



i) Expected Value

Part	Year 1 Cf* PV	Year 2 Cf*PV	- Invest	NPV (1)	Joint Probability (2)	(1)* (2)
1	= 50,000*0.909 = 45,450	= 24,000*0.826 = 19,824	- 80,000	-14,726	= 0.4*0.2 = 0.08	-1,178.08
2	45,450	= 32,000*0.826 = 26,432	- 80,000	-8,118	= 0.4*0.3 = 0.12	-974.16
3	45,450	= 44,000*0.826 = 36,344	- 80,000	1,794	= 0.4*0.5 = 0.2	358.8
4	= 60,000*0.909 = 54,540	= 40,000*0.826 = 33,040	- 80,000	7,580	= 0.6*0.4 = 0.24	1,819.2
5	54,540	= 50,000*0.826 = 41,300	- 80,000	15,840	= 0.6*0.5 = 0.3	4,752
6	54,540	= 60,000*0.826 = 49,560	- 80,000	24,100	= 0.6*0.1 = 0.06	1,446
						6,223.76
Expected Value		= ₹ 6,223.76				

ii) If worst outcome is realised, the NPV will be -₹ 14,726 and probability will be 0.08

iii) If best outcome is realised, the NPV will be -₹ 24,100 and probability will be 0.06

iv) Yes, the project is accepted as the expected value of NPV is positive at ₹ 6,223.76.

33. Illustration

A Company named Roby's cube decided to replace the existing Computer system of their organization. The original cost of the old system was ₹ 25,000 and it was installed 5 years ago. Current market value of old system is ₹ 5,000. Depreciation of the old system was charged with life of 10 years with Estimated Salvage value as Nil. Depreciation of the new system will be charged with life over 5 years. Present cost of the new system is ₹ 50,000. Estimated Salvage value of the new system is ₹ 1,000. Estimated cost savings with the new system is ₹ 5,000 per year. Increase in sales with new system is assumed at 10% per year based on original total sales of ₹ 1,00,000. Company follows straight line method of depreciation. The cost of capital of the company is 10% whereas tax rate is 30%. Evaluate the replacement decision.

[ICAI SM, similar Dec'21 QP (Old)]

Solution:

	Old System	New System
Original Cost	25,000	50,000
Original Life	10 years	5 years
Life Expected	5 years	0
Market Value (Today)	5,000	
Salvage Value (10 yrs)	0	1,000
Savings		5,000
Sales	1,00,000	
Increase In Sales		10,000 p.a
Depreciation	SLM	SLM
Kc	10%	10%
Tax	30%	30%

