

Assignment

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Project Selection Problem :-

Solution:-

Given that full capacity = 2 cr. units per year

~~0th~~ year increase in
production = 20 lakhs
per year

life of project = 7 years

∴,

year	1	2	3	4	5	6	7
units (crores)	1	1.2	1.4	1.6	1.8	2	2

Capital investment = 1 crore

* Price = (units) (cost/unit)

for 1st year = ₹0.45 per unit

∴ for 1 cr. unit = 0.45 crore.

2nd year

for 1.2 cr. unit = 0.54 crore.

* Fixed cost

for 1st yr. = 0.25 crore

increment = 3%
after every year

(2)

$$\therefore \text{for 2}^{\text{nd}} \text{ year} = 0.25 + (0.25) \frac{3}{(100)}$$

$$= 0.2575 \text{ or.}$$

* Variable Cost :-

$$\text{for first year} = 0.15 \text{ rupees} \quad \left| \begin{array}{l} \text{constant (cost/unit)} \\ \text{every year.} \end{array} \right.$$

$$\begin{aligned} 2^{\text{nd}} \text{ year} &= (\text{units}) (\text{cost}) \\ &= (1.2) (0.15) \\ &= 0.18 \text{ rupees} \end{aligned}$$

$$* \text{ Profit} = \text{Price} - (\text{fixed cost} + \text{variable cost})$$

$$\begin{aligned} \text{for 1}^{\text{st}} \text{ year} &= 0.45 - (0.25 + 0.15) \\ &= 0.05 \end{aligned}$$

$$\begin{aligned} 2^{\text{nd}} \text{ year} &= 0.54 - (0.2575 + 0.18) \\ &= 0.1025 \end{aligned}$$

* Tax

$$\text{for 1}^{\text{st}} \text{ \& } 2^{\text{nd}} \text{ year} = 0 \quad (\text{Profit})$$

$$\text{for 3}^{\text{rd}} \text{ year} = \left(\frac{48}{100} \right) (0.1025) (\text{Profit} - \text{depreciation})$$

(3)

$$* \text{Net profit} = \text{Profit} - \text{Tax}$$

$$* \text{Depreciation} = 0.15$$

year	Units (acre)	Price (acres)	Fixed cost	Variable cost	Profit	Tax	Net Profit
1	1	0.45	0.25	0.15	0.05	0	0.05
2	1.2	0.54	0.2575	0.18	0.1025	0	0.1025
3	1.4	0.63	0.265225	0.21	0.154775	0.0022 920	0.1524830
4	1.6	0.72	0.27318195	0.24	0.206818	0.0568 1825 0.2727	0.1795454
5	1.8	0.81	0.281377	0.27	0.258623	0.05 2139	0.20648
6	2	0.90	0.289818	0.3	0.310181	0.0768 871	0.2332943
7	2	0.90	0.298513	0.3	0.301486	0.096 7137	0.2047732

* Salvage value

At the end of project

$$1 - (0.15 \times 6 + 0.1) = 0$$

(4)

* Net Present Value (NPV)

we know that

$$P.V. = (F.V.) \left(\frac{1}{(1+r)^n} \right)$$

$$[r = 0.18] \rightarrow \text{discount rate}$$
NPV \rightarrow

$$\begin{aligned} & \frac{0.05}{(1+0.18)^1} + \frac{0.1025}{(1+0.18)^2} + \frac{0.152483}{(1+0.18)^3} + \frac{0.179545}{(1+0.18)^4} \\ & + \frac{0.20648}{(1+0.18)^5} + \frac{0.2332943}{(1+0.18)^6} + \frac{0.2047732}{(1+0.18)^7} - 1 \end{aligned}$$

$$\therefore NPV = -0.457725$$

$$[NPV < 0]$$

\therefore Project cannot be acceptable.