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Assignment ; Construction
Management

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Question No: 1

* Given data

Number of communication channels = 6

Additional stake holders = 2

* Required data;

Identifying the number of communication channel 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 →

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

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

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

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

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

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

$$n-4 = 0$$

$$n+3 = 0$$

$$n = 4$$

$$n = -3$$

So the number of people involved = 4

As these are additional stake holders.

So total number of people are

$$n = 4 + 2$$

$$n = 6$$

Now the required communication

$$\text{channel} = \frac{3(6-1)}{2}$$

$$= 3(5)$$

Now communication channel = 15

Ans.

Ans;	Term	Formula
	Earned value	$Ev = Pv \text{ to date} \times RP$
	Cost variance	$CV = Ev - AC$
	Schedule variance	$SV = Ev - PV$
	Cost performance Index	$CPI = Ev/AC$
	Schedule Performance Index	$SPI = Ev/PV$
	Estimate at completion (EAC)	$EAC = BAC/CPI$
	Estimated time to complete	$\text{Original Time Estimate} / SPI$

Earn values

$$Ev = Pv \text{ to date} \times RP$$

* value (1)

$$Ev = 100,000 \times \frac{100}{100}$$

$$Ev = 100,000 \times 1 = 100,000$$

* value (2)

$$Ev = 100,000 \times \frac{100}{100}$$

$$Ev = 100,000 \times 1 = 100,000$$

* value (3)

$$Ev = 100,000 \times \frac{90}{100} = 100,000 \times 0.9$$

$$= 90,000$$

* value (4)

$$EV = 100,000 \times \frac{80}{100}$$

$$EV = 100,000 \times 0.8 = 80,000$$

* value (5)

$$EV = 100,000 \times \frac{50}{100}$$

$$EV = 50,000$$

* Cost variance.

$$CV = EV - AC$$

* value (1)

$$CV = 100,000 - 120,000 = -20,000$$

* value (2)

$$CV = 100,000 - 110,000 = -10,000$$

* value (3)

$$CV = 100,000 - 80,000 = 20,000$$

* value (4)

$$CV = 100,000 - 125,000 = -25,000$$

* value (5)

$$CV = 100,000 - 75,000 = 25,000$$

values from (6) to (10)

Same values

$$CV = 100,000$$

* Schedule variance.

$$S_v = E_v - P_v$$

* value 1

$$S_v = 100,000 - 100,000 \\ = 0$$

* value (2)

$$S_v = 100,000 - 100,000 \\ = 0$$

* value (3)

$$S_v = 90,000 - 100,000 \\ = -10,000$$

* value (4)

$$S_v = 80,000 - 100,000 \\ = -20,000$$

* value (5)

$$S_v = 50,000 - 100,000 \\ = -50,000$$

(6) to (10) same values.

$$S_v = 0 - 100,000 \\ = -100,000.$$

* Cost Performance Index.

$$CPI = EV/AC$$

* value (1)

$$CPI = 100,000 / 120,000 \\ = 0.83$$

* value (2)

$$CPI = 100,000 / 110,000 \\ = 0.90$$

* value (3)

$$CPI = 90,000 / 80,000 \\ = 1.13$$

* value (4)

$$CPI = 80,000 / 125,000 \\ = 0.64$$

* value (5)

$$CPI = 50,000 / 75,000 \\ = 0.67$$

(6) to (10) same value

$$CPI = 0$$

* Schedule Performance Index

$$SPI = EV/PV.$$

* value (1)

$$SPI = 100,000/100,000 \\ = 1$$

* value (2)

$$SPI = 100,000/100,000 \\ = 1$$

* value (3)

$$SPI = 90,000/100,000 \\ = 0.9$$

* value (4)

$$SPI = 80,000/100,000 \\ = 0.8.$$

* value (5)

$$SPI = 50,000/100,000 = 0.5.$$

(6) to (10) same values.

* Estimate at Completion (EAC)

$$EAC = BAC / CPI$$

$$BAC = 10,00000$$

$$CPI = 4.495 \text{ (Total value)}$$

$$= 10,00000 / 4.495$$

$$= 222469$$

* Original time Estimate / SPI

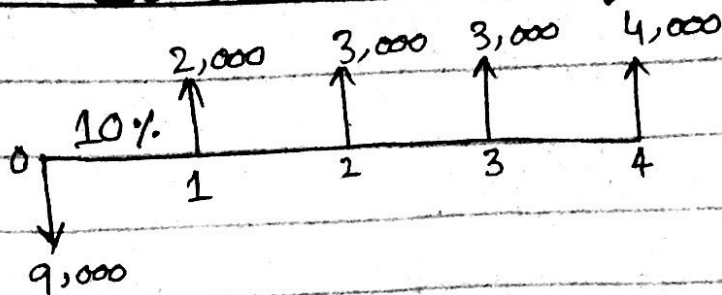
$$= 222469 / 4.45$$

$$= 49993$$

$$= 909 \text{ (weeks)}$$

The project is behind the Schedule.

Question # (03)



Sol;

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

$$Pv_0 = -C_0$$

$$Pv_0 = -9000$$

$-C_0 =$ initial investment

$C =$ Cash flow

$r =$ Discount rate

$T =$ Time

$$C_1 = 2000$$

$$C_2 = 3000$$

$$C_3 = 3000$$

$$C_4 = 4000$$

$$Pv_1 = \frac{C_1}{1+r} = \frac{2000}{1 + \frac{10}{100}}$$

$$Pv_1 = 1818.18$$

$$Pv_2 = \frac{C_2}{(1+r)^2} = \frac{3000}{(1 + \frac{10}{100})^2}$$

$$Pv_2 = 2479.34$$

$$Pv_3 = \frac{C_3}{(1+r)^3} = \frac{3000}{(1 + \frac{10}{100})^3}$$

$$Pv_3 = 2253.94$$

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

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

$$\boxed{PV_4 = 2732.05}$$

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

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

$$\boxed{NPV = \$ 283.51} \text{ Ans.}$$

Question #04

Ans Being a project manager the following identification of the stakeholder by Power/Matrix $\times \times \times$ index are.

Ans; Stakeholder in group A;

Need only minimum effort and monitoring.

* Stakeholder in Group B;

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

* Stakeholder in Group C;

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

* Stake holder in Group D;

Are both powerful and interested. Their cooperation is of key importance for new strategies.

* Classifies stake holders in relation to their power and the extent to which they are likely to show interest in the actions of the organization.

* Can be used to indicate the nature of relationship which should be adopted with each group.

Power/interest Matrix.

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		Level of interest	
		Low	High
Power.	Low	A Minimal effort	B Keep informed
	High	C Keep Satisfied	D Key players

* Assess the proposal in relation to the agency objectives and strategies.

* Determine assessment criteria for proposal.

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

* **Stage 3* Risk analysis;**

*
*
* Identify risk.

* Prepare a comprehensive schedule of risks for each elements.

* Describe each risk and list the assumption.

* **Assess risk likelihoods and consequences.**

* Assemble data on risk and their consequences.

- * Asses risks likelihoods
- * Asses risks impacts.

* Identify significant risks;

- * Risk Rank risks to reflect impacts and likelihoods.
- * where applicable, estimate risk factors.
- * Discard/accept minor risks.
- * Identify moderate risks for management measures.

* Identify moderate risks for detailed risk action planning.

* Stage 4; Risk Response Planning

- * Identify feasible response

- * For each moderate and major risk, Identify the feasible responses.

- * Responses may include

- (a) Risk prevention
- (b) impact mitigation.
- (c) Risk transfers and insurance
- (D) Risk acceptance.

- * Select the best response.
- * Evaluate the benefits and costs for each response.
- * Select the preferred response.