

# CONSTRUCTION MANAGEMENT



**Submitted by**

**KASHIF YAQUB**

**Reg.No. 7733**

**MODULE 8**

**SECTION B**

**Submitted to**

**Dr. ENGR. Muhammad Zeeshan Ahad**

**IQRA NATIONAL UNIVERSITY**

**PESHAWAR**

# Question # 01

You have a team of project managers reporting to you. Recently a new manager relatively inexperienced has joined your team. Considering his level of experience you assigned him to a small project. Considering low complexity and few stakeholders involved - you envision the project to have no surprises or hiccups. You have identified the number of communications channels to be only 6. However with increase in scope of work 2 additional stakeholders who need to be communicated will join the team. You ask the manager to identify number of communication channels now?

## Given Data:

- Number of existing communication channels = 6
- Additional stakeholders = 2

## Required Data:

- To identify the number of communication channels after increasing the scope of work.

## Solution

As from the equation of number of communication channels;

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

As there are six (6) existing communication channels so

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

By cross multiplication

$$6 \times 2 = n(n-1)$$

$$12 = n^2 - n$$

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

By factorization

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

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

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

$$n-4 = 0$$

$$n+3 = 0$$

$$n = 4$$

$$n = -3$$

- So, the number of people involved are 4.
- Also there are two additional stakeholders, so total number of people are

$$n = 4 + 2$$

$$n = 6$$



Now the number of communication channels after increasing scope of work

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

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

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

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

$$= 15$$

So, new communication channels are 15.

# Question #02

## Solution

### Terms

### Formulae

1. Earned Value

$$EV = \text{Planned value} \times \text{Rate of performance}$$

2. Cost Variance

$$CV = EV - \text{actual cost (AC)}$$

3. Schedule Variance

$$SV = EV - \text{Planned Value (PV)}$$

4. Cost Performance Index

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

5. Schedule Performance Index

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

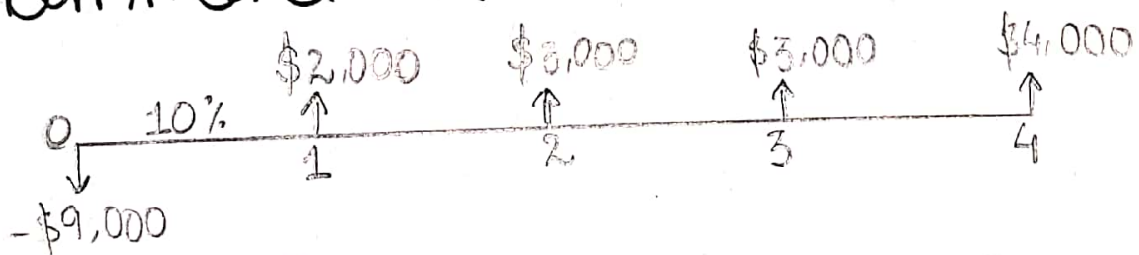
Work Package	BCWS	ACWP	Progress	BCWP	CV	CPI	SPI	SV
	Planned Value (PV)	Actual Value (AC)	%	Earned Value (EV)	EV-AC	$\frac{EV}{AC}$	$\frac{EV}{PV}$	EV-PV
1.	\$100,000	\$120,000	100%	\$100,000	\$20,000	0.83	1.00	\$0
2.	\$100,000	\$110,000	100%	\$100,000	\$10,000	0.91	1.00	\$0
3.	\$100,000	\$80,000	90%	\$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	0.00	\$100,000
7.	\$100,000	\$0	0%	-	-	0	0.00	\$100,000
8.	\$100,000	\$0	0%	-	-	0	0.00	\$100,000
9.	\$100,000	\$0	0%	-	-	0	0.00	\$100,000
10.	\$100,000	\$0	0%	-	-	0	0.00	\$100,000

**Comment:**

The project is behind schedule and overbudget.

## Question # 03

A company is planning to invest 9000\$ in a project today. The project is expected to have life of four years. The expected cash flow for next four years is shown and the discount rate is 10%. Calculate Net present value (NPV) and comment on the result?



### Given Data

- Cost planned to be invested = 9000\$
- Expected life of project = 4 years
- Discount rate = 10%



# Required Data:

Calculate Net Present Value (NPV)

## Solution

As from equation

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

where

-  $C_0$  = Initial Investment

$C$  = Cash Flow

$r$  = Discount rate

$t$  = time

also

$$C_1 = 2000, C_2 = 3000$$

$$C_3 = 3000, C_4 = 4000$$

$$PV_0 = -C_0$$

So

$$PV_0 = -9000$$

Now by formula;

$$\begin{aligned}\rightarrow PV_1 &= \frac{C_1}{1+r} \\ &= \left( \frac{2000}{1 + \frac{10}{100}} \right)\end{aligned}$$

$$PV_1 = 1818.18$$

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

$$PV_2 = 2479.34$$

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

$$PV_3 = 2253.94$$

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

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

$$PV_4 = 2732.05$$

Now,

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

$$= -9000 + 1818.18 + 2479.34$$

$$+ 2253.94 + 2732.05$$

$$NPV = \$283.51$$

## 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.

## Question # 04

Being a project manager, how would you identify the stake holders by power/interest matrix?

Answer

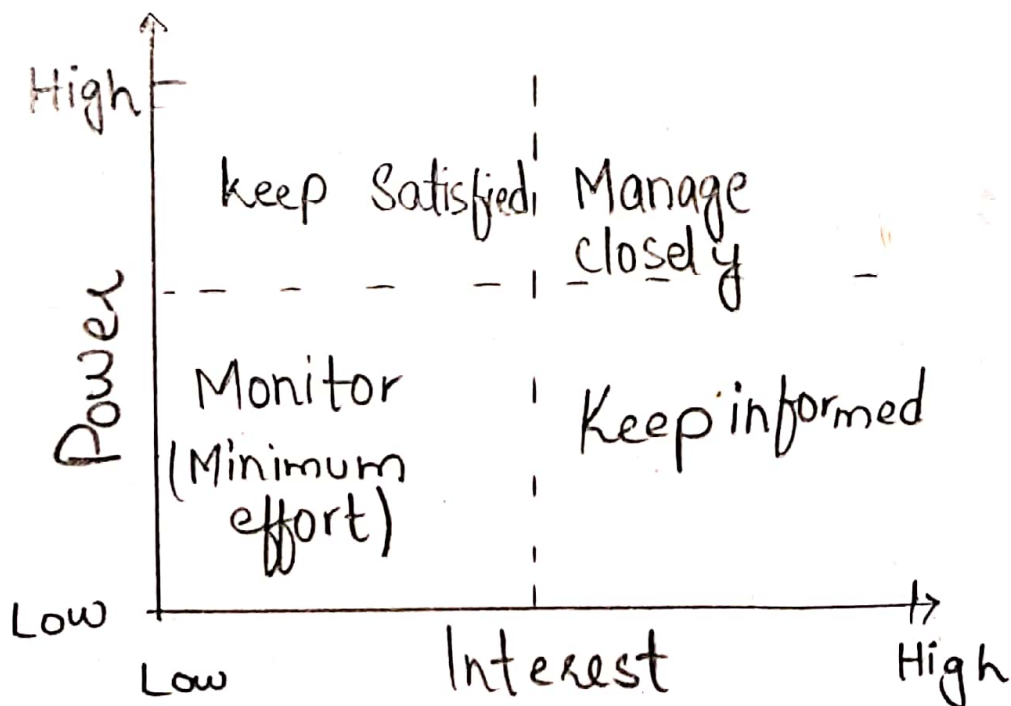
Power / Interest Matrix:

- 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 may 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 be kept in loop, these stakeholders need to be kept ~~at~~ 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.



# Question # 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 element to structure risk analysis.

## Stage 3 (Risk Analysis)

### • Identify Risk

- 1 Prepare a comprehensive schedule of risks for each element
- 2 Describe each risk and elicit the main assumptions

### • Assess risk likelihoods & consequences

- 1 Assemble data on risk & their consequences
- 2 Assess risk likelihoods
- 3 Assess risk impacts

### • Identify significant risks

- 1 Rank risks to reflect impacts and likelihoods

2 where applicable, estimate risk factors

3 Discard/accept minor risks

4 Identify moderate risks for management measures.

- Identify major risks for detailed risk action planning.

## Stage 4 (Risk Response Planning)

- Identify feasible Responses

1 For each moderate & major risk, identify the feasible responses

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

## Stage 5 (Reporting)

- 1) For designated proposals, produce the risk management plan
- 2) For other projects, collate & summarize risk action schedules & measures.

## Stage 6 (Risk Management Implementation)

- 1) Implement & action strategies
- 2) Monitor the implementation
  - a) Assign responsibilities
  - b) Timing.