Lesson 12

Management of Inventory, Accounts Receivables and Cash

Objectives of the lesson

After studying this lesson, students will be able to:

- Describe various dimensions of the management of inventory, accounts receivables, and marketable securities, and
- Understand crux of cash management models and learn their implications in decision making.

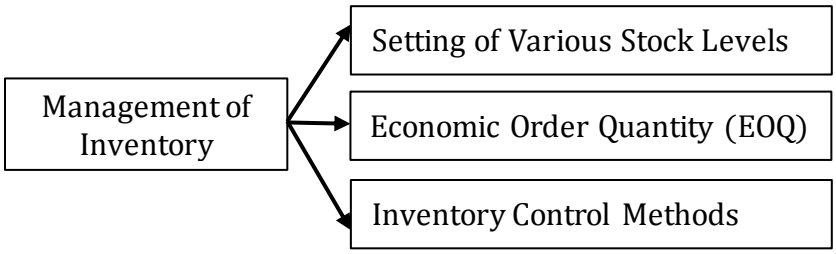
1.0 Introduction

Every business needs sufficient amount of working capital to run its operations smoothly. Furthermore, it needs to utilize its working capital in the most efficient way possible. This is to ensure maximum return on investment and utilization of fixed assets productively. This is possible only if various elements of working capital are managed proficiently. current assets typically include cash and cash equivalents, inventory, accounts receivable, marketable securities, prepaid expenses, and other liquid assets; and current liabilities mainly include accounts payable, and accrued liabilities. Companies need to manage these components effectively and efficiently to achieve objectives of business and maximizing wealth of shareholders.

2.0 Management of Inventory

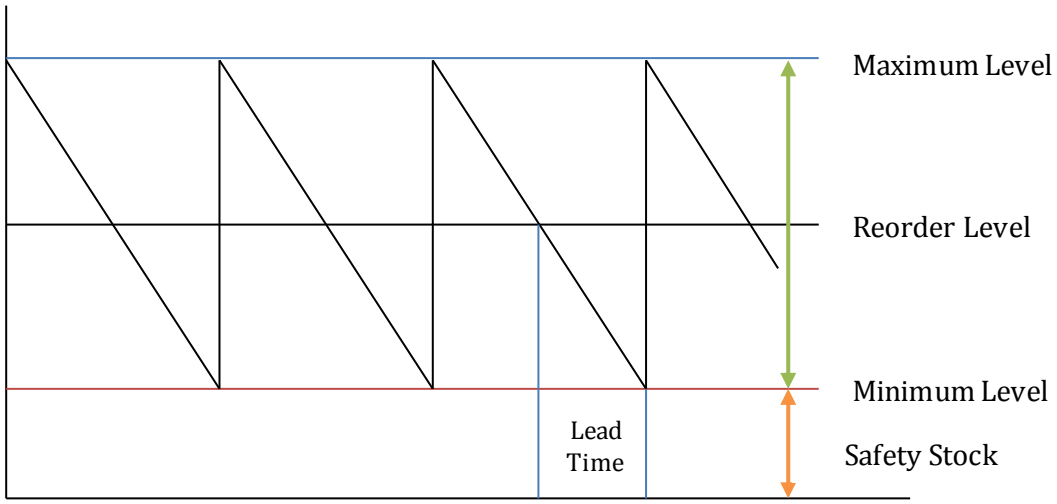
Inventories refer to the stocks of raw materials, work in progress, finished goods and spares and consumables maintained at various stages of production to sustain the routine operations of a concern. Maintenance of inventory represents an investment or application of working funds thus the primary goal of inventory management is to maintain such levels of inventory where the investment in inventories is the minimum and the production goes uninterrupted. The objective of inventory management is to make balance between sufficient stock and stock-out; thus, it requires trade-off between stock-out and over-stocking. The main objectives of inventory control are:

- Maintaining adequate inventory so as to avoid production held up leading to customer dissatisfaction, loss of revenue and increase in cost for emergency purchases.
- Avoiding excessive investment in inventory and consequently reducing carrying costs.
- Relieving management in taking inventory decisions for each and every item of inventory.



2.1 Setting of Inventory Levels

- Maximum Stock Level: The highest level which can be held, beyond which holding costs increase.
  Maximum Level = ROL + ROQ − (Minimum Consumption Rate × Lead time)
- Minimum Stock Level: The lowest level which must be maintained, below this situation of stock-out may emerge.
  Minimum Level = ROL − (Average Consumption Rate × Lead time)
- Average Stock Level: Normally maintained; also known as Normal Stock Level.
  $$\text{Average Level} = \frac{\text{Maximum Stock Level} + \text{Minimum Stock Level}}{2}$$
  Alternatively; $\text{Average Level} = \text{Minimum Stock Level} + \left(\frac{1}{2} \times \text{ROQ}\right)$



- Danger Stock Level: Danger level is the level below the minimum level. When the stock reaches this danger level urgent action for purchase is necessary. At this level, normal issue of material is stopped, only emergency issue is made.
  Danger Level = Average Consumption − Lead time for Emergency)
- Safety Sock: Stock for contingency; also known as Buffer Stock.
- Re-order Stock Level (ROL): It is the point laying between the maximum and minimum levels at which time it is essential to initiate purchase orders for fresh supplies of the material. This point will usually be slightly higher than the minimum stock, to cover such

emergencies as abnormal usage of the material or unexpected delay in delivery of fresh supplies.

ROL = (Maximum Consumption × Maximum Lead Time)

ROL = Minimum Level + (Average Consumption Rate × Average Lead Time)

- Re-order Quantity: It is that order quantity which minimizes sum of ordering and carrying cost; also known as EOQ.

2.2 Determination of Economic Order Quantity

The order size for which sum of ordering cost and carrying cost in minimum is known as Economic Order Quantity (EOQ). It also indicates the order size at which Ordering Cost = Carrying Cost.

Ordering Cost (OC): Costs pertaining to acquisition and ordering of inventory are termed as ordering costs. These costs are generally fixed in nature and remain constant irrespective to the quantum of order size. It includes cost of requisitioning, ordering, freight, cartage, insurance of goods in transit, inspection etc. Annual ordering cost is negatively associated with order size.

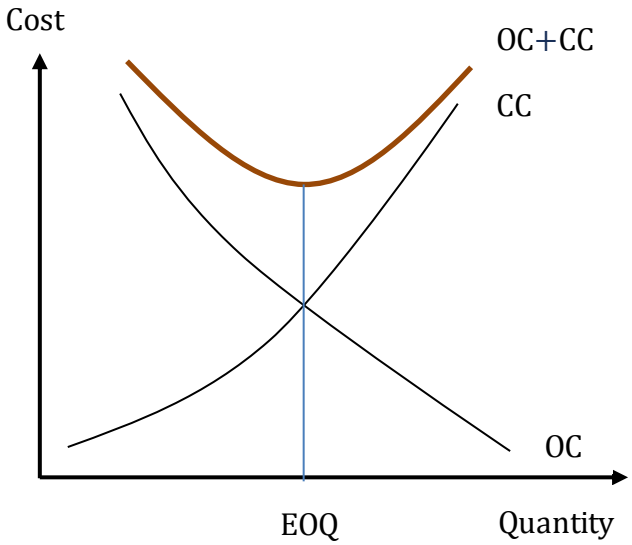
OC = (Number of Orders × OC Per Order)

Here, No. of orders = Annual Usage (U)/ Order Size (Q)

Carrying Cost (CC): It is the cost of holding inventory. It includes costs of safe storage, e.g. godown rent, storekeeper's wage, spoilage, wastage, insurance interest on WC invested etc. Annual carrying cost is positively associated with order size.

CC = (Average Inventory × CC Per Unit Per Annum)

Here, Average Inventory = Order Size (Q)/ 2



Buying huge quantities results into high carrying costs, loss through pilferage, risk of obsolescence, high insurance costs and other related overheads; but ensures that the production goes on smoothly and the ordering costs are reduced. A decision to procure in smaller quantities risks production with non-availability of raw material, availability at higher cost and higher ordering costs. Above diagram shows relationship of ordering costs, carrying costs and EOQ. EOQ represents order size at which OC = CC**,** it can be written as:

$$\text{EOQ} \Rightarrow \left(\frac{U}{Q} \times O\right) = \left(\frac{Q}{2} \times C\right)$$

$$\therefore \left(\frac{UO}{Q} = \frac{QC}{2}\right)$$

$$\therefore Q^2 = \frac{2UO}{C}$$

$$\therefore Q = \sqrt{\frac{2UO}{C}}$$

$$\therefore Q = \sqrt{\frac{2AO}{C}}$$

At EOQ = (OC + CC) is minimum

EOQ model is subject to the following assumptions:

- Consumption of Inventory with respect to time is known with certainty,
- Standard consumption rates of inventory exists,
- The replenishments are received Just in Time, and
- Ordering and carrying costs are constant.

2.3 Inventory Control Methods

- **ABC Analysis:** In the case of a manufacturing company of reasonable size the number of items of inventory runs into hundreds, if not more. From the point of view of monitoring information for control it becomes extremely difficult to consider each one of these items. ABC analysis is a system of discriminatory control over different items of inventory on the basis of investment involved. The items are classified into 3 categories according to their relative importance; the value, and frequency of replenishment.

Category	Particulars	Value	Volume
A	Costly Items	70 Percent	10 Percent
B	Moderate Items	20 Percent	20 Percent
C	Economical Items	10 Percent	70 Percent

- **FSN Analysis:** In this method, items of inventory are classified in 3 categories (Fast, Slow, and Non-moving) on the basis on their usage. (i) Fast-moving items are kept near to issue point and reviewed frequently, (ii) Slow-moving are placed a little far and reviewed periodically, and (iii) Non-moving items are kept at distant place for disposal to avoid losses.
- **VED Analysis:** In this method, items of inventory are classified in 3 categories (Vital, Essential, and Desirable) on the basis their importance in production process.
- **HML Analysis:** In this method, items of inventory are classified in 3 categories (High, Medium, and Low) on the basis on cost of individual item.
- **Ratio Analysis:** It is used to examine efficiency of inventory management system. Important ratios are:

  $$\text{Inventory Turnover Ratio} = \frac{\text{Cost of Raw Material Consumed}}{\text{Avg. Raw Material Inventory}}$$

  $$\text{Inventory Holding Period} = \frac{\text{Days/Months}}{\text{Inventory Turnover Ratio}}$$

  Similar turnover and holding period ratios are used to examine managerial efficiency to manage inventory of semi-finished and finished goods.

3.0 Management of Accounts Receivables

Receivable refers to debt owed to customers arising from sale of goods or services in the ordinary course of business. The objective of receivable management is to promote sales and profit until a point where the return on further investment in receivables is less than the cost of funds raised to finance that additional credit.

The costs and benefits of receivables management are:

Benefits: Trade Credit happens to be an essential practice in the markets; on the positive side it helps the concern to add new sales and retain the existing levels of sales, improving profits.

Costs: The cost of credit extension/ accounts receivables includes:

- Collection Cost: This is the cost which incur on administration and collection of dues from customers. It typically includes salary to the credit department, cost of credit information and related office overheads.
- Capital Cost: When firm sells goods on credit basis, certain funds, equal to cost of sales are blocked with debtors. The cost of these funds is termed as capital cost.
- Delinquency Cost: It includes costs associated with blockage of funds for extended period. When there is delay in realization of trade debts, certain expenses may arise, viz. expenses on facilitating collections, administrative expenses, legal charges etc.

- Default Cost: It refers to the loss incurred in the event of debts turning bad i.e. or default in payment. For e.g., non-realization/ partial realization of money from debtors due to insolvency.

The decision to grant credit is about striking a balance between the incremental benefit and the incremental cost expected to incur in financing the book debts.

3.1 Aspects of Receivables Management

- Credit Analysis: It includes
    - Collection of Information: For credit analysis, certain information about customers is desirable. The sources of credit information can be internal records like the past payment records, trade reference, bank reference, credit information bureau.
    - Credit Analysis: Credit analysis refers to the efforts undertaken for assessment of credit eligibility in terms of the decision to grant credit or not or to what extent. Major aspect covered under analysis include character, capacity, capital base, collateral of customer and the market conditions)
    - Decision to Extending Credit: This includes decision of the credit department to allow credit to a customer or not. For this purpose, firms normally use decision tree approach.
- Credit Policy: Credit policy refers to the broad guidelines governing the grant of credit. It lays down the credit standards and credit terms for dealing with customers. Credit policy has three dimensions.
    - Credit Standards: These include credit norms or criterion governing the grant of credit in quantitative terms. It can be conservative or liberal.
    - Credit Terms: It is concerned with credit period (uniform or selective) and system of trade and cash discount.
- Collection Policies
    - Collection System: It can be direct collection, e-collection, outsourcing, and collection through factoring service agencies.
    - Collection Efforts: These include procedures for persuasion and collection of dues from customers.
- Monitoring and Control
    - Ageing Schedule: This is scheduling of age-wise outstanding receivables.
    - Collection Matrix: This is prepared on the basis of average collection period.

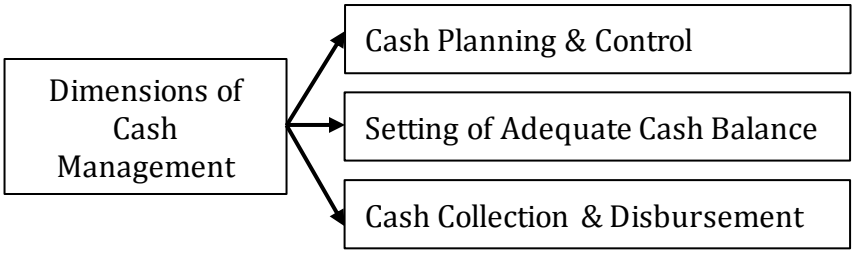
4.0 Management of Cash

Cash Management is concerned with determination of optimal levels of cash and cash equivalents that allow for smooth operations, minimize loss on account of idle cash balances along with the efforts to improve the cash cycle.

The objectives of holding cash are (i) Transactionary, (ii) Precautionary, and (iii) Speculative.

- Transactionary: This is concerned with cash payments and cash realization from sales/ debtors in routine. These payments and receipts don't coincide; hence, firms hold cash balances to ensure payments in time.
- Precautionary: The cash balances held in reserve to address the unforeseen need of cash is the precautionary motive. The unexpected cash requirements may spring from accidents, strike, failure of key customers, unexpected slowdown of collection, sharp increase in the cost of raw material. Precautionary cash balances provide the required cushion to meet unexpected contingencies/obligations. These balances are held in the form of marketable securities so that they can earn a return, alternatively short-term borrowings can also provide for precautionary requirements.
- Speculative: Holding cash balances to take advantage of business opportunities falling outside the normal course of business. For example, make purchase at reduced price on paying cash down.

There are mainly three dimensions of cash management.



4.1 Cash Planning & Control

It involves techniques of estimating cash flows and identifying need for exercising control. The techniques of cash planning & control are:

- Cash Flow Analysis
- Cash Budget
- Ratio Analysis

4.2 Setting of Adequate Cash Balance

The purpose of determining optimal cash balance is to ensure that firm neither has idle cash, nor it observes cash shortage. It is done with the help of three models, viz., (i) Cash Cycle Model, (ii) William J. Baumol's Model, and (iii) Miller-Orr Model

(a) Cash Cycle Model

Cash cycle represent process of cash flow through an enterprise's accounts. It is measured by following equation.

$$\text{Cash Cycle} = \text{Material Conversion Period} + \text{Average Collection Period} - \text{Average Payment Period}$$

Another approach to cash cycle is cash turnover, measured as:

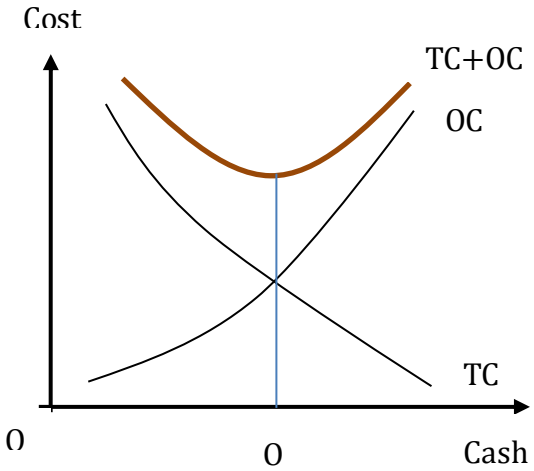
$$\text{Cash Turnover} = \frac{\text{Days in Year}}{\text{Cash Cycle Duration in Days}}$$

The amount of cash required is ascertained by applying cash turnover to annual cash operating expenses. It is measured by:

$$\text{Minimum Cash Needs} = \frac{\text{Annual Cash Outlay}}{\text{Cash Turnover}}$$

(b) William J. Baumol's Model

Baumol's cash management model is like EOQ model of inventory management. It states that firms should strive at optimal cash balance represented by lowest sum of holding cost and transaction costs.



By formula:

$$C = \sqrt{\frac{2TF}{i}}$$

Here: T = Total cash need in a period,
F = Fixed cost of transaction in security or transaction Cost (TC)
i = Interest rate on security in a period or Opportunity Cost (OC)

This model assumes:

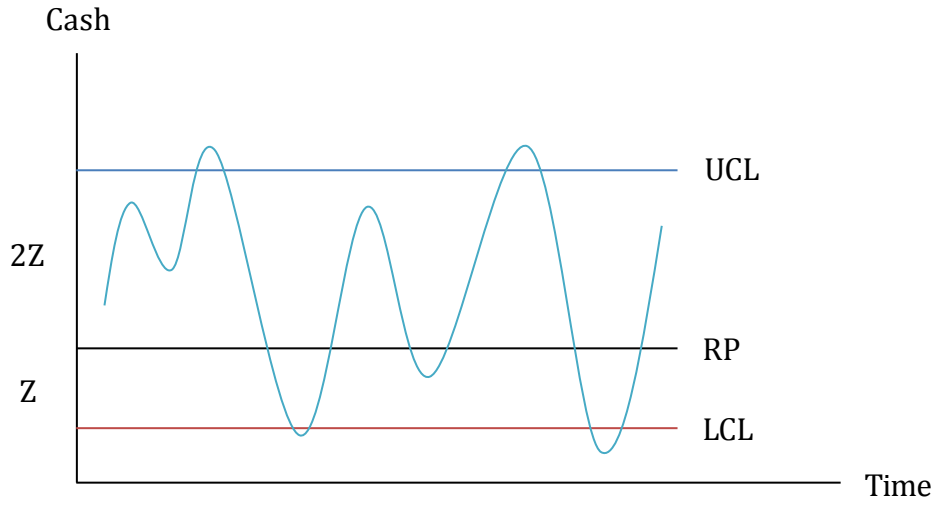
- Certain cash needs,
- Certain cash disbursements,
- Constant opportunity ant transaction Cost.

(c) Miller-Orr Model

This model assumes: (i) Stochastic and normally distributed cash flows, (ii) Minimum required cash balance, (iii) No change in Variance of cash flows, and (iv) No auto-correlation in cash flows.

It allows lower and upper limits of cash balance to be set and determine the return point (target cash balance). The lower limit is set by management considering the acceptable liquidity risk, firm's creditworthiness, and expected needs in cash.

when actual cash goes beyond UCL, excess cash is invested in short-term securities to bring cash balance back to return point (RP); and when actual cash fall below LCL, some securities are sold so that cash balance may rise and reach to RP.



The Return Point (RP) is calculated as:

$$RP = L + Z, \text{ or } RP = L + 3Z$$

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

Here: Z = Return point, T = Security transaction cost,
V = Variance of daily cash flow, i = Interest rate on securities

4.3 Cash Management Strategy

The cash management strategies are oriented towards maximizing the cash turnover and minimizing the operating cash requirement. Operating cash requirement carries a cost in terms of an opportunity cost, minimizing the operating cash balances results in opp ortunity cost savings. The actions leading to the desired results may be as follows.

- Offer cash discounts on prompt payments.
- Have favorable credit terms from suppliers.
- Prompt billing against credit sales.
- Make collection process efficient.
- Avoid cash discount unless highly profitable.
- Improve inventory turnover: Efforts to increase the inventory turnover lead to the reduction in the production cycle; this in turn reduces the cash cycle and the required operating cash leading to cost savings.
- Stretch payments to creditors: It advocates paying the creditors' as late as possible without any adverse implication on credit standing; however, opportunities of availing cash discount should not be forgone.
- Expedite collection from debtors: Attempting to improve the debtor collection period and reduce the cash cycle by altering the credit terms, setting the credit standards and the collection policy. Credit terms require deciding over the terms of credit like days, cash discount etc. Determining credit terms require discretion as to whom to extend credit and on what grounds; and the collection policy determines the collection strategies and focus on collection.
- Use new age collection methods: The firm can subscribe to online bill pay facility, mobile banking, electronic clearing service (ECS), national electronic fund transfer (NEFT) and real time gross settlement (RTGS). These modes improve the collections dramatically and leave the conventional methods of cheque collections lagging far behind.
- Develop decentralized collection system: Identification of strategically located collection centers to reduce the deposit float. Deposit float refers to the cheques that are drawn by the customer but not yet realized by the firm. It arises on account of postal float and bank float. Postal float refers to the delay caused by way of cheque being in transit from drawer to payee; and bank float is time taken by bank for affording credit to the client's account.
- Use concentration banking: This is a subset of the decentralized collection wherein collections at the spokes (collection centers) are pooled at the hubs (central/ concentration/ disbursement account). This is primarily aimed at reducing the postal float.

- Have lock box system: The lock box system eliminates the stage wherein the cheque is delivered to the payee for accounting and then submitted to bank for collection. In this arrangement bank is allowed to operate a lock box available with the postal authorities and the bank collects cheques without any significant delays in collection.
- Avoid early payments: In case cash discount is not availed by the firm, payment before due date should be avoided. It should ideally be made on the due date and not before or later.
- Have centralized disbursement system: This involves paying the creditors from a central account to benefit from the postal float. Usage of a designated account for disbursements allows a better control over the operating cash balances.
- Pay cheques from remote location: Earlier it used to provide with ample postal float but now with the advent of online banking, NEFT and RTGS this tactic is fast turning obsolete.
- Accruals: Accruals stand for the current liabilities arising out of services not paid for. The longer the accrual period, the less the cash balance required. Example, payrolls, utility payments.

4.4 Problems of Inadequate Cash Balance

- Cost of borrowing: Interest expended to avail required funds.
- Transaction cost: Costs arising out of commission, brokerage and other expenses/ costs incidental to borrowing to bridge the shortage.
- Cost of lost opportunity: Losses arising from lost cash discounts, temporary shifts in prices creating opportunities to book profits/windfall gains.
- Loss of interest income: This relates to the interest income loss on the cash balances maintained over the optimal/ desired levels of cash.
- Risk of loss of image: It arises due to delay in payments to creditors, bankers, staff, vendors etc.
- Inability to address emergencies.

5.0 Management of Marketable Securities

Temporary surpluses of cash do not produce returns and are hence employed in securities that allow for prompt redemption of principal with returns and do not risk the loss of principal. Such securities are termed as marketable securities. Marketable securities are short term liquid investment instruments that yield returns on temporary cash surpluses of the firm. The presence of surplus funds with the firm poses a problem in terms of determining the mix of cash and marketable securities. The choice is based on the cost benefit equation. The cost arises out of brokerage payable on purchase and sale of securities and the opportunity cost of cash holding. The benefits are in the form of returns earned on the investment.

5.1 Considerations While Making Investment in Marketable Securities

Firm have various motives behind maintaining balances of cash and marketable securities. However, the selection of marketable securities should be done considering the following factors.

- Liquidity position of the firm
- Yield or return on investment
- Tax liabilities on investment
- Investment avenues: These may include treasury bills, certificate of deposits, commercial paper, units, inter-corporate deposits, liquid funds etc.
- Interest rate risk: Uncertainty of returns from investments due to changes in the interest rate. If the interest rates rise compared to those of securities lying in the portfolio, the market value of portfolio will decline.
- Default risk: The risk of default of redemption of principal and returns.

Summary

Mismanagement of any of the components described above (cash, inventories and accounts receivables) may lead to severe consequences to the business. For instance, shortage of cash may result in incapacity of the firm to meet its short-term obligations. Similarly, inadequate inventories may put production on hold and force the business to purchase raw materials at exaggerated prices. Hence, lack of working capital may result in business failure. However, adequate working capital gives a push to the business during the days in which there is less business activity. Hence, to produce goods without any obstruction and sustain sales, a business needs funds for inventories and accounts receivable. Thus, the survival or failure of business will depend on adequacy of working capital and the efficiency with which working capital is utilized.

Self check Questions

1. What is the importance of inventory management for a business? Write a note on operating control of inventories.
2. What do you mean by inventory levels setting? How do firms manage inventory by setting various levels?
3. What is reorder point? How is it determined? Explain with suitable example.
4. Define economic order quantity. How is it computed? Explain with suitable example.
5. What are the objectives of Receivables management? How can a firm succeed in maintaining investment in receivables at the optimum level?
6. Write a detailed note on management of cash.
7. Comment on: (a) William J. Baumol Model, and (b) Miller-Orr Cash Management Model
8. Write short note on: (a) ABC Analysis, (b) FSN Analysis, (c) VED Analysis, and (d) Cash Cycle.

Practical Problems on Management of Inventory, Accounts Receivables and Cash

Illustration # 1: The inventory statistics of a particular material in Ganga Plastics reveal (i) Maximum delivery period – 7 Weeks, (ii) Average delivery period – 6 Weeks, (iii) Minimum consumption – 800 Units, (iv) Average consumption – 850 Units, and (v) Reorder quantity – 2000 Units. Calculate (i) Reorder Level, (ii) Maximum Inventory Level (iii) Minimum Inventory Level, and (iv) Average Inventory Level.

Solution:

(i) Reorder Level

$\text{ROL} = (\text{Maximum Consumption} \times \text{Maximum Lead Time})$

Here, Maximum Consumption is not available, so, by formula:

$$\text{Average Consumption} = \frac{\text{Minimum Consumption} + \text{Maximum Consumption}}{2}$$

$$850 = \frac{800 + \text{Maximum Consumption}}{2}, \text{so, Maximum Consumption} = 900 \text{ Units}$$

$\text{ROL} = 900 \times 7 = 6{,}300 \text{ Units}$

(ii) Maximum Inventory Level

$\text{Maximum Level} = \text{ROQ} + \text{ROL} - (\text{Minimum Consumption Rate} \times \text{Lead time})$

Here, Lead Time (Minimum Reorder Period) is not available, so, by formula:

$$\text{Average Reorder Period} = \frac{\text{Minimum Reorder Period} + \text{Maximum Reorder Period}}{2}$$

$$6 = \frac{\text{Minimum Reorder Period} + 7}{2} = 5 \text{ Weeks}$$

$\text{Maximum Level} = 2{,}000 + 6{,}300 - (800 \times 5) = 4{,}300 \text{ Units}$

(iii) Minimum Inventory Level

$\text{Minimum Level} = \text{ROL} - (\text{Average Consumption Rate} \times \text{Lead time})$

$\text{Minimum Level} = 6{,}300 - (850 \times 6) = 1{,}200 \text{ Units}$

(iv) Average Inventory Level

$$\text{Average Inventory Level} = \frac{\text{Maximum Inventory Level} + \text{Minmum Inventory Level}}{2}$$

$$\text{Average Inventory Level} = \frac{4{,}300 + 1{,}200}{2} = 2{,}750 \text{ Units}$$

Illustration # 2: Himalaya Refrigeration Company purchases 1,600 units of a component consumed annually, from Bolts & Pins Associates. The annual cost of holding each unit of component is Rs. 8 and cost of placing order each time is Rs. 100.

Calculate (i) Economic Order Quantity, (ii) Reorder Level, and (iii) Maximum and Minimum Inventory Level, if company operates 320 days in a year, material procurement time is 10 days, and safety stock is 20 units.

Solution:

(v) Economic Order Quantity:

$$\text{EOQ} = \sqrt{\frac{2\text{AO}}{\text{C}}} = \sqrt{\frac{2 * 1{,}600 * 100}{8}}$$

$$\text{EOQ} = \sqrt{40{,}000} = 200 \text{ Units}$$

(vi) Reorder Level:

$$\text{ROL} = \text{Minimum Level} + (\text{Avg. Consumption Rate} \times \text{Avg. Lead Time}), \text{or}$$

$$\text{ROL} = \text{Safety Strock} + (\text{Avg. Consumption Rate} \times \text{Avg. Lead Time})$$

$$\text{ROL} = 20 + \frac{1{,}600}{320} \times 10$$

$$\text{ROL} = 20 + (5 \times 10) = 70 \text{ Units}$$

(vii) Maximum and Minimum Inventory Level

$$\text{Maximum Level} = \text{ROQ} + \text{ROL} - (\text{Min. Consump. Rate} \times \text{Lead time}), \text{or}$$

$$\text{Here; ROL} - (\text{Min. Consump. Rate} \times \text{Lead time}) = \text{Safety Stock, so}$$

$$\text{Maximum Level} = \text{ROQ} + \text{Safety Stock}$$

$$\text{Maximum Level} = 200 + 20 = 220 \text{ Units}$$

$$\text{Minimum Level} = \text{ROL} - (\text{Min. Consump. Rate} \times \text{Lead time}), \text{so}$$

$$\text{Minimum Level} = \text{Safety Stock} = 20 \text{ Units}$$

Illustration # 3: Galgotia & Company had sales of 80,000 units in previous financial year. The selling price of product is Rs. 100, variable cost per unit is Rs. 60, and fixed cost is Rs. 16 lakh. The company is contemplating to relax their credit standard which is expected to increase 10% sales. The proposed relaxation is likely to increase the average collection period from 30 days to 45 days.

It is also expected that proposed plan will result in to increase in bad debts by 2% of increased sales. The collection expenses are also expected to go up by Rs. 50,000. Assuming 360 days in a year, corporate tax rate applicable to company 50% and company's after-tax expected rate of return 15%, examine the proposal and suggest whether company should relax credit standards.

Solution:

Calculation of Additional Profit after Tax

	Amount (Rs.)
Additional Sales (8,000 * 100)	8,00,000
Less: Additional Variable Cost (8,000 * 60)	4,80,000
Additional Contribution	3,20,000
Less: Increase in Bad Debt (8,00,000 * 2%)	16,000
Increase in Collection Cost	50,000
Additional Profit Before Tax	2,54,000
Less: Tax @ 50%	1,27,000
Additional Profit After Tax	1,27,000

Calculation of Additional Cost of Investment in Receivables

	Amount (Rs.)
Present Investment in Receivables (at Cost) Cost of Sales = (80,000 * Rs. 80) = Rs. 64,00,000 $\text{Investment in Receivables} = \text{Cost of sales} * \frac{\text{Credit Period}}{360}$ $\text{Investment in Receivables} = 64,00,000 * \frac{30}{360}$	5,33,333
Proposed Investment in Receivables (at Cost) Cost of Sales = (80,000 * Rs. 80) + (8,0000 * Rs. 60) = Rs. 68,80,000 $\text{Investment in Receivables} = 68,80,000 * \frac{45}{360}$	8,60,000
Additional Investment in Receivables	3,26,667
$\text{Cost of Addl. Investment} = \text{Addl. Investment} * \text{Expected Rate of Return}$	
$\text{Cost of Addl. Investment} = (3,26,776 * 15\%)$	49,000

Since expected additional profit after tax is more than cost of additional investment, the proposal is feasible; the company should relax credit standards.

Illustration # 4: The annual turnover of a company is Rs. 10 lakh. It's current average collection period of 45 days, and loss due to bad debts is 1% of sales. The company is considering several plans to liberalize its credit policy. It is argued that relaxations in credit period offered to customers will enhance sales, and thus result into more profits. The financial details of these plans are as follows.

Policy	Increase in Average Collection Period	Expected Increase in Sales (Rs.)	Expected Default (% of Total Sales)
1	15 Days	50,000	2
2	30 Days	80,000	3
3	40 Days	1,00,000	4
4	60 Days	1,25,000	6

The selling price of the product is Rs. 5; cost per unit is Rs. 4, of which variable cost is Rs. 3 per unit. Company's required rate of return on investment is 20%. You are required to evaluate alternatives and suggest best plan to the management of the company.

Solution:

Contribution = (Price – Variable Cost) = (5 – 3) = Rs. 2

$$\text{Variable Cost Ratio} = \frac{\text{Variable Cost}}{\text{Price}} \times 100$$

$$\text{Variable Cost Ratio} = \frac{3}{5} \times 100 = 60\%$$

$$\text{Contribution Ratio} = \frac{\text{Contribution}}{\text{Price}} \times 100$$

$$\text{Contribution Ratio} = \frac{2}{5} \times 100 = 40\%$$

Evaluation of Alternative Credit Policies

	Existing Policy 45 Days	Proposed Policy			
		60 Days	75 Days	85 Days	100 Days
Sales	10,00,000	10,50,000	10,80,000	11,00,000	11,25,000
Additional Sales		50,000	80,000	1,00,000	1,25,000
Contribution	4,00,000	4,20,000	4,32,000	4,40,000	4,50,000
Additional Contribution (A)		20,000	32,000	40,000	50,000
Bad Debts	10,000	21,000	32,400	44,000	67,500
Additional Bad Debts (B)		11,000	22,400	34,000	57,500
Additional Profit Before Capital Cost (A – B)		9,000	9,600	6,000	(7,500)

Average Receivables $\left(\frac{\text{Sales}}{365} \times \text{Credit Period}\right)$	1,23,288	1,72,603	2,21,918	2,56,164	3,08,219
Investment in Receivables (60% of Receivables)	73,973	1,03,562	1,33,151	1,53,698	1,84,932
Additional Investment in Receivables		29,589	59,178	79,725	1,10,959
Required Return on Additional Investment in Receivables @20% (C)		5,918	11,836	15,945	22,192
Net Additional Benefit (A – B) – (C)		3,082 Best Plan	(2,236)	(9,945)	(29,692)