

ADVANCED CAPITAL BUDGETING DECISIONS

CLASS 11

Topic Replacement Project

Question 1:

The Mayfair Rubber Industry Ltd. (MRIL) manufactures small rubbers components for the local markets. It is presently using 8 machines which were acquired three years ago at a cost of Rs. 18 lakhs each having a useful life of 8 years with no salvage value. The policy of the company is to depreciate all machines in 5 years. There production capacity is 37 lakhs unit while the annual demand is 30 lakhs units. The MRIL has received an order from a leading automobile company of Singapore for the supply of 20 lakh rubber bushes at Rs. 15 per unit. The existing machines can be sold @ Rs. 12 lakh per machine. It is estimated that the removal cost of each machine would be Rs. 60,000. In order to meet the increase demand, the MRIL can acquire 3 new machines at an estimated cost of Rs. 100 lakh each which will have a combine production capacity of 52 lakh units.

The operating parameters of the existing machine are as follow:

- i. Labour requirement (unskilled- 18; skilled- 18; supervisor-3; and maintenance – 2) and their per month salary are Rs. 3,500; Rs. 5,500; Rs. 6,500 and Rs. 5,000 each respectively with an increase of 10% to adjust inflation.
- ii. Raw material cost, inclusive of wastage is 60% of revenues.
- iii. Maintenance cost – years 1-5 (Rs 22.5 lakh) and years 6-8 (Rs. 67.5 lakh).
- iv. Operating expenses – Rs. 52.10 lakh expected to increase annually by 5%.
- v. Insurance cost/Premium – year 1,2% of the original cost of the machine, after wards discounted by 10%.
- vi. Selling price – Rs. 15 per unit.

The projected operating parameters with the replacement by the new machines are as follows:

- i. Additional working capital – Rs. 50 lakh.
- ii. Savings in cost of utility – Rs. 2.5 lakh.
- iii. Maintenance cost – years 1-2 (Rs. 7.5 lakh); years 3-5 (Rs. 37.5 lakh).
- iv. Raw material cost – 55% of sales.
- v. Employee requirement (6 skilled at monthly salary of Rs. 7000 each and one for maintenance at monthly salary of Rs 6500).
- vi. Laying of cost of 34 workers – (unskilled – 18; skilled – 12; supervisors – 3; and maintenance – 1) Rs 9,21,000 that is equivalent to six month salary.
- vii. Insurance cost /premium – 2% of the purchase cost of machines in the first year and discounted by 10% in subsequent years.
- viii. Life of machines – 5 years and salvage value – Rs. 10 lakh per machine.

The company follows straight line method of depreciation and the same is accepted for tax purpose. Corporate tax rate is 35% and the cost of capital is 20%.

As the Finance manager of MRIL, prepare a report for submission to the top management with your recommendation about the financial viability of the replacement of the existing machine.

(Source: ICAI)

ANSWER:

Incremental CFAT and NPV

(₹ in lakhs)

Particulars	1	2	3	4	5
Sales	300	300	300	300	300
Add: Cost Savings:					
Maintenance (note 2)	15	15	30	30	30
Cost of utilities	2.5	2.5	2.5	2.5	2.5
Labour Costs (note 3)	17.16	18.87	20.76	22.84	25.12
Less: Incremental cost					
Raw materials (note 4)	142.5	142.5	142.5	142.5	142.5
Depreciation (note 5)	25.2	25.2	54	54	54
Insurance (note 6)	4.12	3.71	3.34	3	2.71
Earning before Tax	163.04	165.16	153.42	155.84	158.76
Less: Taxes (0.35)	57.064	57.806	53.607	54.544	55.426
Earning after taxes	105.976	107.354	99.723	101.296	102.934
CFAT (EAT + Depreciation)	130.976	132.354	153.723	155.296	156.934
Salvage Value					30
Release of working capital					50
(x) PV factor at .20	0.833	0.694	0.579	0.482	0.402
PV	109.10	91.85	89.01	74.85	95.25
Total present value (t = 1- 5)					460.06
Less: cash Outflow					276.55
NPV					183.51

FINANCIAL ANALYSIS WHETHER TO REPLACE THE EXISTION MACHINES (USING NPV METHOD)

Incremental cash outflows:

Cost of 3 new machines (₹ 100 lakh × 3)	300,00,000
Additional working capital	50,00,000
Less: Sale proceeds of existing machines	96,00,000
Add: Removal cost of existing machines	4,80,000
Tax on profit on sale of machine (working note1)	11,76,000
Cost of layng off 34 workers (₹ 921000 tax advantage @ .35 i.e. to ₹ 3,22,350)	5,98,650
Incremental cash outflows	<u>2,76,54,650</u>

Working Notes

1. Tax on profit on sale of existing machine:

Sale proceeds of existing machine:		96,00,000
Less: Book value	(8 × 12,00,000) (₹ 18 lakh × 8 – Original Cost accumulated depreciation 28.80 × 3)	57,60,000
	Gross profit	38,40,000
Less: Removal Cost	(60,000 × 8)	4,80,000
	Net Profit	33,60,000
	Tax rate	0.35
	Taxes payable on profit	11,76,000

2. Saving in Maintenance cost:
(₹ in lakhs)

Year	1	2	3	4	5
Old Machine	22.5	22.5	67.5	67.5	67.5
New Machine	7.5	7.5	37.5	37.5	37.5
Saving in cost	15	15	30	30	30

3. Savings in Labour cost:

Existing labour cost			
Unskilled	(18 × ₹ 3,500 × 12 months)		7,56,000
Skilled	(18 × ₹ 5,500 × 12 months)		11,88,000
Supervisor	(3 × ₹ 6,500 × 12 months)		2,34,000
Maintenance	(2 × ₹ 5,000 × 12 months)		<u>1,20,000</u>
			22,98,000
Proposed labor cost			
Skilled	(6 × ₹ 7,000 × 12 months)		5,04,000
Maintenance	(1 × ₹ 6,500 × 12 months)		<u>78,000</u>
		Cost savings	<u>17,16,000</u>
Savings in subsequent years will increase by 10%			

4. Incremental cost of raw material:

Raw material required for old machine: (3000000 × ₹ 15 per unit × 0.60)	2,70,00,000
Raw material required for new machine (5000000 × ₹ 15 per unit × 0.55)	<u>4,12,50,000</u>
Additional raw material Cost	<u>1,42,50,000</u>

5. Incremental Depreciation:

(₹ in Lakhs)

Years	1 – 2	3 – 5
Depreciation (with new machine) (₹ 100 lakh × 3 – 10 × 3) / 5 years	54.00	54.00
Depreciation (with old machine) (₹ 18 lakh × 8/5 years)	28.80	-
Incremental Depreciation	25.20	54.00

6. Insurance:

(₹ in

lakhs)

Years	1	2	3	4	5
New Machine	6.00	5.40	4.86	4.37	3.94
Old Machine (Wrong Calculation)	1.88	1.69	1.52	1.37	1.23
Incremental Insurance	4.12	3.71	3.34	3.00	2.71

Question 2:

X Ltd. proposes to replace an old machine by a new machine. The old machine has a book value of Rs.40 lacs and can be immediately sold for Rs.70 lacs. If not sold today, it will have negligible salvage value at the end of 5 years from now. The new machine cost Rs. 200 lacs and has a life of 5 year at the end of which it is expected to have a salvage value of Rs.80 lacs. This replacement is expected to result in cost savings to the extent of Rs.42 lacs per year for 5 years. Depreciation @ 20% WDV, Tax rate =30% (applicable to Capital Gains also). Kc = 13%. Appraise the replacement project?

ANSWER:

Initial flow

Cost of the new machine = 200
 SV of the old machine = 70
 Book value of the machine = 40
 $\therefore$ Capital gain = 30
 Tax on CG (30% of 30) = 9
 $\therefore$ Post-tax SV of old machine = 61 (70-9)
 $\therefore$ Initial investment = 200 – 61
 = 139 lacs

Terminal flow

Particulars	New machine	Old machine (Had it not be replaced)
a. SV after 5 yrs	80	0
b. BV after 5 yrs	$200 \times (0.80)^5$	$40 \times (0.80)^5$
c. CG(Loss)	14.46	(13.11)
d. Tax / Tax shield	4.34 (tax)	3.93(T.shield)
e. Post-tax Sv	75.66	3.93

$\therefore$ Terminal flow = New- Old
 =75.66 – 3.93
 = 71.73 lacs

Project Cash Flows

	Particulars	0	1	2	3	4	5
(a)	Cost savings, i.e, EBITDA		42	42	42	42	42
(b)	incremental Depr. @20% on (200-40=160)		32	25.6(*0.8)	20.5	16.38	13.1
(c)	Incremental EBIT (1-t)		7	11.5	15.1	17.93	20.2
(d)	Initial flow	(139)					
(e)	Op. Flow(b+c)		39	37.1	35.5	34.31	33.3

(f)	Terminal flow						71.7
(g)	NCF	(139)	39	37.1	35.5	34.31	105
(h)	PV @ 13%	(139)	34.51	29	24.6	21.04	57
		NPV = 27.24 Lacs.					