

# **MAR GREGORIOS COLLEGE OF ARTS & SCIENCE**

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Affiliated to the University of Madras  
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## **DEPARTMENT OF COMMERCE (ACCOUNTING & FINANCE)**

**SUBJECT NAME: WORKING CAPITAL MANAGEMENT**

**SUBJECT CODE: CPG6B**

**SEMESTER: VI**

**PREPARED BY: PROF.M.PREMA**

## **SYLLABUS**

### **UNIT I: Introduction**

Working Capital Meaning - Importance of working capital management - components of working capital - Factors influencing working capital requirements - Estimating working capital management - working capital life cycle - Role of finance manager in working capital.

### **UNIT II: Financing Current Assets**

Different approaches to Financing Current Assets - Conservative, Aggressive and Matching approach - Sources of Finance Committees on Working Capital Finance..

### **UNIT III: Cash Management**

Importance - Factors influencing Cash Balance - Determining Optimum Cash Balance - Cash Budgeting - Controlling and Monitoring Collection and disbursements.

### **UNIT IV: Receivables Management**

Credit Policy Variables - Credit Standards - Credit period - Cash discount and Collection efforts - Credit evaluation - Control of receivables.

### **UNIT V: Inventory Management**

Need for Inventories and Importance of its Management - Techniques for managing Inventory - Economic Order Quantity (EOQ) - Stock levels - Analysis of Investment in inventory - Selective Inventory Control - ABC, VED and FSN Analysis.

**Note: Questions in Sec. A, B & C shall be in the proportion of 80:20 between Theory and Problems.**

### **Suggested Readings**

1. Hrishikes Battacharya Working Capital Management strategies and Techniques prentice hall of India 2001.
2. Joshi R.N. Cash Management, New Age International Publishers 1999.
3. Chitnis, K.M. Working Capital Management of large Industrial units, Dastane Ramachandra and company Poona

## UNIT- 1 INTRODUCTION

- WorkingCapitalConcepts
- Needforand componentsofWorkingCapital
- KindsofWorkingCapital
- DeterminantsofWorkingCapital
- EstimationofWorkingCapitalrequirements

### INTRODUCTION:

The uses of funds of a concern can be divided into two parts namely long-term funds and short-term funds. The long – term investment may be termed as ‘fixed investment.’ A major part of the long-term funds is invested in the fixed assets. These fixed assets are retained in the business to earn profits during the life of the fixed assets. To run the business operations short-term assets are also required.

The term working capital is commonly used for the capital required for day-to-day working in a business concern, such as for purchasing raw material, for meeting day-to-day expenditure on salaries, wages, rents rates, advertising etc. But there are much disagreement among various financial authorities (Financiers, accountants, businessmen and economists) as to the exact meaning of the term working capital.

### DEFINITION AND CLASSIFICATION OF WORKING CAPITAL:

Working capital refers to the circulating capital required to meet the day to day operations of a business firm. Working capital may be defined by various authors as follows:

1. According to Weston & Brigham- “Working capital refers to a firm’s investment in short term assets, such as cash amounts, receivables, inventories etc.
2. Working capital means current assets.—Mead, Baker and Malott
3. “The sum of the current assets is the working capital of the business”—J.S. Mill

Working capital is defined as “the excess of current assets over current liabilities and provisions”. But as per accounting terminology, it is difference between the inflow and outflow of funds. In the Annual Survey of Industries (1961), working capital is defined to include “Stocks of materials, fuels, semi-finished goods including work-in-progress and finished goods and by-products; cash in hand and bank and the algebraic sum of sundry creditors as represented by

- (a) outstanding factory payments e.g. rent, wages, interest and dividend;
- (b) purchase of goods and services;

- (c) short-term loans and advances and sundry debtors comprising amounts due to the factory on account of sale of goods and services and advances toward tax payments”.

The term “working capital” is often referred to “circulating capital” which is frequently used to denote those assets which are changed with relative speed from one form to another i.e., starting from cash, changing to raw materials, converting into work-in-progress and finished products, sale of finished products and ending with realization of cash from debtors.

Working capital has been described as the “life blood of any business which is apt because it constitutes a cyclically flowing stream through the business”.

### **CONCEPTS OF WORKING CAPITAL**

There are two concepts of working capital viz. quantitative and qualitative. Some people also define the two concepts as gross concept and net concept. According to quantitative concept, the amount of working capital refers to ‘total of current assets’. Current assets are considered to be gross working capital in this concept.

The qualitative concept gives an idea regarding source of financing capital. According to qualitative concept the amount of working capital refers to “excess of current assets over current liabilities.”

L.J. Guthman defined working capital as “the portion of a firm’s current assets which are financed from long-term funds.”

The excess of current assets over current liabilities is termed as ‘Net working capital’. In this concept “Networking capital” represents the amount of current assets which would remain if all current liabilities were paid. Both the concepts of working capital have their own points of importance. “If the objective is to measure the size and extent to which current assets are being used, ‘Gross concept’ is useful; whereas in evaluating the liquidity position of an undertaking ‘Net concept’ becomes pertinent and preferable.

It is necessary to understand the meaning of current assets and current liabilities for learning the meaning of working capital, which is explained below.

**Current assets** – It is rightly observed that “Current assets have a short life span. These types of assets are engaged in current operation of a business and normally used for short-term operations of the firm during an accounting period i.e. within twelve months. The two important characteristics of such assets are,

- (i) Short life span, and
- (ii) Swift transformation into other form of assets.

Cash balance may be held idle for a week or two, account receivable may have a life span of 30 to 60 days, and inventories may be held for 30 to 100 days.”

Fitzgerald defined current assets as, “cash and other assets which are expected to be converted into cash in the ordinary course of business within one year or within such longer period as constitutes the normal operating cycle of a business.”

**Current liabilities** – The firm creates a Current Liability towards creditors (sellers) from whom it has purchased raw materials on credit. This liability is also known as accounts payable and shown in the balance sheet till the payment has been made to the creditors.

The claims or obligations which are normally expected to mature for payment within an accounting cycle are known as current liabilities. These can be defined as “those liabilities where liquidation is reasonably expected to require the use of existing resources properly classifiable as current assets, or the creation of other current assets, or the creation of other current liabilities.”

Circulating capital – working capital is also known as ‘circulating capital or current capital.’ “The use of the term circulating capital instead of working capital indicates that its flow is circular in nature.”

### STRUCTURE OF WORKING CAPITAL

The different elements or components of current assets and current liabilities constitute the structure of working capital which can be illustrated in the shape of a chart as follows:

### STRUCTURE OF CURRENT ASSETS AND CURRENT LIABILITIES

| Current Liabilities         | Current Assets   |
|-----------------------------|--|
| Bank Overdraft              | Cash and Bank Balance  |
| Creditors                   | Inventories: Raw-Materials<br>Work-in-progress<br>Finished Goods |
| Outstanding Expenses        | Spare Parts  |
| Bills Payable               | Accounts Receivables   |
| Short-term Loans            | Bills Receivables  |
| Proposed Dividends          | Accrued Income   |
| Provision for Taxation, etc | Prepaid Expenses<br>Short-term Investments                       |

### CIRCULATION OF WORKING CAPITAL

At one given time both the current assets and current liabilities exist in the business. The current assets and current liabilities are flowing ground in a business like an electric current. However, “The working capital plays the same role in the business as the role of heart in human body. Working capital funds are generated and these funds are circulated in the business. As and when this circulation stops, the business becomes lifeless. It is because of this reason that the working capital is known as the circulating capital as it circulates in the business just like blood in the human body.”

1. Gross Working Capital: It refers to the firm’s investment in total current or circulating assets.
2. Net Working Capital: The term “Net Working Capital” has been defined in two different ways:
  - i. It is the excess of current assets over current liabilities. This is, as a matter of fact, the most commonly accepted definition. Some people define it as only the difference between current assets and current liabilities. The former seems to be a better definition as compared to the latter.
  - ii. It is that portion of a firm’s current assets which is financed by long-term funds.
3. Permanent Working Capital: This refers to that minimum amount of investment in all

current assets which is required at all times to carry out minimum level of business activities. In other



words, it represents the current assets required on a continuing basis over the entire year. Tandon Committee has referred to this type of working capital as "Core current assets".

### **Working Capital may be classified in two ways (Kinds of Working Capital)**

- a) Concept based working capital
- b) Time based working capital
- c) Classification on the basis of financial reports.

### **CONCEPT BASED WORKING CAPITAL**

1. Gross Working Capital
2. Net Working Capital
3. Negative Working Capital

### **CONCEPTS OF WORKING CAPITAL**

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- ii. It is that portion of a firm's current assets which is financed by long-term funds.

3. Negative Working Capital: This situation occurs when the current liabilities exceed the current assets. It is an indication of crisis to the firm.

### **TIME BASED WORKING CAPITAL**

1. Permanent or Fixed Working Capital
  - (a) Regular Working Capital
  - (b) Reserve Working Capital
2. Temporary or Variable Working Capital
  - (a) Seasonal Working Capital
  - (b) Special Working Capital

**1. Permanent Working Capital:** This refers to that minimum amount of investment in all current assets which is required at all times to carry out minimum level of business activities. In other words, it represents the current assets required on a continuing basis over the entire year. Tandon Committee has referred to this type of working capital as "Core current assets".

The following are the characteristics of this type of working capital:

1. Amount of permanent working capital remains in the business in one form or another. This is particularly important from the point of view of financing. The suppliers of such working capital should not expect its return during the life-time of the firm.
2. It also grows with the size of the business. In other words, greater the size of the business, greater is the amount of such working capital and vice versa. Permanent working capital is permanently needed for the business and therefore it should be financed out of long-term funds.

**2. Temporary Working Capital:** The amount of such working capital keeps on fluctuating from time to time on the basis of business activities. In other words, it represents additional current assets required at different times during the operating year. For example, extra inventory has to be maintained to support sales during peak sales period. Similarly, receivables also increase and must be financed during period of high sales. On the other hand investment in inventories, receivables, etc., will decrease in periods of depression.

Suppliers of temporary working capital can expect its return during off season when it is not required by the firm. Hence, temporary working capital is generally financed from short-term sources of finances such as bank credit.

**Classification on the basis of financial reports** – The information of working capital can be collected from Balance Sheet or Profit and Loss Account; as such the working capital may be classified as follows:

- (i) Cash Working Capital – This is calculated from the information contained in profit and loss account. This concept of working capital has assumed a great significance in recent years as it shows the adequacy of cash flow in business. It is based on ‘Operating Cycle Concept’.
- (ii) Balance Sheet Working Capital – The data for Balance Sheet Working Capital is collected from the balance sheet. On this basis the Working Capital can also be divided in three more types, viz., gross Working Capital, net Working Capital and Working Capital deficit.

## **NEED FOR AND COMPONENTS OF WORKING CAPITAL**

For smooth running an enterprise, adequate amount of working capital is very essential. Efficiency in this area can help, to utilize fixed assets gainfully, to assure the firm’s long-term success and to achieve the overall goal of maximization of the shareholders, fund. Shortage or bad management of cash may result in loss of cash discount and loss of reputation due to non-payment of obligation on due dates. Insufficient inventories may be the main cause of production held up and it may compel the enterprises to purchase raw materials at unfavourable rates.

Like-wise facility of credit sale is also very essential for sales promotions. It is rightly observed that “many a times business failure takes place due to lack of working capital.” Adequate working capital provides a cushion for bad days, as a concern can pass its period of depression without much difficulty.

O’ Donnell correctly explained the significance of adequate working capital and mentioned that “to avoid interruption in the production schedule and maintain sales, a concern requires funds to finance inventories and receivables.”

The adequacy of cash and current assets together with their efficient handling virtually determines the survival or demise of a concern. An enterprise should maintain adequate working



capital for its smooth functioning. Both, excessive working capital and inadequate working capital will impair the profitability and general health of a concern.

Therefore working capital is needed till a firm gets cash on sale of finished products. It depends on two factors:

i. Manufacturing cycle i.e. time required for converting the raw material into finished product; and

ii. Credit policy i.e. credit period given to Customers and credit period allowed by creditors. Thus, the sum total of these times is called an "Operating cycle" and it consists of the following six steps:

- i. Conversion of cash into raw materials.
- ii. Conversion of raw materials into work-in-process.
- iii. Conversion of work-in-process into finished products.
- iv. Time for sale of finished goods—cash sales and credit sales.
- v. Time for realization from debtors and Bills receivables into cash.
- vi. Credit period allowed by creditors for credit purchase of raw materials, inventory and creditors for wages and overheads.

## **DETERMINANTS OF WORKING CAPITAL :**

The factors influencing the working capital decisions of a firm may be classified as two groups, such as internal factors and external factors. The internal factors include, nature of business, size of business, firm's product policy, credit policy, dividend policy, and access to money and capital markets, growth and expansion of business etc. The external factors include business fluctuations, changes in the technology, infrastructural facilities, import policy and the taxation policy etc. These factors are discussed in brief in the following lines.

### **I. Internal Factors**

#### 1. Nature and size of the business

The working capital requirements of a firm are basically influenced by the nature and size of the business. Size may be measured in terms of the scale of operations. A firm with larger scale of operations will need more working capital than a small firm. Similarly, the nature of the business - influence the working capital decisions. Trading and financial firms have less investment in fixed assets. But require a large sum of money to be invested in working capital. Retail stores, business units require larger amount of working capital, whereas, public utilities need less working capital and more funds to invest in fixed assets.

#### 2. Firm's production policy

The firm's production policy (manufacturing cycle) is an important factor to decide the working capital requirement of a firm. The production cycle starts with the purchase and use of raw material and completes with the production of finished goods. On the other hand production policy is uniform production policy or seasonal production policy etc., also influences the working capital decisions. Larger the manufacturing cycle and uniform production policy—larger will be

the requirement of working capital. The working capital requirement will be higher with varying production schedules in accordance with the changing demand.

### 3. Firm's credit policy

The credit policy of a firm influences credit policy of working capital. A firm following liberal credit policy to all customers requires funds. On the other hand, the firm adopting strict credit policy and grant credit facilities to few potential customers will require less amount of working capital.

### 4. Availability of credit

The working capital requirements of a firm are also affected by credit terms granted by its suppliers – i.e. creditors. A firm will need less working capital if liberal credit terms are available to it. Similarly, the availability of credit from banks also influences the working capital needs of the firm. A firm, which can get bank credit easily on favorable conditions, will be operated with less working capital than a firm without such a facility.

### 5. Growth and expansion of business

Working capital requirement of a business firm tend to increase in correspondence with growth in sales volume and fixed assets. A growing firm may need funds to invest in fixed assets in order to sustain its growing production and sales. This will, in turn, increase investment in current assets to support increased scale of operations. Thus, a growing firm needs additional funds continuously.

### 6. Profit margin and dividend policy

The magnitude of working capital in a firm is dependent upon its profit margin and dividend policy. A high net profit margin contributes towards the working capital pool. To the extent the net profit has been earned in cash, it becomes a source of working capital. This depends upon the dividend policy of the firm. Distribution of high proportion of profits in the form of cash dividends results in a drain on cash resources and thus reduces company's working capital to that extent. The working capital position of the firm is strengthened if the management follows conservative dividend policy and vice versa.

### 7. Operating efficiency of the firm

Operating efficiency means the optimum utilisation of a firm's resources at minimum cost. If a firm successfully controls operating cost, it will be able to improve net profit margin which, will, in turn, release greater funds for working capital purposes.

### 8. Co-ordinating activities in firm

The working capital requirements of a firm are depend upon the co-ordination between production and distribution activities. The greater and effective the co-ordinations, the pressure on the working capital will be minimized. In the absence of co-ordination, demand for working capital is reduced.

## **II. External Factors**

### 1. Business fluctuations

Most firms experience fluctuations in demand for their products and services. These business variations affect the working capital requirements. When there is an upward swing in the economy, sales will increase, correspondingly, the firm's investment in inventories and book debts will also

increase. Under boom, additional investment in fixed assets may be made by some firms to increase their productive capacity. This act of the firm will require additional funds. On the other hand when, there is a decline in economy, sales will come down and consequently the conditions, the firm try to reduce their short-term borrowings. Similarly the seasonal fluctuations may also affect the requirement of working capital of a firm.

### 2. Changes in the technology

The technological changes and developments in the area of production can have immediate effects on the need for working capital. If the firm wish to install a new machine in the place of old system, the new system can utilise less expensive raw materials, the inventory needs may be reduced thereby working capital needs.

### 3. Import policy

Import policy of the Government may also effect the levels of working capital of a firm since they have to arrange funds for importing goods at specified times.

### 4. Infrastructural facilities

The firms may require additional funds to maintain the levels of inventory and other current assets, when there is a good infrastructural facility in the company like transportation and communications.

### 5. Taxation policy

The tax policies of the Government will influence the working capital decisions. If the Government follows regressive taxation policy, i.e. imposing heavy tax burdens on business firms, they are left with very little profits for distribution and retention purpose. Consequently the firm has to borrow additional funds to meet their increased working capital needs. When there is a liberalized tax policy, the pressure on working capital requirement is minimized.

Thus the working capital requirements of a firm are influenced by the internal and external factors.

## **MEASUREMENT OF WORKING CAPITAL:**

There are 3 methods for assessing the working capital requirement as explained below: a) Percent of Sales Method

Based on the past experience, some percentage of sale may be taken for determining the quantum of working capital

### b) Regression Analysis Method

The relationship between sales and working capital and its various components may be plotted on Scatter diagram and the average percentage of past 5 years may be ascertained. This average percentage of sales may be taken as working capital. Similar exercise may be carried out at the beginning of the year for assessing the working capital requirement. This method is suitable for simple as well as complex situations.

### c) Operating Cycle Method

As a first step, we have to compute the operating cycle as follows:

i) Inventory period:  $\text{Number of days consumption in stock} = I = M/36$

Where I –

Average inventory during the year  $M = \text{Materials consumed during the year}$

ii) Work-in-process: Number of days of work-in-process =  $W \div K / 365$  Where  $W = \text{Average work-in-process during the year}$

$K = \text{Cost of work-in-process i.e., Material + Labour + Factory overheads.}$

iii) Finished products inventory period =  $G \div F / 365$

Where  $G = \text{Average finished products inventory during the year}$   
 $F = \text{Cost of finished goods sold during the year}$

iv) Average collection period of Debtors =  $D \div S / 365$

Where  $D = \text{Average Debtors balances during the year}$   
 $S = \text{Credit sales during the year}$

v) Credit period allowed by Suppliers =  $C \div P / 365$

Where  $C = \text{Average creditors' balances during the year}$   
 $P = \text{credit purchases during the year}$

vi) Minimum cash balance to be kept

daily. Formula:  $O.C. = M + W + F + D - C$

Note: It is also known as working capital cycle. Operating cycle is the total time gap between the purchase of raw material and the receipt from Debtors.

The calculation of net working capital may also be shown as follows

$$\begin{aligned} \text{Working Capital} &= \text{Current Assets} - \text{Current Liabilities} \\ &= (\text{Raw Materials Stock} + \text{Work-in-progress Stock} + \text{Finished Goods Stock} \\ &\quad + \text{Debtors} + \text{Cash Balance}) - \\ &\quad (\text{Creditors} + \text{Outstanding Wages} + \text{Outstanding Overheads}). \end{aligned}$$

Where,

Raw Materials = Cost (Average) of Materials in Stock

Work-in-progress Stock = Cost of Materials + Wages + Overhead of Work-in-progress.

Finished Goods Stock = Cost of Materials + Wages + Overhead of Finished Goods.

Creditors for Material = Cost of Average Outstanding Creditors.

Creditors for Wages = Average Wages Outstanding.

Creditors for Overhead = Average Overheads

Outstanding. Thus,

Working Capital = Cost of Materials in Stores, in Work-in-progress, in Finished

Goods and Debtors.

Less: Creditors for Materials



Plus: Wages in Work-in-

progress, in Finished Goods and in Debtors. Less: Creditors for Wages

Plus : Overheads in Work-in-progress, in Finished Goods and in

Debtors. Less: Creditors for Overheads.

The worksheet for estimation of working capital requirements under the operating cycle method may be presented as follows:

### ESTIMATION OF WORKING CAPITAL REQUIREMENTS

| <b>I Current</b>                      | Amount | Amount      | Amount      |
|---------------------------------------|--------|-------------|-------------|
| <b>Assets:</b> Minimum Cash Balance   |        | ****        |             |
| Inventories:                          |        |             |             |
| Raw Materials                         | ****   |             |             |
| Work-in-progress                      | ****   |             |             |
| Finished Goods                        | ****   | ****        |             |
| Receivables : Debtors                 | ****   |             |             |
| Bills                                 | ****   | ****        |             |
| <b>Gross Working Capital (CA)</b>     |        | <u>****</u> | ****        |
| <br><b>II Current Liabilities</b>     |        |             |             |
| : Creditors for Purchases             |        | ****        |             |
| Creditors for Wages                   |        | ****        |             |
| Creditors for Overheads               |        | <u>****</u> | ****        |
| <b>Total Current Liabilities (CL)</b> |        | <u>****</u> | <u>****</u> |
| Excess of CA over CL                  |        |             | ****        |
| + Safety Margin                       |        |             | ****        |
| <b>Net Working Capital</b>            |        |             | ****        |

The following points are also worth noting while estimating the working capital requirement:

**1. Depreciation:** An important point worth noting while estimating the working capital requirement is the depreciation on fixed assets. The depreciation on the fixed assets, which are used in the production process or other activities, is not considered in working capital estimation. The depreciation is a non-cash expense and there is no funds locked up in depreciation as such and therefore, it is ignored. Depreciation is neither included in valuation of work-in-progress nor in

finished goods. The working capital calculated by ignoring depreciation is known as cash basis working capital. In case, depreciation is included in working capital calculations, such estimate is known as total basis working capital.

**2. Safety Margin:** Sometimes, a firm may also like to have a safety margin of working capital in order to meet any contingency. The safety margin may be expressed as a % of total current assets or total current liabilities or net working capital. The safety margin, if required, is incorporated in the working capital estimates to find out the net working capital required for the firm. There is no hard and fast rule about the quantum of safety margin and depends upon the nature and characteristics of the firm as well as of its current assets and current liabilities.

### Example.1

Hi-tech Ltd. plans to sell 30,000 units next year. The expected cost of goods sold is as follows:

|  | Rs.(Per Unit) |
|--|---------------|
| Raw material                                   | 100           |
| Manufacturing expenses                         | 30            |
| Selling, administration and financial expenses | 20            |
| Selling price                                  | 200           |

The duration at various stages of the operating cycle is expected to be as follows

|                        |           |
|------------------------|-----------|
| : Raw material stage   | 2 months  |
| Work-in-progress stage | 1 month   |
| Finished stage         | 1/2 month |
| Debtors stage          | 1 month   |

Assuming the monthly sales level of 2,500 units, estimate the gross working capital requirement. Desired cash balance is 5% of the gross working capital requirement, and working progress is 25% complete with respect to manufacturing expenses.

### Solution:

#### Statement of Working Capital Requirement

| 1. Current Assets:                         | Amt.(Rs.) | Amt.           |
|--|-----------|----------------|
| Stock of Raw Material (2,500 × 2 × 100)    |           | (Rs.) 5,00,000 |
| Work-in-progress:                          |           | 000            |
| Raw Materials (2,500 × 100)                | 2,50,000  |                |
| Manufacturing Expenses 25% of (2,500 × 30) | 18,750    | 2,68,750       |
| Finished Goods:                            |           |                |
| Raw Materials (2,500 × 1/2 × 100)          | 1,25,000  |                |
| Manufacturing Expenses (2,500 × 1/2 × 30)  | 37,500    | 1,62,500       |

|                             |                  |
|-----------------------------|------------------|
| Debtors(2,500×150)          | <u>3,75,000</u>  |
|                             | 13,06,250        |
| CashBalance(13,06,250×5/95) | <u>68,750</u>    |
| WorkingCapitalRequirement   | <u>13,75,000</u> |

Note:Selling,administrationandfinancialexpenseshavenotbeenincludedinvaluationofclosingstock.

### Example.2

Calculatetheamountofinf workingcapitalrequirementforSRCCLtd.fromthefollowingormation:

|               | ₹ .(PerUnit) |
|---------------|--------------|
| Raw materials | 160          |
| Direct labour | 60           |
| Overhead      | <u>120</u>   |
| Total cost    | 340          |
| Profit        | <u>604</u>   |
| Selling price | <u>00</u>    |

Raw materials are held in stock on an average for one month. Materials are in process on an average for half-a-month. Finished goods are in stock on an average for one month. Credit allowed by suppliers is one month and credit allowed to debtors is two months. Time lag in payment of wages is 1½ weeks. Time lag in payment of overhead expenses is one month. One fourth of the sales are made on cash basis.

Cash in hand and at the bank is expected to be Rs.50,000; and expected level of production amount to 1,04,000 units for a year of 52 weeks.

You may assume that production is carried on evenly throughout the year and a time period of four weeks is equivalent to a month.



**Solution:**

| <b>1.CurrentAssets :</b>            | Amt.(Rs.)       | Amt.(Rs.)        |
|-------------------------------------|-----------------|------------------|
| CashBalance                         |                 | 50,000           |
| StockofRawMaterials(2,000×160×4)W   |                 | 12,80,000        |
| ork-in-progress:                    |                 |                  |
| RawMaterials(2,000×160×2)           | 6,40,000        |                  |
| LabourandOverheads(2,000×180×2)×50% | <u>3,60,000</u> | 10,00,000        |
| FinishedGoods(2,000×340×4)          |                 | 27,20,000        |
| Debtors(2,000×75%×340×8)            |                 | <u>40,80,000</u> |
| TotalCurrentAssets                  |                 | <u>91,30,000</u> |

**2.CurrentLiabilities:**

|                                       |  |                  |
|---------------------------------------|--|------------------|
| Creditors(2,000×Rs.160×4)             |  | 12,80,000        |
| CreditorsforWages(2,000×Rs.60×1½)     |  | 1,80,000         |
| CreditorsforOverheads(2,000×Rs.120×4) |  | <u>9,60,000</u>  |
| TotalCurrentLiabilities               |  | <u>24,20,000</u> |
| NetWorkingCapital(CA–CL)              |  | <u>67,10,000</u> |

**Example.3**

JBC Ltd. sells goods on a gross profit of 25%. Depreciation is considered as a part of cost of production. The following are the annual figures given to you :

|  |               |
|--|---------------|
| Sales(2monthscredit)                           | Rs. 18,00,000 |
| Materialsconsumed(1monthscredit)               | 4,50,000      |
| Wagespaid(1monthlaginpayment)                  | 3,60,000      |
| Cashmanufacturingexpenses(1monthlaginpayment)  | 4,80,000      |
| Administrativeexpenses(1monthlaginpayment)     | 1,20,000      |
| Salespromotionexpenses(paidquarterlyinadvance) | 60,000        |

The company keeps one month's stock each of raw materials and finished goods. It also keeps Rs.1,00,000 in cash. You are required to estimate the working capital requirements of the company on cash cost basis, assuming 15% safety margin .

**Solution:**

| <b>1. Current Assets :</b>                           | Amt. (Rs.)      |
|--|-----------------|
| Cash-in-hand   | 1,00,000        |
| Debtors(cost of sales i.e. $14,70,000 \times 2/12$ ) | 2,45,000        |
| Prepaid Sales Promotion expenses                     | 15,000          |
| Inventories:   |                 |
| Raw Materials( $4,50,000/12$ )                       | 37,500          |
| Finished goods( $12,90,000/12$ )                     | <u>1,07,500</u> |
| Total current assets                                 | <u>5,05,000</u> |
| <b>2. Current Liabilities :</b>                      |                 |
| Sundry creditors ( $4,50,000/12$ )                   | 37,500          |
| Outstanding Manufacturing exp. ( $4,80,000/12$ )     | 40,000          |
| Outstanding Administrative exp. ( $1,20,000/12$ )    | 10,000          |
| Outstanding Wages ( $3,60,000/12$ )                  | <u>30,000</u>   |
| Total current liabilities                            | <u>1,17,500</u> |
| Excess of CA and CL                                  | 3,87,500        |
| +15% for contingencies                               | <u>58,125</u>   |
| Working capital required                             | <u>4,45,625</u> |

**Working Notes:**

|   |                 |
|---|-----------------|
| <b>1. Cost Structure</b>                | Rs.             |
| Sales                                   | 18,00,000       |
| – Gross profit 25% on sales             |                 |
| <u>4,50,000</u> Cost of production      | 13,50,000       |
| – Cost of materials                     | Rs. 4,50,000    |
| – Wages                                 | 3,60,000        |
|   | <u>8,10,000</u> |
| Manufacturing expenses (Total)          | 5,40,000        |
| – Cash Manufacturing expenses           |                 |
| <u>4,80,000</u> Therefore, Depreciation | <u>60,000</u>   |
| <b>2. Total cash cost:</b>              |                 |
| Cost of production                      | 13,50,000       |
| – Depreciation                          | 60,000          |
| + Administrative expenses               | 1,20,000        |
| + Sales promotion expenses              | <u>60,000</u>   |

TotalCashCost

14,70,000



## **IMPORTANCE OR ADVANTAGES OF ADEQUATE WORKING CAPITAL**

Working capital is the life blood and nerve centre of a business. Just as circulation of blood is essential in the human body for maintaining life, working capital is very essential to maintain the smooth running of a business. No business can run successfully without an adequate amount of working capital. The main advantages of maintaining adequate amount of working capital are as follows:

1. **Solvency of the business:** Adequate working capital helps in maintaining solvency of the business by providing uninterrupted flow of production.
2. **Goodwill:** Sufficient working capital enables a business concern to make prompt payments and hence helps in creating and maintaining goodwill.
3. **Easy loans:** A concern having adequate working capital, high solvency and good credit standing can arrange loans from banks and other on easy and favourable terms.
4. **Cash discounts:** Adequate working capital also enables a concern to avail cash discounts on the purchases and hence it reduces costs.
5. **Regular supply of raw materials:** Sufficient working capital ensures regular supply of raw materials and continuous production.
6. **Regular payment of salaries, wages and other day-to-day commitments:** A company which has ample working capital can make regular payment of salaries, wages and other day-to-day commitments which raises the morale of its employees, increases their efficiency, reduces wastages and costs and enhances production and profits.
7. **Exploitation of favourable market conditions:** Only concerns with adequate working capital can exploit favourable market conditions such as purchasing its requirements in bulk when the prices are lower and by holding its inventories for higher prices.
8. **Ability to face crisis:** Adequate working capital enables a concern to face business crisis in emergency such as depression because during such periods, generally, there is much pressure on working capital.
9. **Quick and regular return on investments:** Every Investor wants a quick and regular return on his investments. Sufficiency of working capital enables a concern to pay quick and regular dividends to its investors as there may not be much pressure to plough back profits. This gains the confidence of its investors and creates a favourable market to raise additional funds i.e., the future.
10. **High morale:** Adequacy of working capital creates an environment of security, confidence, and high morale and creates overall efficiency in a business.

**Excess or Inadequate Working Capital** Every business concern should have adequate working capital to run its business operations. It should have neither redundant or excess working capital nor inadequate nor shortage of working capital. Both excess as well as short working capital positions are bad for any business. However, out of the two, it is the inadequacy of working capital which is more dangerous from the point of view of the firm.

## **DISADVANTAGES OF REDUNDANT OR EXCESSIVE WORKING CAPITAL**

1. Excessive Working Capital means idle funds which earn no profits for the business and hence the business cannot earn a proper rate of return on its investments.
2. When there is a redundant working capital, it may lead to unnecessary purchasing and accumulation of inventories causing more chances of theft, waste and losses.
3. Excessive working capital implies excessive debtors and defective credit policy which may cause a higher incidence of bad debts.
4. It may result into overall inefficiency in the organization.
5. When there is excessive working capital, relations with banks and other financial institutions may not be maintained.
6. Due to low rate of return on investments, the value of shares may also fall.
7. The redundant working capital gives rise to speculative transactions.

## **DISADVANTAGES OR DANGERS OF INADEQUATE WORKING CAPITAL**

1. A concern which has inadequate working capital cannot pay its short-term liabilities in time. Thus, it will lose its reputation and shall not be able to get good credit facilities.
2. It cannot buy its requirements in bulk and cannot avail of discounts, etc.
3. It becomes difficult for the firm to exploit favourable market conditions and undertake profitable projects due to lack of working capital.
4. The firm cannot pay day-to-day expenses of its operations and it creates inefficiencies, increases costs and reduces the profits of the business.
5. It becomes impossible to utilize efficiently the fixed assets due to non-availability of liquid funds.
6. The rate of return on investments also falls with the shortage of working capital.

# WORKING CAPITAL CYCLE

Working Capital Cycle is also known as Operating cycle. Operating cycle is the total timegap between the purchase of raw material and the receipt from Debtors. The working capital estimation as per the method of operating cycle, is the most systematic and logical approach. In this case, the working capital estimation is made on the basis of analysis of each and every component of the working capital individually. As already discussed the working capital, required to sustain the level of planned operations, is determined by calculating all the individual components of current assets and current liabilities.

Working capital is needed till a firm gets cash on sale of finished products. It depends on two factors:

i. Manufacturing cycle i.e. time required for converting the raw material into finished product; and

ii. Credit policy i.e. credit period given to Customers and credit period allowed by creditors. Thus, the sum total of these times is called an "Operating cycle" and it consists of the following six steps:

i. Conversion of cash into raw materials.

ii. Conversion of raw materials into work-in-process.

iii. Conversion of work-in-process into finished products.

iv. Time for sale of finished goods—cash sales and credit sales.

v. Time for realization from debtors and Bills receivables into cash.

vi. Credit period allowed by creditors for credit purchase of raw materials, inventory and creditors for wages and overheads.

## STRUCTURE OF WORKING CAPITAL

The study of structure of working capital is another name for the study of working capital cycle. In other words, it can be said that the study of structure of working capital is the study of the elements of current assets viz. inventory, receivable, cash and bank balances and other liquid resources like short-term or temporary investments. Current liabilities usually comprise bank borrowings, trade credits, assessed tax and unpaid dividends or any other such things. The following points mention relating to various elements of working capital deserves:

**Inventory**— Inventory is major item of current assets. The management of inventories – raw material, goods-in-process and finished goods is an important factor in the short-run liquidity positions and long-term profitability of the company.

**Raw material inventories**— Uncertainties about the future demand for finished goods, together with the cost of adjusting production to change in demand will cause a financial manager to desire some level of raw material inventory. In the absence of such inventory, the company could

respond to increased demand for finished goods only by incurring explicit clerical and other transactions costs of ordinary raw material for processing into finished goods to meet that demand. If changes in demand are frequent, these order costs may become relatively large. Moreover, attempts to purchase hastily the needed raw material may necessitate payment of premium purchase prices to obtain quick delivery and, thus, raise cost of production. Finally, unavoidable delays in acquiring raw material may cause the production process to shut down and then re-start again raising cost of production. Under these conditions the company cannot respond promptly to changes in demand without sustaining high costs. Hence, some level of raw materials inventory has to be held to reduce such costs. Determining its proper level requires an assessment of costs of buying and holding inventories and a comparison with the costs of maintaining insufficient level of inventories.

**Work-in-process inventory**— This inventory is built up due to production cycle. Production cycle is the time-span between introduction of raw material into production and emergence of finished product at the completion of production cycle. Till the production cycle is completed, the stock of work-in-process has to be maintained.

**Finished goods inventory**— Finished goods are required for reasons similar to those causing the company to hold raw materials inventories. Customer's demand for finished goods is uncertain and variable. If a company carries no finished goods inventory, unanticipated increases in customer demand would require sudden increases in the rate of production to meet the demand. Such rapid increase in the rate of production may be very expensive to accomplish. Rather than loss of sales, because the additional finished goods are not immediately available or sustain high costs of rapid additional production, it may be cheaper to hold a finished goods inventory. The flexibility afforded by such an inventory allows a company to meet unanticipated customer demands at relatively lower cost than if such an inventory is not held.

Thus, to develop successfully optimum inventory policies, the management needs to know about the functions of inventory, the cost of carrying inventory, economic order quantity and safety stock. Industrial machinery is usually very costly and it is highly uneconomical to allow it to lie idle. Skilled labour also cannot be hired and fired at will. Modern requirements are also urgent. Since requirements cannot wait and since the cost of keeping machine and men idle is higher, than the cost of storing the material, it is economical to hold inventories to the required extent. The objectives of inventory management are:

- (1) To minimize idle cost of men and machines caused by shortage of raw materials, stores and spare parts.
- (2) To keep down:
  - (a) Inventory ordering cost.
  - (b) Inventory carrying cost,
  - (c) Capital investment in inventories.
  - (d) Obsolescence losses

**Receivables**— Many firms make credit sales and as a result thereof carry receivables as a current asset. The practice of carrying receivables has several advantages viz.,

- (i) reduction of collection cost over cash collection,
- (ii) Reduction in the variability of sales, and
- (iii) increase in the level of near-term sales.

While immediate collection of cash appears to be in the interest of shareholders, the cost of that policy may be very high relative to costs associated with delaying the receipt of cash by extension of credit. Imagine, for example, an electric supply company employing a person at every house constantly reading electricity meter and collecting cash from him every minute as electricity is consumed. It is far cheaper for accumulating electricity usage and bill once a month. This of course, is a decision to carry receivables on the part of the company. It may also be true that the extension of credit by the firm to its customers may reduce the variability of sales over time. Customers confined to cash purchases may tend to purchase goods when cash is available to them. Erratic and perhaps cyclical purchasing patterns may then result unless credit can be obtained elsewhere. Even if customers do obtain credit elsewhere, they must incur additional cost of search in arranging for a loan costs that can be estimated when credit is given by a supplier. Therefore, extension of credit to customers may well smooth out of the pattern of sales and cash inflows to the firm over time since customers need not wait for some inflows of cash to make a purchase. To the extent that sales are smoothed, cost of adjusting production to changes in the level of sales should be reduced.

Finally, the extension of credit by firms may act to increase near-term sales. Customers need not wait to accumulate necessary cash to purchase an item but can acquire it immediately on credit. This behaviour has the effect of shifting future sales close to the present time.

Therefore, the extension of credit by a firm and the resulting investment in receivables occurs because it pays a firm to do so. Costs of collecting revenues and adapting to fluctuating customer demands may make it desirable to offer the convenience associated with credit to firm's customers. To the extent that near sales are also increased, extension of credit is made even more attractive for the firm.

**Cash and interest-bearing liquid assets**— Cash is one of the most important tools of day-to-day operation, because it is a form of liquid capital which is available for assignment to any use. Cash is often the primary factor which decides the course of business destiny. The decision to expand a business may be determined by the availability of cash and the borrowing of funds will frequently be dictated by cash position. Cash-in-hand, however, is a non-earning asset. This leads to the question as to what is the optimum level of this idle resource. This optimum depends on various factors such as the manufacturing cycle, the sale and collection cycle, age of the bills and on the maturing of debt. It also depends upon the liquidity of other current assets and the matter of expansion. While a liberal maintenance of cash provides a sense of security, a lack of sufficiency of cash hampers day-to-day operations. Prudence, therefore, requires that no more cash should be kept on hand than the optimum required for handling miscellaneous transactions over the counter and petty disbursements etc.

It has not become a practice with business enterprises to avoid too much redundant cash by investing a portion of their earnings in assets which are susceptible to easy conversion into cash. Such assets may include government securities, bonds, debentures and shares that are known to be readily marketable and that may be liquidated at a moment's notice when cash is needed.



## CHART FOR OPERATING CYCLE OR WORKING CAPITAL CYCLE.

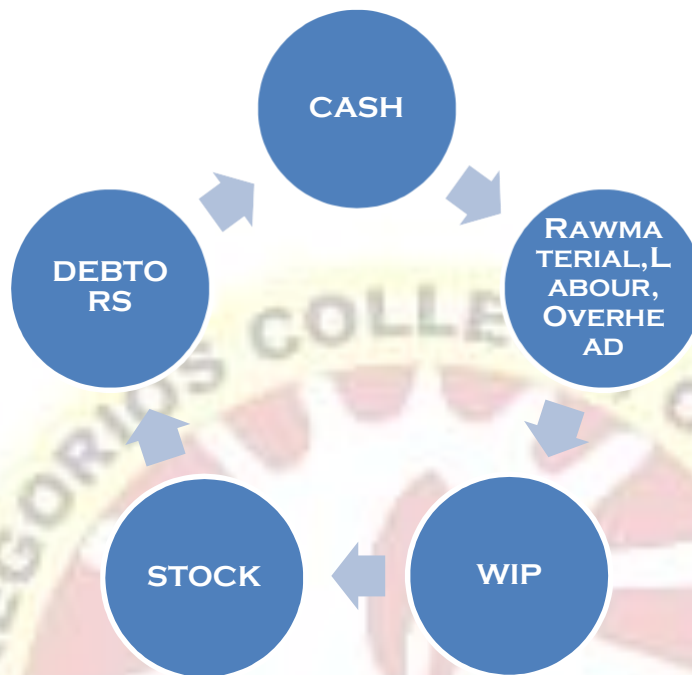


Figure No.1- **WORKING CAPITAL CYCLE**

Figure No.1 depicting 'Working Capital Cycle' makes it clear that the amount of cash funds are used to purchase raw materials and used to pay to creditors. The raw materials are processed; wages and overhead expenses are paid which in result produce finished goods for sale.

The sale of goods may be for cash or credit. In the former case, cash is directly received while in later case cash is collected from debtors. This cycle continues throughout the life of the business firm.

### ***Operating Cycle***

The duration of time required to complete the following sequence of events, in case of manufacturing firm, is called the operating cycle:

1. Conversion of cash into raw materials.
2. Conversion of raw materials into work-in-progress.
3. Conversion of work-in-process into finished goods.
4. Conversion of finished goods into debtors and bills receivable through sales.
5. Conversion of debtors and bills receivable into cash.

The length of cycle will depend on the nature of business. Non manufacturing concerns, service concerns and financial concerns will not have raw material and work-in-process so their cycle will be shorter. Financial concerns have a shortest operating cycle.

## DURATION OF THE OPERATING CYCLE

The duration of the operating cycle is equal to the sum of the duration of each of these stages less the credit period allowed by the suppliers of the firm. In symbols,  $O = R + W + F + D - C$

Where, O = duration of operating cycle.  
 R = raw material storage period.  
 W = work-in-process period.  
 F = finished goods storage period.  
 D = debtors collection period, and  
 C = creditors payment period.

The components of the operating cycle may be calculated as follows:

$$R = \frac{\text{Average stock of raw materials and stores}}{\text{Average raw material and stores consumption per day}}$$

$$W = \frac{\text{Average work-in-process inventory}}{\text{Average cost of production per day}}$$

$$F = \frac{\text{Average finished goods inventory}}{\text{Average cost of goods sold per day}}$$

$$D = \frac{\text{Average book debts}}{\text{Average credit sales per day}}$$

In case of trading concerns, the operating cycle will be: Cash → Stock → Debtors → Cash.

In case of financial concerns, the operating cycle will be: Cash → Debtors → Cash only.

## UNIT 2 WORKING CAPITAL MANAGEMENT

Working capital is rightly an adjunct of fixed capital investment. It is a financial lubricant which keeps business operations going. It is the life-blood of a firm. Cash, accounts receivable and inventory are the important components of working capital, which is rotating in its nature. Cash is the central reservoir of a firm and ensures liquidity. Accounts receivables and inventory form the principal utility of production and sales; they also represent liquid funds in the ultimate analysis. The financial manager should weigh the advantage of customer trade credit, such as increase in volume of sales, against limitations of costs and risks involved therein. He should match inventory trends with level of sales. The uncertainties of inventory planning should be dealt with in a rational manner. There are several costs and risks which are related to inventory management. The risks are there when inventory is inadequate or in excess of requirements. The former may hold up production,

while the latter would result in an unjustified locking up of funds and increase the cost of capital. Inventory management entails decisions about the timing and size of purchases purely on a cost basis. The financial manager should determine the economic order quantities after



considering the relationships of different cost elements involved in purchases. Firms cannot avoid making investments in inventory because production and deliveries involve time lags and discontinuities. Moreover, the demand for sales may vary substantially. In the circumstances, safety levels of stocks should be maintained. Inventory management thus includes purchases management and material management as well as financial management. Its close association with financial management primarily arises out of the fact that it is a simple cash asset.

**Meaning of Working Capital Management**-The management of current assets, current liabilities and inter-relationship between them is termed as working capital management. "Working capital management is concerned with problems that arise in attempting to manage the current assets, the current liabilities and the inter-relationship that exist between them." In practice, "There is usually a distinction made between the investment decisions concerning current assets and the financing of working capital."

From the above, the following two aspects of working capital management emerge:

- (1) To determine the magnitude of current assets or "level of working capital" and
- (2) To determine the mode of financing or "hedging decisions."

## **SIGNIFICANCE OF WORKING CAPITAL MANAGEMENT**

Funds are needed in every business for carrying on day-to-day operations. Working capital funds are regarded as the life blood of a business firm. A firm can exist and survive without making profit but cannot survive without working capital funds. If a firm is not earning profit it may be termed as 'sick', but, not having working capital may cause its bankruptcy working capital in order to survive. The alternatives are not pleasant. Bankruptcy is one alternative. Being acquired on unfavorable terms as another. Thus, each firm must decide how to balance the amount of working capital it holds, against the risk of failure."

Working capital has acquired a great significance and sound position in the recent past for the twin objects of profitability and liquidity. In period of rising capital costs and scarce funds, the working capital is one of the most important areas requiring management review. It is rightly observed that, "Constant management review is required to maintain appropriate levels in the various working capital accounts." Mainly the success of a concern depends upon proper management of working capital so "working capital management has been looked upon as the driving seat of financial manager."

It consumes a great deal of time to increase profitability as well as to maintain proper liquidity at minimum risk. There are many aspects of working capital management which make it an important function of the finance manager. In fact we need to know when to look for working capital funds, how to use them and how to measure, plan and control them. A study of working capital management is very important for internal and external experts. Sales expansion, dividend declaration, plants expansion, new product line, increase in salaries and wages, rising price level, etc., put added strain on working capital maintenance. Failure of any enterprise is undoubtedly due to poor management and absence of management skill.

Importance of working capital management stems from two reasons, viz., (i) A substantial portion of total investment is invested in current assets, and (ii) level of current assets and current liabilities will change quickly with the variation in sales. Though fixed assets investment and long-term borrowing will also respond to the changes in sales, but its response will be weak.

## **DIFFERENCE BETWEEN THE WORKING CAPITAL MANAGEMENT AND THE FIXED ASSETS MANAGEMENT**

In fact management of working capital is similar to that of fixed assets management in the sense that in both cases a firm analyses their effects on its profitability and risk. However, fixed assets management and working capital management differ in three important ways. Firstly, in managing fixed assets time is very important. Consequently, discounting and compounding aspects of time element play a significant role in capital budgeting and a minor one in the working capital management. Secondly, large holdings of current assets specially cash, strengthen a firm's liquidity position (and reduce risks), but they also reduce overall profitability. Thirdly, the level of fixed as well as current assets depends upon the expected sales, but it is only current assets, which can be adjusted with sales fluctuations in the short-run.

## **THEORY OF WORKING CAPITAL MANAGEMENT**

The interaction between current assets and current liabilities is, therefore, the main theme of the theory of working capital management. Working capital management is concerned with the problem that arises in attempting to manage the current assets, the current liabilities and the inter-relationship that exist between them. The goal of working capital management is to manage a firm's current assets and current liabilities in such a way that a satisfactory level of working capital is maintained.

## **UNIT-2 FINANCING CURRENT ASSET**

### **FINANCING AND POLICIES OF WORKING CAPITAL, AND THEIR IMPACT**

After arriving the estimation of working capital for any firm, the next step is how to finance the working capital requirement. It is of two sources of financing:

- i) Short-term
- ii) Long-term

Short-term financing refers to borrowing funds or raising credit for a maximum of 1 year period i.e., the debt is payable within a year at the most. Whereas, the Long-term financing refers to the borrowing of funds or raising credit for one year or more. The finance manager has to mix funds from these two sources optimally to ensure profitability and liquidity. The mixing of finances from long-term and short term should be such that the firm should not face either short of funds or idle funds. Thus, the financing of working capital should not result in either idle or shortage of cash funds.

Policy is a guideline in taking decisions of business. In working capital financing, the manager has to take a decision of mixing the two components i.e., long term component of debt and short term component of debt. The policies for financing of working capital are divided into three categories. Firstly, conservative financing policy in which the manager depends more on long term funds. Secondly, aggressive financing policy in which the manager depends more on short term funds, and third, there is a moderate policy which suggests that the manager depends moderately on both long term and short-term funds while financing. These policies are shown diagrammatically hereunder.

|                               |                          |                                |
|-------------------------------|--------------------------|--------------------------------|
| Conservative Financing Policy | Seasonal Current Assets  | Short Term funds               |
|                               | Permanent Current Assets | Long term funds + Equity Capit |
|                               | Fixed Assets             |                                |
| Aggressive Financing Policy   | Seasonal Current Assets  | Short Term funds               |
|                               | Permanent Current Assets | Long term funds + Equity Capit |
|                               | Fixed Assets             |                                |
| Moderate Financing Policy     | Seasonal Current Assets  | Short Term funds               |
|                               | Permanent Current Assets | Long term funds + Equity Capit |
|                               | Fixed Assets             |                                |

## WORKING CAPITAL POLICIES

### Matching Approach

The question arising here is how to mix both short term and long term funds while financing required working capital. The guiding approach is known as 'matching approach'. It suggests that if the need is short term purpose, raise short – term loan or credit and if the need is for a long term, one should raise long term loan or credit. Thus, maturity period of the loan is to be matched with the purpose and for how long. This is called matching approach. This matches the maturity period of the loan with the period for how long working capital requires. The following diagram shows the matching approach.

### Matching Approach

| Types of Funds  | Working capital requirement |
|-----------------|-----------------------------|
| Short-term-     | Seasonal Working Capital    |
| Long-term -     | Permanent Working Capital   |
| Equity Capital- | Fixed Assets                |

## IMPACT OF WORKING CAPITAL POLICIES

A firm's sales are Rs. 25 lakhs, and having an EBIT – Rs. 3 lakhs. It has fixed assets of Rs. 8 lakhs. The firm is thinking to hold current assets of different size of Rs. 5 lakhs; Rs. 6 lakhs or Rs. 8 lakhs. Assuming profits and fixed assets do not vary, the impact of these working capital policies are in the following manner which is explained in a hypothetical illustration :

|   | Types of Policy (Rs. in lakhs) |              |              |
|---|--------------------------------|--------------|--------------|
|   | Aggressive                     | Moderate     | Conservative |
| Sales   | 25                             | 25           | 25           |
| EBIT  | 3                              | 3            | 3            |
| Current Assets                                | 5                              | 6            | 8            |
| Fixed Assets                                  | 8                              | 8            | 8            |
| Total Assets                                  | 13                             | 14           | 16           |
| <b>Return on Assets % (EBIT/total assets)</b> | <b>23.07</b>                   | <b>21.42</b> | <b>18.75</b> |

Lower the level of current assets (aggressive) higher the returns (23.07 percent) higher the level of current assets (conservative) lower the returns (18.75 percent).

### **OPTIMAL SIZE OF CURRENT ASSETS**

As we have discussed in the earlier paragraphs, current assets and their size depends upon several factors. Arriving appropriate size of current assets such as cash, raw materials, finished goods and debtors is a challenge to the financial manager of a firm. It happens sometimes excess or shortage. We have also discussed in the fore-gone paragraphs about the evils of excess working capital and inadequate working capital. Very few firms arrive optimum level of working capital by their sheer experience and scientific approach. The ratio of current assets to fixed assets helps in measuring the performance of working capital management. The higher the ratio, conservative the firm is in maintaining its current assets and lowers the ratio, aggressive the firm is in maintaining its current assets. So every firm should balance their level of current assets and make it optimum.

### **LIQUIDITY VS. PROFITABILITY**

Any exercise in working capital management will influence either liquidity or profitability. The working capital management is a razor edge exercise for financial manager of an enterprise. In this context the financial manager has to take several decisions of routine and non-routine such as: Sufficient cash balance to be maintained;

To raise long term or short term loans decide the rate of interest and the time of repayment; Decide the purchase policy to buy or not to buy materials;

To determine the economic order quantity for inputs, To fix the price at which to buy the inputs if any;

To sell for credit or not and terms of credit; To decide the terms of purchase;

To decide the credit period and extent of credit;

In all these aspects the financial manager has to take decisions carefully so that the firm's twin objectives such as profitability and solvency are not affected.

## **TRADE OFF BETWEEN LIQUIDITY AND PROFITABILITY**

If a firm maintains huge amount of current assets its profitability will be affected though it protects liquidity. If a firm maintains low current assets, its liquidity is of course weak but the firm's profitability will be high.

## **WORKING CAPITAL FINANCING AND SOURCE OF WORKING CAPITAL**

### **ACCRUALS**

The major accrual items are wages and taxes. These are simply what the firm owes to its employees and to the government.

### **TRADE CREDIT**

Trade credit represents the credit extended by the supplier of goods and services. It is a spontaneous source of finance in the sense that it arises in the normal transactions of the firm without specific negotiations, provided the firm is considered creditworthy by its supplier. It is an important source of finance representing 25% to 50% of short-term financing.

### **WORKING CAPITAL ADVANCE BY COMMERCIAL BANKS**

Working capital advance by commercial banks represents the most important source for financing current assets.

**Forms of Bank Finance:** Working capital advance is provided by commercial banks in three primary ways: (i) cash credits / overdrafts, (ii) loans, and (iii) purchase / discount of bills. In addition to these forms of direct finance, commercial banks help their customers in obtaining credit from other sources through the letter of credit arrangement.

- i. **Cash Credit / Overdrafts:** Under a cash credit or overdraft arrangement, a pre-determined limit for borrowing is specified by the bank. The borrower can draw as often as required provided the outstanding do not exceed the cash credit / overdraft limit.
- ii. **Loans:** These are advances of fixed amounts which are credited to the current account of the borrower or released to him in cash. The borrower is charged with interest on the entire loan amount, irrespective of how much he draws.
- iii. **Purchase / Discount of Bills:** A bill arises out of a trade transaction. The seller of goods draws the bill on the purchaser. The bill may be either clean or documentary (a documentary bill is supported by a document of title like a railway receipt or a bill of lading) and may be payable on demand or after a usage period which does not exceed 90 days. On acceptance of the bill by the purchaser, the seller offers it to the bank for discount / purchase. When the bank discounts / purchases the bill it releases the funds to the seller. The bank presents the bill to the purchaser (the acceptor of the bill) on the due date and gets its payment.
- iv. **Letter of Credit:** A letter of credit is an arrangement whereby a bank helps its customer to obtain credit from its (customer's) suppliers. When a bank opens a letter of credit in favour of its customer for some specific purchases, the bank undertakes the responsibility to honour the obligation of its customer, should the customer fail to do so.



## REGULATION OF BANK FINANCE

Concerned about such a distortion in credit allocation, the Reserve Bank of India (RBI) has been trying, particularly from the mid 1960s onwards, to bring a measure of discipline among industrial borrowers and to redirect credit to the priority sectors of the economy. From time to time, the RBI issues guidelines and directives relating to matters like the norms for inventory and receivables, the maximum permissible bank finance, the form of assistance, the information and reporting system, and the credit monitoring mechanism. The important guidelines and directives have stemmed from the recommendations of various committees such as the Dehejia Committee, the Tandon Committee, the Chore Committee, and the Marathe Committee.

However, in recent years, in the wake of financial liberalisation, the RBI has given freedom to the boards of individual banks in all matters relating to working capital financing.

From the mid-eighties onwards, special committees were set up by the RBI to prescribe norms for several other industries and revise norms for some industries covered by the Tandon Committee.

**Maximum Permissible Bank Finance:** The Tandon Committee had suggested three methods for determining the maximum permissible bank finance (MPBF).

### LENDING NORMS

The recommendation of the Tandon Committee regarding the "Lending norms" has far-reaching implications. The lending norms have been suggested in view of the realization that the banker's role is only to supplement the borrower's resources and not to meet his entire working capital needs. In the context of this approach, the committee has suggested three alternative methods for working out the maximum permissible level of bank borrowings. Each successive method reduces the involvement of short-term bank credit to finance the current assets.

**First Method:** According to this method, the borrower will have to contribute a minimum of 25% of the working capital gap from long-term funds, i.e., owned funds and term borrowings. This will give a current ratio of 1.17:1.

The term working capital gap refers to the total of current assets less current liabilities other than bank borrowings. This can be understood with the help of following example:

#### Example 1

Rs.

|   |               |
|---|---------------|
| Total Current assets required by the borrower as per norms  | 20,000        |
| Current liabilities   | 5,000         |
| Amount of maximum permissible bank borrowings as per the first method can be ascertained as follows:- |               |
| Working Capital gap (Rs. 20,000 – Rs. 5,000)  | 15,000        |
| Less: 25% from long-term sources  | <u>3,750</u>  |
| Maximum permissible bank borrowings   | <u>11,250</u> |

**Second Method:** Under this method the borrower has to provide the minimum of 25% of the total current assets that will give a current ratio of 1.33:1.

**Example 2:** On the basis of the data given in Example 1, borrowings as per the maximum permissible bank second method can be ascertained as follows:

Rs.

|  |               |
|--|---------------|
| Current assets as per norms                          | 20,000        |
| Less: 25% to be provided from long-term funds        | <u>5,000</u>  |
| 15,000   |               |
| Less: Current liabilities other than bank borrowings | <u>5,000</u>  |
| Maximum permissible bank borrowings                  | <u>10,000</u> |

**Third Method:** In this method, the borrower's contribution from long term funds will be to the extent of the entire core current assets and a minimum of 25% of the balance of the current assets. The term core current assets refers to the absolute minimum level of investment in all current assets which is required at all times to carry out minimum level of business activities.

**Example 3 :** On the basis of the information given in Example 1, the amount of maximum permissible bank finance can be arrived at as follows if the core current assets are Rs. 2,000

Rs.

|   |              |
|---|--------------|
| Current assets as per norms                   | 20,000       |
| Less: Core Current Assets                     | <u>2,000</u> |
| 18,000  |              |
| Less: 25% to be provided from long-term funds | <u>4,500</u> |
| 13,500  |              |
| Less: Current Liabilities                     | <u>5,000</u> |
| Maximum permissible bank borrowings           | <u>8,500</u> |

It will thus be seen that in the third method current ratio has further improved.

**Reserve Bank's directive :** The Reserve Bank of India accepted the recommendations of the Tandon Committee. It instructed the commercial banks in 1976 to put all the borrowers having aggregate credit limits from banking system in excess of Rs. 10 lakhs, under the first method of lending.

## **PUBLIC DEPOSITS**

Many firms, large and small, have solicited unsecured deposits from the public in recent years, mainly to finance their working capital requirements.

## **INTER-CORPORATE DEPOSITS**

A deposit made by one company with another, normally for a period up to six months, is referred to as an inter-corporate deposit. Such deposits are usually of three types.

- a. Call Deposits :In theory,a call deposit is withdrawable by the lender on giving a day's notice. In practice, however, the lender has to wait for at least three days.The interest rate on such deposits may be around 10 percent per annum.
- b. Three-months Deposits : More popular in practice, these deposits are taken by borrowers to tide over a short-term cash inadequacy that may be caused by one or more of the following factors: disruption in production, excessive imports of raw material, tax payment, delay in collection, dividend payment, and unplanned capital expenditure. The interest rate on such deposits is around 12 percent per annum.
- c. Six-months Deposits: Normally, lending companies do not extend deposits beyond this timeframe. Such deposits, usually made with first-class borrowers, and carry an interest rate of around 15 percent per annum.

### **SHORT-TERM LOANS FROM FINANCIAL INSTITUTIONS**

The Life Insurance Corporation of India and the General Insurance Corporation of India provide short-term loans to manufacturing companies with an excellent track record.

### **RIGHTS DEBENTURES FOR WORKING CAPITAL**

Public limited companies can issue "Rights" debentures to their shareholders with the object of augmenting the long-term resources of the company for working capital requirements. The key guidelines applicable to such debentures are as follows:

- i. The amount of the debenture issue should not exceed (a) 20% of the gross current assets, loans, and advances minus the long-term funds presently available for financing working capital, or (b) 20% of the paid-up share capital, including preference capital and free reserves, whichever is the lower of the two.
- ii. The debt-equity ratio, including the proposed debenture issue, should not exceed 1:1.
- iii. The debentures shall first be offered to the existing Indian resident shareholders of the company on a pro-rata basis.

### **COMMERCIAL PAPER**

Commercial paper represents short-term unsecured promissory notes issued by firms which enjoy a fairly high credit rating. Generally, large firms with considerable financial strength are able to issue commercial paper. The important features of commercial paper are as follows:

- i. The maturity period of commercial paper usually ranges from 90 days to 360 days.
- ii. Commercial paper is sold at a discount from its face value and redeemed at its face value. Hence the implicit interest rate is a function of the size of the discount and the period of maturity.
- iii. Commercial paper is directly placed with investors who intend holding it till its maturity. Hence there is no well developed secondary market for commercial paper.

## FACTORING

Factoring, as a fund-based financial service, provides resources to finance receivables as well as facilitates the collection of receivables. It is another method of raising short-term finance through account receivable credit offered by commercial banks and factors. A commercial bank may provide finance by discounting the bills or invoices of its customers. Thus, a firm gets immediate payment for sales made on credit. A factor is a financial institution which offers services relating to management and financing of debts arising out of credit sales. Factoring is becoming popular all over the world on account of various services offered by the institutions engaged in it. Factors render services varying from bill discounting facilities offered by commercial banks to a total take over of administration of credit sales including maintenance of sales ledger, collection of accounts receivables, credit control and protection from bad debts, provision of finance and rendering of advisory services to their clients. Factoring may be on a recourse basis, where the risk of bad debts is borne by the client, or on a non-recourse basis, where the risk of credit is borne by the factor.

At present, factoring in India is rendered by only a few financial institutions on a recourse basis. However, the Report of the Working Group on Money Market (Vaghul Committee) constituted by the Reserve Bank of India has recommended that banks should be encouraged to set up factoring divisions to provide speedy finance to the corporate entities.

In spite of many services offered by factoring, it suffers from certain limitations. The most critical fallouts of factoring include (i) the high cost of factoring as compared to other sources of short-term finance, (ii) the perception of financial weakness about the firm availing factoring services, and (iii) adverse impact of tough stance taken by factor, against a defaulting buyer, upon the borrower resulting into reduced future sales.

## UNIT- 3 CASHMANAGEMENT

**MANAGEMENT OF WORKING CAPITAL:** Working Capital Management involves management of different components of working capital such as cash, accounts receivable, creditors, inventories etc. A brief description follows regarding the various issues involved in the management of each of the above components of working capital.

### CASHMANAGEMENT

Cash management is one of the key areas of working capital management. Cash is the most liquid current assets. Cash is the common denominator to which all current assets can be reduced because the other major liquid assets, i.e. receivable and inventory get eventually converted into cash. This underlines the importance of cash management.

The term "Cash" with reference to management of cash is used in two ways. In a narrow sense cash refers to coins, currency, cheques, drafts and deposits in banks. The broader view of cash includes near cash assets such as marketable securities and time deposits in banks. The reason why these near cash assets are included in cash is that they can readily be converted into cash. Usually, excess cash is invested in marketable securities as it contributes to profitability.

Cash is one of the most important components of current assets. Every firm should have adequate cash, neither more nor less. Inadequate cash will lead to production interruptions, while excessive cash remains idle and will impair profitability. Hence, the need for cash management. The cash management assumes significance for the following reasons.

### SIGNIFICANCE

1. Cash planning - Cash is the most important as well as the least unproductive of all current assets. Though, it is necessary to meet the firm's obligations, yet idle cash earns nothing. Therefore, it is essential to have a sound cash planning neither excess nor inadequate.
2. Management of cash flows - This is another important aspect of cash management. Synchronization between cash inflows and cash outflows rarely happens. Sometimes, the cash inflows will be more than outflows because of receipts from debtors, and cash sales in huge amounts. At other times, cash outflows exceed inflows due to payment of taxes, interest and dividend etc. Hence, the cash flows should be managed for better cash management.
3. Maintaining optimum cash balance - Every firm should maintain optimum cash balance. The management should also consider the factors determining and influencing the cash balances at various points of time. The cost of excess cash and danger of inadequate cash should be matched to determine the optimum level of cash balances.
4. Investment of excess cash - The firm has to invest the excess or idle funds in short term securities or investments to earn profits as idle funds earn nothing. This is one of the important aspects of management of cash.

Thus, the aim of cash management is to maintain adequate cash balances at one hand and to use excess cash in some profitable way on the other hand.

## **MOTIVES**

Motives or desires for holding cash refer to various purposes. The purpose may be different from person to person and situation to situation. There are four important motives to hold cash.

**a. Transaction motive** - This motive refers to the holding of cash, to meet routine cash requirements in the ordinary course of business. A firm enters into a number of transactions which require cash payment. For example, purchase of materials, payment of wages, salaries, taxes, interest etc. Similarly, a firm receives cash from cash sales, collections from debtors, return on investments etc. But the cash inflows and cash outflows do not perfectly synchronise. Sometimes, cash receipts are more than payments while at other times payments exceed receipts. The firm must have to maintain sufficient (funds) cash balance if the payments are more than receipts. Thus, the transaction motive refers to the holding of cash to meet expected obligations whose timing is not perfectly matched with cash receipts. Though, a large portion of cash held for transaction motive is in the form of cash, a part of it may be invested in marketable securities whose maturity conform to the timing of expected payments such as dividends, taxes etc.

**b. Precautionary motive** - Apart from the non-synchronisation of expected cash receipts and payments in the ordinary course of business, a firm may be failed to pay cash for unexpected contingencies. For example, strikes, sudden increase in cost of raw materials etc. Cash held to meet these unforeseen situations is known as precautionary cash balance and it provides a caution against them. The amount of cash balance under precautionary motive is influenced by two factors i.e. predictability of cash flows and the availability of short term credit. The more unpredictable the cash flows, the greater the need for such cash balances and vice versa. If the firm can borrow at short-notice, it will need a relatively small balance to meet contingencies and vice versa. Usually precautionary cash balances are invested in marketable securities so that they contribute something to profitability.

**c. Speculative motive** - Sometimes firms would like to hold cash in order to exploit the profitable opportunities as and when they arise. This motive is called as speculative motive. For example, if the firm expects that the material prices will fall, it can delay the purchases and make purchases in future when price actually declines. Similarly, with the hope of buying securities when the interest rate is expected to decline, the firm will hold cash. By and large, firms rarely hold cash for speculative purposes.

**d. Compensation motive** - This motive to hold cash balances is to compensate banks and other financial institutes for providing certain services and loans. Banks provide a variety of services to business firms like clearance of cheques, drafts, transfer of funds etc. Banks charge a commission or fee for their services to the customers as indirect compensation. Customers are required to maintain a minimum cash balance at the bank. This balance cannot be used for transaction purposes. Banks can utilize the balances to earn a return to compensate their cost of services to the customers. Such balances are compensating balances. These balances are also required by some loan agreements between a bank and its customers. Banks require a customer to maintain a minimum cash balance in his account to compensate the bank when the supply of credit is restricted and interest rates are rising.

Thus cash is required to fulfill the above motives. Out of the four motives of holding cash balances, transaction motive and compensation motives are very important. Business firms usually

do not speculate and need not have speculative balances. The requirement of precautionary balances can be met out of short-term borrowings.

## Objectives

The basic objectives of cash management are

- (i) to make the payments when they become due and
- (ii) to minimize the cash balances. The task before the cash management is to reconcile the two conflicting nature of objectives.

**1. Meeting the payments schedule** - The basic objective of cash management is to meet the payment schedule. In the normal course of business, firms have to make payments of cash to suppliers of raw materials, employees and so on regularly. At the same time firm will be receiving cash on a regular basis from cash sales and debtors. Thus, every firm should have adequate cash to meet the payments schedule. In other words, the firm should be able to meet the obligations when they become due.

The firm can enjoy certain advantages associated with maintaining adequate cash. They are:

- a. **Insolvency** - The question of insolvency does not arise as the firm will be able to meet its obligations.
- b. **Good relations** - Adequate cash balance in the business firm helps in developing good relations with creditors and suppliers of raw materials.
- c. **Creditworthiness** - The maintenance of adequate cash balances increases the creditworthiness of the firm. Consequently it will be able to purchase raw materials and procure credit with favorable terms and conditions.
- d. **Availing discount facilities** - The firm can avail the discounts offered by the creditors for payments before the due date.
- e. **To meet unexpected facilities** - The firm can easily meet the unexpected cash expenditure in situations like strikes, competition from customers etc. with little strain.

So, every firm should have adequate cash balances for effective cash management.

**2. Minimising funds committed to cash balances** - The second important objective of cash management is to minimize cash balance. In minimizing the cash balances two conflicting aspects have to be reconciled. A high level of cash balances will ensure prompt payment together with all advantages, but at the same time, cash is a non-earning asset and the larger balances of cash impair profitability. On the other hand, a low level of cash balance may lead to the inability of the firm to meet the payment schedule. Thus the objective of cash management would be to have an optimum cash balance.

**Factors determining cash needs** - Maintenance of optimum level of cash is the main problem of cash management. The level of cash holding differs from industry to industry, organisation to organisation. The factors determining the cash needs of the industry is explained as follows:

- i. **Matching of cash flows** - The first and very important factor determining the level of cash requirement is matching cash inflows with cash outflows. If the receipts and payments are perfectly coincide or balance each other, there would be no need for cash balances. The need for cash management therefore, due to the non-synchronisation of cash receipts and disbursements. For this purpose, the cash inflows and outflows have to be forecast over a

period of time say 12 months with the help of cash budget. The cash budget will pin point the months when the firm will have an excess or shortage of cash.

- ii. **Short costs** - Short costs are defined as the expenses incurred as a result of shortfall of cash such as unexpected or expected shortage of cash balances to meet the requirements. The short costs includes, transaction costs associated with raising cash to overcome the shortage, borrowing costs associated with borrowing to cover the shortage i.e. interest on loan, loss of trade-discount, penalty rates by banks to meet a shortfall in compensating, cash balances and costs associated with deterioration of the firm's credit rating etc. which is reflected in higher bank charges on loans, decline in sales and profits.
- iii. **Cost of cash on excess balances** - One of the important factors determining the cash needs is the cost of maintaining cash balances i.e. excess or idle cash balances. The cost of maintaining excess cash balance is called excess cash balance cost. If large funds are idle, the implication is that the firm has missed opportunities to invest and thereby lost interest. This is known as excess cost. Hence the cash management is necessary to maintain an optimum balance of cash.
- iv. **Uncertainty in business** - Uncertainty plays a key role in cash management, because cash flows cannot be predicted with complete accuracy. The first requirement of cash management is a precautionary cushion to cope with irregularities in cash flows, unexpected delays in collections and disbursements, defaults and expected cash needs. The uncertainty can be overcome through accurate forecasting of tax payments, dividends, capital expenditure etc. and ability of the firm to borrow funds through overdraft facility.
- iv. **Cost of procurement and management of cash** - The costs associated with establishing and operating cash management staff and activities determining the cash needs of a business firm. These costs are generally fixed and are accounted for by salary, storage and handling of securities etc. The above factors are considered to determine the cash needs of a business firm.

## **THE STRATEGIES FOR CASH MANAGEMENT**

**I) Projection of cash flows and planning** - The cash planning and the projection of cash flows is determined with the help of cash budget. The cash budget is the most important tool in cash management. It is a device to help a firm to plan and control the use of cash. It is a statement showing the estimated cash inflows and cash outflows over the firm's planning horizon. In other words the net cash position i.e., surplus or deficiency of a firm is highlighted by the cash budget from one budgeting period to another period.

**II) Determining optimal level of cash holding in the company** - One of the important responsibilities of a finance manager is to maintain sufficient cash balances to meet the current obligations of a company. Determining to optimum level of cash balance influenced by a trade off between risk and profitability. Every business enterprise holding cash balances for transaction purposes and to meet precautionary, speculative and compensative motives. With the help of cash budget the finance manager predicts the inflows and outflows of cash during a particular period of time and there by determines the cash requirements of the company. While determining the optimum level of cash balance (neither excess nor inadequate cash balances) the finance manager has to bring a trade off between the liquidity and profitability of the firm. The optimum level of cash balances of a company can be determined in various ways : They are



- a) Inventory model (Economic Order Quantity) to cash management
- b) Stochastic model
- c) Probability model
- d) The BAT Model

**A) Inventory model (EOQ) to cash management** - Economic Order Quantity (EOQ) model is used in determination of optimal level of cash of a company. According to this model optimal level of cash balance is one at which cost of carrying the inventory of cash and cost of going to the market for satisfying cash requirements is minimum. The carrying cost of holding cash refers to the interest foregone on marketable securities where as cost of giving to the market means cost of liquidating marketable securities in cash.

Optimum level of cash balance can be determined as follows:

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

Where Q = Optimum level of cash inventory

A = Total amount of transaction demand

O = Average fixed cost of securing cash from the market (ordering cost of cash / securities)

C = Cost of carrying cash inventory,

i.e., interest rate on marketable securities for the period involved.

Assumptions: The model is based on the following assumptions:

- 1) The demand for cash, transaction costs of obtaining cash and the holding costs for a particular period are given and do not change during that period.
- 2) There is a constant demand for cash during the period under consideration.
- 3) Cash payments are predictable
- 4) Banks do not impose any restrictions on firms with respect to maintenance of minimum cash balances in the bank accounts.

**For example :** Teja & Company estimated cash payments of Rs. 36,000 for a period of 30 days. The average fixed cost for securing capital from the market (ordering cost) is Rs. 100 and the carrying cost or interest rate on marketable securities is 12% per annum. Determine the optimum quantity of cash balance?

A = Monthly requirement = Rs. 36,000

O = Fixed Cost for securing capital = Rs. 100

C = Cost of interest on marketable securities = 12% per

year Per month: 1% or (0.1)

Therefore:

$$Q = \sqrt{\frac{2AO}{C}} = \sqrt{\frac{2(36000 \times 100)}{0.1}}$$

Optimum transaction of cash: Rs. 8,485.28

Limitations - The EOQ model to determine the optimum size of cash balances is suffered with several practical problems. The first and important problem (limitation) is related with determination of fixed cost associated with replenishing cash. The fixed cost includes both explicit cost (interest rate at which required capital can be secured from the market and implicit cost (time spent in placing an order for getting financial assistance etc.) The computation of implicit cost is very difficult. The model is not useful and applicable where the cash flows are irregular in nature.

**B) Stochastic (irregular) Model** - This model is developed to avoid the problems associated with the EOQ model. This model was developed by Miller and Orr. The basic assumption of this model is that cash balances are irregular, i.e., changes randomly over a period of time both in size and direction and form a normal distribution as the number of periods observed increases. The model prescribes two control limits Upper Control Limit (UCL) and Lower Control Limit (LCL). When the cash balances reaches the upper limit a transfer of cash to investment account should be made and when cash balances reach the lower point a portion of securities constituting investment account of the company should be liquidated to return the cash balances to its return point. The control limits are converting securities into cash and the vice-versa, and the cost carrying stock of cash.

The **Miller and Orr model** is the simplest model to determine the optimal behavior in irregular cash flows situation. The model is a control limit model designed to determine the time and size of transfers between an investment account and cash account. There are two control limits. Upper Limit (U) and lower limit (L). According to this model when cash balance of the company reach the upper limit, cash equal to "U - O" should be invested in marketable securities so that new cash balance touches "O" point. If the cash balance touch the "L" point, finance manager should immediately liquidate that much portion of the investment portfolio which could return the cash balance to 'O' point. (O is optimal point of cash balance or target cash balance)

The "O" optimal point of cash balance is determined by using the formula

$$O = \sqrt[3]{\frac{3TV}{4I}}$$

Where,

O = target cash balance (Optimal cash balance)

T = Fixed cost associated with security transactions  
I = Interest per day on marketable securities

V = Variance of daily net cash flows.

Limitations: This model is subjected to some practical problems

- 1) The first and important problem is in respect of collection of accurate data about transfer costs, holding costs, number of transfers and expected average cash balance.
- 2) The cost of time devoted by financial managers in dealing with the transfers of cash to securities and vice versa.
- 3) The model does not take in account the short term borrowings as an alternative to selling of marketable securities when cash balance reaches lower limit.

Besides the practical difficulties in the application of the model, the model helps in providing more, better and quicker information for management of cash. It was observed that the model produced considerable cost savings in these real life situations.

**C) Probability Model** - This model was developed by William Beranek. Beranek observed that cash flows of a firm are neither completely predictable nor irregular (stochastic). The cash flows are predictable within a range. This occurrence calls for formulating the demand for cash as a probability distribution of possible outcomes.

According to this model, a finance manager has to estimate probabilistic outcomes for net cash flows on the basis of his prior knowledge and experience. He has to determine what is the operating cash balance for a given period, what is the expected net cash flow at the end of the period and what is the probability of occurrence of this expected closing net cash flows.

The optimum cash balance at the beginning of the planning period is determined with the help of the probability distribution of net cash flows. Cost of cash shortages, opportunity cost of holding cash balances and the transaction cost.

Assumptions:

- 1) Cash is invested in marketable securities at the end of the planning period say a week or a month.
- 2) Cash inflows take place continuously throughout the planning period.
- 3) Cash inflows are of different sizes.
- 4) Cash inflows are not fully controllable by the management of firm.
- 5) Sale of marketable securities and other short term investments will be effected at the end of the planning period.

The probability model prescribed the decision rule for the finance manager that the finance manager should go on investing in marketable securities from the opening cash balance until the expectation, that the ending cash balance will be below the optimum cash balance, where the ratio of the incremental net return per rupee of investment is equal to the incremental shortage cost per rupee.

#### **D) The BAT Model**

The Baumol-Allais-Tobin (BAT) model is a classic means of analyzing the cash management problem. It is a straightforward model and very useful for illustrating the factors in cash management and, more generally, current asset management.

To develop the BAT model, suppose the Golden Socks Corporation starts at Time 0 with a cash balance of C 5 \$1.2 million. Each week, outflows exceed inflows by \$600,000. As a result, the cash balance drops to zero at the end of Week 2. The average cash balance is the beginning balance (\$1.2 million) plus the ending balance (\$0) divided by 2, or  $(\$1.2 \text{ million} + \$0) / 2 = \$600,000$  over the two-week period. At the end of Week 2, Golden Socks replaces its cash by depositing another \$1.2 million.

As we have described, the cash management strategy for Golden Socks is very simple and boils down to depositing \$1.2 million every two weeks.

Implicitly, we assume the net cash outflow is the same every day and it is known with certainty. These two assumptions make the model easy to handle. We indicate what happens when they do not hold in the next section.

If  $C$  were set higher, say, at \$2.4 million, cash would last four weeks before the firm would have to sell marketable securities, but the firm's average cash balance would increase to \$1.2 million (from \$600,000). If  $C$  were set at \$600,000, cash would run out in one week and the firm would have to replenish cash more frequently, but its average cash balance would fall from \$600,000 to \$300,000.

Because transaction costs must be incurred whenever cash is replenished (for example, the brokerage costs of selling marketable securities), establishing large initial balances lowers the trading costs connected with cash management. However, the larger the average cash balance, the greater is the opportunity cost (the return that could have been earned on marketable securities).

**III. Strategy for economizing cash** - Once cash flow projections are made and appropriate cash balances are established, the finance manager should take steps towards effective utilization of available cash resources. A number of strategies have to be developed for this purpose they are: a) Strategy towards accelerating cash inflows, and b) Strategy towards decelerating cash outflows

**a) Strategy towards accelerating cash inflows** - In order to accelerate the cash inflows and maximize the available cash the firm has to employ several methods such as reduce the time lag between the movement of a payment to the company is mailed and the movement of the funds are ready for redeployment by the company. This includes the quick deposit of customer's cheques, establishing collection centers and lock-box system etc.

- i) Quick deposit of customer's cheques - The inflow is accelerated through quick deposit of cheques in the banks, the moment they are received. Special attention should be given to deposit the cheques without any delay.
- ii) Establishing collection centres - In order to accelerate the cash inflows the organization may establish collection centres in various marketing centres of the country. These centres may collect the cheques or payments from the customers and deposit them in the local bank. Thus, these cheques are collected immediately at the collection centre and the bank can transfer the surplus money, if any, to the company's main bank. Thus, the decentralized collection system of the company reduced the time lag in cash remittances and collections.
- iii) Lock-box method - The new device which is popular in recent past is lock-box method which will help to reduce the time interval from the mailing of the cheque to the use of funds by the company. Under this arrangement, the company rents lock-box from post office through its service area. The customer's are instructed to mail cheques to the lock-box. The company's bank collects the mail from the lock-box several times a day and deposit them directly in the company's account on the same day. This will reduce the time in mailing cheques, deposit them in bank and thereby reduce overhead costs to the company. But one of the serious limitations of the system is that the banks will charge additional service costs to the company. However, this system is proved useful and economic to the firm.

**b) Strategy for slowing cash outflows** - In order to accelerate cash availability in the company, finance manager must employ some devices that could slow down the speed of payments outward in addition to accelerating collections. The methods of slowing down disbursements are as follows:

- i) Delaying outward payment - The finance manager can increase the cash turnover by delaying the payment on bills until the due date of the no-cost period. Thus, he can economize cash resources of the firm.
- ii) Making pay roll periods less frequent - The firm can economise its cash resources by changing the frequency of disbursing pay to its employees. For example, if the company is presently paying wages weekly, it can effect substantial cash savings if the pay is disbursed only once in a month.
- iii) Solving disbursement by use of drafts - A company can delay disbursement by use of draft on funds located elsewhere. When the firm pays the amount through drafts, the bank will not make the payment against the draft unless the bank gets the acceptance of the issuer firm. Thus the firm need not have balance in its bank account till the draft is presented for acceptance. On the other hand, it will take several days for the draft to be actually paid by the company. Thus finance manager can economize large amounts of cash resources for at least a fortnight. The funds saved could be invested in highly liquid low risk assets to earn income thereon.
- iv) Playing the float - Float is the difference between the company's cheque book balance and the balance shown in the bank's books of accounts. When the company writes a cheque, it will reduce the balance in its books of accounts by the amount of cheque. But the bank will debit the amount of its customers only when the cheque is collected. On the other hand, the company can maximize its cash utilization by ignoring its book balance and keep its cash invested until just before the cheques are actually presented for payment. This technique is known as "playing the float".
- v) Centralized payment system - A firm can delay payments through centralized payment system. Under this system, payments will be made from a single central account. This will benefit the company.
- vi) By transferring funds from one bank to another bank firm can maximize its cash turnover.

## UNIT- 4 RECEIVABLES MANAGEMENT

Receivables mean the book debts or debtors and these arise, if the goods are sold on credit. Debtors form about 30% of current assets in India. Debt involves an element of risk and bad debts also. Hence, it calls for careful analysis and proper management. The goal of receivables management is to maximize the value of the firm by achieving a trade-off between risk and profitability. For this purpose, a finance manager has:

- a. to obtain optimum (non-maximum) value of sales;
- b. to control the cost of receivables, cost of collection, administrative expenses, bad debts and opportunity cost of funds blocked in the receivables.
- c. to maintain the debtors at minimum according to the credit policy offered to customers.
- d. to offer cash discounts suitably depending on the cost of receivables, bank rate of interest and opportunity cost of funds blocked in the receivables.

### COSTS OF MAINTAINING RECEIVABLES

The costs with respect to maintenance of receivables can be identified as follows

- 1. Capital costs** - Maintenance of accounts receivable results in blocking of the firm's financial resources in them. This is because there is a time lag between the sale of goods to customers and the payments by them. The firm has, therefore, to arrange for additional funds to meet its own obligations, such as payment to employees, suppliers of raw materials, etc., while awaiting for payments from its customers. Additional funds may either be raised from outside or out of profits retained in the business. In the first case, the firm has to pay interest to the outsider while in the latter case, there is an opportunity cost to the firm, i.e., the money which the firm could have earned otherwise by investing the funds elsewhere.
- 2. Administrative costs** - The firm has to incur additional administrative costs for maintaining accounts receivable in the form of salaries to the staff kept for maintaining accounting records relating to customers, cost of conducting investigation regarding potential credit customers to determine their credit worthiness etc.
- 3. Collection costs** - The firm has to incur costs for collecting the payments from its credit customers. Sometimes, additional steps may have to be taken to recover money from defaulting customers.
- 4. Defaulting costs** - Sometimes after making all serious efforts to collect money from defaulting customers, the firm may not be able to recover the overdues because of the inability of the customers. Such debts are treated as bad debts and have to be written off since they cannot be realized.

## **BENEFITS OF MAINTAINING RECEIVABLES**

**a. Increase in Sales** - Except a few monopolistic firms, most of the firms are required to sell goods on credit, either because of trade customers or other conditions. The sales can further be increased by liberalizing the credit terms. This will attract more customers to the firm resulting in higher sales and growth of the firm.

**b. Increase in Profits** - Increase in sales will help the firm (i) to easily recover the fixed expenses and attaining the break-even level, and (ii) increase the operating profit of the firm. In a normal situation, there is a positive relation between the sales volume and the profit.

**c. Extra Profit** - Sometimes, the firms make the credit sales at a price which is higher than the usual cash selling price. This brings an opportunity to the firm to make extra profit over and above the normal profit.

## **FACTORS AFFECTING THE SIZE OF RECEIVABLES**

The size of accounts receivable is determined by a number of factors. Some of the important factors are as follows

**1. Level of sales** - This is the most important factor in determining the size of accounts receivable. Generally in the same industry, a firm having a large volume of sales will be having a larger level of receivables as compared to a firm with a small volume of sales.

Sales level can also be used for forecasting change in accounts receivable. For example, if a firm predicts that there will be an increase of 20% in its credit sales for the next period, it can be expected that there will also be a 20% increase in the level of receivables.

**2. Credit policies** - The term credit policy refers to those decision variables that influence the amount of trade credit, i.e., the investment in receivables. These variables include the quantity of trade accounts to be accepted, the length of the credit period to be extended, the cash discount to be given and any special terms to be offered depending upon particular circumstances of the firm and the customer. A firm's credit policy, as a matter of fact, determines the amount of risk the firm is willing to undertake in its sales activities. If a firm has a lenient or a relatively liberal credit policy, it will experience a higher level of receivables as compared to a firm with a more rigid or stringent credit policy. This is because of the two reasons:

- i.** A lenient credit policy encourages even the financially strong customers to make delays in payment resulting in increasing the size of the accounts receivables.
- ii.** Lenient credit policy will result in greater defaults in payments by financially weak customers thus resulting in increasing the size of receivables.

**3. Terms of trade** - The size of the receivables is also affected by terms of trade (or credit terms) offered by the firm. The two important components of the credit terms are (i) Credit period and (ii) Cash discount.

## **CREDIT PERIOD**

The term credit period refers to the time duration for which credit is extended to the customers. It is generally expressed in terms of "Net days". For example, if a firm's credit terms are "Net 15", it means the customers are expected to pay within 15 days from the date of credit sale.

## **CASH DISCOUNT**

Most firms offer cash discount to their customers for encouraging them to pay their dues before the expiry of the credit period. The terms of cash discount indicate the rate of discount as well as the period for which the discount has been offered. For example, if the terms of cash discount are changed from "Net 30" to "2/10 Net 30", it means the credit period is of 30 days but if a customer pays in 10 days, he would get 2% discount on the amount due by him. Of course, allowing cash discount results in a loss to the firm because of recovery of fewer amounts than what is due from the customer but it reduces the volume of receivables and puts extra funds at the disposal of the firm for alternative profitable investment. The amount of loss thus suffered is, therefore, compensated by the income otherwise earned by the firm.

## **OPTIMUM SIZE OF RECEIVABLES**

The optimum investment in receivables will be at a level where there is a trade-off between costs and profitability. When the firm resorts to a liberal credit policy, the profitability of the firm increases on account of higher sales. However, such a policy results in increased investment in receivables, increased chances of bad debts and more collection costs. The total investment in receivables increases and, thus, the problem of liquidity is created. On the other hand, a stringent credit policy reduces the profitability but increases the liquidity of the firm. Thus, optimum credit policy occurs at a point where there is a "Trade-off" between liquidity and profitability.

## **DETERMINANTS OF CREDIT POLICY**

The following are the aspects of credit policy:

1. Level of credit sales required to optimize the profit.
2. Credit period, i.e. duration of credit, whether it may be 15 days or 30 or 45 days etc.
3. Cash discount, discount period and seasonal offers.
4. Credit standard of a customer: 5C's of credit:
  - a. Character of the customer, i.e. willingness to pay.
  - b. Capacity——ability to pay.
  - c. Capital——financial resources of a customer.
  - d. Conditions——  
special conditions for extension of credit to doubtful customers and prevailing economic and market conditions and;
  - e. Collateral security.
5. Profits.
6. Market and economic conditions.
7. Collection policy.
8. Paying habit of customers.
9. Billing efficiency, record-keeping etc.
10. Grant of credit——size and age of receivables.



## OPTIMUM CREDIT POLICY

A firm should establish receivables policies after carefully considering both benefits and costs of different policies. These policies relate to:

- (i) Credit Standards,
- (ii) Credit Terms, and
- (iii) Collection Procedures.

Each of these have been explained below:

**i. Credit standards** - The term credit standards represent the basic criteria for extension of credit to customers. The levels of sales and receivables are likely to be high if the credit standards are relatively loose, as compared to a situation when they are relatively tight. The firm's credit standards are generally determined by the five "C's". Character, Capacity, Capital, Collateral and Conditions. Character denotes the integrity of the customer, i.e. his willingness to pay for the goods purchased. Capacity denotes his ability to manage the business. Capital denotes his financial soundness. Collateral refers to the assets which the customer can offer by way of security. Conditions refer to the impact of general economic trends on the firm or to special developments in certain areas of economy that may affect the customer's ability to meet his obligations.

Information about the five C's can be collected both from internal as well as external sources. Internal sources include the firm's previous experience with the customer supplemented by its own well developed information system. External resources include customer's references, trade associations and credit rating organisations such as Dun & Bradstreet Inc. of USA. This Organisation has more than hundred years experience in the field of credit reporting. It publishes a reference book six times a year containing information about important business firms region wise. It also supplies credit reports about different firms on request.

An individual firm can translate its credit information into risk classes or groups according to the probability of loss associated with each class. On the basis of this information, the firm can decide whether it will be advisable for it to extend credit to a particular class of customers.

**ii. Credit terms** - It refers to the terms under which a firm sells goods on credit to its customers. As stated earlier, the two components of the credit terms are (a) Credit Period and (b) Cash Discount. The approach to be adopted by the firm in respect of each of these components is discussed below:

(a) Credit period - Extending the credit period stimulates sales but increases the cost on account of more tying up of funds in receivables. Similarly, shortening the credit period reduces the profit on account of reduced sales, but also reduces the cost of tying up of funds in receivables. Determining the optimal credit period, therefore, involves locating the period where the marginal profits on increased sales are exactly offset by the cost of carrying the higher amount of accounts receivable.

(b) Cash discount - The effect of allowing cash discount can also be analysed on the same pattern as that of the credit period. Attractive cash discount terms reduce the average collection period resulting in reduced investment in accounts receivable. Thus, there is a saving in capital costs. On the other hand, cash discount itself is a loss to the firm. Optimal discount is established at the point where the cost and benefit are exactly offsetting.

**iii. Collection procedures** - A stringent collection procedure is expensive for the firm because of high out-of-pocket costs and loss of goodwill of the firm among its customers. However, it

minimizes the loss on account of bad debts as well as increases savings in terms of lower capital costs on account of reduction in the size of receivables. A balance has therefore to be struck between the costs and benefits of different collection procedures or policies.

## **CREDIT EVALUATION OF CUSTOMER**

Credit evaluation of the customer involves the following 5 stages

- i. Gathering credit information of the customer through:
  - a. financial statements of a firm,
  - b. bank references,
  - c. references from Trade and Chamber of Commerce,
  - d. reports of credit rating agencies,
  - e. credit bureau reports,
  - f. firm's own records (Past experience),
  - g. other sources such as trade journals, Income-tax returns, wealth tax returns, sales tax returns, Court cases, Gazette notifications etc.
- ii. Credit analysis - After gathering the above information about the customer, the credit-worthiness of the applicant is to be analyzed by a detailed study of 5 C's of credit as mentioned above.
- iii. Credit decision - After the credit analysis, the next step is the decision to extend the credit facility to potential customer. If the analysis of the applicant is not upto the standard, he may be offered cash on delivery (COD) terms even by extending trade discount, if necessary, instead of rejecting the credit to the customer.
- iv. Credit limit - If the decision is to extend the credit facility to the potential customer, a limit may be prescribed by the financial manager, say, Rs. 25,000 or Rs. 1,00,000 or so, depending upon the credit analysis and credit-worthiness of the customer.
- v. Collection procedure - A suitable and clear-cut collection procedure is to be established by a firm and the same is to be intimated to every customer while granting credit facility. Cash discounts may also be offered for the early payment of dues. This facilitates faster recovery.

## **UNIT- 5 INVENTORY MANAGEMENT**

Inventory constitutes an important item in the working capital of many business concerns. Net working capital is the difference between current assets and current liabilities. Inventory is a major item of current assets. The term inventory refers to the stocks of the product of a firm is offering for sale and the components that make up the product. Inventory is stores of goods and stocks. This includes raw materials, work-in-process and finished goods. Raw materials consist of those units or input which are used to manufacture goods that require further processing to become finished goods. Finished goods are products ready for sale. The classification of inventories and the levels of the components vary from organisation to organisation depending upon the nature of business. For example steel is a finished product for a steel industry, but raw material for an automobile manufacturer. Thus, inventory may be defined as "Stock of goods that is held for future use". Since inventories constitute about 50 to 60 percent of current assets, the management of inventories is crucial to successful working capital management. Working capital requirements are influenced by inventory holding. Hence, the need for effective and efficient management of inventories.

A good inventory management is important to the successful operation of most organisations, unfortunately the importance of inventory is not always appreciated by top management. This may be due to a failure to recognise the link between inventories and achievement of organisational goals or due to ignorance of the impact that inventories can have on costs and profits.

Inventory management refers to an optimum investment in inventories. It should neither be too low to affect the production adversely nor too high to block the funds unnecessarily. Excess investment in inventories is unprofitable for the business. Both excess and inadequate investment in inventories are not desirable. The firm should operate within the two danger points. The purpose of inventory management is to determine and maintain the optimum level of inventory investment.

### **TECHNIQUES OF INVENTORY CONTROL**

The following are the various measures of selective control of inventory:

#### **A. ECONOMIC ORDERING QUANTITY (EOQ)**

It is important to note that only the correct quantity of materials is to be purchased. For this purpose, the factors such as maximum level, minimum level, danger level, re-ordering level, and quantity already on order, quantity reserved, availability of funds, quantity discount, and interest on capital, average consumption and availability of storage accommodation are to be kept in view. There should not be any over stock vis-à-vis no question of non-stock. Balance should be made between the cost of carrying and cost of non-carrying i.e. cost of stock-out. Cost of carrying includes the cost of storage, insurance, obsolescence, interest on capital invested. Cost of not

carrying includes the costly purchase, loss of production and sales and loss of customer's goodwill. Economic Ordering Quantity (EOQ) is the quantity fixed at the point where the total cost of ordering and the cost of carrying the inventory will be the minimum. If the quantity of purchases is increased, the cost of ordering decreases while the cost of carrying increases. If the quantity of purchases is decreased, the cost of ordering increases while the cost of carrying decreases. But in this case, the total of both the costs should be kept at minimum. Thus, EOQ may be arrived at by Tabular method by preparing purchase order quantity tables showing the ordering cost, carrying cost and total cost of various sizes of purchase orders.

Economic Ordering Quantity may also be worked out mathematically by using the following formula:

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

Where,

EOQ = Economic Ordering

Quantity A = Annual usage

B = Buying Cost

C = Cost of Carrying One Unit expressed as percentage

Note: Buying Cost is the ordering cost.

## B. FIXING LEVELS (QUANTITY CONTROL)

For fixing the various levels such as maximum, minimum, etc., average consumption and lead time i.e. the average time taken between the initiation of purchase order and the receipt of materials from suppliers are to be estimated for each item of materials.

**a. Maximum Stock Level** - The maximum stock level is that quantity above which stocks should not normally be allowed to exceed. The following factors are taken into consideration while fixing the maximum stock level:

1. Average rate of consumption of material.
2. Lead time.
3. Re-order level.
4. Maximum requirement of materials for production at any time. Total

Cost

Carrying

Costs Ordering

Cost Quantity per

order Cost

5. Storage space available cost of storage and insurance.
6. Financial considerations such as price fluctuations, availability of capital, discounts due to season and bulk purchases, etc.

7. Keeping qualities e.g. risk of deterioration, obsolescence, evaporation, depletion and natural waste, etc.
8. Any restrictions imposed by local or national authority in regard to materials i.e. purchasing from small scale industries and public sector undertakings, price preference clauses, import policy, explosion in case of explosive materials, risk of fire, etc.; and
9. Economic ordering quantity is also considered.

**Formula**

$$\text{Maximum Level} = \text{Re-order level} - (\text{Minimum consumption}) \times (\text{Minimum lead time}) + \text{Reordering quantity}$$

**b. Minimum Stock Level** - The minimum stock level is that quantity below which stocks should not normally be allowed to fall. If stocks go below this level, there will be danger of stoppage of production due to shortage of supplies. The following factors are taken into account while fixing the minimum stock level:

1. Average rate of consumption of material.
2. Average lead time. The shorter the lead time, the lower is the minimum level.
3. Re-order level.
4. Nature of the item.
5. Stock out cost.

**Formula**

$$\text{Minimum Level} = \text{Re-order level} - (\text{Average usage} \times \text{Average lead time})$$

**c. Re-order Level** - This is the point fixed between the maximum and minimum stock levels and at this time, it is essential to initiate purchase action for fresh supplies of the material. In order to cover the abnormal usage of material or unexpected delay in delivery of fresh supplies, this point will usually be fixed slightly higher than the minimum stock level. The following factors are taken into account while fixing the re-order level:

1. Maximum usage of materials
2. Maximum lead time
3. Maximum stock level
4. Minimum stock level

**Formula**

$$\text{Re-order level} = \text{Maximum usage} \times \text{Maximum lead time} + \text{Minimum level} + \text{Consumption during lead time.}$$

Re-ordering Quantity (How much to purchase): It is also called Economic Ordering Quantity.

**d. Danger Level** - This is the level below the minimum stock level. When the stock reaches this level, immediate action is needed for replenishment of stock. As the normal lead time is not available, regular purchase procedure cannot be adopted resulting in higher purchase cost. Hence, this level is useful for taking corrective action only. If this is fixed below the re-order level and above the minimum level, it will be possible to take preventive action.

### C. ABC ANALYSIS FOR VALUE OF ITEMS CONSUMED

ABC Analysis for Inventory Control: ABC analysis is a method of material control according to value. The basic principle is that high value items are more closely controlled than the low value items. The materials are grouped according to the value and frequency of replenishment during a period.

‘A’ Class items: Small percentage of the total items but having higher values. ‘B’ Class items: More percentage of the total items but having medium values. ‘

C’ Class items: High percentage of the total items but having low values.

Illustration:

A manufacturing concern has 1,000 units of materials valuing Rs. 1,00,000 in total. Prepare the statements showing the stock according to ABC analysis.

| Category               | Quantity |              | Value |        | Average value Rs.       |
|------------------------|----------|--------------|-------|--------|-------------------------|
|                        | %        | No. of items | %     | Amount |                         |
| A (High value items)   | 10       | 100          | 70    | 70000  | $70,000 \div 100 = 700$ |
| B (Medium value items) | 20       | 200          | 20    | 20000  | $20,000 \div 100 = 200$ |
| C (Low value items)    | 70       | 700          | 10    | 10000  | $10,000 \div 700 = 14$  |
|                        | 100%     | 1000         | 100%  | 100000 |                         |

For the sake of simplicity, the above percentage has been considered. But in practice, the percentage may vary between 5% to 10%, 10% to 20% and 70% to 85%.

In foreign countries, Bin Cards and Stores Ledger Cards are not maintained for ‘C’ class items. These are issued directly to the production foreman concerned and controlled through norms of consumption based on production targets. By doing this, 70% of the effort required for maintaining the Bin Cards and Stores Ledger Cards is eliminated. With 30% of the effort, an organization will be able to exercise control on the 90% of the inventory values. This reduces the clerical costs and ensures the closer control on costly items in which large amount of capital is invested.

The general procedure for classifying A, B or C items is as follows :

1. Ascertain the cost and consumption of each material over a given period of time.
2. Multiply unit cost by estimated usage to obtain net value.
3. List out all the items with quantity and value.
4. Arrange them in descending order in value i.e., ranking according to value.
5. Ascertain the monetary limits for A, B or C classification.
6. Accumulate value and add up number of items of A items. Calculate percentage on total inventory in value and in number.
7. Similar action for B and C class items.

### Advantages of ABC Analysis

1. To minimize purchasing cost and carrying cost (i.e. holding cost).
2. Closer and stricter control on these items which represent a high portion of total stock value.
3. Ensuring availability of supplies at all times.
4. Clerical costs can be reduced.
5. Inventory is maintained at optimum level and thereby investment in Inventory can be regulated and will be minimum. 'A' items will be ordered more frequently and as such the investment in inventory is reduced.
6. Maintaining enough safety stock for 'C' items.
7. Equal attention to A, B and C items is not desirable as it is expensive.
8. It is based on the concept of Selective Inventory Management and it helps in maintaining high stock-turnover ratio.

### A. Perpetual Inventory System

The Institute of Cost and Management Accountants, London defines the perpetual inventory system as "A system of records maintained by the controlling department, which reflects physical movements of stocks and their current balance."

This system consists of the following three:

- a. Bin cards i.e. Quantitative Perpetual Inventory.
- b. Stores ledger i.e. Quantitative and Value Perpetual Inventory.
- c. Continuous Stock taking i.e. Physical Perpetual Inventory.

### B. H.M.L. Classification

In ABC analysis, the consumption value of items has been taken into account. But in this case, the unit value of stores items is considered. The materials are classified according to their unit value as high, medium or low valued items. Combining ABC analysis and HML classification, it will be more useful to an organization in the sense that the low value components having substantial consumption, that is to say, a small item costing Re. 1 each consumed a lakh numbers will cost Rs. 1.00 lakh which is quite high and it is to be controlled properly.

### C. FS N Analysis

According to this approach, the inventory items are categorized into 3 types. They are fast moving, slow moving and non moving. Inventory decisions are very carefully taken in the case of 'non moving category'. In the case of item of fast moving items, the manager can take decisions quite easily because any error happened will not trouble the firm so seriously. Since risk is less in fast moving items, because they can be consumed quickly unlike the non-moving category which are carried in the godowns for more time period.

As risk is high in case of slow – moving and non – moving – items, the inventory decisions have to be taken carefully without affecting the objectives of profitability and liquidity of the organization.

#### D. V.E.D.Classification

The V.E.D. classification is applicable mainly to the spare parts. Spares are classified as vital (V), essential (E) and desirable (D). Vital class spares have to be stocked adequately to ensure the operations of the plant but some risk can be taken in the case of 'E' class spares. Stocking of desirable spares can even be done away with if the lead time for their procurement is low.

Similarly, classification may be done in respect of the plant and machinery as vital, essential, important and normal (VEIN). If the classifications VED and VEIN are combined, there will be 12 different classes as follows:

Vital spares for vital plant, vital spares for essential plant, vital spares for important plant and vital spares for normal plant. Essential spares for essential plant, essential spares for important plant, essential spares for normal plant and essential spares for vital plant, Desirable spares for essential plant, desirable spares for important plant, desirable spares in vital plant and desirable spares for normal plant.

#### E. Just in Time (JIT)

Normally, inventory costs are high and controlling inventory is complex because of uncertainties in supply, dispatching, transportation etc. Lack of coordination between suppliers and ordering firms is causing severe irregularities, ultimately the firm ends up in inventory problems. Toyota Motors has first time suggested just – in – time approach in 1950s. This means the material will reach the points of production process directly from the suppliers as per the time schedule. It is possible in the case of companies with respective process. Since, it requires close coordination between suppliers and the ordering firms, and therefore, only units with systematic approach will be able to implement it.

#### F. Inventory Turnover Ratio

i) Inventory Turnover Ratio:  $\text{Cost of goods sold} / \text{average total inventories}$ . The higher the ratio, more the efficiency of the firm

ii) Working process turnover ratio =

$\text{Cost of goods sold} / \text{Average inventory of finished goods at costs}$  Here, in this ratio also higher the ratio, more the efficiency of the firm.

iii) Weeks inventory of finished goods on hand  $\rightarrow \text{Finished Goods} / \text{Weekly sales of finished goods}$

This ratio reveals that the lower the ratio, the higher the efficiency of the firm

iv) Weeks raw material on order  $\rightarrow \text{Raw material on order} / \text{Weekly consumption of raw material}$ .

This ratio indicates that the lower the ratio, the higher the efficiency of the firm.

v) Average age of raw material inventory  $\rightarrow \text{Average raw material inventory at cost} / \text{Average daily purchases of raw material}$

This ratio says that the lower the ratio the higher the efficiency of the firm.

vi) Average age of finished goods inventory  $\rightarrow \text{Average finished goods inventory at cost} / \text{Average cost of finished goods manufactured per day}$

This ratio indicates that the lower the ratio the higher the efficiency of the firm.



- i) Out of stock index  $\rightarrow$  No. of times out of stock / No. of items requisitioned  
This ratio indicates the lower the ratio, the higher the efficiency of the firm.
- ii) Spare parts index  $\rightarrow$  Value of spare parts inventory / Value of capital equipment  
This ratio reveals that the higher the ratio, the more the efficiency of the firm.



## PROBLEMS

### Illustration 1

The cost sheet of PQR Ltd. provides the following data:

|  |        |
|--|--------|
| Cost per unit Raw materials                  | Rs. 50 |
| Direct Labor                                 | 20     |
| Overheads (including depreciation of Rs. 10) | 40     |
| Total cost                                   | 110    |
| Profits                                      | 20     |
| Selling price                                | 130    |

Average raw material in stock is for one month. Average materials in work-in-progress is for half month. Credit allowed by suppliers; one month; credit allowed to debtors; one month. Average time lag in payment of wages; 10 days; average time lag in payment of overheads 30 days. 25% of the sales are on cash basis. Cash balance expected to be Rs. 1,00,000. Finished goods lie in the warehouse for one month. You are required to prepare a statement of the working capital needed to finance a level of the activity of 54,000 units of output. Production is carried on evenly throughout the year and wages and overheads accrue similarly. State your assumptions, if any, clearly.

### Solution :

As the annual level of activity is given at 54,000 units, it means that the monthly turnover would be  $54,000/12=4,500$  units. The working capital requirement for this monthly turnover can now be estimated as follows :

#### Estimation of Working Capital Requirements

| Current Assets:  | Amount (Rs.)     | Amount           |
|--|------------------|------------------|
| (Rs.) Minimum Cash Balance                             | 1,00,000         |                  |
| Inventories:   |                  |                  |
| Raw Materials ( $4,500 \times \text{Rs. } 50$ )        | 2,25,000         |                  |
| Work-in-progress:                                      |                  |                  |
| Materials ( $4,500 \times \text{Rs. } 50$ ) / 2        | 1,12,500         |                  |
| Wages 50% of ( $4,500 \times \text{Rs. } 20$ ) / 2     | 22,500           |                  |
| Overheads 50% of ( $4,500 \times \text{Rs. } 30$ ) / 2 | 33,750           |                  |
| Finished Goods ( $4,500 \times \text{Rs. } 100$ )      | 4,50,000         |                  |
| Debtors ( $4,500 \times \text{Rs. } 100 \times 75\%$ ) | <u>3,37,500</u>  |                  |
| Gross Working Capital                                  | <u>12,81,250</u> | <u>12,81,250</u> |

## II Current Liabilities:

|  |                 |                 |
|--|-----------------|-----------------|
| Creditors for Materials (4,500 × Rs. 50) | 2,25,000        |                 |
| Creditors for Wages (4,500 × Rs. 20) / 3 | 30,000          |                 |
| Creditors for Overheads (4,500 × Rs. 30) | <u>1,35,000</u> |                 |
| Total Current Liabilities                | <u>3,90,000</u> | 3,90,000        |
| Net Working Capital                      |                 | <u>8,91,250</u> |

### Working Notes:

1. The Overheads of Rs. 40 per unit include a depreciation of Rs. 10 per unit, which is a non-cash item. This depreciation cost has been ignored for valuation of work-in-progress, finished goods and debtors. The overhead cost, therefore, has been taken only at Rs. 30 per unit.
2. In the valuation of work-in-progress, the raw materials have been taken at full requirements for 15 days; but the wages and overheads have been taken only at 50% on the assumption that on an average all units in work-in-progress are 50% complete.
3. Since, the wages are paid with a time lag of 10 days, the working capital provided by wages has been taken by dividing the monthly wages by 3 (assuming a month to consist of 30 days).

### **Illustration 2**

The management of Royal Industries has called for a statement showing the working capital to finance a level of activity of 1,80,000 units of output for the year. The cost structure for the company's product for the above mentioned activity level is detailed below:

|  |           |
|--|-----------|
| Cost per unit Raw material                           | Rs. 20    |
| Direct labour  | 5         |
| Overheads (including depreciation of Rs. 5 per unit) | <u>15</u> |
|  | 40        |
| Profit   | 10        |
| Selling price  | 50        |

Additional information:

- (a) Minimum desired cash balance is Rs. 20,000
- (b) Raw materials are held in stock, on an average, for two months.
- (c) Work-in-progress (assume 50% completion stage) will approximate to half-a-month's production.
- (d) Finished goods remain in warehouse, on an average, for a month.
- (e) Suppliers of materials extend a month's credit and debtors are provided two months' credit; cash sales are 25% of total sale.

(f) There is a time-lag in payment of wages of a month; and half-a-month in the case of overheads. From the above facts, you are required to prepare a statement showing working capital requirements.

**Solution:**

**Statement of Total Cost**

|   |                         |
|---|-------------------------|
| Raw material (1,80,000 × Rs.20)                       | Rs. 36,00,000           |
| Direct labour (1,80,000 × Rs.5)                       | 9,00,000                |
| Overheads (excluding depreciation) (1,80,000 × Rs.10) | <u>18,00,000</u>        |
| <b>Total Cost</b>                                     | <b><u>63,00,000</u></b> |

**Statement of Working Capital Requirement**

| 1. Current Assets:                                | Amt. (Rs.)              |
|---|-------------------------|
| Cash balance                                      | 20,000                  |
| Raw materials (1/6 of Rs.36,00,000)               | 6,00,000                |
| Work-in-progress (Total cost/24 × 50%)            | 1,31,250                |
| Finished goods (Total cost/12)                    | 5,25,000                |
| Debtors (75% × Rs.63,00,000) × 1/6                | <u>7,87,500</u>         |
| <b>Total current assets</b>                       | <b><u>20,63,750</u></b> |
| <b>2. Current liabilities:</b>                    |                         |
| Creditors (Rs.36,00,000) × 1/12                   | 3,00,000                |
| Direct labour (Rs.9,00,000) × 1/12                | 75,000                  |
| Overheads (Rs. 18,00,000) × 1/24 (excluding dep.) | 75,000                  |
| <b>Total current liabilities</b>                  | <b><u>4,50,000</u></b>  |
| <b>Net working capital requirement</b>            | <b><u>16,13,750</u></b> |

Note : Depreciation is a non-cash item, therefore, it has been excluded from total cost as well as working capital provided by overheads. Work-in-progress has been assumed to be 50% complete in respect of materials as well as labour and overhead expenses.

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