

③ S.D. in NPV [Logical]

$$\text{NPV } ① (300 \times 3.791) - 1000 = 137.30$$

$$② (400 \times 3.791) - 1000 = 516.40$$

$$③ (100 \times 3.791) - 1000 = -620.90$$

$$\text{Expected NPV } (137.30 \times 0.3) + (516.40 \times 0.5) \\ + (-620.90 \times 0.2) = 175.143$$

$$\text{S.D.} = \sqrt{(137.30 - 175.14)^2 \times 0.3 + (516.40 - 175.14)^2 \times 0.5} \\ + (-620.90 - 175.14)^2 \times 0.2} \\ = 430.57$$

2. Calculation of S.D. of Cash flows (ICAI)

$$\begin{aligned}\sigma_x &= \sqrt{(300-310)^2 \times 0.3 + (400-310)^2 \times 0.5} \\ &\quad + (100-310)^2 \times 0.2 \\ &= 113.58\end{aligned}$$

TYK 2

Question: 15

Cyber Company is considering two mutually exclusive projects. Investment outlay of both the projects is ₹ 5,00,000 and each is expected to have a life of 5 years. Under three possible situations their annual cash flows and probabilities are as under:

Situation	Probabilities	Cash Flow (₹)	
		Project A	Project B
Good	0.3	6,00,000	5,00,000
Normal	0.4	4,00,000	4,00,000
Worse	0.3	2,00,000	3,00,000

The cost of capital is 7 per cent, which project should be accepted? Explain with workings.

project B

$$\text{Expected NPV} = 4,00,000$$

$$OB = 77459$$

① Calculation of Expected NPV

project A

$$\begin{aligned} \text{Expected CF} &= (6,00,000 \times 0.3) + \\ &\quad (4,00,000 \times 0.4) + (2,00,000 \times 0.3) \\ &= 4,00,000 \text{ p.a.} \end{aligned}$$

$$\begin{aligned} \text{Expected NPV} &= (4,00,000 \times PVAF, 7\%, 5) \\ &\quad - 5,00,000 \\ &= (4,00,000 \times 4.100) - 5,00,000 \\ &= 11,40,000 \end{aligned}$$

Calculation of S.D. of project A (000)

P	x	P(x)	(x - $\bar{x}$)	(x - $\bar{x}$) ² P
0.3	600	180	200(000)	12000
0.4	400	160	0	0
0.3	200	60	-200	12000
		400		24000

$$\sigma_x = \sqrt{24000} = 154.919$$

₹ 154919

	A	B
Expected NPV	1140000	1140000
<u>S.D.</u>	154919	77459

project B should be accepted
due to lower Risk.

TYK 3

Question: 16

A company is considering Projects X and Y with following information:

Project	Expected NPV (₹)	Standard Deviation
X	1,22,000	90,000
Y	2,25,000	1,20,000

- (i) Which project will you recommend based on the above data?
- (ii) Explain whether your opinion will change, if you use coefficient of variation as a measure of risk.
- (iii) Which measure is more appropriate in this situation and why?

H.W