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SUBJECT: CONSTRUCTION MANAGEMENT

DATE: 22<sup>nd</sup> - JUNE - 2020

Question 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.

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

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

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

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

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

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

$$(n-4) = 0$$

$$n = 4$$

$$n+3 = 0$$

$$n = -3$$

So the number of people involved = 4.

As, there are additional stake holders.

So total number of people are,

$$n = 4 + 2$$

$$n = 6$$

Now, the required communication

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

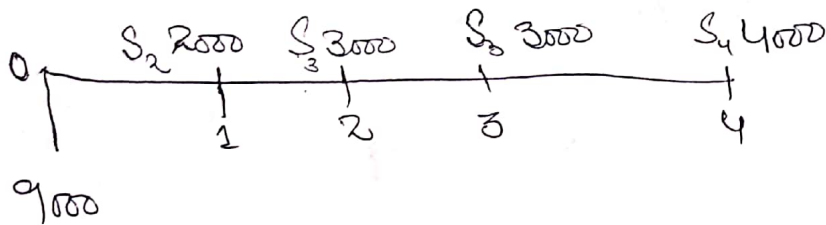
New comm channel = 15 hrs.

Date                      Payment\_30                      Challan Date                      Payment\_31                      Challan Date                      Payment\_32                      Challan Date                      Payment\_33                      Challan Date                      Payment\_34                      Challan Date                     

| Week | BWS                | ACWP             | Progress | BCWP              | (CV)        | CPI   | SPI   | SV         |
|------|--------------------|------------------|----------|-------------------|-------------|-------|-------|------------|
|      | Planned Value (PV) | Actual cost (AC) | %        | Earned Value (EV) | EV-AC       | EV/AC | EV/PV | EV-PV      |
| 1    | 100,000.00         | 120,000.00       | 100%     | 100,000.00        | (20,000.00) | 0.83  | 1.00  | =          |
| 2    | 150,000.00         | 140,000.00       | 100%     | 150,000.00        | (10,000.00) | 0.91  | 1.00  | 10,000.00  |
| 3    | 150,000.00         | 80,000.00        | 90%      | 70,000.00         | 45,000.00   | 1.31  | 0.80  | 20,000.00  |
| 4    | 150,000.00         | 125,000.00       | 80%      | 80,000.00         | 25,000.00   | 0.64  | 0.50  | 50,000.00  |
| 5    | 100,000.00         | 75,000.00        | 50%      | 50,000.00         |             |       | 0.50  | 100,000.00 |
| 6    | 100,000.00         |                  | 0%       |                   |             | 0.67  | 0.00  | 100,000.00 |
| 7    | 100,000.00         |                  | 0%       |                   |             | 0.00  | 0.00  | 100,000.00 |
| 8    | 100,000.00         |                  | 0%       |                   |             | 0.00  | 0.00  | 100,000.00 |
| 9    | 100,000.00         |                  | 0%       |                   |             | 0.00  | 0.00  | 100,000.00 |
| 10   | 100,000.00         |                  | 0%       |                   |             | 0.00  | 0.00  | 100,000.00 |

Comment: The project is behind schedule and over budget.

Question No 3:



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

$PV_0 = -C_0$

$PV_0 = -9000$

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

$PV_1 = 1818.18$

$-C_0$  = initial investment

$C$  = Cash flow

$r$  = Discount rate

$T$  = Time

$C_1 = 2000$

$C_2 = 3000$

$C_3 = 3000$

$C_4 = 4000$

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

$PV_2 = 2479.34$

$\rightarrow PV_3 = \frac{C_3}{(1+r)^3} = \frac{3000}{\left(1+\frac{10}{100}\right)^3}$

$PV_3 = 2253.94$

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

$PV_4 = 2732.05$

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

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

$NPV = \$283.51$

## Question No 4:

### THE POWER / INTEREST MATRIX:

↳ Classifies stakeholders in relation to their power and to extent to which they are likely to show interest in actions of the organisations.

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

|      |                     |                    |      |
|------|---------------------|--------------------|------|
|      |                     | Low                | High |
| Low  | A<br>Minimal effort | B<br>Keep informed |      |
| High | C<br>Keep satisfied | D<br>Key players.  |      |

→ Stakeholders in group A: Need only minimum effort and 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 passive, but may move into group D on an issue of particular interest.

→ Stakeholders in group D: Are both powerful and their co-operation is of key importance of new strategies.

# 2. CHECKLIST FOR RISK MANAGEMENT:

## STAGE 1: INITIATION:

- Assemble risk management resources.
- Appoint the team leader and ensure a breadth of skills within.
- Assign risk management responsibilities appropriate to task.

## STAGE 2: PROPOSAL FAMILIARIZATION:

- Specify objectives and criteria.
- Familiarise the team with the proposal, assemble documents and define objectives.
- Assess the proposal in relation to the Agency's objectives and strategies.
- Determine assessment criteria for proposal.
- Define key elements 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 impact 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.

## STAGE 4: Risk Response Planning

→ Identify feasible responses for each moderate and major risk; identify the feasible responses.

→ Responses may include:

- risk prevention
- impact mitigation
- risk transfer and insurance
- 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.