COMPREHENSIVE CASES

CHAPTER 5

Cash Flow Statement

LINK LEVER LIMITED

(Cash Flow Statement) Link Lever Limited is a medium sized enterprise, specialising in manufacturing of industrial locks, fasteners, fixers and holdfasts. The company began its journey from Gorakhpur in Eastern UP in 2002. It was co-founded by two friends – Arunashu Pal and Tamal Bose. They started making small locks for residential purposes which were sold in the local markets of Eastern UP The locks were fairly successful as they were priced competitively and soon became popular amongst the people.

Buoyed up by their success, the owners decided to expand operations. From 5-worker organisation, working in a garage, they went on to become a 50-member strong company working out of a small unit in Kanpur and catering to the markets of UP within a year of operation. For financing their expansion, the owners took a loan from the State Bank of India and got their company registered as Pal and Bose Ltd.

By 2004-end, the Pal and Bose (PB) Ltd. had become brand name in UP and was manufacturing fasteners, fixers and holdfasts apart from locks, which also were available for various purposes from residential needs to industrial requirements.

Arunashu Pal, CEO of PB Ltd. had seen huge market potential for PB Ltd and was already planning ahead. He planned for opening up of a modern manufacturing plant oustside UP, say, in Jharkhand or Madhya Pradesh, so that he could expand business and create a brand name which would be recognisable throughout India. Tamal Boase, the Joint CEO, was also enthusiastic about the growth of PB Ltd. and wished to diversify into more areas like automobile locks, electronically operated locking mechanism and surveillance security systems.

To meet the additional fund requirements to (1) open up the proposed new plant outside UP (2) buy modern machinery (3) train employees (4) advertise to crate brand awareness and (5) license advanced technology from foreign collaborators, the management of PB Ltd. decided to take additional loan from the State Bank of India, having already paid the past loan.

The manager of the State Bank of India, Kanpur Green Park Branch, Mr. Kuber Chand, visited the premises of PB Ltd. and undertook a detailed appraisal to ascertain its credit worthiness. After his satisfaction with the processes of the plant, he asked for the balance sheet, income statement and the cash flow statement as per AS-3. He assured the two promoters that once the bank received all these documents in proper form, they would process the loan application quickly.

However, as things were looking bright and rosy for PB Ltd. and it was at the threshold of a massive expansion, a mishap took place. A fire broke out at PB Ltd's manufacturing unit at Kanpur. Some important documents were lost as the fire engulfed the administrative block. The debtors' ledger and the stock ledger were completely destroyed in the fire.

On instructions from the CEO of PB Ltd., Alok Mehta, the CFO, prepared from the available records an incomplete balance sheet as shown in Exhibit 1 and additional information (Exhibit 2).

EXHIBIT 1 Incomplete Balance Sheet (Rs '000)

Particulars	*Year 2*	*Year 1*
Long-term Assets:		
Plant and machinery (net of depreciation)	8,211	2,260
Land and buildings	1,950	2,000
Long term investments	720	720
Current Assets:		
Marketable securities	4,550	230
Sundry debtors	*	*
Inventories	*	*
Prepaid expenses	100	50
Interest receivable	150	100
Cash in hand	1,620	730
Cash at bank	971	600
Total Assets	*	*
Long-term Liabilities:		
Share capital	3,580	2,750
Preference share capital	1,000	1,200
Reserves and surplus	7,951	2,210
18% Convertible debentures	1,905	2,230
Current Liabilities:		
Sundry creditors	680	890
Wages outstanding	85	55
Income tax payable	600	680
Total Liabilities	15,801	10,015

EXHIBIT 2 Additional Information

1. Debentureholders holding 25 per cent of the debentures outstanding as on 31st March, Year 1 exercised the option for conversion into equity shares during the financial year and the same was put through.
2. Only one plant was sold during the year for Rs 1,00,000. The original cost of the machine was Rs 6,00,000.
3. During Year 2, interim dividend of Rs 2,00,000 was paid, final dividend paid being Rs 3,00,000.
4. Preference share redemption was carried out at a premium of 8 per cent.
5. Accumulated depreciation on plant and machinery at the end of Year 2 was Rs 10,20,000 and at the end of Year 2 was Rs 11,90,000.
6. The current ratio at the end of Year 1 and Year 2 was 3.098462 and 3.604396.
7. The quick ratio at the end of Year 1 and Year 2 was 3.015 and 3.443.

Required From the above information, prepare (a) income statement for Year 2, (b) reconstructed balance sheet for Years 1 – 2 and (c) AS-3 - based cash flow statement. Show the detailed computations in Working Notes.

Solution

The income statement for Year 2, the reconstructed balance sheet, the cashflow statement and the working notes are shown in Exhibit 3 to 6.

EXHIBIT 3 Income Statement for Year 2 (Rs '000)

Sales	53,250
Less: Cost of goods sold	(42,300)
Add: Gain on sale of plant	20
Gross profit	10,970
Less: depreciation	
Plant and machinery	(690)
Land and building	(50)
Selling and administration expenses	(3,210)
Interest paid	(343)
Add: Interest income	100
Dividend income (gross)	135
Net profit before extraordinary items	6,912
Less: Provision for income tax[@]	(680)
Net profit after taxes	6,232

[@]Tax deducted at source on dividends received (included in provision for taxes amounts to Rs 25,000.

EXHIBIT 4 Reconstructed Balance Sheet (Rs '000)

Particulars	*Year 1*	*Year 2*
Long-term Assets:		
Plant and machinery (net of depreciation)	8,211	2,260
Land and buildings	1,950	2,000
Long term investments	720	720
Current Assets:		
Marketable securities	4,550	230
Sundry debtors	2,820	3,240
Inventories	120	85
Prepaid expenses	100	50
Interest receivable	150	100
Cash in hand	1,620	730
Cash at bank	971	600
Total	15,801	10,015
Long-term Liabilities:		
Share capital	3,580	2,750
Preference share capital	1,000	1,200
Reserves and surplus	7,951	2,210
18% convertible debentures	1,905	2,230
Current Liabilities:		
Sundry creditors	680	890
Wages outstanding	85	55
Income tax payable	600	680
Total	15,801	10,015

EXHIBIT 5 Cash Flow Statement

Particulars	*Amount (Rs '000)*
Cash Flows From Operating Activities:	
Cash receipts from customers	53,670
Cash paid to suppliers and employees	(45,775)
Cash generated from operations	7,895
Income taxes paid	(760)
Net cash from operating activities	7,135
Cash Flows From Investing Activities:	
Purchase of plant and machinery	(6,721)
Proceeds from sale of plant	100
Interest received	100
Dividend received	110
Net cash from investing activities	(6,411)
Cash Flows From Financing Activities:	
Proceeds from issuance of equity share capital	272
Proceeds from issuance of debentures	232
Redemption of preference shares	(216)
Interest paid	(343)
Dividends paid	(500)
Net cash from financing activities	(554)
Net increase in cash and cash equivalents	170
Cash and cash equivalents at the beginning of the year	1,560
Cash and cash equivalents at the end of the year	1,730

EXHIBIT 6 Working Notes (Amount Rs '000)

1. Calculation of Sundry Debtors and Inventories:
   Current assets (year 2) = Current liabilities (year 2) × Current ratio = 4,920
   Sundry debtors + Inventories = 4,920 – 1,980 = 2,940
   Quick assets (year 2) = Current liabilities (year 2) × Quick ratio = 4,700
   Inventories + Prepaid expenses = CA – Quick assets = 220
   Inventories = 220 – 100 = 120
   (i) Hence, Sundry debtors = 2,940 – 120 = 2,820
   Current assets (year 1 – Current liabilities (year 1) × Current ratio = 5,305
   Sundry debtors + Inventories = 5,035 – 1,710 = 3,325
   Quick assets (year 1) = Current liabilities (year 1) × Quick ratio = 4,900
   Inventories + Prepaid expenses = CA – Quick assets = 135
   Inventories = 135 – 50 = 85
   (ii) Hence, Sundry debtors = 3,325 – 85 = 3,240
2. Calculation of Depreciation:
   Opening balance + Depreciation charged during the year - Accumulated depreciation of sold plant = Closing balance
   1,120 + Depreciation charged during the year – 520 = 1,190
   Hence, depreciation charged during the year = 690
3. Cash Receipts From Customers:

Debtors at the beginning of year	3,240
Add: Net sales during the year	53,250

Less: Debtors at the end of year	(2,820)
Total	53,670
4. Cash Paid to Suppliers and Employees	
Cost of goods sold	42,300
Add: Selling and administrative expenses	3,210
Add: Current year prepaid expenses	100
Less: Previous year prepaid expenses	(50)
Add: Creditors at the beginning of the year	890
Less: Creditors at the end of the year	(680)
Add: Inventories at the end of the year	120
Less: Inventories at the beginning of the year	(85)
Add: Wages payable at the beginning of the year	55
Less: Wages payable at the end of the year	(85)
Total	45,775
5. Income Tax Paid:	
Income tax for Year 2	680
Add: Income tax liability at the beginning of Year 2	680
Less: Income tax liability at the end of Year 2	(600)
Total	760
6. Purchase of Plant and Machinery	
Gross block at end of the year	9,401
Less: Gross block at beginning of the year	(3,280)
Add: Original value of plant sold	600
Total	6,721
7. Proceeds From Issuance of Equity Share Capital:	
Equity capital at the end of year	3,580
Less: Equity capital at beginning of the year	(2,750)
Less: Debentures converted into equity	(558)
Total	272
8. Proceeds From Issuance of Debentures:	
Debenture at the end of the year	1,905
Less: Debentures at beginning of the year	(2,230)
Add: Debenture converted into equity shares	558
Total	233
9. Redemption of Preference Share at 8% Premium	
Cash outflow due to redemption = 200 $\times$ 1.08 = 216.	

CHAPTER 7

Volume-Cost-Profit Analysis

THANDAK DESERT COOLERS

Mr Coolguy of 'Thandak' desert coolers enjoys a monopoly in his local market catering to around 10,000 customers every year. His friend Mr Imandar Singh of 'Zordar' pumps supplies him good quality pumps at very reasonable rates (Rs 400 per pump). The year 2003 was not a good year for Mr. Coolguy. He lost his good friend Mr Imandar in a road accident. He also lost most of his savings in share market scam. The Sun God did not bless him with a hot summer and the sales were expected to fall by 20 per cent. To make the matter worse, the new head of 'Zordar' pumps, Mr Opportunist Singh increased the price of pumps by 30 per cent.

Mr Coolguy asked his chief accountant, Mr Calculator Singh, to show the current financial data and the projected financial data if the supply from Zordar pumps were to be maintained. Mr Calculator Singh came out with the following reports.

Cost Data

The cost data is divided into two parts: fixed cost and variable cost. The fixed and the variable components of the mixed costs are separated. The variable costs are divided into three major categories: direct material cost, direct labour costs and the variable overheads. The division of all the cost data is tabulated, for 10,000 units as well as 8,000 units, as follows:

(I) Present Scenario (10,000 units)

Item	*Fixed cost*	*Variable cost and expenses*		
		Direct material	*Direct labour*	*Variable overheads*
Labour	Rs 12,10,000		Rs 20,00,000	
Steel sheets		Rs 60,00,000		
Electricity	35,000			Rs 1,00,000
Depreciation	15,06,620			
Pumps (@ 400 per unit)		40,00,000		
Khus		9,00,000		
Tubes		5,00,000		
Wires		50,000		
Fan		14,50,000		
Telephone	4,580			4,60,000
Rent (office)	1,20,000			
Office expenses	22,000			3,46,000
Bank charges	18,000			
Insurance	35,000			
Repair and maintenance	25,000			2,40,000
Recruitment				64,000
Travel				3,80,000
Conveyance	16,800			1,90,000
Post, courier and parcel	7,000			1,70,000
Miscellaneous				1,50,000
Total	30,00,000	129,00,000	20,00,000	21,00,000

(II) Future Scenario If Pumps Are Bought From Zordar Pumps (8,000 units)

Item	*Fixed cost*	*Variable cost and expenses*		
		Direct material	*Direct labour*	*Variable overheads*
Labour	Rs 12,10,000		Rs 16,00,000	
Steel sheets		Rs 48,00,000		
Electricity	35,000			Rs 80,000
Depreciation	15,06,620			
Pumps (@ 520 per unit)		41,60,000		
Khus		7,20,000		
Tubes		4,00,000		
Wires		40,000		
Fan		11,60,000		
Telephone	4,580			3,68,000
Rent (office)	1,20,000			
Office expenses	22,000			3,46,000
Bank charges	18,000			
Insurance	35,000			
Repair and maintenance	25,000			2,76,800
Recruitment				51,200
Travel				3,04,000
Conveyance	16,800			1,52,000
Post, courier and parcel	7,000			1,36,000
Miscellaneous				1,20,000
Total	30,00,000	112,80,000	16,00,000	18,34,000

(III) Comparative Analysis of Both Scenarios

Item	*10,000 units*	*8,000 units*
Sales revenue @ Rs 2,500 per unit	Rs 250,00,000	Rs 200,00,000
Less: Variable costs		
Direct material	129,00,000	112,80,000
Direct labour	20,00,000	16,00,000
Variable overheads	21,00,000	18,34,000
Total contribution	80,00,000	52,86,000
Less: Total fixed costs	30,00,000	30,00,000
Operating profits	50,00,000	22,86,000

After going through the report Mr Coolguy realised that his profits would drop by Rs 27.14 lakh if he continued to purchase pumps from Zordar pumps and sales drop to 8,000 units. Since there were no other pump manufacturers in the market, the only alternative for Mr Coolguy was to manufacture the pumps indigenously. But he had lost most of his money and for manufacturing pumps he needed to expand his factory and purchase a new machinery (overall Rs 5 lakh more was needed). Raw material for pumps would be needed which would cost Rs 300 per unit. Additional labour would be required to make the pumps, thus increasing the labour costs to Rs 250 per unit. The making of pumps would also draw more electricity etc. thereby increasing the variable overhead costs. The banks were not willing to finance him. Mr Lalchi Singh, the loan shark, saw opportunity to make money and offered to loan money to Mr Coolguy for a period of one year at the rate of more than 20 per cent, the loan to be paid in two instalments of, Rs 3 lakh each, the first one is to be made in the first six months and the second instalment at the end of the year. The interest would be paid at the end of the year. If Mr Coolguy fails to pay

back the interest and the principal on the due date, Mr Lalchi would be entitled to auction off the factory and get back his sum. Mr Coolguy now has to decide whether to accept the offer or not.

Mr Coolguy asked Mr Calculator to find out the implications of the above mentioned factors on the profits and whether he would be able to satisfy Mr Lalchi's conditions. Mr Calculator came out with the following reports:

(IV) Cost if Loan Is Taken For Production of Pumps

Item	*Fixed cost*	*Variable cost and expenses*		
		Direct material	*Direct labour*	*Variable overheads*
Labour	Rs 12,10,000		Rs 20,00,000	
Steel sheets		Rs 48,00,000		
Electricity	35,000			Rs 360,000
Depreciation	15,06,620			
Khus		7,20,000		
Tubes		4,00,000		
Wires		40,000		
Fan		11,60,000		
Telephone	4,580			3,68,000
Rent (office)	1,20,000			
Office expenses	22,000			3,46,000
Bank charges	18,000			
Insurance	35,000			
Repair and maintenance	25,000			2,76,800
Recruitment				51,200
Travel				3,04,000
Conveyance	16,800			1,52,000
Post, courier and parcel	7,000			1,36,000
Machinery	5,00,000			
Miscellaneous				1,20,000
Pump shaft		800,000		
Pump wires		400,000		
Pump cylinder		10,00,000		
Lubrication and insulation		200,000		
Total	3500,000	95,20,000	20,00,000	21,14,000

(V) Projected Profit When Pumps Are Produced

Sales revenue @ Rs 2,500 per unit (8,000 units)	Rs 200,00,000
Less: Variable costs	
Direct material	95,20,000
Direct labour	20,00,000
Variable overheads	21,14,000
Total contribution	63,66,000
Less: Fixed costs	35,00,000
Operating profit	28,66,000
Less: Interest + Principal	6,00,000
EBT	22,20,000

Contribution per unit = Rs 63,66,000/ 8,000 = Rs 795.75
BEP (units) = Total fixed cost/contribution margin per unit
= Rs 41,00,000/795.75 = 5152 units
Attributing no fixed cost in the first six months so as to pay the first instalment comfortably:
Number of units to be sold in the first six months = Rs 300,000/contribution margin per unit
= Rs 300,000/Rs 795.75 = 377 units
Number of units to be sold in the next six months = Rs 38,00,000/Rs 795.75 = 4,775 units
Attributing half the fixed costs in the first six months:
Number of units to be sold in the first six months = Rs 20,50,000/Rs 795.75 = 2,576 units
Number of units to be sold in the next six months = Rs 20,50,000/Rs 795.75 = 2,576 units

Mr Calculator's Inference:

Manufacturing pumps indigenously would eat away the profits by another Rs 66,000. There is also an inherent risk of default of the first instalment to Mr Lalchi as it would not be possible to sell even 377 units in the off season. There is no reason why Mr Coolguy should go ahead with the idea of indigenous pumps.

After seeing the income statement and break-even analysis, Mr Coolguy decided not to take the loan but since his son, Mr Cooldude (doing MBA from IIT Delhi) had come home for a few days. He thought it wise to take his opinion too.

Cooldude came up with a radically different opinion. He suggested that since the machinery was meant for long-term use, it would not be prudent to charge its cost in the current year itself. It would be better to amortise the cost over a period of five years. He suggested to amortise Rs 1 lakh per year (assuming no sale value at the end of 5 years). This gave a different picture altogether.

(VI) Cost Estimate (Revised)

Item	*Fixed cost*	*Variable cost and expenses for 8,000 units*		
		Direct material	*Direct labour*	*Variable overhead*
Labour	Rs 12,10,000		Rs 20,00,000	
Steel sheets		Rs 48,00,000		
Electricity	35,000			Rs 360,000
Depreciation	15,06,620			
Khus		7,20,000		
Tubes		4,00,000		
Wires		40,000		
Fan		11,60,000		
Telephone	4,580			3,68,000
Rent (office)	1,20,000			
Office expenses	22,000			3,46,000
Bank charges	18,000			
Insurance	35,000			
Repair and maintenance	25,000			2,76,800
Recruitment				51,200
Travel				3,04,000
Conveyance	16,800			1,52,000
Post, courier and parcel	7,000			1,36,000
Miscellaneous				1,20,000
Depreciation on machinery	100,000			

(Contd.)

(Contd.)

Interest	1,00,000			
Pump shaft		800,000		
Pump wires		400,000		
Pump cylinder		10,00,000		
Lubrication and insulation		200,000		
Total	32,00,000	95,20,000	20,00,000	21,14,000

(VII) Projected Profits (Revised)

Sales revenue @ Rs 2,500 per unit	Rs 200,00,000
Less: Variable costs	
Direct material	96,00,000
Direct labour	20,00,000
Variable overheads	20,34,000
Total contribution	63,66,000
Less: Fixed costs	32,00,000
EBIT	31,66,000

Cooldude then explained his father that charging the entire cost of the machine in the current year leads to the reduction in profits of the current year. Such purchases (capital expenditures) should be amortised over a period of time. Besides, payment of loan is not an expense. It is expense only to the extent of interest paid. Thus, what seemed to be a decrease in profit by Rs 66,000 was actually an increase by Rs 8,80,000.

At this juncture, Mr Coolguy became very enthusiastic about taking the loan. Cooldude then warned his father that Mr. Lalchi might have set up a trap for him as it was the beginning of February. Generally, desert coolers are not bought in these months. It would be difficult to sell even a modest target of 377 units (not taking the fixed costs into account in the first six months) in these months. However, by offering heavy off-season discount (up to 20 per cent) the sales can be pushed up significantly. Proper advertising should be done so as to inform the people that the discount would be available only for a short-term. As Thandak has a monopoly in the region, the people would like to cash on this opportunity, and the sales would go up. The discount should be discontinued as soon as the cash position (with respect to the first payment of instalment) is reached.

New selling price = Rs 2,000

Revise contribution per unit = Rs 295.75

Rs 300,000/Rs 295.75 = 1,014 units.

As soon as 1,014 units are sold the discount should be discontinued.

(VIII) Projected Profits With Change in Selling Price

Total contribution = 1,014* Rs 295.75 + (8,000 – 1014)* Rs 795.75	Rs 58,59,000
Less: Fixed costs	32,00,000
EBIT	26,59,000

Thus, the proposition of Mr Lalchi is not devoid of connivance. In order to pay the first instalment of Rs 3 lakh to Mr Lalchi, Mr Coolguy would have to forego a substantial profit.

Recommendation

- Mr Coolguy should not take the loan this year.
- A mild summer one year is usually a harbinger of a scorching summer in the following year, in the city of Mr Coolguy. The demand for desert coolers is likely to shoot up the next year. It would not be prudent then to keep up purchasing pumps from Mr Opportunity Singh.
- Investment for making pumps should me made next year's winter from the profits of this year's summer.

CHAPTER 8

Budgeting and Profit Planning

SOUND FUTURE COMMUNICATIONS LIMITED

Sound Future Communications Limited (SFCL) is planning profit for the current year. The Chairman and Managing Director of the Company, Mr Wise has asked the Accounts and Finance Department to prepare the budget outlining the implications of achieving the profit goal of Rs 7 lakh. The Budgeting Department has compiled the information related to its operating and financing activities as detailed in schedules I to VIII.

I. **Balance Sheet as at March 31 of the Current Year**

Liabilities	*Amount*	*Assets*		*Amount*
Share capital	Rs 31,77,428	Fixed assets	Rs 48,00,000	
Retained earnings	18,96,400	*Less:* Accumulated		
Creditors	44,000	depreciation	(12,00,000)	Rs 36,00,000
Taxes payable	74,000	Inventories:		
		Direct materials	1,35,828	
		Finished goods	1,60,000	2,95,828
		Debtors	11,20,000	
		Less: Provision for		
		bad debts	(64,000)	10,56,000
		Cash		2,40,000
	51,91,828			51,91,828

Notes: (i) Debtors include Rs 1,60,000 from the third quarter sales of Rs 20,00,000 and Rs 9,60,000 from fourth quarter sales of Rs 12,00,000; (ii) Direct materials include 6,300 kgs of material A @ Rs 5.88 per kg and 12,600 kgs of material B @ Rs 7.84 per kg; and (iii) Finished goods include 4,000 units @ Rs 40 per unit.

II. *Budget assumptions*

(i) Selling price, Rs 60 per unit

(ii) Quarterly sales forecast (units)

Quarter	*Next year*	*Year following next year*
First	20,000	30,000
Second	30,000	
Third	40,000	
Fourth	20,000	

III. *Inventory policy*

— Finished goods: 20 per cent of the following quarter's requirements at the end of each quarter.

— Raw materials: 30 per cent of the following quarter's requirements at the end of each quarter.

— The firm wishes to have 9,200 kgs of each type of direct material on hand at March 31 of the next year.

IV. *Manufacturing cost per unit*

Direct materials:		
1 kg of A @ Rs 5.88	Rs 5.88	
2 kgs of B @ Rs 7.84	15.68	Rs 21.56
Direct labour: 0.5 × direct labour-hour @ Rs 8		4.00

(*Contd*)

(*Contd*)

Overheads:		
Variable (0.5 × direct labour-hour @ Rs 12)	6.00	
Fixed (Rs 8,44,000 per year/Normal level of activity, 1,00,000 units)	8.44	14.44
Total		40.00

The quarterly fixed manufacturing costs of Rs 2,11,000 include depreciation totaling Rs 50,000. All production variances are written off as an adjustment to the cost of goods sold in the period in which they occurred. The firm follows absorption costing method for income determination.

V. *Selling and administrative costs*:

Commission and distribution, Rs 6 per unit sold
Advertising, Rs 10,000 per quarter
Administrative, Rs 20,000 per quarter.

VI. *Cash disbursement policy*: Raw materials are purchased on terms of 2/10, net/30. Discount is always taken and purchases are recorded at net; 90 per cent of the purchases are paid for in the quarter of purchase and remainder are paid for in the following quarter. The list prices of materials A and B are Rs 6 per kg and Rs 8 per kg respectively. With the exception of income taxes, which are paid during the following quarter, all other payments are made when incurred.

VII. *Cash collection experience*: 20 per cent sales are for cash and 80 per cent are on credit. The terms of sales are 2/10, net/60 days. However, for payments, the sales are billed to customers on the first day of the following quarter; 50 per cent of the credit sales are collected during the discount period and another 40 per cent are received after the discount period but during the quarter in which the billing is done; 7.5 per cent are received during the following quarter and 2.5 per cent are bad debts. These accounts are written off at the end of the 2nd quarter following the sales. A provision of 2 per cent of sales is made for bad debts at the time of sales. Sales discounts are recorded as a deduction from sales in the quarter the discounts are taken. Based on prior experience, this deduction equals 0.8 per cent of the previous quarter's sales (0.8 × 0.5 × 0.02).

VIII. *Other information:*

—Income tax rate is 50 per cent.
—Cash dividends amount to Rs 80,000 at the end of quarter 2 and quarter 4.
—At the end of the 4th quarter, equipment costing Rs 6,00,000 was purchased.

Prepare a comprehensive, quarter-wise, budget to show the projected income of SFCL for the year.

Solution

Quarter-wise Sales Forecast Schedule

Quarter	*First*	*Second*	*Third*	*Fourth*	*Total*
Units sales	20,000	30,000	40,000	20,000	1,10,000
Unit sale price	× Rs 60	× Rs 60	× Rs 60	× Rs 60	× Rs 60
Sales revenue	12,00,000	18,00,000	24,00,000	12,00,000	66,00,000

Production Budget (Units)

Quarter	*First*	*Second*	*Third*	*Fourth*	*Total*
Sales	20,000	30,000	40,000	20,000	1,10,000
Add: Desired closing inventory (0.20 × next quarter)	6,000	8,000	4,000	6,000	6,000
Total finished goods requirement	26,000	38,000	44,000	26,000	1,16,000
Less: Opening Inventory	4,000	6,000	8,000	4,000	4,000
Required production	22,000	32,000	36,000	22,000	1,12,000

Quarterly Manufacturing Cost Budget

Quarter	*First*	*Second*	*Third*	*Fourth*	*Total*
Required production (units)	22,000	32,000	36,000	22,000	1,12,000
Variable costs:					
A (Rs 5.88 per unit)	Rs 1,29,360	Rs 1,88,160	Rs 2,11,680	Rs 1,29,360	Rs 6,58,560
B (Rs 15.68 per unit)	3,44,960	5,01,760	5,64,480	3,44,960	17,56,160
Direct labour (Rs 4 per unit)	88,000	1,28,000	1,44,000	88,000	4,48,000
Overheads (Rs 6 per unit)	1,32,000	1,92,000	2,16,000	1,32,000	6,72,000
	6,94,320	10,09,920	11,36,160	6,94,320	35,34,720
Fixed costs:					
Depreciation	50,000	50,000	50,000	50,000	2,00,000
Other overheads	1,61,000	1,61,000	1,61,000	1,61,000	6,44,000
	2,11,000	2,11,000	2,11,000	2,11,000	8,44,000
Total costs	9,05,000	12,20,920	13,47,160	9,05,320	43,78,720
Budgeted fixed costs	2,11,000	2,11,000	2,11,000	2,11,000	8,44,000
Less: Fixed costs charged (@Rs 8.44 per unit)	1,85,680	2,70,080	3,03,840	1,85,680	9,45,280
Capacity variance	25,320 (Unfavourable)*	59,080 (Favourable)**	92,840 (Favourable)	25,320 (Unfavourable)	1,01,280 (Favourable)

*Under-recovery/under-absorption of fixed costs;
**Over-recovery/over-absorption of fixed costs.

Quarterly Purchase Budget of Raw Materials

Quarter	*First*	*Second*	*Third*	*Fourth*	*Total*
Material (A):					
Production requirement (in units)	22,000	32,000	36,000	22,000	1,12,000
Raw material required @ 1 kg per unit	22,000	32,000	36,000	22,000	1,12,000
Add: Desired ending inventory (30 per cent of the next quarter's requirement)	9,600	10,800	6,600	9,200	9,200
Total requirement	31,600	42,800	42,600	31,200	1,21,200
Less: Opening inventory	6,300	9,600	10,800	6,600	6,300
Purchase requirement (kgs)	25,300	33,200	31,800	24,600	1,14,900
Purchase cost (@ Rs 5.88 per kg)	Rs 1,48,764	Rs 1,95,216	Rs 1,86,984	Rs 1,44,648	Rs 6,75,612
Material (B):					
Raw material required @ 2 kg per unit)	44,000	64,000	72,000	44,000	2,24,000
Add: Desired ending inventory (30 per cent of the next quarter's requirement)	19,200	21,600	13,200	9,200	9,200
Total requirements	63,200	85,600	85,200	53,200	2,33,200
Less: Opening inventory	12,600	19,200	21,600	13,200	12,600
Purchase requirement (kgs)	50,600	66,400	63,600	40,000	2,20,600
Purchase cost (@ Rs 7.84 per kg)	Rs 3,96,704	Rs 5,20,576	Rs 4,98,624	Rs 3,13,600	Rs 17,29,504
Total purchase cost **(A + B)**	5,45,468	7,15,792	6,85,608	4,58,248	24,05,116

Quarterly Selling and Administrative Expenses Budget

Quarter		*First*	*Second*	*Third*	*Fourth*	*Total*
Units sales	20,000		30,000	40,000	20,000	1,10,000
Variable costs:						
Commission and distribution						
(Rs 6 per unit)	Rs 1,20,000		Rs 1,80,000	Rs 2,40,000	Rs 1,20,000	Rs 6,60,000
Fixed costs:						
Advertising	10,000		10,000	10,000	10,000	40,000
Administrative	20,000		20,000	20,000	20,000	80,000
	30,000		30,000	30,000	30,000	1,20,000
Total	1,50,000		2,10,000	2,70,000	1,50,000	7,80,000

Qarterly Budgeted Income Statement (Absorption Costing)

Quarter	*First*	*Second*	*Third*	*Fourth*	*Total*
Sales revenue	Rs 12,00,000	Rs 18,00,000	Rs 24,00,000	Rs 12,00,000	Rs 66,00,000
Less: Provision for bad and doubtful debts (0.02 × sales)	24,000	36,000	48,000	24,000	1,32,000
Less: Sales discount (0.8 × previous quarter's sales)	9,600	9,600	14,400	19,200	52,800
Net sales	11,66,400	17,54,400	23,37,600	11,56,800	64,15,200
Less: Cost of goods sold (@ Rs 40 per unit)	8,00,000	12,00,000	16,00,000	8,00,000	44,00,000
Gross margin (unadjusted)	3,66,400	5,54,400	7,37,600	3,56,800	20,15,200
Add: Capacity variance favourable					
Less: Unfavourable	(25,320)	59,080	92,840	(25,320)	1,01,280
Gross margin (adjusted)	3,41,080	6,13,480	8,30,440	3,31,480	21,16,480
Less: Selling and administrative costs	1,50,000	2,10,000	2,70,000	1,50,000	7,80,000
Earnings before taxes	1,91,080	4,03,480	5,60,440	1,81,480	13,36,480
Less: Taxes (0.50)	95,540	2,01,740	2,80,220	90,740	6,68,240
Earnings after taxes	95,540	2,01,740	2,80,220	90,740	6,68,240

Quarterly Budgeted Statement of Retained Earnings

Quarter	*First*	*Second*	*Third*	*Fourth*	*Total*
Opening balance	Rs 18,96,400	Rs 19,91,940	Rs 21,13,680	Rs 23,93,900	Rs 18,96,400
Add: Earnings after taxes	95,540	2,01,740	2,80,220	90,740	6,68,240
Closing balance	19,91,940	21,93,680	23,93,900	24,84,640	25,64,640
Less: Dividends paid	—	80,000	—	80,000	1,60,640
Closing balance	19,91,940	21,13,680	23,93,900	24,04,640	24,04,640

Quarterly Schedule Relating to Collection from Debtors

Quarter	*First*	*Second*	*Third*	*Fourth*	*Total*
Opening balance	Rs 11,20,000	Rs 10,56,000	Rs 15,36,000	Rs 20,64,000	Rs 11,20,000
Add: Credit sales	9,60,000	14,40,000	19,20,000	9,60,000	52,80,000
Total amount due	20,80,000	24,96,000	34,56,000	30,24,000	64,00,000
Less: Collection:					
(i) During discount period (0.50 × prior quarter credit sales)	4,80,000	4,80,000	7,20,000	9,60,000	26,40,000
(ii) After discount period (0.40 × prior quarter credit sales)	3,84,000	3,84,000	5,76,000	7,68,000	21,12,000
(0.075 × 2nd prior quarter credit sales)	1,20,000	72,000	72,000	1,08,000	3,72,000
Written-off bad debts (0.025 × credit sales of 2nd prior quarter credit sales)	40,000	24,000	24,000	36,000	1,24,000
Closing balance	10,56,000	15,36,000	20,64,000	11,52,000	11,52,000

Quarterly Schedule Relating to Payment to Creditors

Particulars	*First*	*Second*	*Third*	*Fourth*	*Total*
Opening balance	Rs 44,000	Rs 54,546.80	Rs 71,579.20	Rs 68,560.80	Rs 44,000
Add: Credit purchases (net of discount)	5,45,468	7,15,792.00	6,85,608.00	4,58,248	24,05,116
Total amount payable	5,89,468	7,70,338.80	7,57,187.20	5,26,808,80	24,49,116
Less: Payments:					
(i) During the same quarter (0.90)	4,90,921.20	6,44,212.80	6,17,047.20	4,12,423.20	21,64,604.4
(ii) For the prior quarter (0.10)	44,000.00	54,546.80	71,579.20	68,560.80	2,38,686.8
Closing balance	54,546.80	71,579.20	68,560.80	45,824.80	45,824.8

Quarterly Cash Budget

Particulars	*First*	*Second*	*Third*	*Fourth*	*Total*
Cash inflows:					
Cash sales (0.20)	Rs 2,40,000	Rs 3,60,000	Rs 4,80,000	Rs 2,40,000	Rs 13,20,000
Collection from debtors:					
Credit sales subject to discount (0.50)	4,80,000	4,80,000	7,20,000	9,60,000	26,40,000
Less: Discount (0.02)	9,600	9,600	14,400	19,200	52,800
Net amount	4,70,400	4,70,400	7,05,600	9,40,800	25,87,200
0.40 × prior quarter credit sales	3,84,000	3,84,000	5,76,000	7,68,000	21,12,000
0.075 × 2nd prior quarter sales	1,20,000	72,000	72,000	1,08,000	3,72,000

(*Contd*)

(*Contd*)

Total collections from debtors	9,74,400	9,26,400	13,53,600	18,16,800	50,71,200
Total cash inflows	12,14,400	12,86,400	18,33,600	20,56,800	63,91,200
Cash outflows:					
Payment to creditors	Rs 5,34,921.20	Rs 6,98,759.60	Rs 6,88,626.40	Rs 4,80,984.00	Rs 24,03,291.20
Direct labour	88,000	1,28,000.00	1,44,000	88,000	4,48,000.00
Variable overheads	1,32,000	1,92,000	2,16,000	1,32,000	6,72,000.00
Fixed overheads	1,61,000	1,61,000	1,61,000	1,61,000	6,44,000.00
Selling and administrative overheads	1,50,000	2,10,000	2,70,000	1,50,000	7,80,000.00
Income taxes	74,000	95,540	2,01,740	2,80,220	6,51,500.00
Dividends	—	80,000	—	80,000	1,60,000.00
Equipment	—	—	—	6,00,000	6,00,000.00
Total cash outflows	11,39,921.20	15,65,299.60	16,81,366.40	19,72,204	63,58,791.20
Net cash inflows	74,478.80	(2,78,899.60)	1,52,233.6	84,596.00	32,408.8
Opening balance	2,40,000.00	3,14,478.80	35,579.2	1,87,812.80	2,40,000.0
Closing balance	3,14,478.80	35,579.20	1,87,812.80	2,72,408.80	2,72,408.8

Budgeted Balance Sheet as at March 31, Next Year

Liabilities	*Amount*	*Assets*		*Amount*
Share capital	Rs 31,77,428	Fixed assets	Rs 54,00,000	
Retained earnings	24,04,640	*Less:* Accumulated depreciation	14,00,000	Rs 40,00,000
Creditors	45,824.80	Inventories:		
Taxes payable	90,740	Direct material (Material A, 9,200 × Rs 5.88) (Material B, 9,200 × Rs 7.84)	1,26,224	
		Finished goods (6,000 × Rs 40)	2,40,000	3,66,224
		Debtors	11,52,000	
		Less: Allowances for bad debts (Rs 64,000 + Rs 1,32,000 – Rs 1,24,000)	72,000	10,80,000
		Cash		2,72,408.80
	57,18,632.8			57,18,632.8

CHAPTER 9

Capital Budgeting I: Principles and Techniques

REMOTE ADDICTION LTD

Remote Addiction Ltd makes 53 cm colour TV sets. They curerntly sell 40,000 units per year which corresponds to 100 per cent of their manufacturing capacity. The marketing team, based on the market information from their dealers, feels that Remote Addiction Ltd could sell 50,000 units per year at the existing selling price, level of advertising, and existing dealer commissions. However, the plant is not geared up to produce at these levels. The bottleneck is the speed of the assembly line which will support only 40,000 units per year even when operating in round the clock shifts. The only way to increase manufacturing capacity would be to replace the current assembly line with a new higher speed assembly line.

The marketing manager, Mr Becho Kumar, strongly feels that it is extremely important for the Remote Addiction Ltd to grab the additional market share that is available to them for the asking. He is, therefore, keen to instal a high speed assembly line instal to boost the manufacturing capacity so as to meet the anticipated level of 50,000 units per year. He approached the managing director, Mr Dhanda Singh, to explore the possibility of replacing the existing assembly line with a higher speed assembly line.

Mr Dhanda Singh called the finance manager, Mr Rupaya Gupta, and asked him to make a recommendation regarding the replacement of the existing assembly line with a higher speed assembly line. He clearly stated that the recommendation should be based on a required rate of return of 15 per cent. Mr Rupaya Gupta sought some time to collect information and perform a financial analysis in order to make his recommendation. Mr Dhanda Singh asked him to go ahead with the necessary financial analysis.

Mr Gupta made inquiries regarding a higher speed assembly lines and decided that the next higher speed compared to what they currently had would support a manufacturing capacity of 80,000 units per year. This could be purchased for Rs 1,00,00,000 and would have a useful economic life of 5 years with no salvage value at the end of 5 years. For comparison, he determined that the existing assembly line would also have a useful life of another 5 years with no salvage value at the end of 5 years. The current book value of the existing assembly line is Rs 16,00,000 with a market value of Rs 12,00,000. The tax laws as a special case allow straight line depreciation for TV manufacturing assembly lines.

Mr Gupta then collected all other relevant financial information corresponding to the existing assembly line operating at a manufacturing level of 40,000 units per year as well as the proposed new assembly line operating at a manufacturing level of 50,000 units per year. This information is summarised in Exhibit 1.

EXHIBIT 1

Particulars	*Existing assembly line (40, 000 units per year)*	*New assembly line (50,000 units per year)*
Selling price (*Rs per unit*)	19,900	19,990
Material cost (*Rs per unit*)	7,500	7,500
Labour cost (*Rs per unit*)	1,600	2,700
Manufacturing overherads (*Rs per unit*)	1,800	2,350
Dealer commissions (*Rs per unit*)	800	800
Advertising cost (*Rs per year*)	2,00,00,000	2,00,00,000
Depreciation (*Rs per year*)	3,20,000	20,00,000
Working capital requirement (*Rs*)	41,00,000	48,00,000
Income tax rate (*per cent*)	35	35

Based on the above information, Mr Rupaya Gupta performed the necessary financial analysis and provided Mr Dhanda Singh with the report that is shown in Exhibit 2. The NPV as given in this report is (Rs 61,69,604). Mr Rupaya Gupta's recommendation is that since the NPV is negative, Remote Addiction Ltd should not replace the existing assembly line with a new higher speed assembly line.

Mr Becho Kumar was very disappointed to hear this and met Mr Rupaya Gupta to understand what should be done so that the proposal for a new higher speed assembly line could be accepted. Mr Gupta explained that even though the projected sales of 50,000 units per year was significantly higher than the existing sales of 40,000 per units per year, it was still not high enough. Mr Becho Kumar needed to figure out a way to increase the sales further. He hired the market research firm of Bazaar Pulse Pvt Ltd to determine ways to increase sales beyond 50,000 units per year. They came up with the following three mutually exclusive options.

1. Increase sales through trade push. This involves increasing dealer commission from Rs 800 per unit to Rs 1,100 per unit to attain a sales level of 53,000 units per year.
2. Increase sales through customer pull. This involves increasing the advertising expenditure from Rs 2,00,00,000 per year to Rs 4,00,00,000 per year to attain a sales level of 55,000 units per year.
3. Increase sales by exploiting the price elasticity of demand. This involves reducing the selling price of the TV sets from Rs 19,900 per unit to Rs 18,900 per unit to attain a sales level of 59,000 units per year.

Mr Becho Kumar approaches Mr Rupaya Gupta with the three options and requested him to perform a financial analysis to determine if purchasing the new higher speed assembly line could now be justified. Before starting the detailed financial analysis, Mr Rupaya Gupta first assessed whether any of the previous data he had collected and estimated would change for the above three options over and above the specific changes that are mentioned in the options. He concluded that the only additional data that would change would be the working capital requirement at the different sales levels. He estimated these working capital requirerments as follows.

Sales level (units per year)	*Working capital requirement*
53,000	Rs 50,00,000
55,000	51,00,000
59,000	53,00,000

With Mr Dhanda Singh's approval, Mr Rupaya Gupta then proceeded with a detailed financial analysis for all three options. He presented three reports for each of the three options.

Exhibit 3 shows the report for the option corresponding to increasing sales through trade push. The NPV as given in this report is Rs 24,88,572. Mr Rupaya Gupta's initial recommendation was that since the NPV is positive, this option could be considered. Exhibit 4 shows the report for the option corresponding to increasing sales through customer pull. The NPV as given in this report is Rs 2,24,39,656. Mr Rupaya Gupta's initial recommendation was that since the NPV is positive, this option could be considered. Exhibit 5 shows the report for the option corresponding to increasing sales by exploiting the price elasticity of demand. The NPV as given in this report is Rs 47,65,216. Mr Rupaya Gupta's recommendation was that since the NPV is negative, this option should be rejected straight away.

With the complete financial analysis for all three options in front of him, Mr Gupta concluded that it would be advisable to replace the existing assembly line with a new higher speed assembly line in conjunction with increasing sales through customer pull affected by an increase in the advertising expenditure. Even though the NPV was positive for both increasing sales through trade push as well as increasing sales through customer pull, Mr Gupta preferred the option of increasing sales through customer pull because it had a higher NPV. A

higher NPV would result in a higher net addition to the wealth of the firm consistent with the overall objective of maximising the wealth of the corporate firm.

A qualitative benefit would arise from Remote Addiction Ltd's garnering a higher market share resulting from the increased sales along with enhanced brand equity resulting from the increased advertising expenditure. Mr Rupaya Gupta also felt that Remote Addiction Ltd should utilise the excess capacity of the higher speed assembly line by exploring possibilities in the export market. This had the potential of further increasing the NPV and, therefore, increasing the net addition to the wealth of the firm.

Recommendation

Mr Rupaya Gupta made his final recommendations to Mr Dhanda Singh as follows:

1. Replace the existing assembly line with a new higher speed assembly line that would support a manufacturing capacity of 80,000 units per year.
2. Increase the advertising expenditure from Rs 2,00,00,000 per year to Rs 4,00,00,000 per year to attain a sales level of 55,000 units per year.
3. Explore opportunities in the export market to utilise the excess manufacturing capacity of 25,000 units per year that would be available.

EXHIBIT 2 Financial Analysis for Replacement Decision Using the NPV Method (Projected Sales Level of 50,000 Units per Year)

(I) Incremental Cash Outflow ($t = 0$)

Cost of new assembly line	Rs 1,00,00,000
Less: Sales of existing assembly line	12,00,000
Tax advantage (Rs 4,00,000, loss on sale x 0.35)	1,40,000
Add: Incremental working capital	7,00,000
	93,60,000

(II) Incremental Cash Inflow

Particulars	*Existing assembly (40,000 units per year)*	*lineNew assembly line (50,000 units per year)*
Sales revenue	Rs 79,96,00,000	Rs 99,95,00,000
Less:		
Material cost	30,00,00,000	37,50,00,000
Labour cost	6,40,00,000	13,50,00,000
Manufacturing overheads	7,20,00,000	11,75,00,000
Dealer commissions	3,20,00,000	4,00,00,000
Advertising cost	2,00,00,000	2,00,00,000
Depreciation	3,20,000	20,00,000
EBT	31,12,80,000	31,00,00,000
Less: Tax	10,89,48,000	10,85,00,000
EAT	20,23,32,000	20,15,00,000
Add: Depreciation	3,20,000	20,00,000
CFAT	20,26,52,000	20,35,00,000
Incremental CFAT	Rs 8,48,000	

(III) **Determination of NPV**

Years	*CFAT*	*PVIF @ 15 per cent*	*Total PV*
1 to 5	Rs 8,48,000	3.352	Rs 28,42,496
5 (recovery of incremental working capital assuming 100 per cent recovery)	7,00,000	0.497	3,47,900
			31,90,396
PV of cash outflows			93,60,000
NPV			(61,69,604)

(IV) Recommendation Since NPV is negative, do not accept the proposal to buy a replacement the assembly line

EXHIBIT 3 Financial Analysis for Replacement Decision Using NPV method [Projected Sales Level of 53,000 Units Per Year (Trade Push Option)]

(I) **Incremental Cash Outflow ($t = 0$)**

Cost of new assembly line	Rs 1,00,00,000
Less: Sales of existing assembly line	12,00,000
Tax advantage (Rs 4,00,000, loss on sale × 0.35)	1,40,000
Add: Incremental working capital	9,00,000
	95,60,000

(II) **Incremental Cash Inflow**

Particulars	*Existing assembly line (40,000 units per year)*	*New assembly line (50,000 units per year)*
Sales revenue	Rs 79,96,00,000	Rs 105,94,70,000
Less:		
Material cost	30,00,00,000	39,75,00,000
Labour cost	6,40,00,000	14,31,00,000
Manufacturing overheads	7,20,00,000	12,45,50,000
Dealer commissions	3,20,00,000	12,45,50,000
Advertising cost	2,00,00,000	2,00,00,000
Depreciation	3,20,000	20,00,000
EBT	31,12,80,000	31,40,20,000
Less: Tax	10,89,48,000	10,99,07,000
EAT	20,23,32,000	20,41,13,000
Add: depreciation	3,20,000	20,00,000
CFAT	20,26,52,000	20,61,13,000
Incremental CFAT	Rs 34,61,000	

(III) Determination of NPV

Years	*CFAT*	*PVIF @ 15 per cent*	*Total PV*
1 to 5	Rs 34,61,000	3.352	Rs 1,16,01,272
5 (recovery of incremental working capital assuming 100 per cent recovery)	9,00,000	0.497	4,47,300
			1,20,48,572
PV of cash outflows			95,60,000
NPV			24,88,572

(IV) **Recommendation** Since NPV is negative, this option should be rejected.

EXHIBIT 4 Financial Analysis for Replacement Decision Using NPV method [Projected Sales Level of 55,000 Units per Year (Customer Pull Option)]

(I) Incremental Cash Outflow (t = 0)

Cost of new assembly line	Rs 1,00,00,000
Less: Sales of existing assembly line	(12,00,000)
Tax advantage (Rs 4,00,000, loss on sale × 0.35)	1,40,000
Add: Incremental working capital	10,00,000
	96,60,000

(II) Incremental Cash Inflow

Particulars	*Existing assembly line (40,000 units per year)*	*New assembly line (50,000 units per year)*
Sales revenue	Rs 79,96,00,000	Rs 1,09,94,50,000
Less:		
Material cost	30,00,00,000	41,25,00,000
Labour cost	6,40,00,000	14,85,00,000
Manufacturing overheads	7,20,00,000	12,92,50,000
Dealer commissions	3,20,00,000	4,40,00,000
Advertising cost	2,00,00,000	4,00,00,000
Depreciation	3,20,000	20,00,000
EBT	31,12,80,000	32,32,00,000
Less: Tax	10,89,48,000	11,31,20,000
EAT	20,23,32,000	21,00,80,000
Add: Depreciation	3,20,000	20,00,000
CFAT	20,26,52,000	21,20,80,000
Incremental CFAT	Rs 94,28,000	

(III) Determination of NPV

Years	*CFAT*	*PVIF @ 15 per cent*	*Total PV*
1 to 5	Rs 94,28,000	3.352	Rs 3,16,02,656
5 (recovery of incremental working capital assuming 100 per cent recovery)	10,00,000	0.497	4,97,300
			3,20,99,656
PV of cash outflows			96,60,000
NPV			2,24,39,656

(IV) **Recommendation** Since NPV is negative, this option can be considered.

EXHIBIT 5 Financial Analysis for Replacement Decision Using NPV method [Projected Sales Level of 59,000 Units Per Year (Exploiting Price Elasticity of Demand Option)]

(I) Incremental Cash Outflow (t = 0)

Cost of new assembly line	Rs 1,00,00,000
Less: Sales of existing assembly line	12,00,000
Tax advantage (Rs 4,00,000, loss on sale x 0.35) (loss in selling existing assembly line)	1,40,000
Add: Incremental working capital	12,00,000
	98,60,000

(II) Incremental Cash Inflow

Particulars	*Existing assembly line (40,000 units per year)*	*New assembly line (50,000 units per year)*
Sales revenue	Rs 79,96,00,000	Rs 1,12,04,10,000
Less:		
Material cost	30,00,00,000	44,25,00,000
Labour cost	6,40,00,000	15,93,00,000
Manufacturing overheads	7,20,00,000	13,86,50,000
Dealer commissions	3,20,00,000	4,72,00,000
Advertising cost	2,00,00,000	2,00,00,000
Depreciation	3,20,000	20,00,000
EBT	31,12,80,000	31,07,60,000
Less: Tax	10,89,48,000	10,87,66,000
EAT	20,23,32,000	20,19,94,000
Add: Depreciation	3,20,000	20,00,000
CFAT	20,26,52,000	20,39,94,000
Incremental CFAT	Rs 13,42,000	

(III) Determination of NPV

Years	*CFAT*	*PVIF @ 15 per cent*	*Total PV*
1 to 5	Rs 13,42,000	3.352	Rs 44,98,384
5 (recovery of incremental working capital assuming 100 per cent recovery)	12,00,000	0.497	5,96,400
			50,94,784
PV of cash outflows			98,60,000
NPV			(47,65,216)

(IV) Recommendation Since NPV is negative, this option should be rejected.

CHAPTER 10

Capital Budgeting II: Additional Aspects

SMOOTHDRIVE TYRE LTD

Smoothdrive Tyre Ltd manufacturers tyres under the brand name 'Super Tread' for the domestic car market. It is presently using 7 machines acquired 3 years ago at a cost of Rs 15 lakh each having a useful life of 7 years, with no salvage value.

After extensive research and development, Smoothdrive Tyre Ltd has recently developed a new tyre, the 'HyperTread', and must decide whether to make the investments necessary to produce and market the HyperTread. The HyperTread would be ideal for drivers doing a large amount of wet weather and off road driving in addition to normal highway usage. The research and development costs so far total Rs 1,00,00,000. The HyperTread would be put on the market beginning this year and Smoothdrive Tyre expects it to stay on the market for a total of three years. Test marketing, costing Rs 50,00,000, shows that there is a significant market for a HyperTread type tyre.

As a financial analyst at Smoothdrive Tyre, Mr Mani is aksed by the Chief Financial Officer (CFO), Mr Tyrewala to evaluate the HyperTread project and to provide a recommendation on whether or not to proceed with the investment. He has been informed that all previous investments in the HyperTread project are sunk costs and only future cash flows should be considered. Except for the initial investments, which occur immediately, assume all cash flows occur at the year-end.

Smoothdrive Tyre must initially invest Rs 72,00,00,000 in production equipments to make the HyperTread. They would be depreciated at a rate of 25 per cent as per the written down value (WDV) method for tax purposes. The new production equipments will allow the company to follow flexible manufacturing technique, that is, both the brands of tyres can be produced using the same equipments. The equipment is expected to have a 7-year useful life and can be sold for Rs 10,00,00,000 during the fourth year. The company does not have any other machines in the block of 25 per cent depreciation. The existing machines can be sold off at Rs 8 lakh per machine with an estimated removal cost of one machine for Rs 50,000.

Operating Requirements

The operating requirements of the existing machines and the new equipment are detailed in Exhibits 10.1 and 10.2 respectively.

EXHIBIT 10.1 Existing Machines

- Labour costs (expected to increase 10 per cent annually to account for inflation):
  (a) 20 unskilled labour @ Rs 4,000 per month
  (b) 20 skilled personnel @ Rs 6,000 per month
  (c) 2 supervising executives @ Rs 7,000 per month
  (d) 2 maintenance personnel @ Rs 5,000 per month
- Maintenance cost:
  Years 1-5: Rs 25 lakh
  Years 6-7: Rs 65 lakh
- Operating expenses: Rs 50 lakh expected to increase at 5 per cent annually.
- Insurance cost/premium:
  Year 1 : 2 per cent of the original cost of machine
  After year 1 : Discounted by 10 per cent

EXHIBIT 10.2 New Production Equipment

- Savings in cost of utilities: Rs 2.5 lakh
- Maintenance costs:
  Year 1-2: Rs 8 lakh
  Year 3-4: Rs 30 lakh
- Labour costs:
  9 skilled personnel @ Rs 7,000 per month
  1 maintenance personnel @ Rs 7,000 per month
- Cost of retrenchment of 34 personnel: (20 unskilled, 11 skilled, 2 supervisors and 1 maintenance personnel): Rs 9,90,000, that is, equivalent to six months salary
- Insurance premium
  Year 1 : 2 per cent of the purchase cost of machine
  After year 1 : Discounted by 10 per cent

The operating expenses do not change to any considerable extent for the new equipment and the difference is negligible compared to the scale of operations.

Smoothdrive Tyre intends to sell the HyperTread to two distinct markets:

1. *The original equipment manufacturer (OEM) market:* The OEM market consists primarily of the large automobile companies who buy tyres for new cars. In the OEM market, the HyperTread is expected to sell for Rs 1,200 per tyre. The variable cost to produce each HyperTread is Rs 600.
2. *The replacement market:* The replacement market consists of all tyres purchased after the automobile has left the factory. This markets allows higher margins and Smoothdrive Tyre expects to sell the HyperTread for Rs 1,500 per tyre. The variable costs are the same as in the OEM market.

Smoothdrive Tyre expects to raise prices by 1 per cent above the inflation rate. The variable costs will also increase by 1 per cent above the inflation rate. In addition, the HyperTread project will incur Rs 2,50,00,000 in marketing and general administration cost in the first year which are expected to increase at the inflation rate in subsequent years.

Smoothdrive Tyre's corporate tax rate is 35 per cent. Annual inflation is expected to remain constant at 3.25 per cent. Smoothdrive Tyre uses a 15 per cent discount rate to evaluate new product decisions.

The Tyre Market

Automative industry analysts expect automobile manufacturers to have a production of 4,00,000 new cars this year and growth in production at 2.5 per cent per year onwards. Each new car needs four new tyres (the spare tyres are undersized and fall in a different category). Smoothdrive Tyre expects the HyperTread to capture an 11 per cent share of the OEM market.

The industry analysts estimate that the replacement tyre market size will be one crore this year and that it would grow at 2 per cent annually. Smoothdrive Tyre expects the HyperTread to capture an 8 per cent market share.

You also decide to consider net working capital (NWC) requirements in this scenario. The net working capital requirement will be 15 per cent of sales. Assume that the level of working capital is adjusted at the beginning of the year in relation to the expected sales for the year. The working capital is to be liquidated at par, barring an estimated loss of Rs 1.5 crore on account of bad debt. The bad debt will be a tax-deductible expenses.

As a finance analyst, prepare a report for submission to the CFO and the Board of Directors, explaining to them the feasibility of the new investment.

Solution

Financial Analysis Whether to Implement the New Project

Incremental Cash Outflows

Cost of new production equipment	Rs 72,00,00,000
Additional working capital (15 per cent of the expected first year sales)	21,16,80,000
Less: Sale proceeds of existing machines (7 machines × Rs 8 lakh each)	(56,00,000)
Add: Removal cost of the existing machines (7 machines × Rs 50,000)	3,50,000
Tax on profit from sale of machines (*Working note I*)	2,87,109
Cost of laying off workers and personnel (*Working note II)*	6,43,500
	92,73,60,609

Cash Inflows

Particulars	*Year 0*	*Year 1*	*Year 2*	*Year 3*	*Year 4*
Production equipment	Rs 72,00,00,000				
(+) Working capital	21,16,80,000	Rs 22,52,55,060	Rs 23,97,01,847	Rs 25,50,76,331	
(–) Sales of machine	56,00,000				
(+) Tax on sale	2,87,109				
(+) Removal cost	3,50,000				
(+) Cost of layoff	6,43,500				
Sales revenue		141,12,00,000	150,17,00,400	159,80,12,311	170,05,08,870
Add: Cost savings:					
Maintenance		17,00,000	17,00,000	35,00,000	35,00,000
costs (*Working*					
note III)		2,50,000	2,50,00	2,50,000	2,50,000
Cost of utilities					
Labour costs		18,48,000	20,32,800	22,36,080	24,59,688
(*Working note IV*)					
Less: Incremental					
costs:		17,86,00,000	13,39,50,000	10,04,62,500	Nil
(*Working note VI*)					
Bad debt loss (2)					1,50,00,000
Insurance		1,42,47,000	1,28,22,000	1,15,40,000	1,03,86,000
(*Working note V*)					
Less: Total costs		61,06,00,000	64,90,60,700	68,99,66,744	73,34,78,839
Earning before tax		61,15,51,000	70,98,50,500	80,20,29,147	94,78,53,719
Tax @ 35 per cent		21,40,42,850	24,84,47,675	28,07,10,202	33,17,48,802
Earnings after					
tax (c)		39,75,08,150	46,14,02,825	52,13,18,946	61,61,04,917
CFAT (a+b+c)		57,61,08,150	59,53,52,825	62,17,81,446	63,11,04,917
Add: Net					
salvage value of					
equipment (A)					10,00,00,000
Add: Tax					
benefit on short					
term capital loss (B)					7,04,85,625
Release of					
working capital (C)					24,00,76,331
Initial investment	92,73,60,609				

(*Contd.*)

(*Contd.*)

Change in working capital		1,35,75,060	1,44,46,787	1,53,74,484	
Terminal cash inflow (A+B+C)					41,05,61,956
Net cash flow	(92,73,60,609)	56,25,33,090	58,09,06,038	60,64,06,962	104,16,66,873
PV factor @ 15 per cent	1.000	0.870	0.756	0.658	0.572
Present value of cash flows	(92,73,60,609)	48,94,03,788	43,91,64,965	39,90,15,781	59,58,33,452
NPV					**99,60,57,377**

Since the NPV of the project HyperTread is positive and is significant enough for the company to go in for a similar project four year hence, the Smoothdrive Tyre Ltd should go in for production of this new tyre.

Working Notes

I. Tax on Profits From Sale of Existing Machine

Sales proceeds from existing machines	Rs 56,00,000
Less: Book value of existing machine (Working note VI)	44,29,688
Gross profit	11,70,312
Less: Removal costs (7 × Rs 50,000)	3,50,000
Net proft	8,20,312
Tax payable on profits (Profit × 0.35, tax rate)	2,87,109

II. Cost of Laying off 34 Personnel

Salary paid as compensation	Rs 9,90,000
Tax benefit (at 35 per cent)	3,46,500
Cost of layoff	6,43,500

III. Savings in Maintenance Costs *(lakh of rupees)*

Years	*Existing machine*	*New equipment*	*Cost savings*
1	25	8	17
2	25	8	17
3	65	30	35
4	65	30	35

IV. Savings in Labour and Employee Costs

Existing costs:		
Unskilled labour	(20 × 12 months × Rs 4,000)	Rs 960,000
Skilled labour	(20 × 12 months × Rs 6,000)	14,40,000
Supervisors	(2 × 12 months × Rs 7,000)	1,68,000
Maintenance personnel	(2 × 12 months × Rs 5,000)	1,20,000
		26,88,000 (A)
Proposed labour and employee costs:		
Skilled labour	(9 × 12 months × Rs 7,000)	7,56,000
Maintenance Personnel	(1 × 12 months × Rs 7,000)	84,000
		8,40,000 (B)
Labour cost savings (A + B)		18,48,000

Note: Savings in subsequent years will increase by 10 per cent.

V. **Insurance** *(lakh of rupees)*

Years	*Existing machine insurance*	*New equipment*	*Incremental insurance*
1	1.53	144.00	142.47
2	1.38	129.60	128.22
3	1.24	116.64	115.40
4	1.12	104.98	103.86

VI. **Incremental Depreciation**

- WDV of the existing machine in the beginning of year 4:

Initial cost of machine (7 machines × Rs 15 lakh)	Rs 1,05,00,000
Less: Depreciation charges	
Year 1 (Rs 105 lakh × 0.25)	26,25,000
Year 2 (Rs 78.75 lakh × 0.25)	19,68,750
Year 3 (Rs 59.0625 lakh × 0.25)	14,76,563

- WDV of existing machine: 44,29,687
- Depreciation base of new equipment

WDV of existing machine	44,29,687
Add: Cost of new machine	72,00,00,000
Less: Sale value of existing machine	56,00,000
	71,88,29,687

- Base for incremental depreciation
  Rs 71,88,29,687 – Rs 44,29,687 = Rs 71,44,00,000
- Incremental depreciation (t = 1 – 4)

Years	*WDV*	*Depreciation*
1	Rs 71,44,00,000	Rs 17,86,00,000
2	53,58,00,000	13,39,50,000
3	40,18,50,000	10,04,62,500
4	30,13,87,500	Nil

Short term capital loss: Rs 30,13,87,500 – Rs 10,00,00,000 = Rs 20,13,87,500
Tax benefit on short-term capital loss = Rs 20,13,87,500 × 0.35 = Rs 7,04,85,625

Cash Flows and Net Working Capital Requirement for Year 1

Total cash revenues:	
OEM market (0.11 × 4,00,000 cars × 4 tyres × Rs 1,200)	Rs 21,12,00,000
Replacement market (0.08 × 1,00,00,000 tyres × Rs 1,500)	1,20,00,00,000
	1,41,12,00,000
Total costs:	
OEM market + Replacement market:	
(0.11 × 4,00,000 cars × 4 tyres × Rs 600)	
+ (0.08 × 1,00,00,000 tyres × Rs 600)	58,56,00,000
Selling and administrative costs	2,50,00,000
	61,06,00,000
Net working capital (15% of sales)	21,16,80,000

Cash Flows and Net Working Capital Requirement for Year 2

Total cash revenues:	
OEM market (0.11 × 4,10,000* cars × 4 tyres × Rs 1,251**)	Rs 22,56,80,400
Replacement market (0.08 × 1,02,00,000@ tyres × Rs 1,563.75@@)	1,27,60,20,000
	1,50,17,00,400
Total costs:	
OEM market + Replacement market	
(0.11 × 4,10,000 cars × 4 tyres × Rs 625.50)	
+ (0.08 × 1,02,00,000 tyres × Rs 625.50)	62,32,48,200
Selling and administrative costs	2,58,12,500
	64,90,60,700
Net working capital (15 per cent of sales)	22,52,55,060

* 4,10,000 = 4,00,000 + 4,00,000 × 2.5 per cent

** Rs 1,251 = Rs 1,200 + Rs 1,200 × 3.25 per cent inflation × 1 per cent price rise

@ 1,02,00,000 = 1,00,00,000 + 1,00,00,000 × 2 per cent market growth

@@ Rs 1,563.75 = Rs 1,500 + Rs 1,500 × 3.25 per cent inflation × 1 per cent price rise

Cash Flows and Net Working Capital Requirement for Year 3

Total cash revenues:	
OEM market (0.11 × 4,20,250 cars × 4 tyres × Rs 1,304.18)	Rs 24,11,55,924
Replacement market (0.08 × 1,04,00,000 tyres × Rs 1,630.21)	1,35,68,56,387
	1,59,80,12,311
Total costs:	
OEM market + Replacement market	
(0.11 × 4,20,250 cars × 4 tyres × Rs 652.08)	
+ (0.08 × 1,04,00,000 tyres × Rs 652.08)	66,33,15,338
Selling and administrative costs	2,66,51,406
	68,99,66,744
Net working capital	23,97,01,847

Cash Flows and Net Working Capital Requirement for Year 4

Total cash revenues:	
OEM market (0.11 × 4,30,756 cars × 4 tyres × Rs 1,359.61)	Rs 25,76,90,473
Replacement market (0.08 × 1,06,12,080 tyres × Rs 1,699.50)	1,44,28,18,397
	1,70,05,08,870
Total costs:	
OEM market + Replacement market	
(0.11 × 4,30,756 cars × 4 tyres × Rs 679.79)	
+ (0.08 × 1,06,12,080 tyres × Rs 679.79)	70,59,61,262
Selling and administrative costs	2,75,17,577
	73,34,78,839
New working capital	25,50,76,331

CHAPTER 11

Concept and Measurement of Cost of Capital

COMPUTATION OF COST OF CAPITAL OF PALCO LTD

In October 2007, Neha Kapoor, a recent MBA graduate and newly appointed assistant to the Financial Controller of Palco Ltd, was given a list of six new investment projects proposed for the following year. It was her job to analyse these projects and to present her findings before the Board of Directors at its annual meeting to be held in 10 days. The new project would require an investment of Rs 2.4 crore.

Palco Ltd was founded in 1965 by Late Shri A.V. Sinha. It gained recognition as a leading producer of high quality aluminium, with the majority of its sales being made to Japan. During the rapid economic expansion of Japan in the 1970s, demand for aluminium boomed, and Palco's sales grew rapidly. As a result of this rapid growth and recognition of new opportunities in the energy market, Palco began to diversify its products line. While retaining its emphasis on aluminium production, it expanded operations to include uranium mining and the production of electric generators, and, finally, it went into all phases of energy production. By 2007, Palco's sales had reached Rs 14 crore level, with net profit after taxes attaining a record of Rs 67 lakh.

As Palco expanded its products line in the early 1990s, it also formalised its capital budgeting procedure. Until 1992, capital investment projects were selected primarily on the basis of the average return on investment calculations, with individual departments submitting these calculations for projects falling within their division. In 1996, this procedure was replaced by one using present value as the decision making criterion. This change was made to incorporate cash flows rather than accounting profits into the decision making analysis, in addition to adjusting these flows for the time value of money. At the time, the cost of capital for Palco was determined to be 12 per cent, which has been used as the discount rate for the past 5 years. This rate was determined by taking a weighted average cost Palco had incurred in raising funds from the capital market over the previous 10 years.

It had originally been Neha's assignment to update this rate over the most recent 10-year period and determine the net present value of all the proposed investment opportunities using this newly calculated figure. However, she objected to this procedure, stating that while this calculation gave a good estimate of "the past cost" of capital, changing interest rates and stock prices made this calculation of little value in the present. Neha suggested that current cost of raising funds in the capital market be weighted by their percentage mark-up of the capital structure. This proposal was received enthusiastically by the Financial Controller of the Palco, and Neha was given the assignment of recalculating Palco's cost of capital and providing a written report for the Board of Directors explaining and justifying this calculation.

To determine a weighted average cost of capital for Palco, it was necessary for Neha to examine the cost associated with each source of funding used. In the past, the largest sources of funding had been the issuance of new equity shares and internally generated funds. Through conversations with Financial Controller and other members of the Board of Directors, Neha learnt that the firm, in fact, wished to maintain its current financial structure as shown in Exhibit 1.

EXHIBIT 1 Palco Ltd Balance Sheet for Year Ending March 31, 2007

Assets		*Liabilities and Equity*	
Cash	Rs 90,00,000	Accounts payable	Rs 8,50,000
Accounts receivable	3,10,00,000	Short-term debt	1,00,000
Inventories	1,20,00,000	Accrued taxes	11,50,000
Total current assets	5,20,00,000	Total current liabilities	1,20,00,000

(*Contd*)

(*Contd*)

Net fixed assets	19,30,00,000	Long-term debt	7,20,00,000
Goodwill	70,00,000	Preference shares	4,80,00,000
Total assets	25,20,00,000	Retained earnings	1,00,00,000
		Equity shares	11,00,000
		Total liabilities and equity shareholders' fund	25,20,00,000

She further determined that the strong growth patterns that Palco had exhibited over the last ten years were expected to continue indefinitely because of the dwindling supply of US and Japanese domestic oil and the growing importance of other alternative energy resources. Through further investigations, Neha learnt that Palco could issue additional equity shares, which had a par value of Rs 25 per share and were selling at a current market price of Rs 45. The expected dividend for the next period would be Rs 4.4 per share, with expected growth at a rate of 8 per cent per year for the foreseeable future. The flotation cost is expected to be on an average Rs 2 per share.

Preference shares at 11 per cent with 10 years maturity could also be issued with the help of an investment banker with a par value of Rs 100 per share to be redeemed at par. This issue would involve flotation cost of 5 per cent.

Finally, Neha learnt that it would be possible for Palco to raise an additional Rs 20 lakh through a 7-year loan from Punjab National Bank at 12 per cent. Any amount raised over Rs 20 lakh would cost 14 per cent. Short-term debt has always been used by Palco to meet working capital requirements and as Palco grows, it is expected to maintain its proportion in the capital structure to support capital expansion. Also, Rs 60 lakh could be raised through a bond issue with 10 years' maturity with a 11 per cent coupon at the face value. If it becomes necessary to raise more funds via long-term debt, Rs 30 lakh more could be accumulated through the issuance of additional 10-year bonds sold at the face value, with the coupon rate raised to 12 per cent, while any additional funds raised via long-term debt would necessarily have a 10-year maturity with a 14 per cent coupon yield. The flotation cost of issue is expected to be 5 per cent. The issue price of bond would be Rs 100 to be redeemed at par.

In the past, Palco had calculated a weighted average of these sources of funds to determine its cost of capital. In discussion with the current Financial Controller, the point was raised that while this served as an appropriate calculation for external funds, it did not take into account the cost of internally generated funds. The Financial Controller agreed that there should be some cost associated with retained earnings and need to be incorporated in the calculations but didn't have any clue as to what should be the cost.

Palco Ltd is subjected to the corporate tax rate of 40 per cent.

From the facts outlined above, what report would Neha submit to the Board of Directors of Palco Ltd?

Solution

Report Submitted by Neha Kapoor on Cost of Capital

For investment decisions, the company has already incorporated the use of discounted cash flow techniques. However, it is using the past cost of capital for discounting the future cash flows. This approach is not justified as the cost of capital is undergoing frequent changes in the present volatile environment because the interest rates and equity prices are changing very fast. Hence, for investment decisions, the company should rely on ***weighted marginal cost of capital*** rather than the ***weighted average cost of capital*** because the former is based on the cost of funds raised for forthcoming projects while the later is based on the existing capital structure.

Currently the company has 50 per cent of the funds raised through equity, 20 per cent through preference share capital and 30 per through the debt funds as shown in Exhibit 2. Since the capital structure policy of company

is to maintain the same level of debt-equity ratio, the additional amount of Rs 2.4 crore would be raised in the following manner:

Equity Funds (Rs crore)		
New issue of equity shares	1.10	
Retained earnings	0.10	1.20
Debt Funds		
Bank financing/bonds		0.72
Preference Share Capital		0.48
		2.40

Computation of Cost of Capital

Cost of Equity Funds

- New issue of equity shares

$$K_e = \frac{\text{Dividend}}{P_0 - \text{flotation cost}} + g = \frac{\text{Rs } 4.4}{\text{Rs } 45 - \text{Rs } 2} + 8 = 18.23 \text{ per cent}$$

- Retained Earnings

  Retained earnings do not carry any explicit cost. The opportunity cost of retained earnings is the rate of return on dividend foregone by equity shareholders. The shareholders generally expect dividend and capital gain from their investment. Hence, the cost of retained earnings will be equal to the shareholder's required rate of return as computed above. However, no flotation cost would be involved unlike the new issue of shares.

$$K_{RE} = \frac{\text{Dividend}}{P_0 - \text{flotation cost}} + g = \frac{\text{Rs } 4.4}{\text{Rs } 45} + 8 = 17.78 \text{ per cent}$$

Cost of Debt Funds

In this case the Palco Ltd has two alternatives available before it. Either it can go for bank financing which carries a higher interest rate or it can go in for raising funds by issuing bonds which carries substantial issuance cost.

$$K_d = \frac{\text{Interest } (1 - \text{Tax rate}) + \text{Flotation cost/maturity period}}{(RV + SV)/2}$$

- Cost of Bonds

  For first Rs 60 lakh:

$$K_d = \frac{\text{Rs } 11(1 - 40\%) + (\text{Rs } 4/10)}{\text{Rs } (100 + 96)/2} = 7.14 \text{ per cent}$$

  For second Rs 12 lakh:

$$K_d = \frac{\text{Rs } 12(1 - 40\%) + (\text{Rs } 4/10)}{\text{Rs } (100 + 96)/2} = 7.75 \text{ per cent}$$

  Total cost of debt if the funds are raised through bonds:

$$K_d = 7.14\% \times (60/72) + 7.75\% \times (12/72) = 5.95 + 1.29 = 7.24 \text{ per cent}$$

- Cost of Bank Financing

  For first Rs 20 lakh:

$$K_d = \text{Rs } 12(1 - 40\%) = 7.2 \text{ per cent}$$

  For second Rs 52 lakh:

$$K_d = \text{Rs } 14(1 - 40\%) = 8.4 \text{ per cent}$$

Total cost of debt if the funds are raised through bank loan:

$$K_d = 7.2\% \times (20/72) + 8.4\% \times (52/72) = 8.07 \text{ per cent}$$

Hence, the company should choose bonds for raising funds as they carry lower cost, assuming the other factors being constant.

Cost of Preference Shares

$$K_p = \frac{\text{Dividend + Flotation cost/maturity period}}{(RV + SV)/2}$$

$$= \frac{\text{Rs 11 + Rs 5/10}}{\text{Rs(100 + 95)/2}} = 11.8 \text{ per cent}$$

Weighted Marginal Cost of Capital

$$WMCC = f^n \{K_e, K_{RE}, K_d, K_p\}$$

$$= 18.23\% \times (1.1/2.4) + 17.78\% \times (0.10/2.4) + 7.24\% \times (0.72/2.4) + 11.8\% \times (0.48/2.4)$$

$$= 13.62 \text{ per cent}$$

Hence, 13.62 per cent is the cost of capital that is relevant for appraising the new investment proposals. This would enable the company to arrive at better decisions as the cost of capital input used here is realistic rather than historical as used in the past.

CHAPTER 12

Analysis of Risk and Uncertainty

PELLON COMPANY LIMITED

During union negotiations this year, the Pellon Company Ltd management realised that it must offer its employees greater retirement benefits. The company is considering offering either one of the following:

Plan A: an increase in the amount of the company's share of the annual contribution to the funded pension plan now in existence.

Plan B: elimination of the existing pension plan and its replacement by a new plan calling for variable payback where the amount of the company's payment would depend upon the level of profits for the year.

The actual cost of the pension plan to Pellon would depend upon many factors, such as age of employees, number of years they have been with the company, and employee's current earnings. However, the prime causes of uncertainty for the new retirement offers are that since employees are given options as to the extent to which they wish to participate in the pension plan, their individual decisions would determine the amount of employer's contribution under Plan A. This uncertainty would, however, be resolved in the first year of the new plan. For Plan B, the level of future profits would be the main consideration. However, the success or failure of a new product line to be introduced in the last part of the coming year would greatly reduce the uncertainty.

The Management of Pellon Company Ltd wished to make a two-year cost comparison for the two plans, and has, therefore, made the following cost and probability estimates:

	Probability	*First year cost*
Plan A:	0.1	Rs 6,00,000
	0.3	7,50,000
	0.6	9,00,000
Plan B:	0.2	5,00,000
	0.5	7,50,000
	0.3	10,00,000

In the second year for Plan A, uncertainty is negligible, since all employees would have selected their participation in the programme. The Management estimates the second-year cost of Plan A to be Rs 6,00,000 greater than its first-year cost. For Plan B, uncertainty about second-year profits would still exist, so estimates of costs are also still uncertain.

Given first-year cost		*Probability*	*Second year cost*
(i)	Rs 5,00,000	0.60	Rs 5,00,000
	5,00,000	0.40	7,50,000
(ii)	7,50,000	0.50	8,50,000
	7,50,000	0.50	10,50,000
(iii)	10,00,000	0.40	11,00,000
	10,00,000	0.60	13,00,000

(a) Construct a decision tree for management to use in evaluating the two plans. Assuming that all costs are incurred at the end of the year for they apply and that 10 per cent discount (risk-free) rate is appropriate, compute the PV of costs for each plan at each branch terminal of tree. Also, find the expected PV of costs for each project as a weighted average of these terminal PVs.

(b) Which project is more risky?

(c) Which plan should the firm offer to the union?

(a) **Decision Tree** *(Amount in Rs lakh)*

	Year 1			Year 2					
	Probability	*Cash outflow*	*PV*	*Probability*	*Cash outflow*	*PV*	*NPV at 10% rate of discount*	*Joint Probability*	*Expected NPV*
Plan A	0.1	Rs 6.0	Rs 5.45	1	Rs 12.0	Rs 9.9	Rs (–15.35)	0.1	Rs (–1.53)
	0.3	7.5	6.8	1	13.5	11.1	(–17.9)	0.3	(–5.37)
	0.6	9.0	8.18	1	15.0	12.39	(–20.57)	0.6	(–12.34)
									(–19.24)
Plan B	0.2	5.0	4.5	0.6	5.0	4.13	(–8.63)	0.12	(–1.04)
				0.4	7.5	6.19	(–10.69)	0.08	(–0.86)
	0.5	7.5	6.8	0.5	8.5	7.02	(–13.82)	0.25	(–3.45)
				0.5	10.0	8.26	(–15.06)	0.25	(–3.76)
	0.3	10.0	9.09	0.4	11.0	9.08	(–18.17)	0.12	(–2.18)
				0.6	13.0	10.73	(–19.82)	0.18	(–3.56)
									(–14.85)

Decision Point

(b) Determination of the Value of Coefficient of Vairation (NPV/Standard Deviation)

Plan A			*Plan B*		
NPV (Rs lakh)	*Probability*	*Expected NPV (Rs lakh)*	*NPV (Rs lakh)*	*Probability*	*Expected NPV (Rs lakh)*
(–15.35)	0.1	(–1.53)	(–8.63)	0.12	(–1.04)
(–17.9)	0.3	(–5.37)	(–10.69)	0.08	(–0.86)
(–20.57)	0.6	(–12.34)	(–13.82)	0.25	(–3.45)
			(–15.06)	0.25	(–3.76)
			(–18.17)	0.12	(–2.18)
			(–19.82)	0.18	(–3.56)
NPV		–19.24			–14.85

Determination of Standard Deviation About the Expected NPV

Project A *(Amount in Rs lakh)*

$\overline{NPV}_i$	$\overline{NPV}$	$NPV_i - \overline{NPV}$	$(NPV_i - \overline{NPV})^2$	P_i	$(NPV_i - \overline{NPV})^2 P_i$
(–15.35)	(–19.24)	3.89	15.13	0.1	1.51
(–17.9)	(–19.24)	1.34	1.80	0.3	0.54
(–20.57)	(–19.24)	(–1.33)	1.77	0.6	1.06
				$\overline{NPV}_A$	3.11

$$\sigma_A = \sqrt{3.11} = 1.26$$

Coefficient of variation (V_A)

$$V_A = \frac{\text{Standard deviation}}{\text{Expected net present value}} = \frac{1.76}{-19.24 \text{ lacs}} = -0.091$$

Project B *(Amount in Rs lakh)*

NPV_i	$\overline{NPV}$	$NPV_i - \overline{NPV}$	$(NPV_i - \overline{NPV})^2$	P_i	$(NPV_i - \overline{NPV})^2 P_i$
(–8.63)	(–14.85)	6.22	38.69	0.12	4.64
(–10.69)	(–14.85)	4.16	17.31	0.08	1.38
(–13.82)	(–14.85)	1.03	1.06	0.25	0.26
(–15.06)	(–14.85)	(–0.21)	0.04	0.25	0.01
(–18.17)	(–14.85)	(–3.32)	11.02	0.12	1.32
(–19.82)	(–14.85)	(–4.97)	24.70	0.18	4.45
				$(\overline{NPV}_A)^2$	12.06

$$\sigma_B = \sqrt{12.06} = 3.47$$

Coefficient of variation (V_B)

$$V_B = \frac{\text{Standard deviation}}{\text{Expected Net Present Value}} = \frac{3.47}{-14.85} = (-0.233)$$

As such the Plan A is more risky.

(c) The expected NPV outflow with **Plan B** is less (–Rs 14.85 lakh) than **Plan A** (Rs –19.24 lakh). Therefore, the company is advised to adopt Plan B to offer to the union.

CHAPTER 13

Working Capital Management—An Overview

COOKING LPG LTD DETERMINATION OF WORKING CAPITAL

Introduction

Cooking LPG Ltd, Gurgaon, is a private sector firm dealing in the bottling and supply of domestic LPG for household consumption since 1995. The firm has a network of distributors in the districts of Gurgaon and Faridabad. The bottling plant of the firm is located on National Highway – 8 (New Delhi – Jaipur), approx. 12 kms from Gurgaon. The firm has been consistently performing well and plans to expand its market to include the whole National Capital Region.

The production process of the plant consists of receipt of the bulk LPG through tank trucks, storage in tanks, bottling operations and distribution to dealers. During the bottling process, the cylinders are subjected to pressurised filling of LPG followed by quality control and safety checks such as weight, leakage and other defects. The cylinders passing through this process are sealed and dispatched to dealers through trucks. The supply and distribution section of the plant prepares the invoice which goes along with the truck to the distributor.

Statement of the Problem

Mr I. M. Smart, DGM (Finance) of the company, was analysing the financial performance of the company during the current year. The various profitability ratios and parameters of the company indicated a very satisfactory performance. Still, Mr Smart was not fully content-specially with the management of the working capital by the company. He could recall that during the past year, in spite of stable demand pattern, they had to, time and again, resort to bank overdrafts due to non-availability of cash for making various payments. He is aware that such aberrations in the finances have a cost and adversely affects the performance of the company. However, he was unable to pinpoint the cause of the problem.

He discussed the problem with Mr U. R. Keenkumar, the new manager (Finance). After critically examining the details, Mr Keenkumar realised that the working capital was hitherto estimated only as approximation by some rule of thumb without any proper computation based on sound financial policies and, therefore, suggested a reworking of the working capital (WC) requirement. Mr Smart assigned the task of determination of WC to him.

Profile of Cooking LPG Ltd

(1) **Purchases:** The company purchases LPG in bulk from various importers ex-Mumbai and Kandla, @ Rs 11,000 per MT. This is transported to its Bottling Plant at Gurgaon through 15 MT capacity tank trucks (called bullets), hired on annual contract basis. The average transportation cost per bullet ex-either location is Rs 30,000. Normally, 2 bullets per day are received at the plant. The company makes payments for bulk supplies once in a month, resulting in average time-lag of 15 days.

(2) **Storage and Bottling:** The bulk storage capacity at the plant is 150 MT (2 $\times$ 75 MT storage tanks) and the plant is capable of filling 30 MT LPG in cylinders per day. The plant operates for 25 days per month on an average. The desired level of inventory at various stages is as under:
- LPG in bulk (tanks and pipeline quantity in the plant) – three days average production/sales.
- Filled Cylinders – 2 days average sales.
- Work-in-process inventory – zero.

(3) **Marketing:** The LPG is supplied by the company in 12 kg cylinders, invoiced @ Rs 250 per cylinder. The rate of applicable sales tax on the invoice is 4 per cent. A commission of Rs 15 per cylinder is paid to the distributor on the invoice itself. The filled cylinders are delivered on company's expense at the distributors' godown, in exchange of equal number of empty cylinders. The deliveries are made in truck-loads only,

the capacity of each truck being 250 cylinders. The distributors are required to pay for deliveries through bank draft. On receipt of the draft, the cylinders are normally dispatched on the same day. However, for every truck purchased on pre-paid basis, the company extends a credit of 7 days to the distributors on one truck-load.

(4) Salaries and Wages: The following payments are made:

- Direct labour – Re 0.75 per cylinder (Bottling expenses) – paid on last day of the month.
- Security agency-Rs 30,000 per month-paid on 10th of subsequent month.
- Administrative staff and managers – Rs 3.75 lakh per annum, paid on monthly basis on the last working day.

(5) Overheads:

- Administrative (staff car, communication etc) – Rs 25,000 per month – paid on the 10th of subsequent month.
- Power (including on DG set) – Rs 1,00,000 per month paid on the 7th of subsequent month.
- Renewal of various licenses (pollution, factory, labour, CCE etc.) – Rs 15,000 per annum-paid at the beginning of the year.
- Insurance-Rs 5,00,000 per annum to be paid at the beginning of the year.
- Housekeeping, etc – Rs 10,000 per month paid on the 10th of the subsequent month.
- Regular maintenance of plant – Rs 50,000 per month paid on the 10th of every month to the vendors. This includes expenditure on account of lubricants, spares and other stores.
- Regular maintenance of cylinders (statutory testing) – Rs 5 lakh per annum – paid on monthly basis on the 15th of the subsequent month.
- All transportation charges as per contracts – paid on the 10th of subsequent month.
- Sales tax as per applicable rates is deposited on the 7th of the subsequent month.

(6) Sales: Average sales are 2,500 cylinders per day during the year. However, during the winter months (December to February), there is an incremental demand of 20 per cent.

(7) Average Inventories: The average stocks maintained by the company as per its policy guidelines:

- Consumables (caps, ceiling material, valves etc) – Rs 2 lakh. This amounts to 15 days consumption.
- Maintenance spares – Rs 1 lakh.
- Lubricants – Rs 20,000.
- Diesel (for DG sets and fire engines) – Rs 15,000.
- Other stores (stationary, safety items) – Rs 20,000.

(8) Minimum cash balance including bank balance required is Rs 5 lakh.

(9) Additional Information for Calculating Incremental Working Capital During Winter

- No increase in any inventories take place except in the inventory of bulk LPG, which increases in the same proportion as the increase of the demand. The actual requirements of LPG for additional supplies are procured under the same terms and conditions from the suppliers.
- The labour cost for additional production is paid at double the rate during winters.
- No changes in other administrative overheads.
- The expenditure on power consumption during winter increases by 10 per cent. However, during other months, the power consumption remains the same as the decrease owing to reduced production is offset by increased consumption on account of compressors/ACs.
- Additional amount of Rs 3 lakh is kept as cash balance to meet exigencies during winter.
- No change in time schedules for any payables/receivables.
- The storage of finished goods inventory is restricted to a maximum 5,000 cylinders due to statutory requirements.

Solution

EXHIBIT I A Statement Showing Determination of Net Working Capital

Particulars	*(Amount in Rs lakh)*
(A) Current Assets	
Inventories holding	
Raw material inventory (90 MT × (Rs 11,000 + (Rs 30,000/15MT))	11.70
LPG in transit (10 days × 2 Truck × 15 MT × Rs 11,000)	33.00
Consumables	2.00
Maintenance spare	1.00
Lubricants	0.20
Diesel	0.15
Other stores	0.20
Finished goods (5,000 CYL × (Rs 162.08 + Rs 4.61)) (see working note 1)	8.33
Debtors (25,000 CYL × 7 days × 50% × Rs 180.69) (see working note 1)	15.81
Cash in bank	5.00
Renewal of license and insurance (Rs 15,000 + Rs 5,00,000)	5.15
Total	82.54
(B) Current Liabilities	
LPG credit (30 MT × Rs 11,000) × 15 days	49.50
Bulk transportation cost (25 days × 2 Trucks × Rs 30,000/30) × ((30 days/2) + 10 days)	12.50
Cylinder transportation credit (((25 days × 10 Trucks per day × Rs 1,000)/30) × 25 days)	2.08
Labour (((Rs 0.75 × 2,500 × 25)/30) × 15)	0.23
Plant security agency (Rs 30,000 × 25/30 days)	0.25
Administration staff/Manager ((Rs 3,75,000/12) × (15/30))	0.16
Administration expenses ((Rs 25,000 × 25/30 days)	0.21
Power (Rs 1,00,000 × 22/30 days)	0.73
House-keeping (Rs 10,000 × 25/30)	0.08
Plant maintenance ((Rs 50,000/30) × 25 days)	0.42
Cylinder testing ((Rs 5,00,000/12) × (30/30))	0.42
Sales tax (2,500 × 25 days × Rs 250 × 4/100) × (22/30)	4.58
Total	71.16
(C) Net Working Capital (A – B)	11.38

Working Note 1

Cost per cylinder	
A Bottling/cylinder (12 Kgs)	
Direct labour (Rs 0.75 per cylinder)	Rs 0.75
Materials consumables (Rs 2,00,000/(2,500 × 15 days))	5.33
LPG (Rs 11,000/1,000 = Rs 11 × 12 Kgs.)	132.00
Bulk transportation cost ((Rs 30,000/15,000 Kg) × 12 Kg)	24.00
Total 'A'	162.08

(*Contd*)

(*Contd*)

B	Production and administrative overheads (Rs lakh)	
	Security (Rs 30,000 × 12 months)	3.6
	Administrative staff/Manager Rs 3,75,000 per annum	3.75
	Other administration expenses (Rs 25,000 × 12 months)	3.00
	Power (Rs 1,00,000 × 12 months)	12.00
	House-keeping (Rs 10,000 × 12 months)	1.20
	Plant maintenance (Rs 50,000 × 12)	6.00
	Cylinder testing	5.00
	Total cost	34.55
	Annual production (of cylinders)	7.50
	Overheads per cylinder (Rs 35.55 lakh/7.5 lakh)	4.61
C	Transportation overheads (Rs 1,000/250 CYL)	4.00
D	Sales tax (4 per cent of Rs 250)	10.00
E	Total (*A* + *B* + *C* + *D*)	180.69

EXHIBIT 2 Incremental Working Capital Requirement From December to February

	Particulars	*(Amount in Rs lakh)*
(A)	Current Assets	
	LPG in transit (10 days × (500 × 12/15,000) truck × 15 MT × Rs 11,000)	Rs 6.60
	Raw material inventory (90 MT × (Rs 11,000 + (30,000/15MT)) × 0.2	2.34
	Debtors (500 CYL × 7 days × 50% × Rs 182.24) (see working note 2)	3.19
	Cash in bank	3.00
	Total	15.13
(B)	Current Liabilities (incremental)	
	LPG credit (500 × 12 Kg/1000) MT × Rs 11,000) × (15/2)	9.9
	Bulk transportation cost ((6 × 25/15 Trucks × Rs 30,000)/30) × (30 days/2) + 10 days)	2.50
	Cylinder transportation credit (((25 days × 2 Trucks per day × Rs 1000)/30) × 25 days)	0.42
	Labour (((Rs 0.75 × 2 × 500 × 25)/30) × 15)	0.05
	Power (10% × Rs 1,00,000 × 22/30 days)	0.07
	Sales tax (500 × 25 days × Rs 250 × 4/100 × 22/30)	0.92
	Total	13.86
(C)	Net Working Capital (Incremental) (*A* – *B*)	1.27

During December to February there will be 20 per cent increase in demand.
The finished goods stock will be restricted to 5,000 cyls only.
The raw material inventory is maintained for 3 days consumption.
The stock of consumables and other store items remains unchanged.
The receivables increased in proportion to increase in sales.

Working Note 2

Incremental cost per cylinder	
Direct labour ((Rs 1.50 – Rs 0.75) per cyl)	Re 0.75*
Power (Rs 1,00,000 × 0.1/(500 cyl × 25 days))	0.80**
Incremental cost/Additional Cylinder	1.55
Total cost of each additional cylinder bottled = 180.69 + 1.55	182.24

* The direct labour is paid at double the rate i.e. Rs 0.75 x 2 for each additional cylinders bottled

** Power requirement increased by 10 per cent.

Recommendation

It is recommended that Cooking LPG Ltd., should maintain the net working capital at following levels for its smooth operations:

- The average net working capital required is Rs 11.38 lakh. This should be made available from long-term sources of finances.
- During winter months (December to February), an additional Rs 1.55 lakh will be required over and above the average net working capital requirements. The same may be met by short-term financing.

CHAPTER 14

Management of Cash and Marketable Securities

M/S HI-TECH ELECTRONICS

M/s Hi-tech Electronics, a consumer electronics outlet, was opened two years ago in Dwarka, New Delhi. Hard work and personal attention shown by the proprietor, Mr Sony, has brought success. However, because of insufficient funds to finance credit sales, the outlet accepted only cash and bank credit cards. Mr Sony is now considering a new policy of offering instalment sales on terms of 25 per cent down payment and 25 per cent per month for three months as well as continuing to accept cash and bank credit cards.

Mr Sony feels this policy will boost sales by 50 per cent. All the increases in sales will be credit sales. But to follow through a new policy, he will need a bank loan at the rate of 12 per cent. The sales projections for this year without the new policy are given in Exhibit 1.

EXHIBIT 1 Sales Projections and Fixed Costs

Month	*Projected sales without instalment option*	*Projected sales with instalment option*
January	Rs 6,00,000	Rs 9,00,000
February	4,00,000	6,00,000
March	3,00,000	4,50,000
April	2,00,000	3,00,000
May	2,00,000	3,00,000
June	1,50,000	2,25,000
July	1,50,000	2,25,000
August	2,00,000	3,00,000
September	3,00,000	4,50,000
October	5,00,000	7,50,000
November	10,00,000	15,00,000
December	8,00,000	12,00,000
Total sales	48,00,000	72,00,000
Fixed cost	2,40,000	2,40,000

He further expects 26.67 per cent of the sales to be cash, 40 per cent bank credit card sales on which a 2 per cent fee is paid, and 33.33 per cent on instalment sales. Also, for short term seasonal requirements, the firm takes loan from chit fund to which Mr Sony subscribes @ 1.8 per cent per month.

Their success has been due to their policy of selling at discount price. The purchase price per unit is 90 per cent of selling price. The fixed costs are Rs 20,000 per month. The proprietor believes that the new policy will increase miscellaneous cost by Rs 25,000.

The business being cyclical in nature, the working capital finance is done on trade-off basis. The proprietor feels that the new policy will lead to bad debts of 1 per cent.

(a) As a financial consultant, advise the proprietor whether he should go for the extension of credit facilities.

(b) Also prepare cash budget for one year of operation of the firm, ignoring interest. The minimum desired cash balance is Rs 30,000, which is also the amount the firm has on January 1. Borrowings are possible which are made at the beginning of a month and repaid at the end when cash is available.

Solution

Decision Analysis Whether M/s Hi-Tech Electronics Should Extend Credit sales

Particulars	*Amount*
Incremental sales revenue	Rs 24,00,000
Less: Incremental variable costs	21,60,000
Contribution margin	2,40,000
Less: Other incremental costs:	
Bad debts (1%)	24,000
Investment cost (*Working note* 1)	22,754
Additional operating expenses (miscellaneous)	25,000
Incremental profit	1,68,246

Working Note 1

Calculation of Investment Requirement Using Trade-off Approach

Month	*Incremental sales*	*Incremental variable cost*	*Monthly funds requirement*	*Long-term funds*	*Short-term funds*
January	Rs 3,00,000	Rs 2,70,000	Rs 1,95,000	Rs 1,86,875	Rs 8,125
February	2,00,000	1,80,000	1,30,000	1,86,875	0
March	1,50,000	1,35,000	97,500	1,86,875	0
April	1,00,000	90,000	65,000	1,86,875	0
May	1,00,000	90,000	65,000	1,86,875	0
June	75,000	67,500	48,750	1,86,875	0
July	75,000	67,500	48,750	1,86,875	0
August	1,00,000	90,000	65,000	1,86,875	0
September	1,50,000	1,35,000	97,500	1,86,875	0
October	2,50,000	2,25,000	1,62,500	1,86,875	0
November	5,00,000	4,50,000	3,25,000	1,86,875	1,38,125
December	4,00,000	3,60,000	2,60,000	1,86,875	73,125
					2,19,375

Cost of long-term funds = Rs 1,86,875 $\times$ 0.12 = Rs 22,425
Cost of short-term funds = [Rs 2,19,375 $\div$ 12] $\times$ 0.018 = Rs 329
Total cost = Rs 329 + Rs 22,425 = Rs 22,754.

Recommendation From the incremental analysis, I would suggest that Mr Sony should go for extending credit to the customers. Further, I suggest that he should hire independent agency to assess the creditworthiness of the customer. Also, the projection that there will be only 50 per cent increase in customers due to credit may turn out to be wrong. A large number of cash purchasers will buy on credit scheme. In order to retain the cash purchases, he will have to sell goods at further discount.

Cash Budget

	Particulars	*January*	*February*	*March*	*April*	*May*	*June*	*July*	*August*	*September*	*October*	*November*	*December*
	Sales (Rs)	9,00,000	6,00,000	4,50,000	3,00,000	3,00,000	2,25,000	2,25,000	3,00,000	4,50,000	7,50,000	15,00,000	12,00,000
	Credit sales (Rs)	2,25,000	1,50,000	1,12,500	75,000	75,000	56,250	56,250	75,000	1,12,500	1,87,500	3,75,000	3,00,000
(A)	**Cash Inflows:**												
	Cash sales (Rs)	6,75,000	4,50,000	3,37,500	2,25,000	2,25,000	1,68,750	1,68,750	2,25,000	3,37,500	5,62,500	11,25,000	9,00,000
	Collection from debtors:												
	Instalment collected for month following sales (25% of credit sales in previous month)		75,000	50,000	37,500	25,000	25,000	18,750	18,750	25,000	37,500	62,500	1,25,000
	Instalment collected for 2nd month after sales (25% of credit sales 2 months ago)			75,000	50,000	37,500	25,000	25,000	18,750	18,750	25,000	37,500	62,500
	Instalment collected after 3rd month after sales (25% of credit sales 3 months ago)				72,750	48,500	36,375	24,250	24,250	18,188	18,188	24,250	36,375
	Less: 1% bad debt for the sales 3 months ago)												
	Total	6,75,000	5,25,000	4,62,500	3,85,250	3,36,000	2,55,125	2,36,750	2,86,750	3,99,438	6,43,188	12,49,250	11,23,875
(B)	**Cash Outflows:**												
	Purchases	8,10,000	5,40,000	4,05,000	2,70,000	2,70,000	2,02,500	2,02,500	2,70,000	4,05,000	6,75,000	13,50,000	10,80,000
	Selling, administrative and other costs	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
	Variable expenses	5,000	5,000									7,500	7,500
	Total	8,35,000	5,65,000	4,25,000	2,90,000	2,90,000	2,22,500	2,22,500	2,90,000	4,25,000	6,95,000	13,77,500	11,07,500
	Surplus (deficiency)	(–1,60,000)	(–40,000)	37,500	95,250	46,000	32,625	14,250	(–3,250)	(–25,562)	(–51,812)	(–1,28,250)	16,375
	Beginning balance	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
	Ending balance (indicated)	(–1,30,000)	(–10,000)	67,500	1,25,250	76,000	62,625	62,625	26,750	44,375	(–21,813)	(–98.250)	46,375
	Minimum desired cash balance	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
	Borrowings required (Deficiency + Minimum desired cash balance)	1,60,000	40,000						3,250	25,562	51,812	1,28,250	16,375
	(Repayments) minimum			(–37,500)	(–95,250)	(46,000)	(21,250)						
	Short term investments						11,375	32,625					
	Ending balance (actually estimated)	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000

CHAPTER 15

Receivables Management

IND INSTRUMENTS LTD

The Ind Instruments Ltd (IIL) manufactures industrial components for the heavy machinery industry. It mainly sells to industrial companies at a retail price of Rs 50 per component. Its current balance sheet and income statement is summarised in Exhibits 1 and 2 respectively.

EXHIBIT 1 Comparative Balance Sheet of Ind Instruments Ltd (Rs lakh)

Liabilities	*Year 1*	*Year 2*	*Year 3*	*Assets*	*Year 1*	*Year 2*	*Year 3*
Capital	30.55	30.55	30.55	Fixed assets	59.36	63.46	68.22
Profit	66.40	67.07	69.43	Current assets:			
Secured loan	27.08	20.07	17.27	Inventory	50.87	65.80	76.07
Unsecured loan	5.00	5.00	5.00	Debtors	70.94	76.90	80.65
Current liabilities				Cash	24.39	24.60	28.88
and provisions:				Prepaid expenses	32.43	37.44	36.51
Sundry creditors	107.35	142.71	165.32				
Expenses payable	1.61	2.80	2.66				
	237.99	268.20	290.23		237.99	268.20	290.23

EXHIBIT 2 Comparative Summary Income Statement of Ind Instruments Ltd (Figures in lakh)

Particulars	*Year 1*	*Year 2*	*Year 3*
Opening stock (units)	0.24	0.39	0.79
Production (units)	13.50	13.85	14.50
Sales (units)	13.35	13.45	14.39
Closing stock (units)	0.39	0.79	0.90
1 Sales revenue (sales unit × Rs 50)	Rs 667.46	Rs 672.46	Rs 719.23
2 Variable cost (0.65 × sales revenue)	433.85	437.09	467.50
3 Contribution	233.61	235.37	251.73
4 Fixed cost	150.00	150.00	160.00
5 Bad debt	13.21	14.26	16.54
6 Cash discount (sales revenue × 0.30 × 0.02)	4.00	4.03	5.75
7 Profit	66.40	67.07	69.43
8 Average collection period (days)	21	21	21
9 Average investment in debtors	34.06	34.25	36.60
10 Cost of investment (RoR = 0.18)	6.13	6.16	6.59
11 Collection costs	0.45	0.50	0.55
12 Adjusted profits [7 – (10 + 11)]	59.82	60.40	62.29

The IIL has recently appointed Avinash as its new financial controller. Immediately after taking over, he examines the working capital management policy of the company. Against the industry norm of 10-12 per cent, the IIL's ratio of net working capital to annual turnover (sales) was, as shown below, on the basis of data in Exhibits 1 and 2, low as well as declining.

Year	*Networking capital (NWC) (Rs lakh)*	*Annual turnover (Rs lakh)*	*NWC ÷ Sales (%)*
1	69.67	667.46	10.4
2	59.23	672.45	8.8
3	54.03	719.23	7.5

Mr Avinash also finds that the current and quick ratios of the IIL, summarised below, are inadequate.

Year	*Current ratio*	*Quick ratio*
1	1.64	0.87
2	1.41	0.70
3	1.32	0.65

These findings convinced Mr Avinash that all was not well with the working capital management of the company. He discussed the problem with CFO of the company, Mr Keemti Lal. To find a solution, he undertook a detailed analysis of the income statement of the company. The following points emerged from the study of the income statements.

(a) The company was retailing the component for the sale price of Rs 50, while the variable cost was 65 per cent;
(b) The fixed cost was Rs 150 lakh as long as production levels were below 14,50,000 units per annum;
(c) For production levels of 14,50,000 units per annum above, the fixed costs rose to Rs 160 lakh;
(d) The bad debt levels (i.e. sales ÷ bad debts) had been 1.98 per cent (year 1), 2.11 per cent (year 2) and 2.3 per cent (year 3);
(e) Sales had never equated production in all the three years, and the left over inventory for one year had become the opening inventory for the next year;
(f) The credit policy followed by the company is "2/10 net 30".
(g) On an average, only 30 per cent of the customers availed of the cash discount over all the last three years;
(h) The pre-tax rate of return that IIL was expecting for the last three years was 18 per cent, using which Avinash calculated the cost of average investment made in debtors as shown in the same statements;
(i) The cost of collection from debtors was Rs 45,000 in year 1, which had been continuously increasing by Rs 5,000 per year for the next two years.

From the above facts Avinash was convinced that the solution to the ills that besieged that company lay with the customers. So he sought to meet the major customers of IIL. What he found startled him. He found the following main facts from the customer of IIL:

(a) Many of the customers, the ones with the large orders worth nearly 65 per cent of the annual sales of IIL, were of the opinion that it was high time that IIL reviewed its credit terms extended to its debtors;
(b) Many customers were asking for more credit period, though some were also ready to forego the 2 per cent discount that IIL was endowing as of now; in fact, they were ready to settle with discounts as low as 1-1.5 per cent, as was the industry norm, in return for an extension of the credit period by IIL;
(c) Some accounts that had become bad debt in the recent years had the same complaint that the credit terms of IIL were too stringent, and had to be relaxed for them to continue doing business with IIL as they had been in the past, else they may be forced to look for alternative sources.

From the talks he had with the customers and internal management of IIL, Avinash thought of three alternatives to offer to IIL. These are:

(i) To extend credit period to 45 days, with the cash discount of 2 per cent available to those customers paying up within the grace period of 20 days;

(ii) To extend credit period to 60 days, with the cash discount of 1.5 per cent available to those customers paying up within the grace period of 30 days;
(iii) To extend credit period to 75 days, with the cash discount of 1 per cent available to those customers paying up within the grace period of 40 days.

He then showed these three alternatives to the customers and management of IIL. From consultations with both, he was able to come to the following estimations:

(A) For first option (2/20 net 45),
  (a) for production of 14.50 lakh units, a sales of 14.55 lakh units (after taking into account the previous year's closing inventory);
  (b) the fixed cost would be Rs 160 lakh;
  (c) the bad debts are expected to be 2 per cent of sales revenue;
  (d) 50 per cent of the customers would avail of the cash discount;
  (e) the pre-tax RoR expected by IIL, 18 per cent;
  (f) the average collection cost would be Rs 0.53 lakh.

(B) For second option (1.5/30 net 60),
  (a) for production of 14.5 lakh units, a sales of 14.65 lakh units (after taking into account the previous year's closing inventory);
  (b) the fixed cost would be Rs 160 lakh;
  (c) the bad debts are expected to be 1.5 per cent of sales revenue;
  (d) 55 per cent of the customers would avail of the cash discount;
  (e) the pre-tax RoR expected by IIL, 18 per cent;
  (f) the average collection cost would be Rs 0.52 lakh.

(C) For third option (1/40 net 75),
  (a) for production of 15 lakh units, a sale of 14.75 lakh units (after taking into account the previous year's closing inventory);
  (b) the fixed cost would increase to Rs 170 lakh;
  (c) the bad debts are expected to be 1 per cent of sales revenue;
  (d) 70 per cent of the customer would avail of the cash discount;
  (e) the pre-tax RoR expected by IIL, 18 per cent;
  (f) the average collection cost would be Rs 0.52 lakh.

As an alternative to the above in-house options of receivables management of IIL, a factoring proposal from the Forward Looking Bank of India (FLBI) is also available. It has two options: (i) with recourse, and (ii) without recourse. Even within these options, there were two options each that FLBI was offering IIL. The details of the offer follow:

(A) For first option (F-I),
  (a) the option is with recourse;
  (b) the up front advance is 80 per cent of the total amount;
  (c) the discount charged on the amount payable would be at the rate of 20 per cent;
  (d) the commission rate would be 1.5 per cent per annum;
  (e) the bad debts would be assumed at 1 per cent of the total sales revenue;

(B) For second option (F-II),
  (a) the option is without recourse;
  (b) the up-front advance is 85 per cent of the total amount;
  (c) the discount charged on the amount payable would be at the rate of 18 per cent;

(d) the commission rate would be 3 per cent per annum;
(e) there would be no bad debts.

(C) For third option (F-III),
(a) the option is with recourse;
(b) the up-front advance is 85 per cent of the total amount;
(c) the discount charged on the amount payable would be at the rate of 20 per cent;
(d) the commission rate would be 2 per cent per annum;
(e) the bad debts would be assumed at 1 per cent of total sales revenue;

(D) For fourth option (F-IV),
(a) the option is without recourse;
(b) the up-front advance is 90 per cent of the total amount;
(c) the discount charged on the amount payable would be at the rate of 18 per cent;
(d) the commission rate would be 4 per cent per annum;
(e) there would be no bad debts.

In addition, FLBI is guaranteeing (for both the with- and without-recourse options):
(a) Sales of 14.75 lakh units, (i.e. Rs 737.50 lakh per annum);
(b) Payment of the whole amount payable to IIL within a period of 30 days.

Which option of in-house receivables management should be recommended by Avinash to the CFO of the IIL? Should he prefer the factoring arrangement? Which factoring option should he recommend? Why?

Solution

Financial Evaluation of Credit Term Options for IIL (*figures in lakh*)

Particulars	*Plan I (2/20 net 45)*	*Plan II (1.5/30 net 60)*	*Plan III (1/40 net 75)*
1. Opening stock (units)	0.90	0.90	0.90
2. Production (units)	14.50	14.50	15.00
3. Sales (units)	14.55	14.65	14.75
4. Closing stock (units)	0.85	0.75	1.15
5. Sales revenue [(1) × Rs 50]	727.50	732.50	737.50
6. Variable cost [(5) × 0.65]	472.88	476.13	479.38
7. Contribution [(5) – (6)]	254.63	256.38	258.13
8. Fixed costs	160.00	160.00	170.00
9. Bad debts	14.55	10.99**	7.38
10. Cash discount	7.28@	6.04@@	5.16@@@
11. Profit [(7) – (8 + 9 + 10)]	72.80	79.34	75.59
12. Average collection period (days)	32	43	50
13. Average investment in debtors	56.26	75.98	90.19
14. Cost of investment [(13) × 0.18]	10.13	13.68	16.23
15. Collection costs	0.53	0.52	0.52
16. Adjustment profit [(11) – (14 + 15)]	62.14	65.15	58.83

@ (0.2 × 0.50 × Rs 727.50 lakh)
@@ (0.15 × 0.55 × Rs 732.50 lakh)
@@@ (0.01 × 0.70 × Rs 737.50 lakh)
** 1.5 per cent

Recommendation The best option is Plan II [i.e. 1.5/30 net 60]

Financial Evaluation of In-house Option: Plan II

Relevant cost	*Amount (Rs lakh)*
1. Cash discount	6.04
2. Cost of funds/investments in receivables	15.75
3. Bad debt	10.99
4. Contribution in foreign sales	1.75
5. Avoidable administrative overheads	0.22
Total	34.75

Financial Evaluation of Factoring Arrangement *(Amount in Rs lakh)*

Relevant costs	*Factoring options*			
	I *(With recourse and 80 per cent advance)*	*II* *(Without recourse and 85 per cent advance)*	*III* *(With recourse and 85 per cent advance)*	*IV* *(Without recourse and 90 per cent advance)*
Factoring commission	11.06	22.13	15.75	29.50
Bad debts (1%)	7.38	0.00	7.38	0.00
Discount charge	9.69	9.12	10.24	9.56
Cost funds/investment in receivables	2.61	2.16	2.05	1.67
Total	30.74	33.40	34.42	40.73

Recommendation Option I of factoring arrangement should be chosen in place of Plan II of in-house receivables management.

CHAPTER 17

Working Capital Financing

SMART CHIP HARDWARE COMPANY

The Smart Chip Hardware Company is a reputed company in industry with offices at Delhi, Chennai, and Mumbai. The company was founded by Mr Mahendra Kapoor and at present he is the chairman of the company.

Since the last few years, his son Gyanendra, a postgraduate in Finance has been involved in the business. Soon after joining, Gyanendra began to question a number of practices. He experimented with distribution channels and discovered that he could eliminate many dealers while increasing the sales. After being comfortable with the company's production activities and sales efforts, he began to work on its cash flows and credit problems.

The Company sold most of its southern accounts to a subsidiary, Arrow Chip Company. The resulting cash from the sale of accounts was used to modernise the company's machinery. Some of the funds were also used to improve the distribution system.

These actions brought about a considerable improvement in the service of western and northern customers and resulted in substantial increase in sales.

The next years sales are being forecast at Rs 9.8 crore if the firm continues to market its products aggressively.

At the end of the previous year, Gyanendra looked at past balance sheets and forecasted expenses. The firm was budgeting three stable items for the next year: office and marketing salaries, Rs 45,00,000; sales and promotion expenses, Rs 70,00,000 and miscellaneous overheads, Rs 22,00,000. Gyanendra knew that if the firm did not borrow any additional funds, Smart Chip would have likely interest expenses of approximately Rs 45,00,000 next year.

Having gathered these data, Gyanendra needed to look at collection costs and bad debt losses not included in general and administrative expenses. He decided to forecast these items using data from firm's risk–class approach to receivables management. All accounts were assigned to a risk-class category, which was reviewed on regular basis. The credit manager normally prepared an estimate of the collection costs and bad debts losses of each category of customer. These estimates were compared against actual data at the end of each year. For the past five years, the estimates proved to be fairly accurate. The bad debt losses were based on actual losses over the past five years, and the collection cost was allocated based on the routine expenses and the special collection efforts required for each category of customers.

During the past four years, Smart Chip Hardware sold on the terms 2/10 net 30. Based on past data, 30 per cent of the total customers would take the 2 per cent discount while others would pay on an average in 45 days. After giving some thought to the data, Gyanendra spoke with Chatur Singh, the firm's sales manager. Two months earlier, Chatur Singh had suggested that the firm should increase its terms of trade to 2/10 net 60. This would increase receivables, collection costs and bad debts losses but would result in additional sales and profits to the firm. He estimated that the office and marketing expenses will rise by Rs 15,00,000, selling expenses would rise by approximately Rs 20,00,000 and miscellaneous overheads will rise by Rs 5,00,000. The money required to finance additional receivables will be borrowed at 16 per cent. Gyanendra asked Chatur Singh to check the effect on sales if firm changes its terms to net 15. Two weeks later Chatur Singh submitted his appraisal.

From his past experience Gyanendra knew that cost of goods sold would be approximately 70 per cent of net sales of Rs 9.8 crore. He estimated that they would be 73 per cent at Rs 8.5 crore net sales and 68.5 per cent at Rs 11.9 crore sales. The tax rate for planning purposes should be assumed at 40 per cent.

Using the above mentioned information, Gyanendra was prepared to analyse and take a decision about appropriate credit policy for Smart Chip Hardware Company. He decided in advance that he would not change the policy unless the new policy gives either an increase in sales of 20 per cent or an increase in profit of 10 per

cent. He would prefer both but would accept a decline in sales of 25 per cent as long as profits rose by 10 per cent or more.

While he was in the middle of his analysis, he received an offer to avail services from M/s Fair Factoring Ltd (FFL) as an alternative to in-house management of receivables collection and credit monitoring. As a result of factoring agreement, Gyanendra estimated that miscellaneous overhead would decline from Rs 27,00,000 to Rs 22,00,000.

According to factoring proposal, the FFL offers a guaranteed payment within 60 days. The other details are listed below: (1) Advance, 80 per cent, (2) Up-front discount, 22 per cent, and (3) Commission 4 per cent.

Before taking final decision, Gyanendra thought to analyse the factoring proposal along with other terms. What decision should he take?

Solution

Collection Costs and Bad Debt Losses by Category of Customer

Risk category	*Collection costs as a percentage of sales (%)*	*Actual bad debt losses as a percentage of sales (%)*
1	2	1
2	3	2
3	4	3
4	6	5

Forecast General and Administrative Expenses *('000s)*

Particulars	*Trade terms*		
	2/10 net 60	*2/10 net 30*	*Net 15*
Office and marketing salaries	6,000	4,500	4,000
Sales and promotion	9,000	7,000	6,000
Miscellaneous overheads	2,700	2,200	2,000
Interest expenses	4,500	4,500	4,500

Terms of Trade and Actual Practices Reported by Credit Managers

Terms of trade	*Average collection period in actual practice*
Net 15	22 to 26 days
2/10 net 30	40 to 50 days
2/10 net 60	60 to 70 days

Next Year's Sales Estimates *(in '000s)*

Particulars	*Trade terms*		
	Net 15	*2/10 net 30*	*2/10 net 60*
Gross sales	88,000	1,02,000	1,25,000
Returns	3,000	4,000	5,400
Percentage of customers availing discount (%)	0	30	15
Cost of goods sold as a percentage of net sales (i.e. sales – returns)(%)	73	70	68.5
Net credit sales	85,000	98,000	1,19,600
Sales by credit category:			
1	28,000	30,000	30,000

(*Contd*)

(*Contd*)

2	38,000	42,000	44,000
3	19,000	24,000	28,000
4		2,000	15,600
Total credit sales	85,000	98,000	1,17,600

Estimated Receivables With Each Credit Policy

Terms of trade	*Average collection period*	*Average receivables*
Net 15	24	Rs 5,667
2/10 net 30	45	12,250
2/10 net 60	65	21,594

Savings for Added Cost for Each Trade Policy

Terms of trade	*Level of receivables*	*Original level of receivables*	*Funds freed or tied-up*	*Cost of funds*	*Savings*	*Added cost*
Net 15	Rs 5,667	Rs 12,250	Rs 6,583	0.16	Rs 1,053	
2/10 net 30	12,250	12,250	0	0.16	0	
2/10 net 60	21,594	12,250	(–9,344)	0.16		Rs (–1,495)

Schedule for Collection Costs and Bad Debts for Trade Terms 2/10 Net 30 ('000s)

Risk category	*Credit sales*	*Collection costs*	*Bad debts*
1	Rs 30,000	Rs 600	Rs 300
2	42,000	1,260	840
3	24,000	960	720
4	2,000	120	100
Total	98,000	2,940	1,960

Schedule for Collection Costs and Bad Debts for Trade Terms 2/10 Net 60 ('000s)

Risk category	*Credit sales*	*Collection costs*	*Bad debts*
1	Rs 30,000	Rs 600	Rs 300
2	44,000	1,320	880
3	28,000	1,120	840
4	15,000	936	780
Total	1,17,600	3,976	2,800

Pro Forma Income Statement for Smart Chip Hardware Company for Different Trade Terms

Particulars	*Trade terms*		
	Net 15	*2/10 net 30*	*2/10 net 60*
Gross sales	Rs 88,000	Rs 1,02,000	Rs 1,25,000
Less: Returns	3,000	4,000	5,400
Net sales	85,000	98,000	1,19,600
Cost of goods sold	64,240	71,400	85,625
Gross profit	20,760	26,600	33,975

(*Contd*)

(*Contd*)

Collection costs	2,460	2,940	3,976
Bad debts	1,610	1,960	2,800
Office and marketing expenses	4,000	4,500	6,000
Sales and promotion expenses	6,000	7,000	9,000
Miscellaneous overheads	1,800	2,200	2,700
Discounts	0	588	359
Operating income	4,890	7,412	9,140
Saving or added cost of receivables	1,053	0	(–2,495)
EBIT	5,943	7,412	7,645
Present interest on debt	4,500	4,500	4,500
EBT	1,443	2,912	3,145
Taxes (40%)	577	1,165	1,258
EAT	866	1,747	1,887

Terms of Factoring Arrangement

Particulars	*Terms*
Advance (%)	80
Discount charge (%)	22
Upfront commission (%)	4
Cost of own funds (%)	18
Guaranteed payment date (days)	60

Advantages to Smart Chip Hardware By Factoring Deal

Particulars	*Amount ('000s)*
Sales	1,19,600
Miscellaneous	2,200

Cost of In-house Collection and Financing

Particulars	*Amount ('000s)*
Cost of discount	Rs 359
Cost of collection	3,976
Cost of overheads	2,700
Bad debts	2,800
Cost of investment in debtors (Rs 21,594 × 0.16)	3,455
Total cost	13,290

Cost of Factoring Without Recourse

Particulars	*Amount ('000s)*
Commission upfront	Rs 4,784
Discount charges	2,526
Working capital financing cost	878
Saving in overheads	(500)
Total cost	7,688

Pro Forma for Income Statement After Factoring Deal

Particulars	*2/10 Net 60*
Gross sales	Rs 1,25,000
Less: Returns	5,400
Net sales	1,19,000
Cost of goods sold	85,624
Gross profit	33,975
Commission upfront	4,784
Discount charges	2,526
Office and marketing salaries	6,000
Sales and promotion expenses	9,000
Miscellaneous overhead	2,200
Cost of working capital financing	878
EBIT	8,587
Present interest on debt	4,500
EBT	4,087
Taxes (40%)	1,635
EAT	2,452

Recommendation

1. If Smart Chip changes terms from 2/10 net 30 to 2/10 net 60, sales increases by little more than 20 per cent but profits does not increase by 10 per cent because of increased bad debts and administrative and selling expenses incurred to achieve more sales. This increase can be attributed to pressure of selling to non-worthy and far-flunged customers.
2. If the term is changed to net 15, sales decrease by 14 per cent only but profits decrease by around 50 per cent. This decrease in profits is not desirable.
3. After taking into account the factoring deal for term 2/10 net 60, sales increased by 20 per cent and savings achieved through factoring increased the profits by around 20 per cent.
4. Thus, Gyanendra should change the terms to 2/10 net 60 along with factoring arrangement; otherwise stick to current policy of 2/10 net 30.

CHAPTER 20

Designing Capital Structure

ZIP ZAP ZOOM CAR COMPANY

Zip Zap Zoom Company Ltd is into manufacturing cars in the small car (800 cc) segment. It was set up 15 years back and since its establishment it has seen a phenomenal growth in both its market and profitability. Its financial statements are shown in Exhibits 1 and 2 respectively.

The company enjoys the confidence of its shareholders who have been rewarded with growing dividends year after year. Last year, the company had announced 20 per cent dividend, which was the highest in the automobile sector. The company has never defaulted on its loan payments and enjoys a favourable face with its lenders, which include financial institutions, commercial banks and debentureholders.

The competition in the car industry has increased in the past few years and the company foresees further intensification of competition with the entry of several foreign car manufacturers many of them being market leaders in their respective countries. The small car segment especially, will witness entry of foreign majors in the near future, with latest technology being offered to the Indian customer. The Zip Zap Zoom's senior management realises the need for large scale investment in upgradation of technology and improvement of manufacturing facilities to pre-empt competition.

Whereas on the one hand, the competition in the car industry has been intensifying, on the other hand, there has been a slowdown in the Indian economy, which has not only reduced the demand for cars, but has also led to adoption of price cutting strategies by various car manufacturers. The industry indicators predict that the economy is gradually slipping into recession.

EXHIBIT 1 Balance Sheet as at March 31, 200X

(*Amount in Rs crore*)

Source of Funds		
Share capital	350	
Reserves and surplus	250	600
Loans:		
Debentures (@ 14%)	50	
Institutional borrowing (@ 10%)	100	
Commercial loans (@ 12%)	250	
Total debt		400
Current liabilities		200
		1,200
Application of Funds		
Fixed assets:		
Gross block	1,000	
Less: Depreciation	250	
Net block	750	
Capital WIP	190	
Total fixed assets		940
Current assets:		
Inventory	200	
Sundry debtors	40	

(*Contd*)

(*Contd*)

Cash and bank balance	10	
Other current assets	10	
Total current assets		260
		1,200

EXHIBIT 2 Profit and Loss Account for the Year Ended March 31, 200X

(*Amount in Rs crore*)

Sales revenue (80,000 units × Rs 2,50,000)		2,000.0
Operating expenditure:		
Variable cost:		
Raw material and manufacturing expenses	1,300.0	
Variable overheads	100.0	
Total		1,400.0
Fixed cost:		
R&D	20.0	
Marketing and advertising	25.0	
Depreciation	250.0	
Personnel	70.0	
Total		365.0
Total operating expenditure		1,765.0
Operating profits (EBIT)		235.0
Financial expense:		
Interest on debentures	7.7	
Interest on institutional borrowings	11.0	
Interest on commercial loan	33.0	51.7
Earnings before tax (EBT)		183.3
Tax (@ 35%)		64.2
Earnings after tax (EAT)		119.1
Dividends		70.0
Debt redemption (sinking fund obligation)**		40.0
Contribution to reserves and surplus		9.1

* Includes the cost of inventory and work in process (W/P) which is dependent on demand (sales)

** The loans have to be retired in the next ten years and the firm redeems Rs 40 crore every year.

The company is faced with the problem of deciding how much to invest in upgradation of its plans and technology. Capital investment up to a maximum of Rs 100 crore is required. The problem areas are three-fold.

- The company cannot forgo the capital investment as that could lead to reduction in its market share as technological competence in this industry is a must and customers would shift to manufacturers providing latest in car technology.
- The company does not want to issue new equity shares and its retained earnings are not enough for such a large investment. Thus, the only option is raising debt.
- The company wants to limit its additional debt to a level that it can service without taking undue risks. With the looming recession and uncertain market conditions, the company perceives that additional fixed obligations could become a cause of financial distress, and, thus, wants to determine its additional debt capacity to meet the investment requirements.

Mr Shortsighted, the company's Finance Manager, is given the task of determining the additional debt that the firm can raise. He thinks that the firm can raise Rs 100 crore worth debt and service it even in years of recession. The company can raise debt at 15 per cent from a financial institution. While working out the debt capacity, Mr Shortsighted takes the following assumptions for the recession years:

(a) A maximum of 10 per cent reduction in sales volume will take place.
(b) A maximum of 6 per cent reduction in sales price of cars will take place.

Mr Shortsighted prepares a projected income statement which is representative of the recession years. While doing so, he determines what he thinks are the "irreducible minimum" expenditures under recessionary conditions. For him, risk of insolvency is the main concern while designing the capital structure. To support his view, he presents the income statement as shown in Exhibit 3.

EXHIBIT 3 Projected Profit and Loss Account

(*Amount in Rs crore*)

Sales revenue (72,000 units × Rs 2,35,000)		1,692.0
Operating expenditure:		
Variable cost:		
Raw material and manufacturing expenses	1,170.0	
Variable overheads	90.0	
Total		1,260.0
Fixed cost:		
R&D	—	
Marketing and advertising	15.0	
Depreciation	187.5	
Personnel	70.0	
Total		272.5
Total operating expenditure		1,532.5
EBIT		159.5
Financial expense:		
Interest on existing Debentures	7.0	
Interest on existing institutional borrowings	10.0	
Interest on commercial loan	30.0	
Interest on additional debt	15.0	62.0
EBT		97.5
Tax (@ 35%)		34.1
EAT		63.4
Dividends		—
Debt redemption (sinking fund obligation)		50.0*
Contribution to reserves and surplus		13.4

*Rs 40 crore (existing debt) + Rs 10 crore (additional debt)

Assumptions of Mr Shortsighted

- R&D expenditure can be done away with till the economy picks up.
- Marketing and advertising expenditure can be reduced by 40 per cent.
- Keeping in mind the investor confidence that the company enjoys, he feels that the company can forgo paying dividends in the recession period.

He goes with his worked out statement to the Director Finance, Mr Arthashatra, and advocates raising Rs 100 crore of debt to finance the intended capital investment. Mr Arthashatra does not feel comfortable with the statements and calls for the company's financial analyst, Mr Longsighted.

Mr Longsighted carefully analyses Mr Shortsighted's assumptions and points out that insolvency should not be the sole criterion while determining the debt capacity of the firm. He points out the following:

- "Apart from debt servicing, there are certain expenditures like those on R&D and marketing that need to be continued to ensure the long-term health of the firm.
- "Certain management policies like those relating to dividend payout, send out important signals to the investors. The Zip Zap Zoom's management has been paying regular dividends and discontinuing this practice (even though just for the recession phase) could raise serious doubts in the investor's mind about the health of the firm. The firm should pay at least 10 per cent dividend in the recession years".
- "Mr Shortsighted has used the accounting profits to determine the amount available each year for servicing the debt obligations. This does not give the true picture. Net cash inflows should be used to determine the amount available for servicing the debt."
- "Net cash inflows are determined by an interplay of many variables and such a simplistic view should not be taken while determining the cash flows in recession. It is not possible to accurately predict the fall in any of the factors such as sales volume, sales price, marketing expenditure and so on. Probability distribution of variation of each of the factors that affect net cash inflow should be analysed. From this analysis, the probability distribution of variation in net cash inflow should be analysed (the net cash inflows follow a normal probability distribution). This will give a true picture of how the company's cash flows will behave in recession conditions."

The management recognises that the alternative suggested by Mr Longsighted rests on data, which are complex and require expenditure of time and effort to obtain and interpret. Considering the importance of capital structure design, the Finance Director asks Mr Longsighted to carry out his analysis. Information on the behaviour of cash flows during the recession periods is taken into account.

The methodology undertaken is as follows:

(a) Important factors that affect cash flows (especially contraction of cash flows), like sales volume, sales price, raw materials expenditure, and so on, are identified and the analysis is carried out in terms of cash receipts and cash expenditures.

(b) Each factor's behaviour (variation behaviour) in adverse conditions in the past is studied and future expectations are combined with past data, to describe limits (maximum favourable, most probable and maximum adverse) for all the factors.

(c) Once this information is generated for all the factors affecting the cash flows, Mr Longsighted comes up with a range of estimates of the cash flow in future recession periods based on all possible combinations of the several factors. He also estimates the probability of occurrence of each estimate of cash flow.

Assuming a normal distribution of the expected behaviour, the mean expected value of net cash inflow in adverse conditions came out to be Rs 220.27 crore with standard deviation of Rs 110 crore.

Keeping in mind the looming recession and the uncertainty of the recession behaviour, Mr Arthashastra feels that the firm should factor a risk of cash inadequacy of around 5 per cent even in the most adverse industry conditions. Thus, the firm should take up only that amount of additional debt that it can service 95 per cent of the times, while maintaining cash adequacy.

To maintain an annual dividend of 10 per cent, an additional Rs 35 crore has to be kept aside. Hence, the expected available net cash inflow is Rs 185.27 crore (i.e. Rs 220.27 crore – Rs 35 crore).

Analyse the debt capacity of the company

Solution The additional cash available in recession conditions to service debt (catering for 5% risk tolerance) is given by the following:

$$\frac{X - \mu}{\sigma} = -1.64$$

Here:

X is the additional cash available each year for servicing fixed obligations

μ = Rs 185.27

σ = Rs 110 crore

–1.64 is that value of Z which gives 95 per cent of the area of the standard normal curve.

Taking all the above into account, Mr Longsighted works out the additional debt capacity as shown in Exhibit 4. The additional debt capacity as calculated by him is Rs 73.16 crore.

Mr Arthashastra too is convinced that there is no need to take up debt which can lead to a risk of cash inadequacy, especially in the present economic scenario. Mr Shortsighted too, realises the importance of maintaining cash adequacy even in the most unfavourable conditions. Thus, it decided that the firm will raise an additional debt of only Rs 73.15 crore at present and not take any undue risk. Further investments can be undertaken when the industry conditions revive.

EXHIBIT 4 Financial Analysis

(Rs crore)

Determination of Cash Flows:		
Cash available for dividends = [EAT + Depreciation – Debtors – Sinking fund obligation]	Rs 259.15	
Cash available at 15% contraction	220.27	
Cash required for dividends	35.00	
Average cash flow available for additional obligations	185.27	
Determination of Debt Capacity:		
Tolerance limit (%)	5	
Standard deviation	110	
Cash flow under most adverse conditions*	4.45	
Existing cash reserve	10.00	
Cash available	14.45	
Debt obligation per crore rupee of additional debt:		
Interest (15% less Tax shield)		0.0975
Sinking fund obligation		0.1000
Total		0.1975
Debt capacity (Rs 14.45 crore/0.1975 crore)		73.16

*Calculation of cash flow under most adverse conditions is based on the normal distribution (Z distribution):

$$Z \text{ value} = \frac{\text{Cash inflow} - \text{Mean value of cash inflow}}{\text{Standard deviation}}$$

The Z value corresponding to tolerance limit = –1.64.

Replacing the value in the above equation, we get the value cash inflows = Rs 4.45 crore.

CHAPTER 25

Lease Financing and Hire-purchase Finance

ARQ LTD

ARQ Ltd is an Indian company based in Greater Noida, which manufactures packaging materials for food items. The company maintains a present fleet of five fiat cars and two Contessa Classic cars for its chairman, general manager and five senior managers. The book value of the seven cars is Rs 20,00,000 and their market value is estimated at Rs 15,00,000. All the cars fall under the same block of depreciation @25 per cent.

A German multinational company (MNC) BYR Ltd, has acquired ARQ Ltd in all cash deal. The merged company called BYR India Ltd is proposing to expand the manufacturing capacity by four folds and the organisation structure is reorganised from top to bottom. The German MNC has the policy of providing transport facility to all senior executives (22) of the company because the manufacturing plant at Greater Noida was more than 10 kms outside Delhi where most of the executives were staying.

Prices of the Cars to be Provided to the Executives have been as follows:

Manager (10)	Santro Xing	Rs 3,75,000
DGM and GM (5)	Honda City	6,75,000
Director (5)	Toyota Corolla	9,25,000
Managing Director (1)	Sonata Gold	13,50,000
Chairman (1)	Mercedes Benz	23,50,000

The company is evaluating two options for providing these cars to executives

Option 1: The company will buy the cars and pay the executives fuel expenses, maintenance expenses, driver allowance and insurance (at the year-end). In such case, the ownership of the car will lie with the company. The details of the proposed allowances and expenditures to be paid are as follows:

(a) **Fuel Expenses and Maintenance Allowances per Month**

Particulars	*Fuel expenses*	*Maintenance allowance*
Manager	Rs 2,500	Rs 1,000
DGM and GM	5,000	1,200
Director	7,500	1,800
Managing Director	12,000	3,000
Chairman	18,000	4,000

(b) **Driver Allowance:** Rs 4,000 per month (Only Chairman, Managing Director and Directors are eligible for driver allowance).

(c) **Insurance Cost:** 1 per cent of the cost of the car.

The useful life for the cars is assumed to be five years after which they can be sold at 20 per cent salvage value. All the cars fall under the same block of depreciation @ 25 per cent using written down method of depreciation. The company will have to borrow to finance the purchase from a bank with interest at 14 per cent repayable in five annual equal instalments payable at the end of the year.

Option 2: ORIX, The fleet management company has offered the 22 cars of the same make at lease for the period of five years. The monthly lease rentals for the cars are as follows (assuming that the total of monthly lease rentals for the whole year are paid at the end of each year).

Santro Xing	Rs 9,125
Honda City	16,325
Toyota Corolla	27,175
Sonata Gold	39,250
Mercedes Benz	61,250

Under this lease agreement the leasing company, ORIX will pay for the fuel, maintenance and driver expenses for all the cars. The lessor will claim the depreciation on the cars and the lessee will claim the lease rentals against the taxable income. BYR India Ltd will have to hire fulltime supervisor (at monthly salary of Rs 15,000 per month) to manage the fleet of cars hired on lease. The company will have to bear additional miscellaneous expenses of Rs 5,000 per month for providing him the PC, mobile phone and so on.

The company's effective tax rate is 40 per cent and its cost of capital is 15 per cent.

Analyse the financial viability of the two options. Which option would you recommend? Why?

Solution

(I) Buying/Borrowing Option

(a) **Total Investment**

Particulars	*Cost of one car*	*Number of cars*	*Total cost*
Santro Xing	Rs 3,75,000	10	Rs 37,50,000
Honda City	6,75,000	5	33,75,000
Toyota Corolla	9,25,000	5	46,25,000
Sonata Gold	13,50,000	1	13,50,000
Mercedes Benz	23,50,000	1	23,50,000
			1,54,50,000

(b) **Present Value of Future Cash Outflows**

Year-end	*Gross cash outflows*		*Tax advantage on*			*Net cash outflows*	*PV factor at 8.4%***	*Total PV*
	Loan instalment	*Fixed operating costs (schedule 1)*	*Interest (schedule 2)*	*Depreciation (schedule 3)*	*Fixed operating costs*			
1	Rs 45,00,437*	Rs 22,84,500	Rs 8,65,200	Rs 13,95,000	Rs 9,13,800	Rs 36,10,937	0.922	Rs 33,29,284
2	45,00,437	22,84,500	7,34,304	10,46,250	9,13,800	40,90,583	0.851	34,81,086
3	45,00,437	22,84,500	5,85,087	7,84,688	9,13,800	45,01,362	0.785	35,33,569
4	45,00,437	22,84,500	4,14,975	5,88,516	9,13,800	48,67,646	0.724	35,24,175
5	45,00,437	22,84,500	2,21,265	4,41,387	9,13,800	52,08,485	0.669	34,84,476
							3.951	1,73,52,590

*Rs 154,50,000/3.433 = Rs 45,00,437

** (14% × 0.6)

(II) Leasing Option

Total Lease Rent

Model of car	*Lease rent of a car*	*Number of cars*	*Total lease rent*
Santro Xing	Rs 9,125	10	Rs 91,250
Honda City	16,325	5	81,625
Toyota Corolla	27,175	5	1,35,875
Sonata Gold	39,250	1	39,250
Mercedes Benz	61,250	1	61,250
Total monthly lease bill			4,09,250

Total Monthly Expenses

Lease rent	Rs 4,09,250
Salary of supervisor	15,000
Miscellaneous charges	5,000
Total monthly charges	4,29,250
Total annual expenses (Rs 4,29,250 × 12)	51,51,000
Tax shield on annual expenses @40%	20,60,400
Cash outflows after taxes	30,90,600

Short-term Capital Loss on account of Sale of Existing Cars

Book value of the existing seven cars	Rs 20,00,000
Salvage value of seven cars	15,00,000
Short-term capital loss	5,00,000
Tax advantage on short term capital loss (Rs 5,00,000 × 0.4)	2,00,000

Present value of Cash Outflows

Total annual expenses	Rs 30,90,600
Annuity for Re 1 for 5 years @8.4%	3.951
Present value of future cash outflows	1,22,10,961
Less: Tax advantage on short-term capital loss	2,00,000
Less: Sales proceeds of existing cars	15,00,000
Present value of incremental cash outflows	1,05,10,961

Recommendation Since the present value of the proposal for buying cars is more than the present value of leasing the cars from the leasing company ORIX, it is recommended that the company should opt for leasing.

Schedule 1: Annual Fixed Operating Cost

Fixed Monthly Expenses

Executive	*Car*	*Number of cars*	*Fuel expenses*	*Maintenance expenses*	*Driver expenses*	*Total monthly expenses*
Manager	Santro Xing	10	Rs 2,500	Rs 1,000	0	Rs 35,000
DGM and GM	Honda City	5	5,000	1,200	0	31,000
Director	Toyota Corolla	5	7,500	1,800	Rs 4,000	66,500
Managing Director	Sonata Gold	1	12,000	3,000	4,000	19,000
Chairman	Mercedes Benz	1	18,000	4,000	4,000	26,000
Total monthly expenses						1,77,500

Fixed Yearly Expenses

Fixed monthly expenses @ Rs 1,77,500 × 12 months	Rs 21,30,000
Insurance cost @1%	1,54,500
Total fixed operating costs	22,84,500

Schedule 2: Schedule of Debt Payment

Year-end	*Loan instalment*	*Loan at the beginning of the year*	*Interest payment 14%*	*Principal repayment*	*Principal outstanding at the end of the year*
1	Rs 4,500.437	Rs 1,54,50,000	Rs 21,63,000	Rs 23,37,437	Rs 1,31,12,563
2	4,500.437	1,31,12,563	18,35,759	26,64,572	1,04,47,991
3	4,500.437	1,04,47,991	14,62,719	30,37,718	74,10,273
4	4,500.437	74,10,273	10,37,438	34,62,999	39,47,274
5	4,500.437	39,47,274	5,53,163	39,47,274	Nil

Schedule 3: Schedule of Depreciation for Buying (Borrow) Option

Rate of depreciation: 25% (Written down method)

Book value at the start of year = Opening balance of the block + Purchases – Salvage value of sold assets:

Opening balance of the 25% block	Rs 20,00,000
Add: Buying cost of cars	1,54,50,000
Less: Salvage value of cars	15,00,000
Book value at the start of year	1,59,50,000

Base for incremental depreciation

Depreciation based for new block	Rs 1,59,50,000
Less: Depreciation base for existing block	20,00,000
	1,39,50,000

Year	*Depreciation*
1 (Rs 1,39,50,000 × 0.25)	Rs 34,87,500
2	26,15,625
3	19,61,719
4	14,71,289
5	11,03,467*

* It is assumed that company would be buying the new cars again in the sixth year. So the 25 per cent depreciation block will continue to exist. So tax advantage on short-term capital loss because of selling of assets at market price lower than the book value in the sixth year is not considered.

CHAPTER 32

Business Valuation

TATA MOTORS LIMITED

Tata Motors Limited (TML) is one of the leading automobile manufacturing companies in India. TML manufactures both commercial as well as passenger vehicles. The financial statements of the company for year 2006 are as follows:

Balance Sheet of TML as at 31st March 2006 (Amount in Rs. crore)

Liabilities	*Amount*	*Assets*	*Amount*
Shareholders Fund		Long term / Fixed assets	4,382
Paid up equity capital	383		
Reserves	5,154	Long term financial investments	1,470
Deferred tax liabilities	771	Deferred tax assets	151
		Intangible assets	150
External Liabilities			
8.5% Long term borrowings	2,219	Current assets	
12% Debentures	76		
15% Other long-term borrowings	642	Inventories	2,012
Creditors and other liabilities	7,118	Receivables	6,534
		Cash and bank balance	1,119
		Marketable securities	545
	16,363		**16,363**

Profit and Loss Account of TML for the years ended March, 2001 - 2006 (Amount in Rs. crore)

Particulars	*Mar 2001*	*Mar 2002*	*Mar 2003*	*Mar 2004*	*Mar 2005*	*Mar 2006*
Income						
Sales revenues from current product lines	7976	8715	10704	15312	20277	23568
Non-operating income (dividend, interest & miscellaneous)	171	135	150	263	385	609
Expenditures						
Raw materials, stores, etc.	4886	4882	5900	8578	12263	14633
Wages and salaries	608	692	720	882	1039	1143
Energy (power and fuel)	185	185	194	215	238	259
Indirect taxes (excise, etc.)	1319	1407	1768	2292	3092	3436
Advertising and marketing expenses	206	305	398	322	409	498
Distribution expenses	111	127	140	185	239	335
Other operating expenses	397	494	666	1006	1221	1392
Profit before depreciation, interest and taxes	434	759	1068	2094	2160	2481
Financial charges	491	424	317	217	218	295
Profit before depreciation and taxes	-57	334	750	1877	1942	2187
Depreciation	347	355	362	383	424	524
Profit before taxes	-404	-21	388	1495	1519	1663
Tax provision	2	1	210	483	416	525
Profit after tax	-406	-22	178	1012	1103	1138

Note:

1. Income from "change in stock" and non-recurring income has not been considered above,
2. Non-recurring expenses also have been ignored

The domestic industry is projected to grow at 10% to 15% (y-o-y basis) for next 5 years. The company is looking for international expansion and is investing to expand abroad through acquisitions, and dealership expansions. The TML is also investing in various companies abroad as a minority stakeholder as a strategic decision.

The TML has taken the cognizance of boom in the economy and the marketing and sales department has projected the (y-o-y) growth for next 8 years (2007-2014) as follows:

Sales revenue projection for current product lines, 2007-2014 (In percentages)

Projection Scenario	*Probability*	*Y-o-Y Growth in Sales*							
		2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*
Optimistic	30%	20%	15%	15%	12%	12%	12%	12%	12%
Most Likely	40%	20%	15%	12%	10%	10%	10%	10%	10%
Pessimistic	30%	15%	12%	10%	8%	6%	6%	6%	6%

Volume sales projection for new product lines, 2007-2014 (In units)

Projection Scenario	*Probability*	*Sales Volume*							
		2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*
Optimistic	30%	120,000	240,000	360,000	432,000	475,200	522,720	574,992	632,491
Most Likely	40%	100,000	200,000	300,000	360,000	396,000	435,600	479,160	527,076
Pessimistic	30%	50,000	100,000	125,000	143,750	158,125	173,938	191,331	210,464

The realizable price (gross revenue per product including excise duty) on new product is to be Rs. 1,60,000 per unit for first two years. Subsequently price is to be reduced to Rs. 1,40,000 per unit.

Sales revenue projection for new product lines, 2007-2014 (Amount in Rs. crore)

Projection Scenario	*Probability*	*Projected Sales Revenues*							
		2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*
Optimistic	30%	1,920	3,840	5,040	6,048	6,653	7,318	8,050	8,855
Most Likely	40%	1,600	3,200	4,200	5,040	5,544	6,098	6,708	7,379
Pessimistic	30%	800	1,600	1,750	2,013	2,214	2,435	2,679	2,947

Also, the new product is to be manufactured from a separate production facility wherein Government is offering income tax exemption.

To cater to the demand, The TML has been investing regularly (as shown below) in new product lines as well as expanding its regular product lines.

Investment planned for years, 2007-2014 (Amount in Rs. crore)

Investment made at beginning of Financial Year	*Current Product Lines*	*New Product Lines*
2007	100	500
2008	100	400
2009	100	100
2010	200	100

(*Contd*)

(*Contd*)

2011	250	150
2012	100	0
2013	200	300
2014	200	100

Adhering to its policy of reducing excise duties across the industry, Government is planning to reduce the excise duty on automotive products to 12% from its existing 16% from 2009. Moreover, increased focus on achieving cost efficiency through six sigma implementation, inventory management, e-procurement and better supply chain management may lead to a decrease in operating cost per unit. The overall operating cost is likely to reduce to 90% of the gross revenues in year 2007 onwards.

The TML has a sound debt equity ratio of 1:2 and intends to maintain the same. The company has BETA of 1.19 historically. The yearly market return of stocks on local stock exchanges has been around 14%. The risk free rate of return could be considered at 6%.

Additional information:

- Historically, current assets (excluding marketable securities) were around 35% of the gross sales. The same percentage is likely to exist for automotive businesses across all product lines in future years as well.
- In year 2006, current ratio was 1.35. However, in years before that, TML was able to manage with current ratios around 1.1. It has now set a target to maintain current ratio of 1.2 now onwards.
- TML has planned its non-operating (financial investments) investments to increase by 10% y-o-y. Investments in long-term instruments like equities and bonds form part of such investments.
- Dividends and interests income from long-term investments form around 70% of the non-operating revenues in year 2006. Other miscellaneous incomes could be considered as non-recurring in nature and will not occur in future.
- Historically, company has been trading at local stock exchanges with PE ratio of 22.
- Free cash flows are to grow at 2% y-o-y (pessimistic) and 3% y-o-y (most likely and optimistic) after its explicit projected period.
- Effective corporate tax could be safely assumed to be around 32%.
- On an average, deferred tax liabilities have been increasing by 6% year on year basis.
- On an average, deferred tax assets have been decreasing by 30% year on year basis.

The market valuation of the company is in the range of Rs. 31,000 – Rs. 33,000 crore as per April, 2006 data of the Bombay Stock Exchange. The management of TML assigns the task of valuation of TML to, Alok Verma, a financial consultant. Mr. Verma is of the view that given the fact about the TML, free cash flow approach to valuation would be appropriate.

Using a three step approach: (1) The present value of free cash flows to firm during the explicit forecast period, (2) The present value of continuing value of free cash flows to the firm after the explicit period, and (3) Value of non-operating assets at the end of the explicit period, the financial consultant has prepared a valuation report shown in Exhibit 32.1.

EXHIBIT 32.1 FCFF based valuation of TML

Cost of capital

Cost of equity:

Cost of Equity for the company using CAPM approach is 15.5% as shown below:

= Rf + (Rm – Rf) * BETA

= 6% + (14% - 6%)*1.19 = 15.52% or 15.5%

Cost of debt:

Particulars	*Interest Rate (%)*	*Amount (Rs. Crore)*	*Interest paid (Rs. Crore)*
Long term debt	8.50%	2,219	188.61
Debentures	12%	76	9.12
Other long-term loan	15%	642	96.3
Total		2,937	294.03
Overall Interest rate	10%		
Corporate Tax	32%		
Effective interest rate	6.8%		

Cost of capital

Debt: Equity 0.53:1

Cost of Capital = 6.8 %*(0.53/1.53) + 15.5 %*(1/1.53)

= 2.36% + 10.14% = 12.5%

Value of the company with optimistic scenario (Amount in Rs. crore)

Particulars	*March-end*							
	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*
Sales revenues								
Current product line	28,282	32,524	37,403	41,891	46,918	52,549	58,854	65,917
New product line	1,920	3,840	5,040	6,048	6,653	7,318	8,050	8,855
Total	30,202	36,364	42,443	47,939	53,571	59,867	66,904	74,772
Cash operating expenditure-Current product line (90%)	25,454	29,272	33,663	37,702	42,226	47,294	52,969	59,325
Cash operating expenditure-New product line (90%)	1,728	3,456	4,536	5,443	5,988	6,586	7,245	7,969
Depreciation-Current product line	896	737	610	528	472	398	358	327
Depreciation-New product Line	100	160	148	138	141	113	150	140
Operating earnings-Current product line	1,932	2,515	3,131	3,661	4,220	4,857	5,527	6,265
Operating earnings-New product line	92	224	356	466	525	619	655	745
Taxes-Current product line	618	805	1,002	1,172	1,350	1,554	1,769	2,005
Taxes-New product lines	—	—	—	—	—	—	—	—
Increase in deferred tax liabilities	46	49	52	55	58	62	66	70
Decrease in deferred tax assets	(45)	(32)	(22)	(16)	(11)	(8)	(5)	(4)
NOPAT*	1,405	1,917	2,455	2,917	3,346	3,868	4,353	4,940
After tax non-operating income (dividend and interest)	319	351	386	424	467	513	565	621
Gross cash flow**	2,720	3,165	3,599	4,007	4,426	4,892	5,426	6,028
Capital expenditures	600	500	200	300	400	100	500	300
Investment in financial instruments	147	162	178	196	215	237	260	286

(*Contd.*)

(*Contd.*)

Increase in working capital	(784)	359	355	321	329	367	411	459
Free cash flows	2,757	2,144	2,866	3,191	3,482	4,188	4,255	4,982
Continuing value of free cash flows								**54,017**
Present value factor for FCFF	0.889	0.790	0.703	0.624	0.554	0.493	0.438	0.388
Present values of free cash flows	2,451	1,694	2,015	1,991	1,929	2,064	1,864	22,892
Company Value	**36,900**							
Growth of free cash flows after the projected period		3%						

***** Operating earnings of current and new product lines – Taxes – Increase in deferred tax liability + Decrease in deferred tax assets.

** NOPAT + After-tax non-operating income + Depreciation of current and new product lines.

Value of the company with most likely scenario (Amount in Rs. crore)

Particulars	*March-end*							
	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*
Sales revenues								
Current product line	28,282	32,524	36,427	40,070	44,077	48,485	53,333	58,666
New product line	1,600	3,200	4,200	5,040	5,544	6,098	6,708	7,379
Total	29,882	35,724	40,627	45,110	49,621	54,583	60,041	66,046
Cash operating expenditure-Current product line (90%)	25,454	29,272	32,785	36,063	39,669	43,636	48,000	52,800
Cash operating expenditure-New product line (90%)	1,440	2,880	3,780	4,536	4,990	5,489	6,037	6,641
Depreciation-Current product line	896	737	610	528	472	398	358	327
Depreciation-New product Line	100	160	148	138	141	113	150	140
Operating earnings-Current product line	1,932	2,515	3,033	3,479	3,935	4,451	4,975	5,540
Operating earnings-New product line	60	160	272	366	414	497	521	598
Taxes-Current product line	618	805	971	1,113	1,259	1,424	1,592	1,773
Taxes-New product lines	—	—	—	—	—	—	—	—
Increase in deferred tax liabilities	46	49	52	55	58	62	66	70
Decrease in deferred tax assets	(45)	(32)	(22)	(16)	(11)	(8)	(5)	(4)
NOPAT	1,373	1,853	2,305	2,692	3,042	3,469	3,844	4,299
After tax non-operating income (dividend and interest)	319	351	386	424	467	513	565	621
Gross cash flow	2,688	3,101	3,448	3,782	4,122	4,493	4,917	5,387
Capital expenditures	600	500	200	300	400	100	500	300
Investment in financial instruments	147	162	178	196	215	237	260	286

(*Contd.*)

(*Contd.*)

Increase in working capital	(803)	341	286	261	263	289	318	350
Free cash flows	2,744	2,098	2,784	3,025	3,244	3,867	3,838	4,450
Continuing value of free cash flows								45,615
Present value factor for FCFF	0.889	0.790	0.703	0.624	0.554	0.493	0.438	0.388
Present values of free cash flows	2,439	1,658	1,957	1,888	1,797	1,906	1,681	19,426
Company Value	**32,752**							
Growth of free cash flows after the projected period		3%						

Value of the company with pessimistic scenario (Amount in Rs. crore)

Particulars	*March-end*							
	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*
Sales revenues								
Current product line	27,104	30,356	33,392	36,063	38,227	40,520	42,952	45,529
New product line	800	1,600	1,750	2,013	2,214	2,435	2,679	2,947
Total	27,904	31,956	35,142	38,075	40,441	42,956	45,630	48,475
Cash operating expenditure-Current product line (90%)	24,393	27,320	30,052	32,457	34,404	36,468	38,656	40,976
Cash operating expenditure-New product line (90%)	720	1,440	1,575	1,811	1,992	2,192	2,411	2,652
Depreciation-Current product line	896	737	610	528	472	398	358	327
Depreciation-New product Line	100	160	148	138	141	113	150	140
Operating earnings-Current product line	1,814	2,298	2,729	3,079	3,350	3,654	3,937	4,226
Operating earnings-New product line	(20)	—	27	63	81	131	118	155
Taxes-Current product line	580	735	873	985	1,072	1,169	1,260	1,352
Taxes-New product lines	—	—	—	—	—	—	—	—
Increase in deferred tax liabilities	46	49	52	55	58	62	66	70
Decrease in deferred tax assets	(45)	(32)	(22)	(16)	(11)	(8)	(5)	(4)
NOPAT	1,212	1,546	1,853	2,117	2,311	2,562	2,735	2,963
After tax non-operating income (dividend and interest)	319	351	386	424	467	513	565	621
Gross cash flow	2,528	2,793	2,997	3,207	3,391	3,585	3,808	4,051
Capital expenditures	600	500	200	300	400	100	500	300
Investment in financial instruments	147	162	178	196	215	237	260	286
Increase in working capital	(918)	236	186	171	138	147	156	166
Free cash flows	2,699	1,895	2,433	2,540	2,638	3,102	2,891	3,298
Continuing value of free cash flows								32,038

(*Contd.*)

(*Contd.*)

Present value factor for FCFF	0.889	0.790	0.703	0.624	0.554	0.493	0.438	0.388
Present values of free cash flows	2,399	1,497	1,710	1,585	1,461	1,529	1,266	13,710
Company Value	**25,160**							
Growth of free cash flows after the projected period		2%						

Estimation of the value of the company (Amount in Rs. crore)

Projection Scenario	*Optimistic*	*Most Likely*	*Pessimistic*
Probability	30%	40%	30%
Present value of FCFF	36,900	32,752	25,160
Weighted Average Present Value of FCFF	31,719		
Value of Marketable Securities*	545		
Estimated Value of the Firm	32,264		

***According to Copeland,** Marketable securities are short-term cash investments that the company holds over and above its target cash balances to support operations. The investment in marketable securities is zero-net-present value investment. The return on this investment just compensates for its risk. Therefore, the present value of the cash flow related to these marketable securities must equal the market value of these securities on the company's books at the time of the valuation.

Conclusion: The estimated value of the firm is Rs. 32,264 crore in April, 2006 (Very closely with the stock

M/S DHODA SWEETS BUSINESS VALUATION

M/s Dhoda Sweets (DS) is a popular confectionary manufacturer in North India. DS has reached its fifth year of trading. It has been successful in developing its business after a slow start. At the end of its fourth year of trading it obtained a new equity capital. Its summarised balance sheet at the end of year 5 is shown in Exhibit 1.

EXHIBIT 1 Dhoda Sweets' Balance Sheet as on March 31, year 200X (Rs '000)

Fixed assets		Rs 1,000
Current assets	Rs 1,500	
Less: Current liabilities	500	
Net current assets		1,000
Total assets		2,000
Share capital (1,00,000 shares × Rs 10)		1,000
Reserves		500
Shareholders funds		1,500
10% Debt		500
Shareholders fund and liabilities		2,000
EAT (tax at 50 per cent)		150

The management of DS is now planning to expand its operations to enter the novelty sweets market. Since they lack the expertise in manufacturing in this segment, instead of setting up a new unit, they propose to acquire a unit in this segment.

Mr Vin Market (Marketing Manager) has been deployed to seek out such a player because of high good connections in the market. He comes out with a lot of options but one company in particular catches his attention. Khemchand Halwaai (KH) is into the manufacturing of novelty sweets with a product range and market which would perfectly complement that of DS's.

The Finance Manager, Mr Money Minded is summoned by Mr Vin Market to help him with the financial aspects.

Mr Money Minded immediately gets on to the job and at first he looks at the balance sheet of KH summarised in Exhibit 2.

EXHIBIT 2 Balance Sheet of KH as on March 31, Year 200X (Rs '000)

Fixed assets			Rs 250
Current assets		Rs 500	
Less: Current liabilities		250	
Net current assets			250
Total assets			500
Share capital (30,000 shares × Rs 10)			300
Reserves			100
Shareholders funds			400
10% Debt			100
Total liabilities			500
EAT (tax at 50 per cent)	Year	2,001	19
		2,002	22
		2,003	25

Mr Money Minded has estimated that the acquisition will result in some financial synergy. Upon careful deliberations, the management of DS arrives at a conclusion that it can raise the level of efficiency at KH to the level at which it operates. The current levels are summarised in Exhibit 3.

EXHIBIT 3

	DS	*KH*
Return on capital employed (%)	17.50	15
Profit growth rate (%)	20	14
3 years average earning (Rs '000)		
EBT	125	44
EAT	63	22
Earnings per share	1.5	0.833
Market price	18	—
PE ratio (times)	12	—
Dividend per share	0.5	0.5

Mr Money Minded, as a MBA graduate, had studied the following valuation methods:

1. Market valuation
2. Earning capacity
3. Net book value of assets
4. Liquidation

On dwelling deeper the figures that in the absence of market quotation for Ms KH, market valuation is irrelevant. Also, the net book value of assets is irrelevant for a going concern but it can provide a starting point for negotiations. Liquidation value gives distress prices, but they do not involve intangible assets for which DS will have to pay a price.

He also feels that the most appropriate basis for valuation in going concern is the stream of earnings that is being purchased, reflected in the earnings capacity.

Earnings: To get the feel of possible earnings, Mr Money Minded decides to use a range of earnings coming from: (1) Most recent earnings, (2) Average earnings, (3) Earnings increased to reflect DS's return on capital, (4) Projected earnings, and (5) Return on capital required. The respective valuations are summarised in Exhibits 4-11.

EXHIBIT 4 [Valuation 1 (Most Recent Earnings)]

2003 earnings	Rs 0.833
P/E ratio	12
Price per share (Rs 0.833 × 12)	10

EXHIBIT 5 Valuation 2 (Average Earnings)

Average earnings (Rs '000s)	(19 + 22 + 25)/3	22
EPS (average) (Rs)	(Rs 22,000/30,000)	0.73
Price per share (Rs 0.73 × 12)		8.8

EXHIBIT 6 Valuation 3 [Earnings Increased to Reflect DS's Return on Capital (i.e. KH's ROC will be at 17.5%)]

Capital employed (Rs)	Rs 5,00,000
Required ROC (%)	17.5
EBIT	87,500
Interest (0.10 × Rs 1,00,000)	10,000
EBT	77,500
Tax (0.50)	38,750
EAT	38,750
EPS = Rs 38,750/30,000	1.29
Price per share (Rs 1.29 × 12)	15.5

EXHIBIT 7 Valuation 4 (Projected Earnings)

It is unrealistic to believe that KH will grow at the same rate as DS immediately. Hence, 20 per cent is too optimistic but according to Mr Money Minded it provides a ceiling for the bid.

KH's average profit	Rs 22,000
At 20 per cent growth projected profit [(Rs 22,000 (1 + 0.2)]	26,400
New EPS (Rs 26,400/30,000)	0.88
Price per share (Re 0.88 × 12)	10.6

EXHIBIT 8 Valuation 5 (ROC Required)

DS's ROCE (%)	17.5
DH's EAT	Rs 25,000
Add: Tax	25,000
EBT	50,000
Add: Interest	10,000
EBIT	60,000
DS can pay: (Rs 60,000 × 100/17.5)	3,43,000
Price per share (Rs 3,43,000/30,000)	11.4

EXHIBIT 9 Valuation 6 (Book Value of Assets)

Net total assets	Rs 5,00,000
Less: Debentures	1,00,000
Net book value	4,00,000
Book value per share (Rs 4,00,000/30,000)	13.3

EXHIBIT 10 Summary of Valuation

Valuation Method	*Share price*
Most recent earnings	Rs 10.00
Average earnings	8.80
Earnings increased to reflect DS's return on capital	15.5
Projected earnings	10.60
ROC required	11.4
Book value of assets	13.30

Now the management of DS has broad parameters to start with the negotiations.

The only valuation which seems out of line to the management is the valuation by 'earnings increased to reflect DS's return on capital' because they could not hope to increase the level of ROC of KH immediately to 17.5 per cent and it would be unreasonable to believe so. Hence, the management of DS will have to pay anywhere from Rs 8.8 per share to Rs 13.3 per share in the negotiations for them to be right to both the companies.

CHAPTER 33

Corporate Restructuring

PANDA SYSTEMS

Panda Systems is a four month old firm software solutions provider. It was conceived by a group of entrepreneurs who wanted to make it big in life. Although the set-up was small, it offered state of the art facilities to motivate its employees.

The company has the right blend of domain experts, programmers and administrators working as a team, committed to take the organisation to a higher level. The US has always been a lucrative market for Indian software companies. Panda Systems is no exception and is on the lookout for potential partners in the US.

An opportunity came in the form of 'Bigboy & Company'. It is a one year old company basically located in the New Jersey area. They are looking for a reliable partner in India. Both the companies think that they have the synergy and can do good business if they join hands.

The Director of Panda Systems is interested in the proposal and wants to evaluate the issue from the financial perspective. He approaches his finance team to analyse the case and report to the management in a week's time. Bigboy & Company wants Panda Systems to become 50 per cent partner of the merged firm by investing in their firm.

The available data about the companies are summarised in Exhibit 1.

EXHIBIT 1

Particulars	*Panda Systems*	*Bigboy & Company*
Knowledge workers	10	5
Last year's revenue (US $)	N.A.	50,000
Place of operation	New Delhi	New Jersey
Partners	3	2
Capital structure (% equity)	100	100

The terms mentioned in the contract in black and white are:

- The new company will take the name of Bigboy & Company.
- It will be 100 per cent equity owned firm.
- US operations will be handled by Bigboy & Company.
- Indian operations will be handled by Panda Systems under the new name of Bigyboy & Company.
- Development base will be in India only because of cheap labour.
- The revenues estimated by the Bigboy & Company are:

  Year 1 = US $ 8,00,000
  2 40,00,000
  3 90,00,000

Methodology

To study and analyse the merger proposal, a two-step approach elaborated below was adopted by the finance team:

(a) Valuation: The current value of both the companies in order to arrive at the amount to be invested in merged firm should be established.

(b) Evaluation: Once the amount to be invested is finalised, the Panda Systems should find out whether the agreed revenues from the US operations will give the desired returns on investment or not.

Valuation

For Panda Systems

Land and building: (a large building in posh colony)	Rs 70,00,000
Hardware and software: (includes desktops, laptops, UPS & related software)	40,00,000
Human capital	50,00,000
	1,60,00,000

For Bigboy & Company

Last year's turnover	US $ 50,000
Conversion rate: (1$ = Rs 46)	Rs 23,00,000
Multiplication factor:	3*
Total value (Rs 23,00,000 × 3)	Rs 69,00,000

*As per valuation system in US, the last year's turnover is multiplied with the multiplication factor which is between 3 to 30 depending upon the age of the firm. The older the company, the higher will be the multiplication factor. Since this is only one year old company, we have taken the least multiplication factor.

Net amount to be invested by Panda Systems for 50 per cent equity will be: Rs 5,30,00,000.

Work Sheet

Particulars	*Year 1*	*Year 2*	*Year 3*
Sales revenue (US $)	8,00,000	40,00,000	90,00,000
Conversion factor	46	46	46
Sales revenue (Rs)	3,68,00,000	18,40,00,000	41,40,00,000
Safety factor (%)	30	30	30
Adjusted revenues (sales revenue X 70%)	2,57,60,000	12,88,00,000	28,98,00,000
Less: Expenses:			
Orgaware (Annexure 1)	39,45,000	1,79,75,000	3,70,55,000
Humanware (Annexure 2)	1,00,50,000	3,90,20,000	9,18,00,000
Software (Annexure 3)	31,50,000	60,00,000	86,50,000
Hardware (Annexure 4)	31,07,000	49,84,000	85,52,000
Running cost (Annexure 5)	2,28,000	5,17,600	10,06,400
Total expenses	2,04,80,000	6,84,96,600	14,70,63,400
Safety factor (%)	30	30	30
Adjusted expenses (Total expenses X 130%)	2,66,24,000	8,90,45,580	19,11,82,420
Less: Depreciation (Annexure 6)	24,42,800	29,70,720	46,09,088
EBT (–33,06,800)	3,67,83,700	9,40,08,492	
Less: Tax (@ 40 per cent)	(–13,22,720)	1,47,13,480	3,76,03,397
EAT (–19,84,080)	2,20,70,220	5,64,05,095	
Add: Depreciation	24,42,800	29,70,720	46,09,088
CFAT	4,58,720	2,50,40,940	6,10,14,183
PV factor (@ 20 per cent)	0.833	0.694	0.579
Present value	3,82,114	1,73,78,412	3,53,27,212
Total present value			5,30,87,738
Total cash outflow			5,30,00,000
NPV			87,738

Assumptions

We have made following assumptions in four financial analysis:

- The conversion rate of rupee *vis-a-vis* US dollar is fixed as US $1 = Rs 46.
- The valuation is done as practiced in different countries and no effort is made to change it.
- The discounting is done @ 20 per cent because investor expectation in the IT sector, is very high as the industry is going through a growth phase. This prompted us to take higher discounting factor.
- We have inflated out costs by 30 per cent in order to cover any unforeseen increase in different cost heads and to keep some buffer for us.
- We have reduced the revenue by 30 per cent as we do not want to take chances with our partners commitment. Also, it will give us some cushion.
- The block of assets continue to exist as company will continue its operations after three years.
- The rate of depreciation is 60 per cent for IT products.
- Opening balance at year 1 is assumed to be Rs 30,00,000 for calculation of depreciation.
- We have assumed that no equipment is sold during these three years.
- IT is a fast changing industry, so we have taken analysis up to three years only.
- We have gone for all branded IBM products for hardware.
- We will use licensed software only as per our company policy. We are against piracy.

Recommendations After our analysis we feel that quantitatively this proposal of merger will be profitable for our company. However, certain qualitative aspects are to be considered before making the final decision.

- We, as a company will loose our identity after the merger.
- The Bigboy & Company is only one year old so they do not have a brand equity as such. So they are almost as new as us in US.
- The kind of returns we are expected can be achieved inspite of merger if we open office in the US.
- The Bigboy & Company has recently split with some US partners. So their credibility is doubtful.
- We will have 100 per cent dependency on them.

We understand that we should get into US market as early as possible, but we will advise you to defer this deal and look for some alternatives before finalising this proposal.

- Opening up our own office in US.
- Evaluating an alliance with established US companies.

ANNEXURE 1

Orgaware	*Calculation principle*	***Year 1***	***Year 2***	***Year 3***
Fully furnished office space	Rs 59,000 per person. It includes lighting, furniture and other Rs 6,00,000 per vehicle for all years with 0, 4 and 6 vehicles in the 1st, 2nd & 3rd years respectively. This includes different kinds of cars starting from Maruti Zen to Mitsubishi Lancer	Rs 17,70,000	Rs 59,90,000	Rs 1,18,00,000
Vehicles		0	24,00,000	36,00,000

(*Contd.*)

(*Contd.*)

Advertising and marketing	At the rate of 5 per cent of the yearly revenues (unadjusted)	18,40,000	92,00,000	2,07,00,000
Communication	L – Landline, F – Fax, M – Mobile. These are the new connections installed along	6L + 1F + 5M	4L + 1F + 5M	10L+2F+10M
	with 10 landlines and 2 Faxes & 5 Mobiles with yearly costs of	2,15,000	75,000	1,55,000
Parties and recreation activities	Aggregate	1,20,000	3,10,000	8,00,000
TOTAL		39,45,000	1,79,75,000	3,70,55,000

ANNEXURE 2

Humanware	*Calculation principle*	***Year 1***	***Year 2***	***Year 3***
Number of knowledge workers per year	These are the total number of employees at the end of year	30	100	200
Salaries:	Average 25000 * person * month with 20 per cent increase every year	Rs 90,00,000	Rs 3,60,00,000	Rs 8,64,00,000
Product training	Rs 5,000 per person	1,50,000	5,00,000	10,00,000
New technology training	Rs 10,000 per person	3,00,000	10,00,000	20,00,000
Number of employee leaving	20 per cent of the previous years strength		6	20
New employees recruited		30	76	120
Recruitment expenses	Rs 20,000 per person	6,00,000	15,20,000	24,00,000
TOTAL		1,00,50,000	3,90,20,000	9,18,00,000

ANNEXURE 3

Software	*Calculation principle*	***Year 1***	***Year 2***	***Year 3***
Acquiring base software	Operating system – Windows NT, Win 2K professional version with licences	Rs 10,00,000	Rs 25,00,000	Rs 40,00,000
Acquiring application software	Licensed software Rational Rose, Adobe, Max etc.	10,00,000	20,00,000	30,00,000
Software packages	Anti Virus – Norton, JDK etc.	5,00,000	8,00,000	12,00,000
Lease line	64 K Lease line year 1, 128 K lease line year 2, 128 K in the year 3. We have to incur additional cost of new 64 K pipe in year 2. Hence, the cost is higher in year 2	6,50,000	7,00,000	4,50,000
TOTAL		31,50,000	60,00,000	86,50,000

ANNEXURE 4

Hardware	*Calculation principle*	***Year 1***	***Year 2***	***Year 3***
Servers	Quantity	2	4	7
Value	IBM 600 @ Rs 2,66,000	Rs 5,32,000	Rs 10,64,000	Rs 18,62,000
Desktops/PCs	Quantity	25	58	96
Value	IBM P III, M Hz	16,25,000	34,80,000	57,60,000
Laptops	Quantity	5	2	4
Value	IBM Celeron 15" Screen	7,00,000	2,40,000	4,80,000
Networking Infrastructure		1,50,000	1,00,000	2,50,000
Printers		1	1	2
Value		1,00,000	1,00,000	2,00,000
TOTAL		31,07,000	49,84,000	85,52,000

ANNEXURE 5

Running cost	*Calculation principle*	***Year 1***	***Year 2***	***Year 3***
Vehicles	Number of vehicles	0	4	6
	(petrol + servicing) Rs 14,400/ vehicle	0	Rs 57,600	Rs 86,400
Communi-cation	L – Landline = Rs 18,000 per year	6L+1F+5M	10L+2F+10M	20L+4F+20M
Total lines	F-Fax = Rs 18,000 per year M-Mobile = Rs 14,400 per year	1,98,000	3,60,000	7,20,000
Estab-lishment charges	Number of persons	30	100	200
	(Elec+water etc 1,000per per-son)	30,000	1,00,000	2,00,000
TOTAL		2,28,000	5,17,600	10,06,400

ANNEXURE 6

Year	*Opening balance*	*New equipments*	*Sale of old equipment*	*Net balance*	*Depreciation*	*Closing book value*
1	Rs 30,00,000	Rs 31,07,000	0	Rs 61,07,000	Rs 36,64,200	Rs 24,42,800
2	24,42,800	49,84,000	0	74,26,800	44,56,080	29,70,720
3	29,70,720	85,52,000	0	1,15,22,720	69,13,632	46,09,088