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Exam Final term

SUBJECT :: Construction Management

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Ah AD

Q NO 1

GIVEN DATA -

Number of Communication Channel = 6

Additional Stake holders = 2

Required:-

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 Channel \Rightarrow

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

P.T.O

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

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

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

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

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

$$\Rightarrow (n-4) = 0 \Rightarrow n = 4$$

Also

$$\Rightarrow n+3 = 0 \quad n = -3$$

So the number of people involved = 4

As there are additional stake holder's

So total number of people are

$$n = 4 + 2$$

$$n = 6$$

Now, the required communication channel

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

New communication channel = 15 Ans

Q No : 2

GIVEN DATA:-

For a project of 10 package, for each planned value, Actual cost and percentage of completion is given:-

Required Data:-

Calculate

- Earned Value
- Cost Variance
- Schedule Variance
- Cost performance Index
- Schedule performance Index

Solution:-

Work Pac key	BCWS P.V(\$)	ACWP A.C(\$)	% Progress	BCWP EV(\$)	Cost Variance	Schedule Variance	Cost Performance Index	Schedule Performance Index
1	100,000	120,000	100	100,000	-20,000	0	0.83	1
2	100,000	110,000	100	100,000	-10,000	0	0.91	1
3	100,000	80,000	90	90,000	10,000	-10,000	1.13	0.9
4	100,000	125,000	80	80,000	-45,000	-20,000	0.64	0.8
5	100,000	75,000	50	50,000	-25,000	-50,000	0.67	0.5
6	100,000	0	0	0	0	-100,000	0	0
7	100,000	0	0	0	0	-100,000	0	0
8	100,000	0	0	0	0	-100,000	0	0
9	100,000	0	0	0	0	-100,000	0	0
10	100,000	0	0	0	0	-100,000	0	0

Work page package 4

1) Earned value (EV)

$$EV = PV \times RP$$

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

$$EV = 80,000$$

2) Cost Variance

$$CV = EV - AC$$

$$CV = 80,000 - 125,000$$

3) Schedule Variance

$$CV = -45,000 \$$$

$$SV = EV - PV$$

$$SV = 80,000 - 100,000$$

$$SV = -20,000 \$$$

4) Cost performance Index CPI

$$CPI = \frac{EV}{AV} = \frac{80,000}{125,000}$$

5) Schedule performance

$$SPI = \frac{EV}{PV} = \frac{80,000}{100,000} = 0.8$$

Work package - 5

1) EV

$$EV = PV \times RP$$

$$EV = 100000 \times 50\%$$

$$EV = 50000 \$$$

2) Cost Variance - CV

$$CV = EV - AC$$

$$CV = 50000 - 75000$$

$$CV = -25000 \$$$

3) Schedule

Variance - SV

$$SV = EV - PV$$

$$SV = 50000 - 100000$$

$$SV = -50000 \$$$

4)

Cost Performance Index

$$CPI = \frac{EV}{AC} = \frac{50000}{75000} = 0.67$$

5)

SPI

$$SPI = \frac{EV}{PV} = \frac{50000}{100000} = 0.5$$

Work package 6

1) Earned Value EV

$$EV = PV \times RP$$

$$EV = 100,000 \times 0\%$$

$$EV = 0$$

2) Cost Variance:

$$CV = EV - AC$$

$$CV = 0 - 0$$

$$CV = 0$$

3) Schedule Variance SV:

$$SV = EV - PV$$

$$SV = 0 - 100000$$

$$SV = -100000$$

4) Cost performance Index:

$$CPI = \frac{EV}{AC} = \frac{0}{0} = 0$$

5) Schedule performance Index SPI

$$SPI = \frac{EV}{PV} = \frac{0}{100000} = 0$$

Comments:-

On The basis of CPI:

According to thumb Rule:-

- Work package 1, 2, 4 and 5 are over budget because CPI value is less than 100%
- Work package 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 No 03

(2)

Sol

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

$$PV_0 = -C_0$$

$$PV_0 = -9000$$

$$PV_1 = \frac{C_1}{1+r} = \left(\frac{2000}{1 + \frac{10}{100}} \right)$$

$$PV_1 = 1818.18$$

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

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

$$PV_2 = 2479.34$$

$-C_0$ = Initial investment

C_2 = Cash Flow

r = Discount Rate

T = Time

$$C_1 = 2000$$

$$C_2 = 3000$$

$$C_3 = 3000$$

$$C_4 = 4000$$

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

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

$$PV_3 = 2253.94$$

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

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

$$PV_4 = 2732.05$$

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

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

$$NPV = \$283.51$$

Q NO 4

The power / Interest Matrix :-

Classifies Stakeholders in a relationship 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 the relationship which should be adopted with each group

Power / Interest Matrix

		Level of interest	
		Low	high
Power	Low	A Minimal effort	B Keep informed
	high	C Keep satisfied	D Key players

Power / Interest Matrix:-

Stakeholder in a group A:-

Need only
minimum effort in monitoring.

Stakeholders in Group B:-

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

Stakeholder in a Group C:-

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

Stakeholders in a Group D:-

Are Both powerful and grouped
their co-operation is of key
importance for new strategies.

CHECKLIST FOR RISK MANAGEMENT :-

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 risk

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

(2)

- Determine assessment criteria for proposal
- Define key elements (targets 20-50 elements or activities) to structure risk analysis

Stage 03

Risk Analysis :-

- Identify risks
- prepare a comprehensive schedule of risk for each element
- Describe each risk & list the main assumption-
- Assess risk likelihoods and consequences:-
 - Assemble data on risk and their consequences
 - Assess risk likelihoods
 - Assess Risk impacts

(3)

- Identify significant risks.
- Rank risks to reflect impacts and likelihoods
- Where applicable estimate risk factors
- Discard / accept minor risks
- Identify moderate risk for management measure.
- Identify major risks for detailed risk action planning.

Stage 4

Risk Response planning:-

- Identify feasible responses.
- For each moderate and major risk identify the feasible response
- Responses may include

(a) Risk prevention

(b) Impact mitigation

(c) Risk transfer & insurance

(d) Risk acceptance

• Describe each feasible response & list main assumptions

• Select the ~~res~~ best response.

• Evaluate the benefits and costs for each response

• Select the preferred response.

• Develop management measures and action schedules

• Specify risk management measure for moderate risks

• Develop risk action schedule for major risk

(a) Action required

(b) Resources

(c) Responsibilities

(d) Timing

Stage 5 Reporting:-

- For designated proposals produce the risk management plan
- For other project create and summarize risk action schedules measure

Stage 6 Risk management Implementations

- Implement measures and action strategies
- monitor the implementation
 - ① Assign responsibilities
 - ② Timing
- Undertake periodic review & performance evaluation

END