Question No 1:-

Given Data:.

Number of communication channels = 6

Additional stake holder = 2

Required:.

Identify the number of Communication channel after increasing the scope of work=?

Sol:.

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

Number of People involved in Six Communication channel

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

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

$$12 = n^2 - n$$

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

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

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

$$n - 4 = 0$$

$$\boxed{n = 4}$$

$$n + 3 = 0$$

$$\boxed{n = -3}$$

So the number of People involved = 4

As there are additional state holder's

So total number of People are:

$$n = 4 + 2$$
$$n = 6$$

Now, the required Communication Channel

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

New Communication Channel = $\boxed{15}$ ← Answer.

Question # 2

Given Data:.

→ Total number of Package = 10

→ For each Package planed value, Actual cost and range of completion is known.

To Find:.

For each Package

(1) Earned Value = Ev = ?
(2) Cost variance = Cv = ?
(3) Schedule varience = Sv = ?
(4) Cost Performance Index = ?
(5) Schedule Performance index = SP_I = ?
(6) Comment on each package.

Solution:.

① Work Package 1:.

(1) Earned Value (Ev):.

Ev = Planned value x Rate of Performance

Ev = $100000 x 100%

Ev = $100000

(2) Cost varience (cv):.

Cv = Ev - Ac

Cv = $100000 - 120,000

Cv = -20000

③ Schedule Variance:-

$$Sv = Ev - Pv$$

$$Sv = 100000 - 100000$$

$$Sv = 0$$

④ Cost of Performance Index (CP_I):-

$$CP_I = \frac{Ev}{Ac} = \frac{100000}{120000} = 0.83$$

⑤ Schedule Performance Index:-(SP_I)

$$SP_I = \frac{Ev}{PV} = \frac{100000}{100000} = 1$$

Comment on work Packge 1:-

As we see the $Sv=0$ and $SP_I=1$ that mean that Project is Exactly on the plan Path 100%

→ As we see that Cv is (-ve) and Cost of Performance the project is overbudgeted.

Work Package 2 :-

① Earned Value (Ev) :-

$Ev = PV \times P_p$

$Ev = 100000 \times 100\%$

$\boxed{Ev = 100{,}000\$}$

② Cost Variance :- (Cv)

$Cv = Ev - Ac$

$Cv = 100{,}000 - 110000$

$\boxed{Cv = -10000\$}$

③ Schedule Variance :- (Sv)

$Sv = Ev - PV$

$Sv = 100000 - 100{,}000$

$\boxed{Sv = 0\$}$

④ Cost Performance Index (CPI) :-

$CPI = Ev/Ac = \frac{100000}{110000}$

$\boxed{CPI = 0.90}$

⑤ Schedule Performance Index (SPI) :-

$SPI = Ev/Pv = 100000/100000$

$\boxed{SPI = 1}$

Comment: Project is Exactly on the base line as Sv = 0 and SPI = 1 but in terms of cost the Project is overbudget as Cv is (-) and CPI is less than 1.

Work Package 3::

① Earned Value = Ev = Pv x Rp

Ev = 100,000 x 90%

Ev = 90,000 $

② Cost Variance = CV = Ev - Ac

CV = 90,000 - 80,050

CV = 10,000 $

③ Schedule Varence = Sv = Ev - Pv

Sv = 90000 - 100,000

Sv = -10 000 $

④ Cost Performance Index = CPI = Ev/Ac

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

⑤ Schedule Performance Index:-

Sp1 = Ev/Pv

$$Sp1 = \frac{90,000}{100,000}$$

Sp1 = 0.9

Comment:- As we see that in terms of cost the Project is under budgeted because the cv and cp is +Ve and above than 1 but in terms of Schedaling the Project is potentially behind the base line as Sv = -ve and Sp1 is less than 1.

Work Package 4:

① Earned value = Ev = Pv x Rp

Ev = 10,0000 x 80 %

Ev = 80,000 $

② Cost variance = CV = Ev - Ac

CV = 80,000 - 125,000

CV = -45,000 $

③ Schedule Variance = Sv = Ev - Pv

Sv = 80,000 - 100000

Sv = - 20000 $

④ Cost of Performance Index = CPI = EV/AV

$$CPI = \frac{80,000}{125,000} = 0.64$$

⑤ Schedule Performance Index = SPI = Ev/PV

$$SPI = \frac{80,000}{10,000} = 0.2$$

Comment:

The Project is overbudgeted as CV is (-ve) and CPI < 1 as used as the project is balanced the schedule i.e from base line as SV = (-ve) and SPI is less than 1.

Work Package 5:-

① Earned Value = Ev = Pv x Rp

Ev = 100,000 x 50%

Ev = 50000 $

② Cost Varience = Cv = Ev x Ac

Cv = 50000 − 75000

Cv = − 25000 $

③ Schedule Varience = Sv = Ev − Pv

Sv = 50000 − 100000

Sv = −50000 $

④ Cost Performance Index :-

$$CPI = Ev/Ac = \frac{50000}{75000} = \boxed{0.67}$$

⑤ Schedule Performance Index = SPI = Ev / Pv

$$SPI = 50000/10000 = \boxed{0.5}$$

Comment:

The Project is overbudget in terms of Cost as cv is (−ve) and CPI is less than 1 and in terms of scheduling the project is behind halfway from its base line as Sv = −50000 and CPI = 0.5

Work Package 6:-

(1) Earned Value(Ev):-

$$Ev = PV \times RP$$
$$" = 100,000 \times 0\%$$
$$\boxed{EV = 0}$$

(2) Cost Varience (CV):-

$$CV = Ev - Ac$$
$$CV = 0 - 0$$
$$\boxed{CV = 0}$$

(3) Schedule varience (SV):-

$$SV = Ev - PV$$
$$" = 0 - 100000$$
$$\boxed{SV = -100,000}$$

(4) Cost Performance Index (CPI):-

$$CPI = EV/Ac = \%0 = \boxed{\infty}$$

(5) Schedule Performance Index (SPI)

$$SPI = Ev/PV = 0/100,000 = 0$$

Comment:-

The Work Package 6 is not get started, so it is 100% behind the schedule

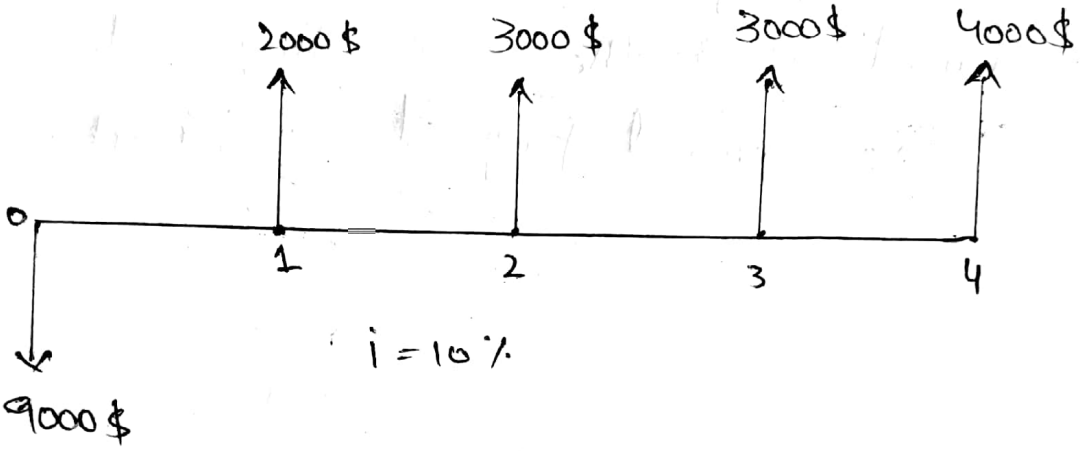
WorkPackge 7, 8, 9, 10 is same as WorkPackge 6 which is not yet started they all are very beging of the Project.

Question No 3:-

Given Data:-

Initial Investment = 9000 $
Duration of Project = 4 years
Discount rate = i = 10%

Cash flow shown in fig



To Find:-

(a) NPV = ?
(b) Comment or Remarks = ?

Sol:-

(a) As we know the formula of NPV as,

$$NPV = \sum_{i=1}^{t=4} \left(\frac{\text{Net Cash flow}}{(1+i)^n} \right) - \text{initial investment}$$

$$NPV = \left(\frac{2000}{(1+0.1)} + \frac{3000}{(1+0.1)^2} + \frac{3000}{(1+0.1)^3} + \frac{4000}{(1+0.1)^4} \right) - 9000$$

$$NPV = 9283.51 - 9000$$

$$\boxed{NPV = 283.51\ \$}$$

(b) **Comment :-**

The Positive value of (NPV) shows that the Project is able to recover its inital investment with the discounting rate of 10% and the overall Project is Profitable.

Question no(4)

⇒ Power/Interest Matrix

⇒ Stakeholders in group(A) :- Need only minimum effort of monitoring

⇒ Stakeholder 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 on issue of particular interest.

Power/Interest Matrix (Gardner et al 1986)

Power \ Level of Interest	Low	High
Low	A minimal effort	B keep informed
High	C keep satisfied	D key players

⇒ Stakeholder in group (D) :- Are powerful Their co-operation is of key importance for new strength.

Question 5:-

Check List 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 objective and Criteria.
→ Familiarise the team with the Proposal, assemble documentation and define the key objective.
→ Assess the Proposal in relation to the Agency's objectives and Strategies
→ Determine assessment criteria for Proposal.
→ Define key element (target 20-50 elements, items or activities) to structure risk analysis.

Stage 3 Risk Analysis

→Identify Risk:.

→ Prepare a comprehensive schedule of risks for each element.
→ Describe reach risk and list main assumptions.

→ **Assess risk likelihoods and consequences**

→ Assemble data on risk and their consequence.
→ Assess risk likelihood.
→ Assess risk impact.

→ **Identify significant risks:**

→ Rank risks to reflect impacts and likelihood.
→ Where applicable, estimate risk factors.
→ Discard/accept minor risks.
→ Identify moderate risks for management measure.

Stage 4 Risk Response Planning

→ **Identify Feasible response:**

→ For each moderate and major risks, identify the feasible responses.
→ Responses may include:
(a) Risk Prevention.
(b) Impact mitigation.
(c) Risk transfer and insurance.
(d) Risk acceptance.

Select best response

→ Evalute the benefits and costs for each response
→ Select the Preferred response.