

CONSTRUCTION MANAGEMENT



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MODULE 8

SECTION A

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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,

Number of communication channel

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

The number of people involved in six communication channels,

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

by cross multiplication;

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

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

By factorization;
 $n^2 - 4n + 3n - 12 = 0$

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

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

$$(n-4) = 0$$

$$n = 4$$

$$n+3 = 0$$

$$n = -3$$

Hence the number of people involved = 4

As, there are additional stake holder's to total number of people are;

$$n = 4 + 2$$

$$n = 6$$

Now, the required communication channel

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

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

$$= \frac{6(5)}{2}$$

$$= \frac{30}{2}$$

$$= 15$$

So, new communication

channel = 15

Ans

Q: No: 02

Solution:-

Terms

Formulas

- Earned Value
- Cost Variance
- Cost Performance Index
- Schedule Variance
- Schedule Performance Index

$$EV = PV \text{ to date} \times RP$$

$$CV = EV - AC$$

$$CPI = EV/AC$$

$$SV = EV - PV$$

$$SPI = EV/PV$$

Work Package	BCWS Planned value (PV)	ACWP Actual cost (AC)	Progress %	BCWP Earned value (EV)	(CV) EV-AC	CPI EV/AC	SPI EV/PV	SV EV-PV
1	\$ 100,000	\$ 120,000	100%	\$ 100,000	\$ (20,000)	0.83	1	\$ -
2	\$ 100,000	\$ 110,000	100%	\$ 100,000	\$ (10,000)	0.91	1	\$ -
3	\$ 100,000	\$ 80,000	90%	\$ 90,000	\$ (10,000)	1.13	0.90	\$ (10,000)
4	\$ 100,000	\$ 125,000	80%	\$ 80,000	\$ (45,000)	0.64	0.80	\$ (20,000)
5	\$ 100,000	\$ 75,000	50%	\$ 50,000	\$ (25,000)	0.67	0.50	\$ (50,000)
6	\$ 100,000	\$ -	0%	\$ -	\$ -	0	0	\$ (100,000)
7	\$ 100,000	\$ -	0%	\$ -	\$ -	0	0	\$ (100,000)
8	\$ 100,000	\$ -	0%	\$ -	\$ -	0	0	\$ (100,000)
9	\$ 100,000	\$ -	0%	\$ -	\$ -	0	0	\$ (100,000)
10	\$ 100,000	\$ -	0%	\$ -	\$ -	0	0	\$ (100,000)

Comment:- The project is behind schedule and overbudget.

Q: No: 3

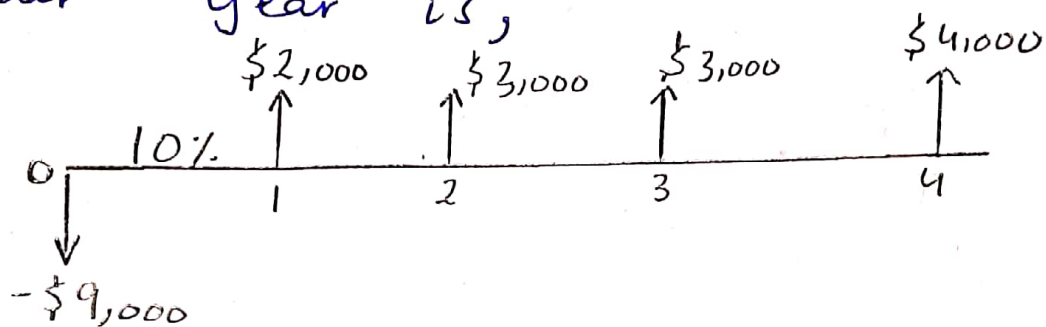
Given Data:-

Cost planned to invest = 9000 \$

Expected life of project = 4 years.

Discount rate = 10%.

Expected cash flow for next four year is,



Required Data:-

Calculate Net Present value (NPV).
Also comment on result.

Solution:-

As we know that,

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

As;

$-C_0$ = Initial Investment

C = Cash Flow

$r =$ Discount Rate

$T =$ Time

Here the values are,

$$C_1 = 2000$$

$$C_2 = 3000$$

$$C_3 = 3000$$

$$C_4 = 4000$$

Also,

$$PV_0 = -C_0$$

$$\Rightarrow PV_0 = -9000$$

Now by formula;

$$PV_1 = \frac{C_1}{1+r}$$

$$= \left[\frac{2000}{1 + \frac{10}{100}} \right]$$

$$PV_1 = 1818.18$$

Also,

$$PV_2 = \frac{C_2}{(1+r)^2}$$

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

$$PV_2 = 2479.34$$

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

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

$$PV_3 = 2253.94$$

$$PV_4 = \frac{C_4}{(1+r)^4}$$

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

$$PV_4 = 2732.05$$

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

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

$$NPV = \$ 283.51$$

Comment on Result:-

So the Net Present value (NPV) of \$283.51 suggests that the combined PV of all cash inflows exceeds the PV of cash outflows by \$283.51.

Q: 04

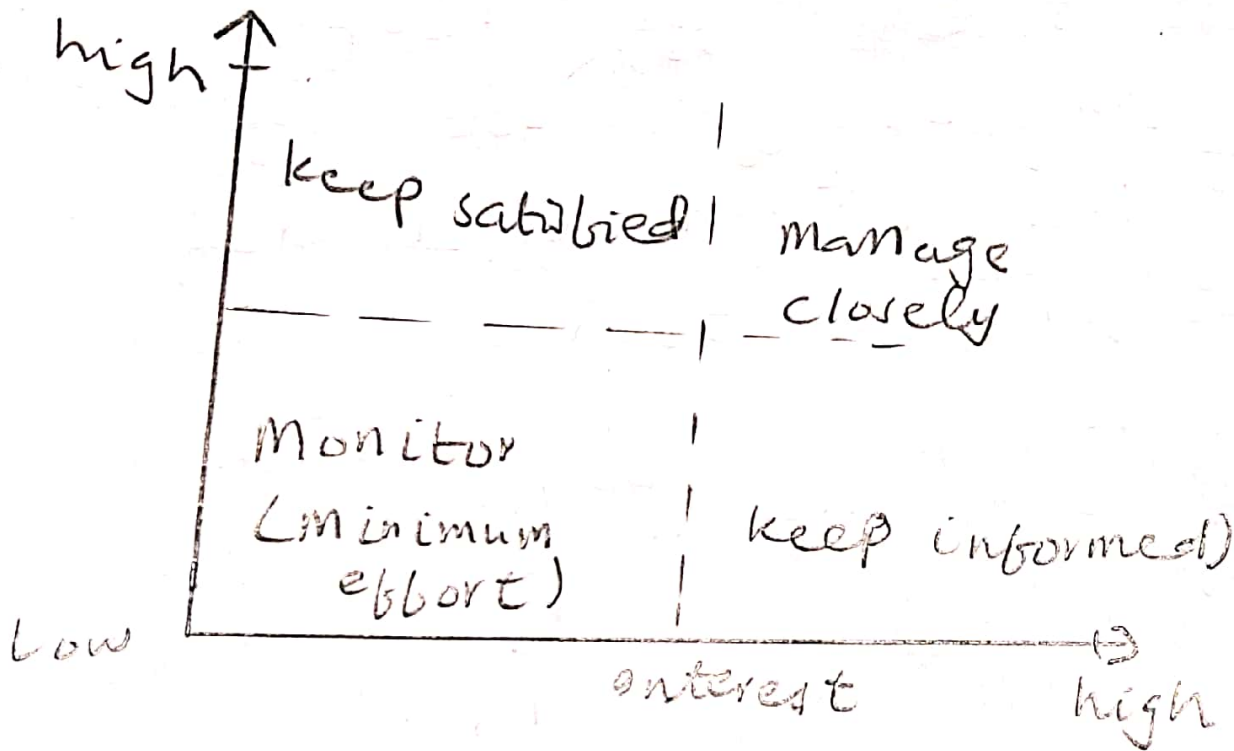
Power / Interest Matrix:-

- The power / interest matrix is a simple tool that helps to categorize project stakeholders with increasing power and interest in project.
- This matrix helps to focus on the key stakeholders who can make or break the project. In turn, this power / interest matrix helps us in stakeholder prioritization.

Layout of the Matrix:-

The power interest matrix contains four quadrants. Each quadrant gives an indication of the level of stakeholder management that we will have to employ

and many also influence the type of communication style. The four quadrants of power/interest matrix are shown below:-



• High Power - High interest:-

These stakeholders are decision makers and have biggest impact on project success and hence we must closely manage their expectations.

High Power - Low interest:-

These stakeholders needed to

kept satisfied even though they aren't interested because they yield power.

These type of stakeholders should be dealt cautiously because they may use their power in a not desired way in the project if they become unsatisfied.

- **Low power - High interest:**
These people should be kept adequately informed, and must talk to them to ensure that no major issues are arising. These people can often be very helpful with detail of project.

Low power. Low interest:
Monitor these stakeholders but we should not bore them with excessive communications.

Q:05

Risk Management Checklist For a Project of Residential house

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 appropriate to task.

Stage: 2 (Proposal Familiarization):-

- specify 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.
- Define key elements (target 20-50 elements, items or activities) to structure risk analysis.

Stage: 3 (Risk Analysis):-

- **Identify Risks:-**
 - Prepare a comprehensive schedule of risks for each element.
 - Describe each risk and list the main assumptions.
- **Assess risk likelihoods and consequences:-**
 - Assemble data on risk and their consequences.
 - Assess risk likelihoods.
 - Assess risk impacts.
- **Identify significant risks:-**
 - Rank risks to reflect impacts and likelihoods.
 - where applicable, estimate risk factors.
 - Discard/accept minor risks.
 - Identify moderate risks for management measures.
- **Identify major risks for detailed risk action planning**
measures.

Stage: 4 (Risk Response Planning):-

• Identify feasible responses

→ For each moderate and major risk, identify the feasible responses

→ Responses may include:

(a) risk prevention.

(b) impact mitigation

(c) risk transfer and insurance.

(d) risk acceptance.

• Describe each feasible response and list main assumptions.

• Select the best response

→ Evaluate the benefits and costs for each response.

→ Select the preferred response.

Stage: 5 (Reporting):-

→ For designated proposals, produce the Risk Management Plan.

→ For other projects, collate and summarize risk action schedules and measures.

Stage: 6 (Risk management implementation)

- Implement and action strategies.
- Monitor the implementation.
 - (a) Assign responsibilities.
 - (b) Timing.
- Undertake periodic review and performance evaluation.