

Accounting for Financial and Managerial Decision and Control [AFMDC]

Unit 9

Managerial Accounting for Decision Making: Lease or Purchase Decision

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Contents

- Decision regarding to:
 - Lease or Purchase

Learning Objectives

- Understand the concept of lease and purchase
- Decision regarding to: Lease or purchase

Concept of Lease and Purchase

- Buy or not to buy?
- Different methods for acquiring the required equipment
 - through rent, lease or buy
- Need thoroughly investigated

Rent Out Equipment

- Should a company rent out the required equipment?
 - How long does the company need equipment
 - If the need of equipment is for a short period of time (say a week or month), then renting is probably the best option

When to rent?

- Very short-term use and extended need
- Do not want to invest thousands of rupees in a new piece of equipment and the rent cost is negligible compared to the long-term cost of buying
- Seasonal or peak-period use

Advantages of Renting

- Flexibility
- Pay for use
- Improved borrowing capacity
- No Maintenance Cost
- No Hidden Costs
- No Taxes
- State-of-the-art Equipment

Lease Equipment

- Lease is an alternative to rent and buy capital equipment
 - For example aircraft, electrical power plants, agriculture land
- A lease is a contract whereby the owner of an asset grants to other party the exclusive right to use the asset for an agreed period of time
- Every lease involves two parties:
 - Lessee - the user of the asset
 - Lessor – Owner of the asset
- The lessee makes periodical payments (known as lease rent) to the owner of the asset

Lease Equipment (contd.)

- Lease agreements are of two types
 - Operating lease and
 - Financial lease
- Operating leases are short-term (shorter than the expected useful life of the equipment) and cancellable with proper notice during the contract period at the option of the lessee
- Financial leases are long-term (extend over most of the expected useful life of the equipment) and cannot be cancelled or can be cancelled only if the lessor is reimbursed for any losses
 - Use for leasing land and building and large prices of fixed equipments

Advantages of Leasing

- Tax benefit
- Improved borrowing capacity
- Immediate write-off amount spent
- Reduced maintenance costs
- Amount saving
- Source of finance
- Technology obsolescence advantage

Buy Equipment

There are definitely advantages to buying

Advantages of Buying

- **Tax Advantages**

- depreciation on assets is deducted directly from net income
- taxable income becomes lower, reducing the amount of tax due.
- If buying is made by borrowing instead of cash payment, additional tax advantages can be obtained against the interest expenditure.

- **Resale and Trade-in**

- Equipment can be resold or traded in toward the purchase of new equipment.
- So, most of the companies encourage people to buy their equipment by allowing trade-in of older models for newer ones.
- For the old equipment having the customer buy the product outright is the most advantageous arrangement.

- **Price Breaks**

- There is considerably more room for negotiation when buying as opposed to renting or leasing.

Evaluation of Lease or Buy Options

- The lessee's viewpoint on financial evaluation of lease:
- Immediate payment of purchase price is required to pay to supplier if the decision is made for buying of equipment
- For such, the company should have sufficient cash balance in hand
- If not, the company has to raise through equity share capital or borrowing loan from financial institutions
- If equipment is leased rather than purchased then the company can save lump sum payment of cost of purchase but lease rent is agreed to pay over the period of lease
- It will constitute a fixed charge like interest payable on borrowing

Evaluation of Lease or Buy Options (Contd.)

- To evaluate lease or buy alternatives, it is necessary to analyze the following financial factors:
- The initial payment required in the case of outright purchase
- The scrap value of the owned equipment at the expiry of the period of lease
- The total amount payable over the period of lease i.e. periodical rental obligation.
 - Lease rent payable time whether at the beginning or end of the period
- The tax rate and cost of capital after tax
- The capital allowances (or investment allowance/rebate) on the equipment purchase
- The risk involved in the alternatives
- The impact on the credit status

Evaluation of Lease or Buy Options (Contd.)

Step 1

- Determine the cash flow after tax for each year under the lease alternative as under
- $\text{Lease rent payment} \times (1 - \text{Tax rate})$

Step 2

- Determine the cash flow after tax for each year under the buying alternative as under
- If cash purchase
- $\text{Cash value} - [\text{Depreciation} \times (1 - \text{Tax rate})]$
- If borrowing purchase
- $\text{Gross Loan instalment} - [(\text{Depreciation} + \text{Interest}) \times (1 - \text{tax rate})]$

Evaluation of Lease or Buy Options (Contd.)

Step 3

- Compare the present value of cash outflows associated with leasing (step 1) and buying (step 2) alternatives by employing after tax cost of capital

Evaluation of Lease or Buy Options (Contd.)

Step 4

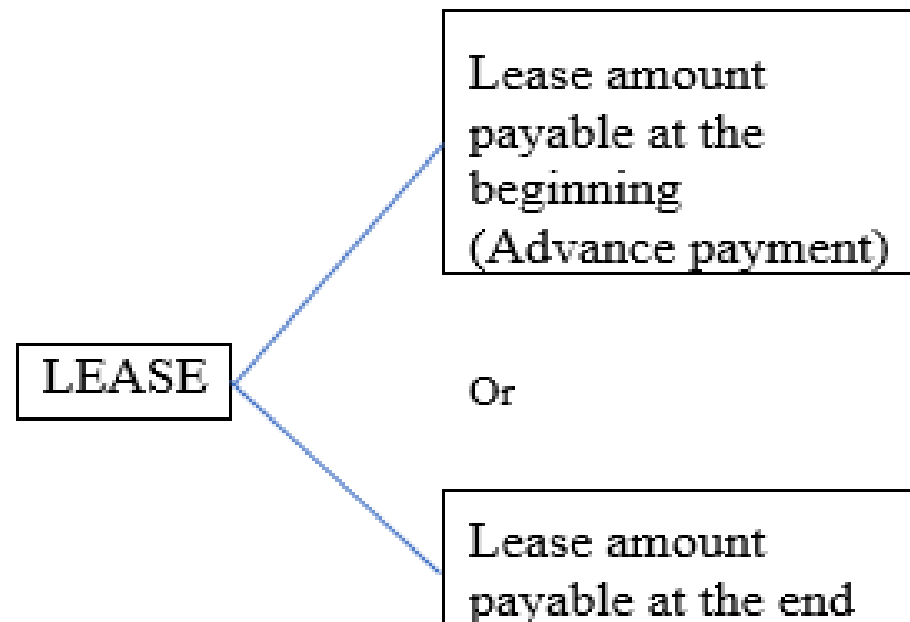
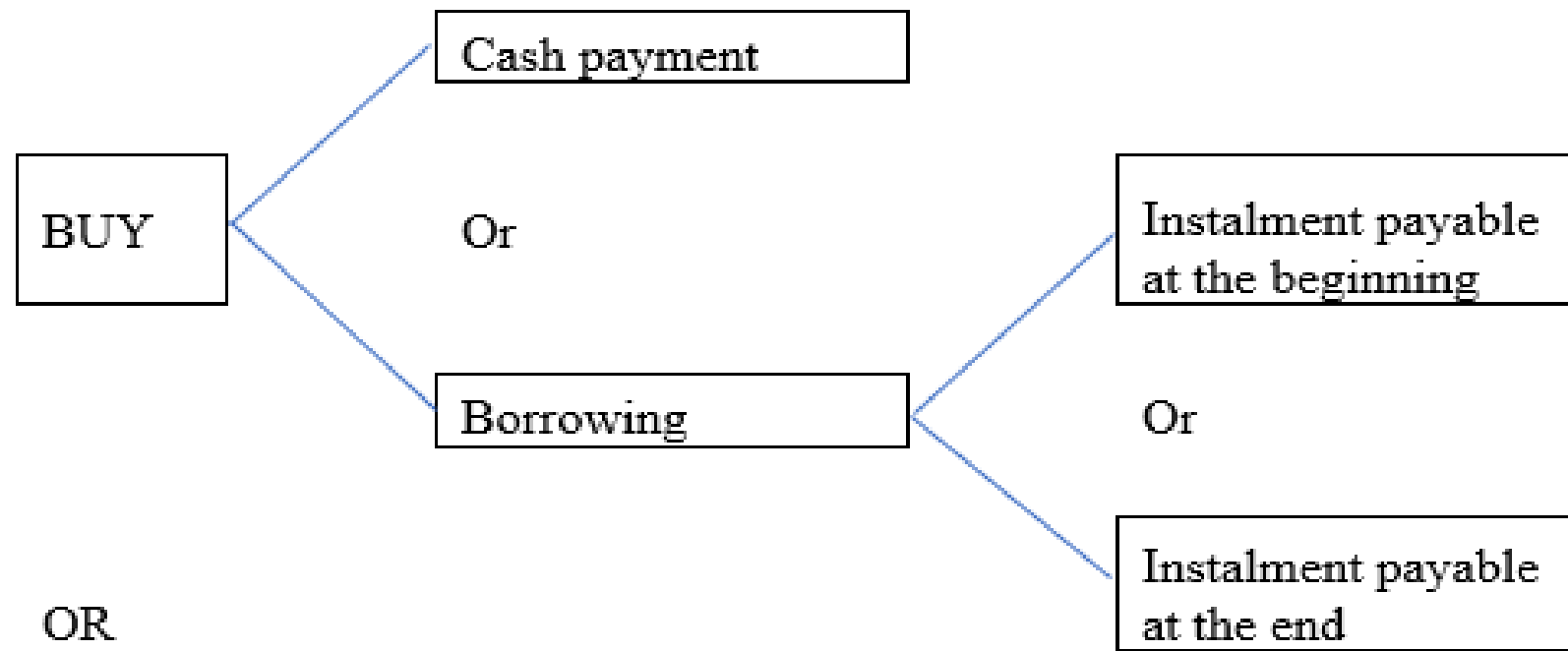
- Select the alternative with the lower present value:

Present Value	Condition		Decision
PV of net cash outflows under leasing alternative	$>$	PV of net cash outflows under buying alternative	Buy
PV of net cash outflows under leasing alternative	$<$	PV of net cash outflows under buying alternative	Lease

Evaluation of Lease or Buy Options (Contd.)

Step 4

- Select the alternative with the lower present value:
- Alternatively, we can ascertain the Net advantage to leasing (NAL). If we obtain NAL positive value then it is advantageous to lease and vice-versa
- $NAL = PV \text{ Cost of Buying} - PV \text{ Cost of Leasing}$



(Source: Author)

Evaluation of Lease or Buy Options (Contd.)

- Cost of Capital After Tax = Cost of Capital Before Tax \times (1 – Tax Rate)

$$\text{Annual Depreciation} = \frac{\text{Cost of Equipment} - \text{Salvage Value of Equipment}}{\text{Life of Equipment (Years)}}$$

Evaluation of Lease or Buy Options (Contd.)

We are required to determine the annual bank loan instalment payment. If the instalment payments are to be payable on end of the year, it can be calculated as:

$$\text{Bank Loan Instalment} = \frac{\text{Loan Amount}}{\text{PVIF of Annuity } \dots \% \text{ Interest } \dots \text{ Years}}$$

If the instalment payments are to be paid on in advance, it can be calculated as:

$$\text{Bank Loan Instalment} = \frac{\text{Loan Amount}}{1 + \text{PVIF of Annuity } \dots \% \text{ Interest } \dots \text{ Years}}$$

Evaluation of Lease or Buy Options

Question 1

Asian foods industry is wishing to introduce a new equipment costing Rs. 4,00,000. The life of the equipment is 5 years with salvage value amounting Rs. 50,000. The industry has cost of capital before tax is 16% and applicable tax rate is 25%. The industry has the following options for obtaining the new equipment:

Case 1

Buying: Cash payment made as an initial outlay for outright purchase.

OR

Leasing: Annual lease rent amounting Rs. 1,25,000 at the end of each year for 5 years.

Evaluation of Lease or Buy Options

Question 1 (Contd.)

Case 2

Buying: Cash payment made through borrowing loan from bank. Equal instalment is required to pay at the end of each year for 5 years.

Interest rate 16% is charge by bank. OR

Leasing: Annual lease rent amounting Rs. 1,25,000 is to be made in advance of each year for 5 years.

Evaluation of Lease or Buy Options

Question 1 (Contd.)

Case 3

Buying: Cash payment made through borrowing loan from bank.
Equal instalment is required to pay at the beginning of each year for 5 years. Interest rate 16% is charge by bank.

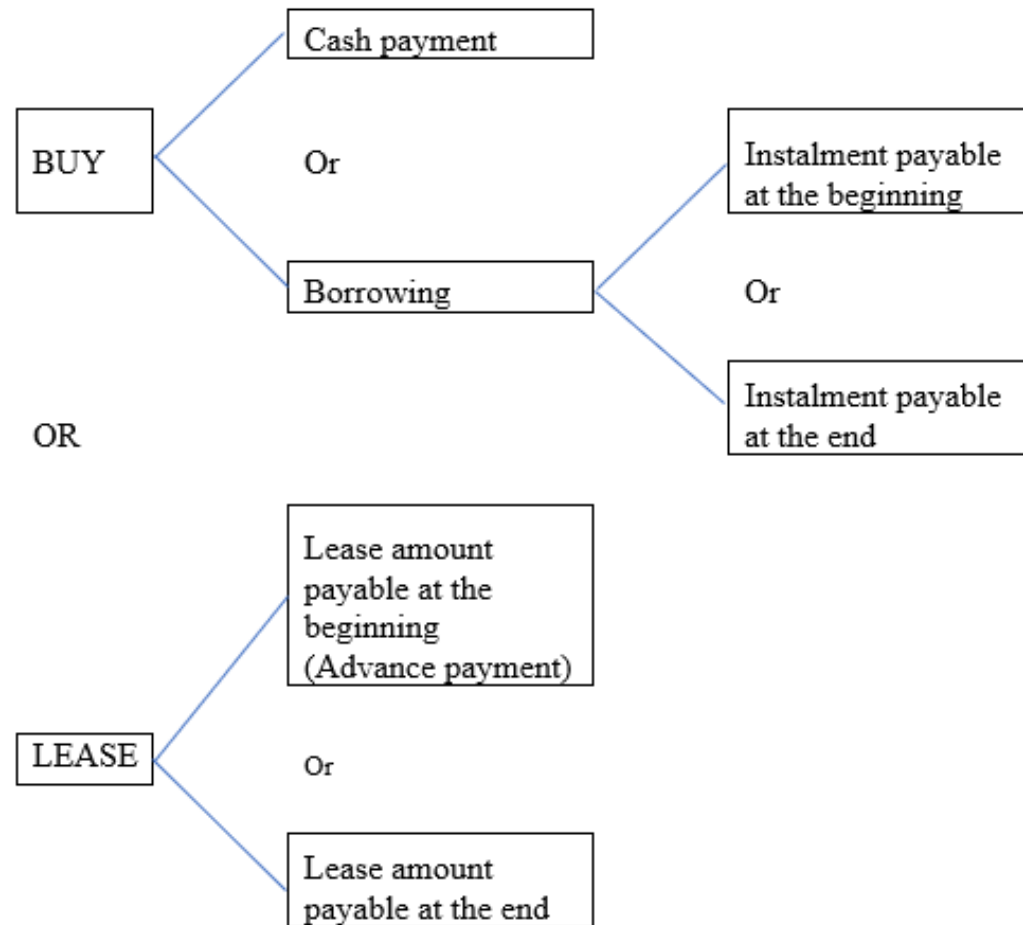
OR

Leasing: Lease rent payments are to be made at the end of each year and the equipment will yield lessor a return of 14%.

Required: Evaluate each options and suggests to the management to buy or lease on each option separately.

Evaluation of Lease or Buy Options

Solution: Case 1



Case 1

Buying: Cash payment made as an initial outlay for outright purchase.

OR

Leasing: Annual lease rent amounting Rs. 1,25,000 at the end of each year for 5 years.

Evaluation of Lease or Buy Options

Solution: Case 1

Basic Calculations:

- i. Cost of Capital After Tax = Cost of Capital Before Tax \times (1 – Tax Rate)
= 16% \times (1 – 25%)
= 12%
- ii. Annual Depreciation = $\frac{\text{Cost of Equipment} - \text{Salvage Value of Equipment}}{\text{Life of Equipment (Years)}}$
= $\frac{\text{Rs. 4,00,000} - \text{Rs. 50,000}}{5 \text{ years}}$ = Rs. 70,000.

Evaluation of Lease or Buy Options

Solution: Case 1

Present Value of Cash Outflows Under Lease Alternative (Payment- Year End)

Year	Lease Payment	Tax Shield @ 25%	Net Cash Outflows After Tax	PV Factor After Tax 12%	Total PV of Lease Payment (Rs.)
Col. 1	Col. 2	Col. 3 = col. 2 \times 25%	Col. 4 = col. 2 – col. 3	Col. 5	Col. 6 = col. 4 \times col. 5
1 - 5	1,25,000	31,250	93,750	3.605	3,37,969

Evaluation of Lease or Buy Options

Solution: Case 1

Present Value of Cash Outflows Under Buying Alternative						
Year	Initial Payment	Depreciation	Tax Shield @ 25%	Net Cash Outflows After Tax	PV Factor After Tax 12%	Total PV of Buying (Rs.)
Col. 1	Col. 2	Col. 3	Col. 4 = Col. 3 × 25%	Col. 5 = Col. 2 – Col. 4	Col. 6	Col. 7 = Col. 5 × Col. 6
0	4,00,000	--	-	4,00,000	1.000	4,00,000
1 - 5	-	70,000	17,500	(17,500)	3.605	(63,087)
Gross Total						3,36,913
Less:	PV of Salvage Value (Rs. 50,000 × 0.567)					(28,350)
Net Cash Outflows Under Buying Alternative						3,08,563

Evaluation of Lease or Buy Options

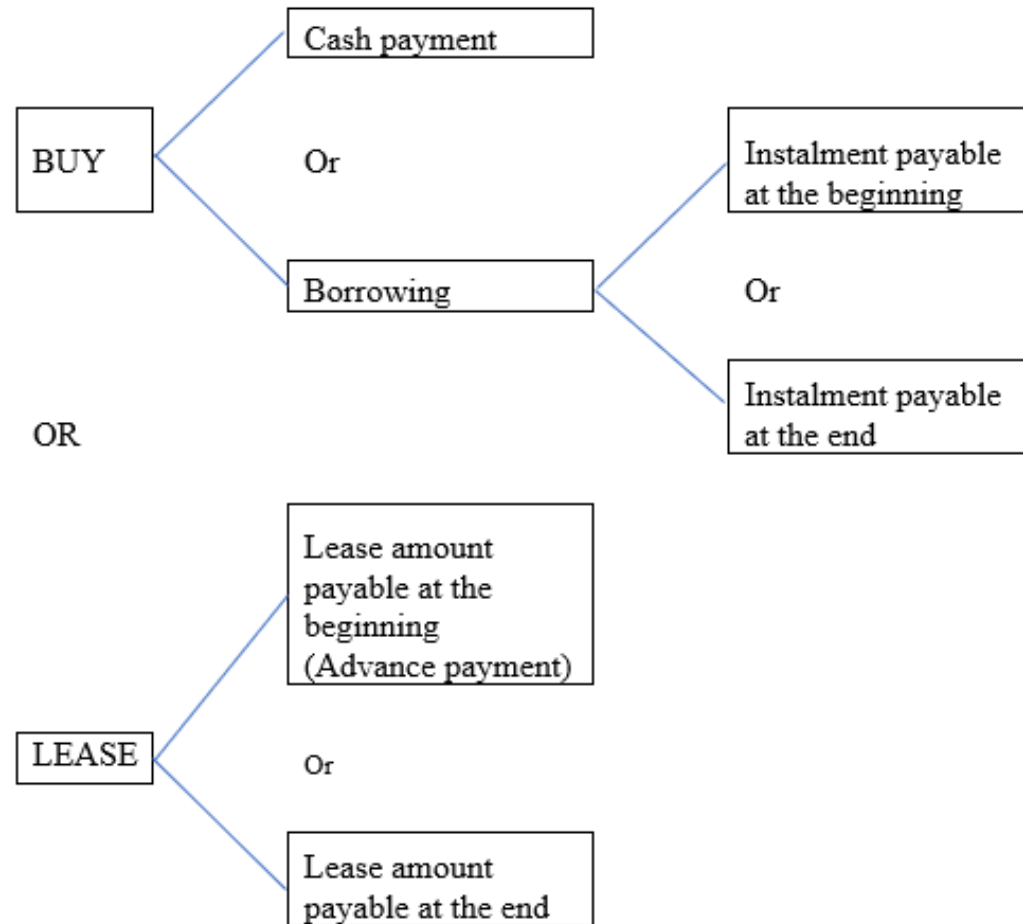
Solution: Case 1

$$\begin{aligned}\text{NAL} &= \text{PV Cost of Buying} - \text{PV Cost of Leasing} \\ &= \text{Rs. } 3,08,563 - \text{Rs. } 3,37,969 \\ &= (\text{Rs. } 29,406)\end{aligned}$$

Decision: Since the negative NAL or the present value of total a cash outflow for buying alternative (Rs. 308,563) is lower than that for leasing alternative (Rs. 337,969), so it is recommended for buying the equipment.

Evaluation of Lease or Buy Options

Solution: Case 2



Case 2

Buying: Cash payment made through borrowing loan from bank. Equal instalment is required to pay at the end of each year for 5 years. Interest rate 16% is charge by bank.

OR

Leasing: Annual lease rent amounting Rs. 1,25,000 is to be made in advance of each year for 5 years.

Evaluation of Lease or Buy Options

Solution: Case 2

Present Value of Cash Outflows Under Lease Alternative (Payment- Advance)

Year	Lease Payment	Tax Shield @ 25%	Net Cash Outflows After Tax	PV Factor After Tax 12%	Total PV of Lease Payment (Rs.)
Col. 1	Col. 2	Col. 3	Col. 4 = col. 2 – col. 3	Col. 5	Col. 6 = col. 4 × col. 5
0	1,25,000	-	1,25,000	1.000	1,25,000
1 - 4	1,25,000	31,250	93,750	3.037	2,84,719
5	-	31,250	(31,250)	0.567	(17,719)
Total PV of Cash Outflows Under Leasing Alternative					3,92,000

Evaluation of Lease or Buy Options

Solution: Case 2

Determination of the Interest and Principal Components of the Loan Instalment (Year-End Payment)

First of all, we are required to determine the annual bank loan instalment payment. Since the instalment payments are to be paid on end of the year, it can be calculated as under:

$$\begin{aligned}\text{Bank Loan Instalment} &= \frac{\text{Loan Amount}}{\text{PVIF of Annuity, 16\% Interest, 5 Years}} \\ &= \frac{\text{Rs. 4,00,000}}{3.274} = \text{Rs. 1,22,175}\end{aligned}$$

Evaluation of Lease or Buy Options

Solution: Case 2

Loan amortization schedule (Loan repayment schedule)

Year	Loan Instalment (Rs.)	Payment		Principal Outstanding at the End of the Year (Rs.)
		Interest on Loan (Rs.)	Principal Re-payment (Rs.)	
Col. 1	Col. 2	Col. 3 = col. 5 \times 16%	Col. 4 = col. 2 – col. 3	Col. 5
0	–	–	–	4,00,000
1	1,22,175	64,000	58,175	3,41,825
2	1,22,175	54,692	67,483	2,74,342
3	1,22,175	43,895	78,280	1,96,062
4	1,22,175	31,370	90,805	1,05,257
5	1,22,175	16,918*	1,05,257	–

*Differences between instalment and the principal amount. Amounting Rs. 77 error due to approximation figure.

Evaluation of Lease or Buy Options

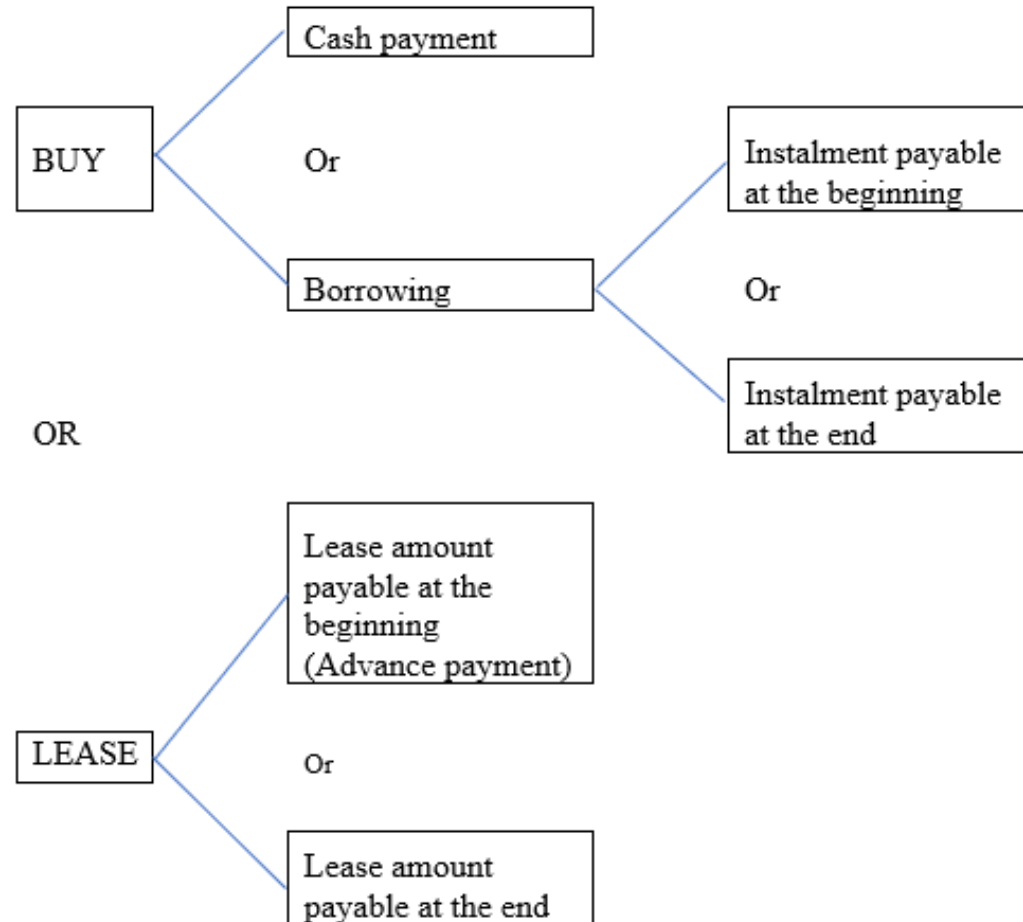
Solution: Case 2

Present Value of Cash Outflows Under Buying Alternative							
Year	Bank Instalment Payment	Interest	Depreciation	Tax Shield @ 25%	Net Cash Outflows After Tax	PV Factor After Tax 12%	Total PV of Buying (Rs.)
Col 1	Col. 2	Col. 3	Col. 4	Col. 5 = (Col. 3+4)×25%	Col. 6 = Col. 2 – Col. 5	Col. 7	Col. 8 = Col. 6 × Col. 7
1	1,22,175	64,000	70,000	33,500	88,675	0.893	79,187
2	1,22,175	54,692	70,000	31,173	91,002	0.797	72,529
3	1,22,175	43,895	70,000	28,474	93,701	0.712	66,715
4	1,22,175	31,370	70,000	25,343	96,832	0.636	61,585
5	1,22,175	16,918	70,000	21,730	1,00,445	0.567	56,952
Gross total							3,36,968
Less: PV of Salvage Value (Rs. 50,000 × 0.567)							(28,350)
Net Cash Outflows Under Buying Alternative							3,08,618

Decision: Since the present value of total cash outflow for buying alternative (Rs. 308,618) is lower than that for leasing alternative (Rs. 392,000), so it is recommended for buying the equipment.

Evaluation of Lease or Buy Options

Solution: Case 3



Case 3

Buying: Cash payment made through borrowing loan from bank. Equal instalment is required to pay at the beginning of each year for 5 years. Interest rate 16% is charge by bank.

OR

Leasing: Lease rent payments are to be made at the end of each year and the equipment will yield lessor a return of 14%.

Evaluation of Lease or Buy Options

Solution: Case 3

Leasing Alternative: First of all, we are required to determine the annual lease rent payment. Since the lease rent payments is to be paid on end of each year, it can be calculated as under:

$$\begin{aligned}\text{Lease Rental Payment} &= \frac{\text{Cash Price of Equipment}}{\text{PVIF of Annuity, 14\% Interest, 5 Years}} \\ &= \frac{\text{Rs. 4,00,000}}{3.433} = \text{Rs. 1,16,516}\end{aligned}$$

Present Value of Cash Outflows Under Lease Alternative (Payment- Year End)

Year	Lease Payment	Tax Shield @ 25%	Net Cash Outflows After Tax	PV Factor After Tax 12%	Total PV of Lease Payment (Rs.)
Col. 1	Col. 2	Col. 3 = col. 2 × 25%	Col. 4 = col. 2 – col. 3	Col. 5	Col. 6 = col. 4 × col. 5
1 - 5	1,16,516	29,129	87,387	3.605	3,15,030

Evaluation of Lease or Buy Options

Solution: Case 3

Buying Alternative: First of all, we are required to determine the annual bank loan instalment payment. Since the instalment payments are to be paid on in advance, it can be calculated as under:

$$\begin{aligned}\text{Bank Loan Instalment} &= \frac{\text{Loan Amount}}{1 + \text{PVIF of Annuity, 16\% Interest, 4 Years}} \\ &= \frac{\text{Rs. 4,00,000}}{1 + 2.798} \\ &= \text{Rs. 1,05,319}\end{aligned}$$

Evaluation of Lease or Buy Options

Solution: Case 3

**Determination of the Interest and Principal Components of the Loan Instalment
(Advance Payment)**

Year	Loan Instalment (Rs.)	Payment		Principal Outstanding at the End of the Year (Rs.)
		Interest on Loan (Rs.)	Principal Re-payment (Rs.)	
Col. 1	Col. 2	Col. 3 = col. 2 \times 16%	Col. 4 = col. 2 – col. 3	Col. 5
0	1,05,319		1,05,319	2,94,681
1	1,05,319	47,149	58,170	2,36,511
2	1,05,319	37,842	67,477	1,69,034
3	1,05,319	27,045	78,274	90,760
4	1,05,319	14,559*	90,760	–

*Differences between instalment and the principal amount. Amounting Rs. 37 error due to approximation figure.

Evaluation of Lease or Buy Options

Solution: Case 3

Present Value of Cash Outflows Under Buying Alternative

Year	Bank Instalment Payment	Interest	Depreciation	Tax Shield @ 25%	Net Cash Outflows After Tax	PV Factor After Tax 12%	Total PV of Buying (Rs.)
Col 1	Col. 2	Col. 3	Col. 4	Col. 5 = (Col. 3 + 4) × 25%	Col. 6 = Col. 2 – Col. 5	Col. 7	Col. 8 = Col. 6 × Col. 7
0	1,05,319	-	-	-	1,05,319	1.000	1,05,319
1	1,05,319	47,149	70,000	29,287	76,032	0.893	67,897
2	1,05,319	37,842	70,000	26,960	78,359	0.797	62,452
3	1,05,319	27,045	70,000	24,261	81,058	0.712	57,713
4	1,05,319	14,559	70,000	21,140	84,179	0.636	53,538
5	-	-	70,000	17,500	(17,500)	0.567	(9,922)
						Gross total	3,36,997
Less: PV of Salvage Value (Rs. 50,000 × 0.567)							(28,350)
Net Cash Outflows Under Buying Alternative							3,08,647

Decision:

Since the present value of total cash outflow for buying alternative (Rs. 308,647) is lower than that for leasing alternative (Rs. 315,030), so it is recommended for Buying the equipment.

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Thank You