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Paper	Const. Management
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Question No. 1

Given data:

Number of communication channels = 6

Additional stakeholders = 2

Required:

Identify the number of communication channels after increasing scope of work = ?

Solution:

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 stakeholders, so total number of people are;

$$n = 4 + 2$$

$$n = 6$$

Now the required communication

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

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

New communication channel = 15

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Question No: 02

Given data:

Total number of packages = 10

For each package planned value
Actual cost & percentage of
completion is known:

Required:

For each package

- (1) Earned value = (EV) = ?
- (2) Cost variance = (CV) = ?
- (3) Schedule variance = (SV) = ?
- (4) Schedule performance index = (SPI) = ?
- (5) Cost performance Index = (CPI) = ?

Comment on each package.

Solution: (i) (EV): 1x100k page (1)
By formula

EV = Planned value \times Rate of
Performance

$$EV = PV \times RP$$

$$EV = \$100000 \times 100\%$$

$$= \$100000 \times 1$$

$$EV = \$100000$$

(ii) CV :

$$CV = EV - AC$$

$$CV = \$100000 - 120000$$

$$CV = 20000$$

(iii) SV :

$$SV = EV - PV$$

$$SV = 100000 - 100000$$

$$SV = 0$$

(iv) SPI :

$$CPI = \frac{EV}{PV} = \frac{100000}{100000} = 1$$

(v) CPI :

$$CPI = \frac{EV}{AC} = \frac{100000}{120000} = 0.83$$

Comments:

As we see the $SV = 0$ & $SPI = 1$ it means that project is exactly on the plan path 100%

As we see that CV is (ve) & CPI is less than 1, it means that the project is over budgeted.

Workpage (2):

(i) EV:

$$EV = PV \times RP$$

$$EV = 100000 \times 100\%$$

$$EV = 100000 \times 1$$

$$EV = 100000 \$$$

(ii) CV:

$$CV = EV - AC$$

$$CV = 100000 - 110000$$

$$CV = -10000 \$$$

(iii) SV:

$$SV = EV - PV$$

$$SV = 100000 - 100000$$

$$SV = 0 \$$$

(iv) CPI:

$$CPI = \frac{EV}{AC} = \frac{100000}{110000}$$

$$CPI = 0.90 \$$$

(v) SPI:

$$SPI = \frac{EV}{PV} = \frac{100000}{100000} = 1$$

$$SPI = 1$$

Comments:

Project is exactly on the

the base line as $SV = 0$ & $SPI = 1$
but in terms of cost the project
is over budgeted as $CV = (-ve)$
& CPI is less than 1.

Workpage (03):

(i) ~~CV~~: EV:

$$EV = PV \times ROP$$

$$EV = 100000 \times 90\%$$

$$EV = ~~900000~~ 90000 \$$$

(ii) CV:

$$CV = EV - AC$$

$$= 90000 - 80000$$

$$CV = 10000 \$$$

(iii) SV:

$$SV = EV - PV$$

$$= 90000 - 100000$$

$$SV = -10000 \$$$

(iv) CPI:

$$CPI = \frac{EV}{AC} = \frac{90000}{80000} = 1.125$$

(v) SPI:

$$SPI = \frac{EV}{PV} = \frac{90000}{100000}$$

$$SPI = 0.9$$

Comments.

As we see that in terms of cost the project is under budgeted because the CV & CPI is (ve) and above then 1 but in terms of scheduling the project is potentially behind the base line as $SV = (-ve)$ and SPI is less than 1.

Workpage 4:

(i) EV:

$$EV = PV \times RP$$

$$EV = 100000 \times 80\%$$

$$EV = 80000$$

(ii) CV:

$$CV = EV - AC$$

$$= 80000 - 125000$$

$$CV = -45000 \$$$

(iii) SV:

$$SV = EV - PV$$

$$SV = 80000 - 100000$$

$$SV = -20000 \$$$

(iv) CPI:

$$CPI = \frac{EV}{AV} = \frac{80000}{125000}$$

$$CPI = 0.64$$

(v) SPI

$$SPI = \frac{EV}{PV} = \frac{80000}{100000}$$

$$SPI = 0.8$$

Comments:

The project is over budgeted as CV is (-ve) and CPI is less than 1 as used as project is behind the ~~schold~~ schedule is from base line as SV = (-ve) and SPI is less than 1.

Workpage (5):

(i) EV:

$$EV = PV \times ROP$$

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

$$EV = 50000 \$$$

(ii) CV:

$$CV = EV - AC$$

$$CV = 50000 - 75000$$

$$\del{CV} \quad CV = -25000 \$$$

(iii) SV:

$$SV = EV - PV$$

$$SV = 50000 - 100000$$

$$SV = -50000 \$$$

(iv) CPI:

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

$$CPI = 0.67$$

(v) SPI

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

$$SPI = 0.5$$

Comments:

The project is over budgeted in terms of cost as $CV = (-ve)$ and CPI is less than 1 and in terms of ~~sched~~ scheduling the project is behind half way from its baseline as $SV = -50000$ and $SPI = 0.5$.

Workpage (06):

(i) EV:

$$EV = PV \times RP$$

$$EV = 100000 \times \del{0.5} 0\%$$

$$EV = 0$$

(ii) CV:

$$CV = EV - AC$$

$$CV = 0 - 0$$

$$CV = 0$$

(iii) SV:

$$SV = EV - PV$$

$$SV = 0 - 100000$$

$$SV = -100000 \$$$

(iv) CPI:

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

(v) SPI:

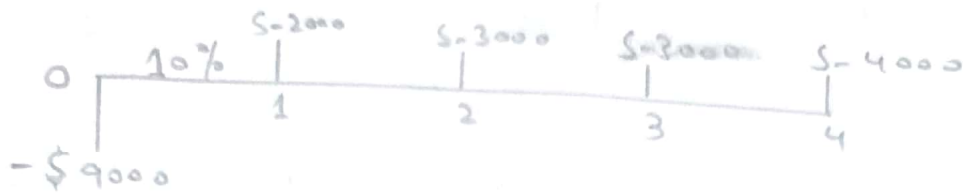
$$\frac{EV}{PV} = \frac{0}{100000} = 0$$

Comments:

The workpage 6 is not yet started so it is 100% behind the schedule.

Workpage 7, 8, 9 and 10 is same like workpage 6 which is not yet started they all are very beging of the project.

Question No: 03



Required

$$r = 10\%$$

$$NPV = P$$

Solution:

$$PV_0 = -C_0$$

$$PV_0 = -9000$$

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

$$PV_1 = 1818.18$$

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

$$PV_2 = 2479.34$$

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

$$PV_3 = 2253.94$$

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

$$PV_4 = 2732.05$$

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

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

$$NPV = \$283.51$$



Question No: (04)

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 key stakeholders who can make or break the project. In turn, this power/interest matrix help us in stakeholders prioritization.

		Level of interest	
		Low	High
Power/Interest Matrix	Low	A Minimal effort	B Keep informed
	High	C Keep satisfied	D Key players

Powers/Interest Matrix:

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 for new strategies.

Question No: 05

Answer:

Stages to be considered in the risk management checklist:

Stage - 1

Initiation

- Assemble Risk Management resources.
- Assign Risk Management responsibilities appropriate to task.

Stage - 2

Proposal Familiarization:

- Specify objective & criteria.
- 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
- Assess risk likelihoods and consequences.

- ~~Identify~~ Identify significant risks.
- Identify major risks for detailed risk action planning.

Stage - 4

Risk response planning.

- Identify feasible responses.
- Describe each feasible response and list main assumptions.
- Select the best response.
- ~~Develop~~ Develop ~~management~~ management measures and action schedule.
- Develop risk action schedules for major risks.

Stage - 5

Reporting

- For designated proposals, produce the risk management plan.
- ~~Implement measures and action strategies.~~
- For other project, collate and ~~the~~ summarize risk action schedules and measures.

Stage - 6

Risk management Implementation.
Implement measures and action
strategies.

Monitor the implementation.

Undertake periodic review and
Performance evaluation.

End

