV_4 = 2732.05\ \$}$$

$$MPV = -C_0 + \frac{C_1}{1+r} + \frac{C_2}{(1+r)^2} + \frac{C_3}{(1+r)^3} + \frac{C_4}{(1+r)^4}$$

$$= -9000 + 1818.18 + 2479.34 + 2253.94 + 2732.05$$

$$\boxed{MPV = \$\ 283.51} \quad \text{Ans.}$$

Conclusion:-

A positive NPV means the combined PV of all cash inflows exceeds the PV of cash outflows.

In our example the NPV of $283.51 suggests that the combined PV of all cash inflows exceeds the PV of cash outflows by $283.51.

Q No4:-

Ans:- Power/interest Matrix:

Power		Level of interest: Low	Level of interest: High
	Low	A Minimal effort	B keep informed
	High	C keep satisfied	D key players

Power/Interest Matrix:

Stakeholders in group A:-

Need only minimum effort an monitoring.

Stakeholders in group B:-

Should be kept informed as they may be able to influence more powerful stakeholders.

Stakeholders in group C:-

Are powerful, but level of interest is low. Generally expected to be positive, but may move into group D on an issue of particular interest.

Stakeholders in group D:-

Are both powerful and interested. Their co-operation is of key importance for new strategies.

Q No5:-

The different stages to be considered on the Risk Management checklist for a Projet of residental house are:

Stage 1:- (Initiation):-

→ Assemble Risk Management resources.
→ Appoint the team leader and ensure a breadth of skills/experience within the team.
→ Assign Risk Management responsibilities to tast.

Stage 2:-

Proposal Familiarization:-

→ Specific objectives and criteria.
→ Familiarise the team with the proposal, assemble documentation and define the key objectives.
→ Assess the proposal in relation to the Agency's objectives and strategies.
→ Determine assessment criteria for proposal.
→ Define key elements (target 20-50 elements items or activities) to structure risk analysis.

step 3:- Risk Analysis:-

→ Identify risks.
• Prepare a comprehensive schedule of risk's for each element.

→ Assess risk likelihood and consequences.
→ Identify significant risks.
→ Identify major risk for detailed risk action planning.

Stape 4:-
(Risk response planning):-

→ Identify feasible response.
• For each moderate and major risk, identify the feasible responses.
→ Describe each feasible response and list main assumptions.
→ Select the best response.
→ Develop management measures and action schedules.
→ Specify risk management measures for moderate risks.

step 5:-
(Reporting)
→: For designated proposals, produce the risk management plan.
→ For other projects, collate and summarize risk action schedules and measures.

Stages:- 6

Risk Management Implementation :-

- Implement measures and action strategies.
- Monitor the implementation.
  - Assign responsibilities.
  - Timing.
- Undertake ~~perdo~~ perodic review and performance evaluation.