Illustration 19.17

Find out the optimum cash balance as per Baumols Model for the following :

Annual cash needed	Rs. 2,40,000
Transaction cost	Rs. 100 per conversion
Interest rate	Rs. 12% p.a.

What are the opportunity costs of holding cash, the transaction cost and the total costs. What these would be if cash held is Rs. 15,000 or Rs. 25,000 ?

Solution :

Optimum cash balance as per Baumol Model is :

$$C = \sqrt{\frac{2FT}{r}} \qquad = \sqrt{\frac{2 \times 2,40,000 \times 100}{.12}}$$

$$= \text{Rs. } 20,000$$

Average Cash balance	Rs. 10,000 (*i.e.*, 20,000 ÷ 2)
Interest Cost @ 12%	Rs. 1,200
No. of transactions (Rs. 2,40,000 ÷ 20,000)	12
Transaction cost (12 × 100)	Rs. 1,200
Total cost (Rs. 1,200 + 1,200)	Rs. 2,400

Illustration 19.20

Cash flows of Green Packs Ltd. behave in a random manner. Find out the 'Return Point' and 'Upper Limit', as per Miller-Orr Model, on the basis of the following information:

(*i*) Cost of effecting a marketable securities transaction is Rs. 200.

(*ii*) Annual yield on marketable securities is 12%.

(*iii*) Standard deviation of daily cash balance is Rs. 500.

(*iv*) The minimum cash balance is Rs. 5,000.

Also find out average cash balance.

Solution :

'Z' value as per M-O Model is:

$$Z = \sqrt[3]{\frac{3TV}{4i}}$$

where, T = Transaction cost, Rs. 2,000

V = Variance of daily cash requirement, (5,000)

i = Daily rate of interest, $(.12 \div 365) = .0328\%$.

$$\text{Now,} \quad Z = \sqrt{\frac{3 \times 2{,}000 \times 2{,}50{,}000}{4 \times .000328}} = \sqrt[3]{1143292268292}$$

$$= 4853$$

Now, Return Level, R = Rs. 5,000 + Rs. 4,853 = Rs. 9,853

Upper Level, U = Rs. 5,000 + 3(4,853) = Rs. 19,559.

Illustration 19.21

Illustration 20.8

ABC Ltd. is examining the question of relaxing its credit policy. It sells at present 20,000 units at a price of Rs. 100 per unit, the variable cost per unit is Rs. 88 and average cost per unit at the current sales volume is Rs. 92. All the sales are on credit, the average collection period being 36 days.

A relaxed credit policy is expected to increase sales by 10% and the average age of receivables to 60 days. Assuming 15% return, should the firm relax its credit policy ?

Solution :

EVALUATION OF PROPOSALS

	Present Plan (20,000 units)	**Proposed Plan (22,000 units)**
Sales	Rs. 20,00,000	Rs. 22,00,000
-Variable costs (Rs. 88 per unit)	17,60,000	19,36,000
-Fixed costs (20,000 units × Rs. 4)	80,000	80,000
Net Profit	1,60,000	1,84,000
Investment cost	27,600	50,400
Income	1,32,400	1,33,600

The firm should relax its credit policy as it increases the profit by Rs. 1,200.

Working Notes :

The investment costs have been calculated as follows :

	Present Plan	**Proposed Plan**
Cost of sales (Variable + Fixed cost)	Rs. 18,40,000	Rs. 20,16,000
Average daily sale (360 days a year)	5,111	5,600
Credit period	36 days	60 days
Therefore, average debtors	1,84,000	3,36,00
Interest @ 15%	27,600	50,400

Illustration 20.9

Illustration 21.3

ABC Motors purchases 9,000 units of spare parts for its annual requirements, ordering one month usage at a time. Each spare part costs Rs. 20. The ordering cost per order is Rs. 15 and the carrying charges are 15% of unit cost. You have been asked to suggest a more economical purchasing policy for the company. What advice would you offer, and how much would it save the company per year?

Solution:

The existing cost of maintaining inventory is as follows:

Since, the firm is buying 9,000 units which are purchased in orders of 1 month usage, therefore, the number of units being ordered per order is 9,000/12 = 750 units, and the firm is placing 12 orders in a year, and the average inventory is 375 units (*i.e.*,750/2). Now,

Ordering cost (12 × Rs. 15)	Rs. 180
Carrying cost (20 × 375 × 15%)	1,125
Total annual cost of existing policy	1,305

The economic order quantity may be ascertained as follows:

$$EOQ = \sqrt{\frac{2AO}{C}}$$

Or, $EOQ = [(2AO)/C]^{1/2}$

where, EOQ = Economic quantity per order.

A = 9,000 units

O = Rs. 15

C = 15% of Rs. 20 = Rs. 3

Now, $EOQ = [(2AO)/C]^{1/2}$

$= [(2 \times 9{,}000 \times 15)/3]^{1/2}$

= 300 units.

So, the EOQ is 300 units and the number of orders in a year would be 9,000/300 = 30, and the average inventory would be 300/2 = 150 units. The cost of maintaining this economic order quantity is as follows:

Ordering cost (30 × 15)	Rs. 450
Carrying cost (20 × 150 × 3)	450
Total annual cost of existing policy	900

So, the firm can save in annual cost of maintaining inventory to the extent of Rs. 1,305–900 = Rs. 405.

Illustration 21.4