



Capital Budgeting Exercises

Ex.1

The **cost** of a project is \$50,000 and it generates cash inflows of \$20,000, \$15,000, \$25,000, and \$10,000 over four years. Using the NPV and Profitability index, appraise the value of the proposed investment, assuming a 10% rate of discount.

Year	Cash Flow (\$)	Discount (%10)	Total (\$)
1	20,000	0.909	18,180
2	15,000	0.826	12,390
3	25,000	0.751	18,775
4	10,000	0.683	6,830
			56,175

Total Value = \$56,175

Initial Cost = \$50,000

NPV = \$6,175

Profitability Index = $56,175 / 50,000 = 1.1235$

Net Profitability Index = $6,175 / 50,000 = 0.1235$

The value of the proposed investment would be accepted since the Net Profitability Index is on the positive side.

Ex.2

A company is considering whether to **purchase** a new machine. Machines A and B are available for \$80,000 each. Earnings after taxation are as follows:

Year	Machine A	Machine B
	\$	\$
1	24,000	8,000
2	32,000	24,000
3	40,000	32,000
4	24,000	48,000
5	16,000	32,000

Evaluate the two alternatives using the following: (a) payback method, (b) Net present value method. You should use a **discount rate** of 10%.

Payback Method

$$\text{Machine A} = 24,000 + 32,000 + t \cdot 40,000 = 80,000$$

$$t = 0.6 \rightarrow 2.6 \text{ years in total}$$

$$\text{Machine B} = 8,000 + 24,000 + 32,000 + t \cdot 48,000 = 80,000$$

$$t = 0.33 \rightarrow 3.33 \text{ years in total}$$

Machine A would be preferred since it takes less time to payback.

Net Present Value Method

Discount Rates in Each Year

Year	Discount (%10)
1	0.909
2	0.826
3	0.751
4	0.683
5	0.621

Machine Earnings → Present Values

Machine A	Machine B
24,000 → 21,816	8,000 → 7,272
32,000 → 26,432	24,000 → 19,824
40,000 → 30,040	32,000 → 24,032
24,000 → 16,392	48,000 → 32,784
16,000 → 9,936	32,000 → 19,872
Total = 136,000 → 104,616	Total = 144,000 → 103,784

Net Present Values

Machine A: $104,616 - 80,000 = \$24,616$ → **Will be preferred since NPV is higher.**

Machine B: $103,784 - 80,000 = \$23,784$