8. Investment Projects. Criteria for Capital Budgeting

Problem 43

The Myears Paint Company currently manufactures paint with a machine that cost $100,000 five years ago and that is being depreciated (straight line) to a salvage value of $0 five years from today. The raw materials for a gallon of paint cost $12,00, and the sales price is $20,00 per gallon. Myears Paint Company sells 25,000 gallons per year. Moni Levinska, new manager, estimates that Myears Paint Company can sell 20% more paint if she replaces the current machine with the new one that produces a higher-quality paint at the same cost. The new machine will cost $150,000 and be depreciated (straight line) to a value of $0 five years from today. Marginal tax rate is 40%.

(a) What is annual operating cashflow from operations with the current machine ?

(b) What will annual operating cash flow from operations be with the
     new machine ?

(c) Find the incremental change in the annual cash flow from operations if the
     old machine is replaced.

Solution

	(a)	(b)	(c)
Sales	500 000	600 000	100 000
Materials	300 000	360 000	60 000
Depreciation	10 000	30 000	20 000
EBIT	190 000	210 000	20 000
Income Tax	76 000	84 000	8 000
Net Income	114 000	126 000	12 000
Depreciation	10 000	30 000	20 000
CFAT	124 000	156 000	32 000

Problem 44

The Myears Paint Company is thinking of replacing an old machine that produces paint.
The existing machine cost $100,000 three years ago and is being depreciated (straight line)
to a salvage value of $0 seven years from now. It can be sold today for $60,000.
The new machine will cost $150,000 and be depreciated (straight line) to a value of $0
five years from now. The cost of training employees to use the new machine
will be $10,000, and installation costs for the new machine will be $6,000.
Finally, the new machine will require an increase in working capital of
$20,000. Tax rate is 25%.
(a) Find the book value of the old machine.
(b) Find the net initial outlay associated with replacing the old machine.

Solution

Depreciation old	10 000
BV of old machine	70 000

Direct CF

Purchase price	-150 000		
Installation	-6 000	Depreciable Base	-156 000
Training costs	-7 500		
Total direct CF	-163 500		

Indirect CF

		MV of old machine	60 000
MV of old machine	60 000	BV of old machine	-70 000
Tax Savings	2 500	Loss	-10 000
Net working capital	-20 000		
Total Indirect CF	42 500		

Total Initiat CFAT	-121 000

Problem 45

Susan Fish is thinking of importing lobsters to sell to restaurants and spe-
cialty stores. She estimates that this venture will require an initial outlay of
 $200,000 to buy a refrigerated storage unit that can be depreciated (straight
line) to a salvage value of $20,000 in eight years. In addition, she estimates
that she will need $25,000 in working capital during the eight years of the project.
Annual sales are estimated to be $100,000 and annual expenses, $50,000.
Marginal tax rate is 20%.
(a) What is initial outlay associated with opening up the importing business ?
(b) What is the annual cash flow from operations ?
(c) What will be the terminal cash flow in year 8 ?
(d) What is the payback period for this project ?
(e) What is the accounting rate of return of this project ?
(f) If she requires a 15% to make this investment
    what is the project's net present value ? What is the profitablility index ?
(g) What is the project internal rate of return ?

Solution

(a)   **Initial cash flows**
          Investment costs   -225,000

(b)   **Operating cash flows**

		Sensitivity analysis		
Sales	100,000			
Expenses	-50,000	Δ prices	NPV	IRR
Depreciation	-22,500		-10,604	13,7%
EBIT	27,500	-30,0%	-118,299	-1,4%
Tax	5,500	-20,0%	-82,401	4,0%
Net income	22,000	-10,0%	-46,502	9,0%
Depreciation	22,500	0,0%	-10,604	13,7%
CFAT	44,500	10,0%	25,295	18,1%

(c)   **Terminal cash flows**

Salvage value	20,000	20,0%	61,194	22,5%
Recovery of NWC	25,000	30,0%	97,092	26,7%
	45,000			

(d)   Payback period = Investment costs / ΔCFAT   5,056 =225/52.5
(e)   AROR=net income/(investment costs +final value)/2   16,30%
(f)

0	1	2	3	4	5	6	7	8
-225,000	44,500	44,500	44,500	44,500	44,500	44,500	44,500	89,500

          NPV =   -10,604 Excel function   NPV(12%, c48:k48)(1+12%)
          PI=   0,95 (Investment costs + NPV) / Investment costs
(g)   IRR=   13,66%