Department of B.E Civil Engineering

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Assignment # ***Final Paper***

Semester: ***8th***

Section : ***"C"***

Subject: ***Construction Management***

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1. 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 assign 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 communication channels to be only 6.However with increase in scope of work 2 additional stakeholders who need to be communicated with join the team. You ask the manager to identify the number of communication

channels now?

QUESTION # 1

GIVEN DATA :-

Number of Communication Channel = 6

Additional Stake holders = 2

REQUIRED DATA :-

Identify the number of Communication Channels

SOLUTION :-

As we know that;

Number of Communication channel $= \frac{n(n-1)}{2}$

The number of people involved in six Communication Channels

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

$$12 = n^2 - n$$

Rearranging the terms

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

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

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

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

$(n-4) = 0$

$\boxed{n = 4}$

$n + 3 = 0$

$\boxed{n = -3}$

So the number of people involved = 4

As There are additional stake holder's

So total number of people are;

$n = 4 + 2$

$\boxed{n = 6}$

Now, the required Communication Channel $= \frac{6(6-1)}{2}$

$= 3(5)$

$= 15$

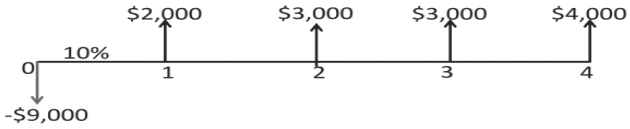
So, New Communication channel = 15

2. If you have a project of 10 packages for each package planned value, Actual cost and percentage of completion is given. Calculate the earned value, cost variance, schedule variance, cost performance index and schedule performance index? (Comment if the project is ahead/behind schedule or over/under budget).

WORK PAKAGE	P.V	A.C	PROGRESS %	RP	EV	CV	SV	CPI	SPI
				RP=AWC/WPC	EV=PV*RP	CV=EV-AC	SV=EV-PV	CPI=EV/AC	SPI=EV/PV
1	100000	120000	100	1	100000	-20000	0	0.833333333	1
2	100000	110000	100	1	100000	-10000	0	0.909090909	1
3	100000	80000	90	0.9	90000	10000	-10000	1.125	0.9
4	100000	125000	80	0.8	80000	-45000	-20000	0.64	0.8
5	100000	75000	50	0.5	50000	-25000	-50000	0.666666667	0.5
6	100000	0	0	0	0	0	-100000	.	0
7	100000	0	0	0	0	0	-100000	.	0
8	100000	0	0	0	0	0	-100000	.	0
9	100000	0	0	0	0	0	-100000	.	0
10	100000	0	0	0	0	0	-100000	.	0
AVERAGE								**0.4293**	**0.42**

CPI <1 so project is over budget
SPI < 1 so project is behind schedule.

3. 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?



Sol

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

$$PV_0 = -C_0$$

$$PV_0 = -9000$$

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

$$\boxed{PV_1 = 1818.18}$$

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

$$PV_2 = \frac{3000}{\left(1+\frac{10}{100}\right)^2} \Rightarrow \boxed{PV_2 = 2479.34}$$

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

$$PV_3 = \frac{3000}{\left(1+\frac{10}{100}\right)^3} \Rightarrow \boxed{PV_3 = 2253.94}$$

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

$$PV_4 = \frac{4000}{\left(1+\frac{10}{100}\right)^4} \Rightarrow \boxed{PV_4 = 2732.05}$$

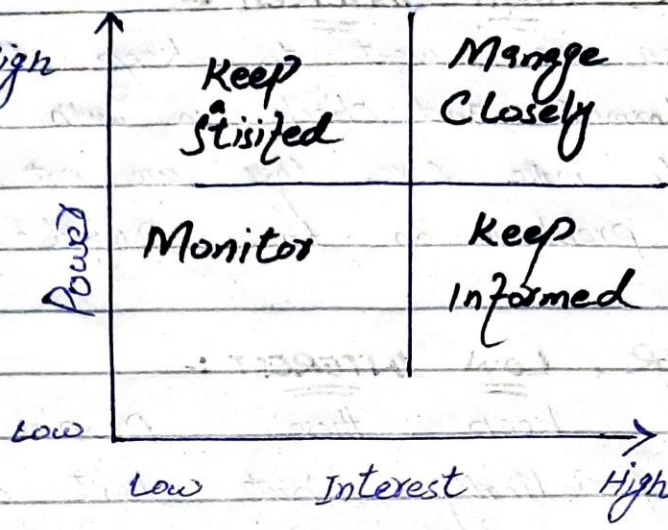
$$NPV = -C_0 + \frac{C_1}{1+r} + \frac{C_2}{(1+r)^2} + \frac{C_3}{(1+r)^3} + \frac{C_4}{(1+r)^4}$$

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

$$\boxed{NPV = 283.51}$$

Comment : The NPV value is positive so you should do this project, it is beneficial for you.

4. Being a Project Manager, how would you identify the stake holders by power/interest Matrix?



① **HIGH Power, HIGH INTEREST:-**

These are your most important stakeholders, and you should prioritize keeping them happy with your project's progress.

② **HIGH POWER, LOW INTEREST:-**

Because of their influence in the company you should work to keep these people satisfied. But because they have not shown a deep interest in your project, you could turn them off if you overcommunicate with them.

(3) LOW POWER, HIGH INTEREST :-

You well want to keep these people informed and check in with them regularly to make sure they are not experiencing problems on the project.

(4) LOW POWER, LOW INTEREST :-

Just keep these people informed periodically, but don't overdo it.

5. For a project of residential house what are the different stages to be considered in the risk management checklist?

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 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*
- ❑ *Determine assessment criteria for proposal*
- ❑ *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*

✓ ***Stage 4*** ***<u>Risk Response Planning</u>***

- ❑ *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*
- ❑ *Develop management measures and action schedules*
    - ❑ *Specify Risk Management measures for moderate risks*
    - ❑ *Develop risk action schedules for major risks*
    - ❑ • *Actions required (what is to be done?)*
    - ❑ • *Resources (what and who?)*
    - ❑ • *Responsibilities (who?)*
    - ❑ • *Timing (when?)*

- ✓ ***Stage 5*** ***<u>Reporting</u>***

- ❑ *For designated proposals, produce the Risk Management Plan*

- ❑ *For other projects, collate and summarize risk action schedules and* ***measures***