

(d) Calculation of NPV

$$\text{Poor} = (13.50 \times 175000 \times 3.605) - 3605000 - 5000000$$
$$= -88188$$

$$\text{Normal (200000 units)} = \text{NPV} = 1128500$$

$$\text{Good} \quad \text{NPV} = 2345188$$

<u>NPV</u>	<u>probability</u>
-88188	30%
1128500	60%
2345188	10%

$$\begin{aligned}\text{Expected NPV} &= (-88188 \times 30\%) \\ &+ (1128500 \times 60\%) + (2345188 \times 10\%) \\ &= ₹ 885163\end{aligned}$$

Since Acceptable Risk is 20%, it means if chances of Negative NPV is more than 20%, project should be Rejected. In this question, probability of Negative NPV is 30% hence project should be rejected.

Question – 36

X Ltd. is considering its new project with the following details: H.W

Sr. No.	Particulars	Figures
✓1	Initial capital cost	₹ 400 Cr.
✓2	Annual unit sales	5 Cr.
✓3	Selling price per unit	₹ 100
✓4	Variable cost per unit	₹ 50
✓5	Fixed costs per year	₹ 50 Cr.
✓6	Discount Rate	6%

Required:

1. Calculate the NPV of the project.

2. Compute the impact on the project's NPV considering a 2.5 per cent adverse variance in each variable. Which variable is having maximum effect?

Consider Life of the project as 3 years.

Scenario Analysis

Question – 43

XYZ Ltd. is considering a project "A" with an initial outlay of ₹ 14,00,000 and the possible three cash inflow attached with the project as follows:

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Particulars	Year 1	Year 2	Year 3
Worst case	450	400	700
Most likely	550	450	800
Best case	650	500	900

Assuming the cost of capital as 9%, determine NPV in each scenario. If XYZ Ltd is certain about the most likely result in first two years but uncertain about the third year's cash flow, analyze what will be the NPV expecting worst scenario in the third year.

2. Scenario Analysis

- There is a limitation of Sensitivity Analysis that one factor will change at one time, it means factors are independent.

But In real life, factors are dependent on each other. If selling price of product decreases, then sales volume will increase. Hence Introduce Scenario Analysis.

- In Scenario Analysis, we change All factors of project simultaneously & calculate NPV in different-different scenario.

3 Decision Tree

Decision Tree is a graphical presentation of decision problem.

Question - 26

A firm has an investment proposal, requiring an outlay of ₹ 80,000. The investment proposal is expected to have two years economic life with no salvage value. In year 1, there is a 0.4 probability that cash inflow after tax will be ₹ 50,000 and 0.6 probability that cash inflow after tax will be ₹ 60,000. The probability assigned to cash inflow after tax for the year 2 is as follows:

The cash inflow year 1	₹ 50,000		₹ 60,000	
The cash inflow year 2	Probability		Probability	
	₹ 24,000	0.2	₹ 40,000	0.4
	₹ 32,000	0.3	₹ 50,000	0.5
	₹ 44,000	0.5	₹ 60,000	0.1

The firm uses a 10% discount rate for this type of investment.

Required:

- Construct a decision tree for the proposed investment project and calculate the expected net present value (NPV).
- What net present value will the project yield, if worst outcome is realized? What is the probability of occurrence of this NPV?
- What will be the best outcome and the probability of that occurrence?
- Will the project be accepted?

(Note: 10% discount factor 1 year 0.909; 2 year 0.826)

⑤ What is the prob. of Negative NPV =

② Worst Outcomes

$$NPV = -14728$$

$$\text{prob.} = 0.08 \text{ or } 8\%$$

$$\text{Expected } (-14728 \times 0.08)$$

③ Best Outcomes

$$NPV = 24100$$

$$\text{prob.} = 0.06$$

$$\text{Expected } (24100 \times 0.06) = 1446$$

④ Since Expected NPV is positive
hence project should be accepted.