Working Capital Management 6

This Module Includes

Working Capital Management

SLOB Mapped against the Module:

To develop critical thinking and problem-solving competencies so that students can assist the management in ensuring optimum management of working capital and capital expenditure in existing as well as new projects.

Module Learning Objectives:

After studying this module, the students will be able to –

- Know different types of working capital;
- Explain working capital cycle and cash cycle;
- Analyse receivables and payables management;
- Explain inventory management techniques;
- Understand liquidity management;
- Explain investment, cash and cash equivalents;
- Equip themselves with detail understanding of different cash management models;
- Know different sources of working capital financing.

Introduction to Working Capital Management

6.1

Thhe financial management of business involves the management of long-term assets, long-term capital, and the management of short-term assets and liabilities. Management of working capital concerns with the management of assets such as cash, marketable securities, receivables, inventories and other current assets also liabilities include payables and accruals.

Working capital management is essentially the management of current assets and current liabilities in an organisation. It is concerned with the problems that has been arising in attempting to manage the current assets, the current liabilities and inter relationship that exists between them. The role of the working capital management is to manage the firm's current assets and liabilities in such a way that a satisfactory level of working capital is maintained.

6.1.1 Theoretical Underpinnings

Working capital typically means holdings of current assets or short-term assets such as cash, receivables inventories and marketable securities.

Working Capital - Meaning & Definition

The term working capital also called gross working capital refers to the firm's aggregate of current assets. Current assets are those assets which can be convertible into cash within an accounting period, generally a year. Therefore, they are cash or mere cash resources of a business concern. However, we can understand the meaning of working capital from the following:

(a) "Working capital means the funds available for day-to-day operations of an enterprise. It also represents the excess of current assets over current liabilities including short-term loans". — Accounting Standards Board, The Institute of Chartered Accountants of India.

(b) "Working capital is that portion of a firm's current assets which is financed by short-term funds."— Gitman, L.J.

From the above definitions, we can say that the working capital is the firm's current assets or the excess of current assets over current liabilities. However, the later meaning will be more useful in most of the times as in all cases we may not find excess of current assets over current liabilities.

Concept of Working Capital

Working capital has two concepts:

(i) Gross working capital and

(ii) Net working capital

Gross working capital refers to the total of the current assets.

Net working capital refers to the excess of the current assets over current liabilities. Net working capital (NWC) can alternatively define as the part of the current assets which are financed with the long-term funds. Since, current liabilities represent sources of short-term funds, as long as the current assets exceeds the current liabilities, the excess must be financed with the long-term funds.

Though both concepts are important for managing it. Gross working capital is more helpful to the management in managing each individual current assets for day-to-day operations. But, in the long run, it is the net working capital that is useful for the purpose.

When we want to know the sources from which funds are obtained, it is not working capital that is more important and should be given greater emphasis. The definition given by the Accountants, U.S.A., will give clear view of working capital which is given below:

"Working capital sometimes called net working capital, is represented by excess of current assets over current liabilities and identifies the relatively liquid portion of total enterprise capital which constitutes a margin of better for maturing obligations within the ordinary operation cycle of the business."

Each concern has its own limitations and constraints within which it has to decide whether it should give importance to gross or not working capital.

Concept of Zero Working Capital

The zero-working capital (ZWC) differs from the commonly used working capital i.e., current assets minus current liabilities.

ZWC = Inventories (+) Receivables (-) Payables.

The rationale is that inventories and receivables are the major constituents of current assets which affect sales. Further, suppliers finance inventories through account payable.

Current Assets

An asset is classified as current asset when:

(a) it is expected to be realised or intends to be sold or consumed in normal operating cycle of the organisation;

(b) the asset is held primarily for the purpose of trading;

(c) it is expected to be realised within twelve months after the reporting period;

(d) it is non- restricted cash or cash equivalent.

Generally current assets of an organisation, for the purpose of working capital management can be classified into the following main heads:

(i) Inventory (raw material, work-in-process and finished goods)

(ii) Receivables (trade receivables and bills receivables)

(iii) Cash or cash equivalents (short-term marketable securities)

(iv) Prepaid expenses

Current Liabilities

A liability is classified as current liability when:

(a) it is expected to be settled in normal operating cycle of the organisation

(b) the liability is held primarily for the purpose of trading;

(c) it is expected to be settled within twelve months after the reporting period.

Generally current liabilities of an organisation, for the purpose of working capital management can be classified into the following main heads:

(i) Payables (trade payables and bills payables)

(ii) Outstanding payments (wages and salary etc.)

6.1.2 Planning of Working Capital

Working capital of a business should be commensurate with its needs. Too high or too low working capital of a business or two extremes of working capital are equally dangerous to the existence of the business enterprise itself.

High amount of working capital, though increases its liquidity position but reduces its profitability and on the other hand too low working capital though increases its profitability reduces its liquidity. Both such extreme situations may cause business concerns to shut down.

Danger of too high amount of Working Capital

(a) It results in unnecessary accumulation of inventories and gives chance to inventory mishandling, wastage, pilferage, theft, etc., and losses increase.

(b) Excess working capital means idle funds which earns no profits for the business.

(c) It shows a defective credit policy of the company resulting in higher incidence of bad debts and adversely affects Profitability.

(d) It results in overall inefficiency.

Problems of inadequate or low amount of Working Capital

(a) It becomes difficult to implement operating plans and achieve the firm's profit target.

(b) It stagnates growth and it will become difficult to the firm to undertake profitable ventures for non-availability of working capital funds.

(c) It may not be in a position to meet its day-to-day current obligations and results in operational inefficiencies.

(d) The return on investment falls due to under utilisation of fixed assets and other capacities of the business concern.

(e) Credit facilities in the market will be lost due to faulty working capital.

(f) The reputation and goodwill of the firm will also be impaired considerably.

Determinants of Working Capital

The size or magnitude and amount of working capital will not be uniform for all organisations. It differs from one type of organisation to the other type of organisation. Depending upon various conditions and environmental factors of each and every organisation. There are many factors that determine the size of working capital. However, there are some factors, which are common to the most of the business concerns. Such factors are enumerated below:

1. **Nature and Size of the Business:** A company's working capital requirements depends on the activities it carried on and its size too. For instance, public utility organisation or service organisation where its activities are of mere service nature, does not require high amount of working capital, as it has no need of maintaining any stocks of inventories. In case of trading organisation, the magnitude of working capital is high as it

requires to maintain certain stocks of goods as also some credit to debtors. Further, if we go to manufacturing organisation the cycle period of working capital is high because the funds are to be invested in each and every type of inventory forms of raw-material, work-in-progress, finished goods as also debtors. Industrial units too require a large amount of working capital.

2. **Production Policies:** These policies will have a great significance in determining the size of the working capital. Where production policies are designed in such a way that uniform production is carried on throughout the accounting period, such concern requires a uniform and lesser amount of working capital. On the other hand, the concerns with production policies according to the needs of the customers will be peak at sometimes and require high amount of working capital. In seasonal industries too, where production policies are laid down tightly in the business season requires a high amount of working capital.

3. **Process of Manufacture:** If the manufacturing process of a particular industry is longer due to its complex nature, more working capital is required to finance that process, because, longer the period of manufacture, the larger the inventory tied up in the process and naturally requires a high amount of working capital.

4. **Growth and Expansion of Business:** A business concern at status requires a uniform amount of working capital as against the concerns which are growing and expanding. It is the tendency of any business organisation to grow further and further till its saturation point, if any. Such growth may be within the existing units by increased activities. Similarly, business concerns will expand their organisation by establishing new units. In both the cases, the need for working capital requirement increases as the organisation increases.

5. **Fluctuations in the Trade Cycle:** Business activities vary according to the general fluctuations in the world. There are four stages in a trade cycle which affects the activities of any business concern. Accordingly, the requirements of working capital are bound to change. When conditions of boom prevail, it is the policy of any prudent management to build or pile up large stock of inventories of various forms to take the advantage of the lower prices. Such fluctuations cause a business concern to demand for more amount of working capital. The other phase of trade cycle i.e., depression i.e., low or absence of business activities cause business concerns to demand for more working capital. In condition of depression, the products produced are not sold due to fall in demand, lack of purchasing power of the people. As a result of which entire production obtained was not sold in the market and high inventories are piled up. Therefore, there arises the need for heavy amount of working capital. Thus, the two extreme stages of trade cycles make the business concerns to demand for more working capital. In the former case due to acts and policies of management and in the later case due to natural phenomena of trade cycle.

6. **Terms and Conditions of Purchases and Sales:** A business concern which allows more credit to its customers and buys its supplies for cash requires more amount of working capital. On the other hand, business concerns which do not allow more credit period to its customers and seek better credit facilities for their supplies naturally require lesser amount of working capital.

7. **Dividend Policy:** A consistent dividend policy may affect the size of working capital. When some amount of working capital is financed out of the internal generation of funds such affect will be there. The relationship between dividend policy and working capital is well established and very few companies declare dividend without giving due consideration to its effects on cash and their needs for cash.

   If the dividend is to be declared in cash, such outflow reduces working capital and therefore, most of the business concerns declare dividend now-a-days in the form of bonus shares as such retain their cash. A shortage of working capital acts as powerful reason for reducing or skipping cash dividend.

8. **Price Level Changes:** The changes in prices make the functions of a finance manager difficult. The anticipations of future price level changes are necessary to avoid their affects on working capital of the firm. Generally, rising price level will require a company to demand for more amount of working capital, because the same level of current assets requires higher amount of working capital due to increased prices.

9. **Operating Efficiency:** The operating efficiency of a firm relates to its optimum utilisation of resources available whether in any form of factor of production, say, capital, labour, material, machines etc.; If a company is able to effectively operate its costs, its operating cycle is accelerated and requires relatively lessor amount of working capital. On the other hand, if a firm is not able to utilise its resources properly will have slow operating cycle and naturally requires higher amount of working capital.

10. **Percentage of Profits and Appropriation out of Profits:** The capacity of all the firms will not be same in generating their profits. It is natural that some firms enjoy a dominant and monopoly positions due to the quality of its products, reputations, goodwill etc. (for example Colgate Tooth Paste, Bata Chapels etc.,) and some companies will not have such position due to poor quality and other inherent hazards.

    The company policy of retaining or distribution of profits will also affect the working capital. More appropriation out of profits than distribution of profit necessarily reduces the requirements of working capital.

11. **Other Factors:** Apart from the above general considerations, there may be some factors responsible for determination of working capital which are inherent to the type of business. Some of such factors may be as follows:

    (a) General co-ordination and control of the activities in the organisation.

    (b) Absence of specialisation of products and their advantages.

    (c) Market facilities.

    (d) Means of transport and communication system.

    (e) Sector in which the firm works i.e., private or public sector etc.

    (f) Government policy as regard to: (i) Imports and Exports

    (g) Tax considerations.

    (h) Availability of labour and its organisation.

    (i) Area in which it is situated such as backward, rural sub-urban, etc.,

Types of Working Capital on the basis of Nature

There are two types of working capital, the distinction of which made keeping in view the nature of such funds in a business concern, which are as follows:

(a) Rigid, fixed, regular or permanent working capital; and

(b) Variable, seasonal, temporary or flexible working capital.

Every business concern has to maintain certain minimum amount of current assets at all times to carry on its activities efficiently and effectively. It is indispensable for any business concern to keep some material as stocks, some in the shape of work-in-progress and some in the form of finished goods.

Similarly, it has to maintain certain amount of cash to meet its day-to-day requirements. Without such minimum amount, it cannot sustain and carry on its activities. Therefore, some amount of working capital i.e., current assets is permanent in the business without any fluctuations like fixed assets and such amount is called working capital. To say precisely, permanent working capital is the irreducible minimum amount of working capital necessary to carry on its activities without any interruptions. It is that minimum amount necessary to outlays its fixed assets effectively.

On the other hand, temporary working capital is that amount of current assets which is not permanent and fluctuating from time to time depending upon the company's requirements and it is generally financed out of short-term funds. It may also high due to seasonal character of the industry as such it is also called seasonal working capital.

Temporary and permanent working capital are shown below in a diagram.

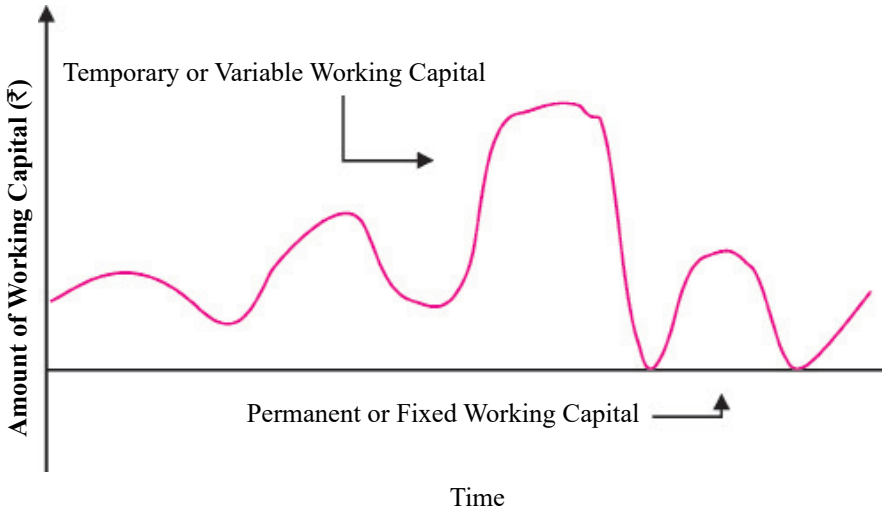

Figure 6.1: Types of working capital on the basis of Nature

6.1.3 Working Capital Cycle and Cash Cycle

Working Capital Cycle or Operating Cycle are synonymous terms in the context of management of working capital. Any business concern, whether it is of financial nature, trade organisation or a manufacturing organisation needs certain time to net fruits of the efforts. That is, by investment of cash, producing or doing something for some time will fetch profit. But soon after the investment of cash, it cannot get that profit by way of cash again immediately. It takes time to do so. The time required to take from investment of cash in some assets and conversion of it again into cash termed as operating or working capital cycle. Here the cycle refers to the time period.

The following figures has shown the working capital cycle and case cycle of different types of organisations.

In case of manufacturing concerns, the operating cycle will be Raw materials → WIP → Finished goods → Sales → Debtors & Bills Receivable → Cash

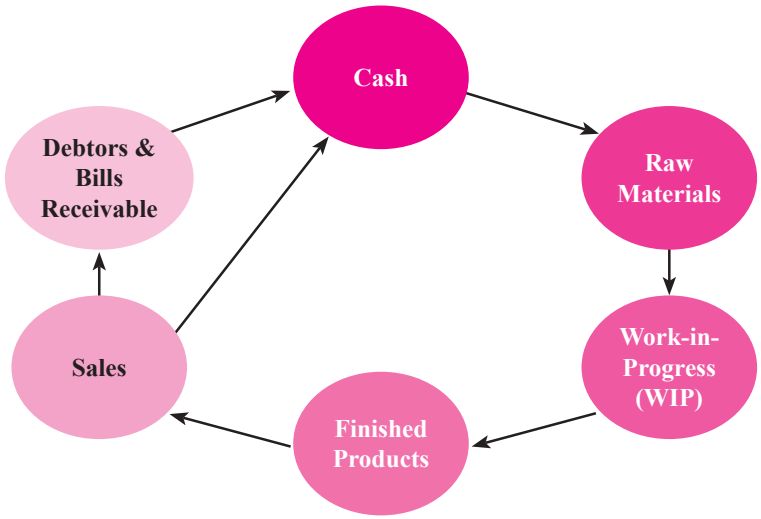

Figure 6.2: The operating cycle in manufacturing organisation

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

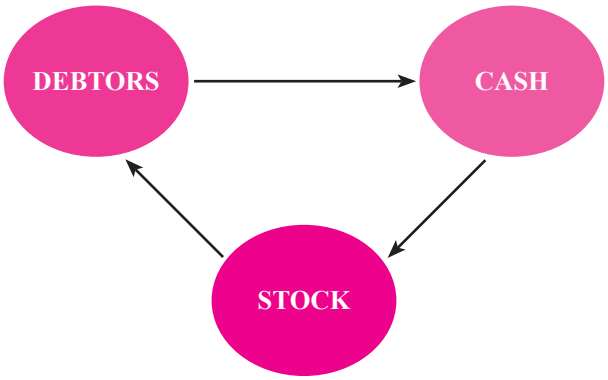

Figure 6.3: Operating cycle in trading organisation

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

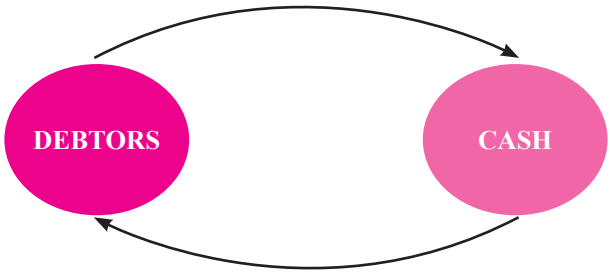

Figure 6.4: Operating cycle in financial organisation

The operating cycle of a manufacturing company involves three phases:

Phase 1: Acquisition of resources such as raw material, labour, power and fuel, etc.

Phase 2: Manufacture of the product which includes conversion of raw material into work-in-progress into finished goods.

Phase 3: Sale of the product either for cash or on credit. Credit sales create accounts receivable for collection

The length of the operating cycle of a manufacturing firm is the sum of: (i) inventory conversion period (ICP) and (ii) debtors (receivables) conversion period (DCP).

The inventory conversion period is the total time needed for producing and selling the product. Typically, it includes: (a) raw material conversion period (RMCP), (b) work-in-process conversion period (WIPCP), and (c) finished goods conversion period (FGCP). The debtors' conversion period is the time required to collect the outstanding amount from the customers. The total of inventory conversion period and debtors' conversion period is referred to as gross operating cycle (GOC).

Gross operating cycle = Inventory conversion period (ICP) + Debtors conversion period (DCP)

GOC = I CP + DCP

Net operating cycle (NOC) is the difference between gross operating cycle and payables deferral period. Net operating cycle = Gross operating cycle (GOC) – Creditors deferral period (CDP).

$$\text{NOC} = \text{GOC} - \text{CDP}$$

Net operating cycle is also referred to as cash conversion cycle.

Inventory Conversion Period

The inventory conversion (ICP) is the sum of raw material conversion period (RMCP), work-in-process conversion period (WIPCP) and finished goods conversion period (FGCP):

$$\text{ICP} = \text{RMCP} + \text{WIPCP} + \text{FGCP}$$

Raw Material Conversion Period (RMCP)

The raw material conversion period (RMCP) is the average time period taken to convert material in to work-in-process. RMCP depends on: (a) raw material consumption per day, and (b) raw material inventory.

$$\text{RMCP} = \frac{\text{Raw material invetory}}{\text{[Raw material consumption/360]}}$$

Work-in-process Conversion Period (WIPCP)

Work-in-process conversion period (WIPCP) is the average time taken to complete the semi-finished work or work-in-process.

$$\text{WIPCP} = \frac{\text{Work – in progress Inventory}}{\text{[Cost of Production / 360]}}$$

Finished Goods Conversion Period (FGCP)

Finished goods conversion period (FGCP) is the average time taken to sell the finished goods

$$\text{FGCP} = \frac{\text{Finished Goods inventory}}{\text{[Cost of Production / 360]}}$$

Debtors (Receivables) Conversion Period (DCP)

Debtors' conversion period (DCP) is the average time taken to convert debtors into cash. DCP represents the average collection period

$$\text{DCP} = \frac{\text{Receivables}}{\text{[Credit sales / 360]}} = \frac{\text{Debtors} \times 360}{\text{Credit sales}}$$

Creditors (Payables) Deferral Period (CDP)

Creditors (payables) deferral period (CDP) is the average time taken by the firm in paying its suppliers (creditors).

$$\text{DCP} = \frac{\text{Payables}}{\text{[Credit Purchase / 360]}} = \frac{\text{Creditors} \times 360}{\text{Credit Purchase}}$$

It is obvious from the above that the time gap between the sales and their actual realisation of cash is technically termed as Operating Cycle or Working Capital Cycle.

The period of working capital cycle may differ from one business enterprise to the other depending upon the nature of the enterprise and its activities. It means the pattern of working capital cycle do change according to its activities.

Students Note: Some authors consider 12 months = 360 days

6.1.4 Estimation of Working Capital Requirements

In order to calculate the working capital needs, holding period of various types of inventories, the credit collection period and the credit payment periods are required. Working capital also depends on the budgeted level of activity in terms of production/sales. The calculation of WC is based on the assumption that the production/sales is carried on evenly throughout the year and all costs accrue similarly.

The steps involved in estimating the different items of CA and CL are as follows:

Estimation of Current Assets

(i) Raw Materials Inventory

The investment in raw materials inventory is estimated on the basis of following equation.

$$\frac{\text{Budgeted productions (in units)} \times \text{Cost of raw materials per unit} \times \text{Average inventory holding period (months or days)}}{\text{12 months/365 days}}$$

(ii) Work-in- Progress (WIP) Inventory

The relevant costs to determine work-in-process inventory are the proportionate share of cost of raw materials and conversion costs such as labour and manufacturing overhead costs excluding depreciation. Depreciation is excluded as it does not involve any cash expenditure.

$$\frac{\text{Budgeted productions (in units)} \times \text{Estimated work-in-progress cost per unit} \times \text{Average time span of work-in-progress inventory (months or days)}}{\text{12 months/365 days}}$$

(iii) Finished Goods Inventory

Working capital required to finance the finished goods inventory is given below:

$$\frac{\text{Budgeted productions (in units)} \times \text{Cost of goods produced per unit (excluding depreciation)} \times \text{Finished goods holding period (months or days)}}{\text{12 months/365 days}}$$

(iv) Debtors

The working capital included in debtors should be estimated in relation to total cost price (excluding depreciation)

$$\frac{\text{Budgeted credit sales (in units)} \times \text{Cost of sales per unit (excluding depreciation)} \times \text{Average debt collection period (months or days) (months or days)}}{\text{12 months/365 days}}$$

(v) Cash and Bank Balances

Apart from working capital needs for financing inventories and debtors, firms also find it useful to have some minimum cash balances with them. It is difficult to lay down the exact procedure of determining such an amount. This would primarily be based on the motives for holding cash balances of the business firm, attitude of management toward risk, the access to the borrowing sources in times of need and past experience, and so on.

Estimation of Current Liabilities

The working capital needs of business firms are lower to the that extent such needs are met through the current liabilities (other than bank credit) arising in the ordinary course of business. The important current liabilities (CL), in this context are, trade creditors, wages and overheads. Estimation of these liabilities are mentioned below:

(i) Trade Creditors

$$\frac{\text{Budgeted yearly productions (in units)} \times \text{Raw material cost per unit} \times \text{Credit period allowed by creditors (months or days)}}{\text{12 months/365 days}}$$

(ii) Direct Wages

$$\frac{\text{Budgeted yearly productions (in units)} \times \text{Direct labour cost per unit} \times \text{Average time-lag in payment of wages (months or days)}}{\text{12 months/365 days}}$$

(iii) Overheads

$$\frac{\text{Budgeted yearly productions (in units)} \times \text{Overhead cost per unit} \times \text{Average time-lag in payment of overheads (months or days)}}{\text{12 months/365 days}}$$

(iv) Goods and Services Tax (GST)

$$\frac{\text{Budgeted yearly productions (in units)} \times \text{GST per unit} \times \text{Average time-lag in payment of GST (weeks or days)}}{\text{12 months/365 days}}$$

Working capital can be estimated by using the following format.

Determination of Working Capital

Particulars	Amount (₹)
A. Estimation of Current Assets	
(i) Minimum desired cash and bank balances	× × ×
(ii) Inventories	
Raw materials	× × ×
Work-in-Progress	× × ×
Finished Goods	× × ×
(iii) Debtors*	× × ×
Total Current Assets	× × ×
B. Estimation of Current Liabilities	
(i) Creditors**	× × ×
(ii) Wages	× × ×
(iii) Overheads	× × ×
(iv) Goods and Services Tax (GST)	× × ×
Total Current Liabilities	× × ×
C. Net Working Capital (A – B)	× × ×
Add: Margin for contingency	× × ×
D. Net Working Capital Required	× × ×
*If payment is received in advance, the item would be listed in Current Liabilities.	× × ×
**If advance payment is to be made to creditors, the item would appear under Current Assets. The same would be the treatment for advance payment of wages and overheads.	× × ×

Illustration 1

PQR Ltd. produces a product with the following revenue cost structure:

Particulars	Cost per unit (₹)
Raw materials	115
Direct labour	80
Overheads	37
Total Cost	**232**
Profit	58
Selling Price	290

The following additional information is available:

(a) Average raw materials in stock: One month.

(b) Average materials in process: Half-a-month, Raw material 100%, Direct labour 50%, overheads 50% complete.

(c) Average finished goods in stock: One month.

(d) Credit allowed by suppliers: One month

(e) Credit allowed to debtors: Two months.

(f) Time lag in payment of wages: Half a month.

(g) Overheads: One month

(h) One-fourth of sales are on cash basis.

(i) Cash balance is expected to be ₹ 1,60,000.

You are required to prepare a statement showing the working capital needed to finance a level of activity of 60,000 units of annual output. The production is carried throughout the year on even basis and wages and overheads accrue uniformly. Debtors are to taken at cost.

Solution:

Statement showing estimate of Working Capital

Particulars	(₹)	(₹)
Current Assets		
Stock of Raw material (60,000 units × ₹115 × 1/12)		5,75,000
Work-in-progress:		
Raw materials (60,000 units × ₹115 × 1/12 × 1/2)	2,87,500	
Direct labour (60,000 units × ₹80 × 1/12 × 1/2 ×1/2)	1,00,000	
Overheads (60,000 units × ₹37 × 1/12 × 1/2 × 1/2)	46,250	4,33,750
Stock of finished goods (60,000 units × ₹232 × 1/2)		11,60,000

Particulars	(₹)	(₹)
Debtors (60,000 units × ₹232 × 3/4 × 2/12)		17,40,000
Cash balance		1,65,000
Total	**(A)**	**40,73,750**
Current Liabilities:		
Creditors for raw material (60,000 units × ₹115 × 1/12)		5,75,000
Creditors for wages (60,000 units × ₹80×1/12 × 1/2)		2,00,000
Creditors for overheads (60,000 units × ₹37 × 1/12)		1,85,000
Total	**(B)**	**9,60,000**
Net Working Capital	**(A) – (B)**	**31,13,750**

Illustration 2

A and B Ltd is desired to purchase a business and has consulted you, and one point on which you are asked to advise them, is the average amount of working capital which will be required in the first year's working.

You are given the following estimates and instructed to add 12 % to your computed figure to allow for contingencies.

Particulars	Amount for the year (₹)
(i) Average amount blocked up for stocks:	
Stocks of finished product	6,000
Stock of stores and materials	7,000
(ii) Average credit given:	
Inland sales: 6 weeks' credit	3,12,000
Export sales: 1.5 weeks' credit	78,000
(iii) Average time lag in payment of wages and other outgoings	
Wages: 1.5 weeks	2,60,000
Stock and materials: 1.5 months	52,000
Rent and royalties: 6 months	12,000
Clerical staff: ½ month	62,400
Manager: ½ month	4,800
Miscellaneous expenses: 1.5 months	52,000
(iv) Payment in advance:	
Sundry expenses (paid quarterly in advance)	8,000
Undrawn profits on an average throughout the year	10,000

Solution:

Statement to determine Net Working Capital for AB Ltd.

Particulars	Amount (₹)
(a) Current assets:	
(i) Stocks of finished product	6,000
(ii) Stock of stores and materials	7,000
(iii) Debtors:	
Inland sales (₹ 3,12,000 × 6/52)	36,000
Export sales (78,000 × 1.5/52)	2,250
(iv) Advance payment of sundry expenses (8,000 × 1/4)	2,000
Total investment in current assets	53,250
(b) Current liabilities:	
(i) Wages (₹2,60,000 × 1.5/52)	7,500
(ii) Stock and materials (₹ 52,000 × 1.5/12)	6,500
(iii) Rent and royalties (₹ 12,000 × 6/12)	6,000
(iv) Clerical staff (₹ 62,400 × 0.5/12)	2,600
(v) Manager (₹ 4,800 × 0.5/12)	200
(vi) Miscellaneous expenses (₹ 52,000 × 1.5/12)	6,500
Total estimate of current liabilities	29,300
(c) Net working capital	
(i) Current assets - Current liabilities (a - b)	23,950
(ii) Add: 12% contingency allowance	2,874
Average amount of working capital required	26,824

Assumptions:

(i) A time period of 52 weeks / 12 months has been assumed in year.

(ii) Undrawn profit has been ignored in the working capital computation for the following reasons:

(a) For the purpose of determining working capital provided by net profit, it is necessary to adjust the net profit for income tax and dividends / drawings, and so on.

(b) Profit need not always be a source of financing working capital. It may be used for other purposes like purchase of fixed assets, payment of long-term loans, and so on. Since the firm does not seem to have such uses, ₹ 10,000 may be treated as source of working capital. But the net working capital will not change.

(iii) Actual working capital requirement would be more than what is estimated here as the cash component of current assets is not known.

Illustration 3

A company has prepared its annual budget, relevant details of which are reproduced below:

(a) Sales ₹ 46.80 lakhs (25% cash sales and balance on credit)	78,000 units
(b) Raw material cost	60% of sales value
(c) Labour cost	₹ 6 per unit
(d) Variable overheads	₹ 1 per unit
(e) Fixed overheads	₹ 5 lakhs (including ₹ 1,10,000 as depreciation)

Budgeted stock levels:	
Raw materials	3 weeks
Work-in-progress	1 week (Material 100%, Labour & Overheads 50%)
Finished goods	2 weeks
Debtors are allowed credit	4 weeks
Creditors allow credit	4 weeks
Wages are paid by-weekly, i.e., by the 3rd week and by the 5th week for the 1st & 2nd weeks and the 3rd & 4th weeks respectively	
Lag in payment of overheads	2 weeks
Cash-in-hand required	₹ 50,000

Prepare the working capital budget for a year for the company, making whatever assumptions that you may find necessary.

Solution:

Unit Selling Price and Cost	(₹)
Selling price (₹46,80,000 ÷ 78,000)	60
Cost:	
Raw materials (60% of ₹46,80,000 ÷ 78,000)	36
Labour	6
Variable overheads	1
Fixed overheads (excluding depreciation)	5
Total cost per unit	**48**

Statement showing Working Capital Requirement

Current Assets		(₹)
Raw materials	(78,000 units × ₹ 36 × 3/52)	1,62,000
Work-in-progress	(78,000 units × ₹ 42 × 1/52)	63,000

Current Assets		(₹)
Finished goods	(78,000 units × ₹ 48 × 2/52)	1,44,000
Debtors	(78,000 units × ₹ 60 × 75/100 × 4/52)	2,70,000
Cash in hand		50,000
Total (A)		**6,89,000**
Current Liabilities		
Creditors	(78,000 units × ₹ 36 × 4/52)	2,16,000
Lag in wages	(78,000 units × ₹ 6 × 2/52)	18,000
Lag in payment of overheads	(78,000 units × ₹ 6 × 2/52)	18,000
Total (B)		**2,52,000**
Net working capital required	(A) – (B)	4,37,000

Note:

1. Total sales for 4 weeks is 6,000 units. Excluding 25% cash sales, credit sales amounts to 4,500 units.
2. One year is assumed to be of 52 weeks.

Illustration 4

A company plans to manufacture and sell 400 units of a domestic appliance per month at a price of ₹ 600 each. The ratio of costs to selling price are as follows:

Particulars	(% of selling price)
Raw materials	30%
Packing materials	10%
Direct labour	15%
Direct expense	5%

Fixed overheads are estimated at ₹ 4,32,000 per annum.

The following norms are maintained for inventory management:

Raw materials	30 days
Packing materials	15 days
Finished goods	200 units
Work-in-progress	7 days

Other particulars are given below:

(a) Credit sales represent 80% of total sales and the dealers enjoy 30 working days credit. Balance 20% are cash sales.

(b) Creditors allow 21 working days credit for payment.

(c) Lag in payment of overheads and expenses is 15 working days.

(d) Cash requirements to be 12% of net working capital.

(e) Working days in a year are taken as 300 for budgeting purpose.

Prepare a Working Capital requirement forecast for the budget year.

Solution:

Selling Price and Cost per unit **(₹)**

Raw materials (₹ 600 × 30/100)	180
Packing materials (₹ 600 × 10/100)	60
Direct labour (₹ 600 × 15/100)	90
Direct expenses (₹ 600 × 5/100)	30
Fixed overheads [₹ 4,32,000 / (400 × 12)]	90
Total cost	450
Profit	150
Selling Price per unit	600

Forecast of Working Capital Requirement: **(₹)**

Current Assets		
Raw materials stock	(₹ 4800 × 180 × 30/300)	86,400
Packing materials stock	(₹ 4800 × 60 × 15/300)	14,400
Working in progress	(₹ 4800 × 285 × 7/300)	31,920
Finished goods stock	(₹ 450 × 200 units)	90,000
Debtors	(₹ 4800 × 80/100 × ₹ 600 × 30/300)	2,30,400
Total (A)		**4,53,120**
Current Liabilities:		
Creditors for raw material suppliers	(₹ 4800 × 180 × 21/300)	60,480
Creditors for packing material	(₹ 4800 × 60 × 21/300)	20,160
Creditors for expenses and overheads	(₹ 4800 × 120 × 15/300)	28,800
Total (B)		**1,09,440**
Net Working Capital (A) – (B)		3,43,680
Add: Cash required (12% of net working capital)		41,242
Total Working Capital Required		3,84,922

Note:

(a) Work-in-progress is valued with raw material cost at 100% and 50% of wages, overheads and expenses.

(b) Debtors are valued at selling price.

Illustration 5

(a) From the following details, prepare an estimate of the requirement of Working Capital:

Production	60,000 units
Selling price per unit	₹ 5
Raw material	60% of selling price
Direct wages	10% of selling price
Overheads	20% of selling price
Materials in hand	2 months requirement
Production Time	1 month
Finished goods in Stores	3 months
Credit for Material	2 months
Credit allowed to Customers	3 months
Average cash balance	₹ 20,000

Wages and overheads are paid at the beginning of the month following. In production, all the required materials are charged in the initial stage and wages and overheads accrue evenly.

(b) What is the effect of double shift working on the requirement of working capital?

Solution:

(a) Computation of requirement of Working Capital

Annual production 60,000 units

Monthly production 5,000 units

Unit Cost Sheet

Particulars		(₹)
Selling price		5.00
Cost of Raw Material 60% of ₹5 =	₹3.00	
Wages 10% of ₹5 =	₹0.50	
Overheads 20% of ₹5 =	₹1.00	
Total cost per unit		4.50
Profit per unit		0.50

Current Assets:		(₹)	(₹)
Stock of Raw material	$3 \times 60{,}000 \times \frac{2}{12}$		30,000
Work in Progress:			

Raw Materials	$3 \times 60,000 \times \frac{1}{12}$	15,000	
Wages and Overheads	$1.50 \times 60,000 \times \frac{1}{12} \times \frac{1}{2}$	3,750	18,750
Stock of Finished Goods	$4.50 \times 60,000 \times \frac{3}{12}$		67,500
Debtors (on sales)	$5.00 \times 60,000 \times \frac{3}{12}$		75,000
Cash			20,000
Total Current Assets	(A)		2,11,250

Current Liabilities:		(₹)
Creditors	$3 \times 60,000 \times \frac{2}{12}$	30,000
Outstanding wages	$0.5 \times 60,000 \times \frac{1}{12}$	2,500
Outstanding overheads	$1 \times 60,000 \times \frac{1}{12}$	5,000
Total Current Liabilities (B)		37,500

Working Capital: (A-B) = 2,11,250 – 37,500 = ₹ 1,73,750

(b) Effects of Double shift working:

The following assumptions are made before estimating the working capital requirement for double shift working:

1. Production will be 10,000 units per month or 1,20,000 units per year.
2. Materials may not be required at double rate. Due to inventory control measures it may be taken as 2/3.
3. WIP will be the same at 5,000 units. This will not increase as WIP of first shift will be handed over to second shift.
4. 50% of overheads are assumed as fixed. This will not increase due to double shift working.

On the basis of above assumptions, the following capital requirement is estimated as follows:

Current Assets:			(₹)
Stock of Raw material	$30,000 + \left(30,000 \times \frac{2}{3}\right)$		50,000

Work in Progress:			
Raw materials	$3 \times 60{,}000 \times \frac{1}{12}$	15,000	
Wages and Overheads	$**1.25 \times 60{,}000 \times \frac{1}{12} \times \frac{1}{2}$	3,125	18,125
Stock of finished Goods	$4.25 \times 1{,}20{,}000 \times \frac{3}{12}$		1,27,500
Debtors (on sales)	$5.00 \times 1{,}20{,}000 \times \frac{3}{12}$		1,50,000
Cash (double)			40,000
Total Current Assets	**(A)**		**3,85,625**

Current liabilities:		(₹)
Creditors	$3 \times 1{,}20{,}000 \times \frac{2}{12}$	60,000
Outstanding wages	$0.5 \times 1{,}20{,}000 \times \frac{1}{12}$	5,000
Outstanding overheads (Fixed Overheads remain same)		2,500
(Variable Overheads double as before)		5,000
Total Current Liabilities	**(B)**	**72,500**

Working Capital required for two shifts: (A-B) = ₹ 3,85,625 – ₹ 72,500 = ₹ 3,13,125

Therefore, additional working capital required for second shift = ₹ 3,13,125 – ₹ 1,73,750 = ₹ 1,39,375

** Calculation of Cost per unit

	Single shift (₹)	Double shift (₹)
Raw material Cost	3.00	3.00
Wages	0.50	0.50
Overhead expenses:		
Fixed	0.50	0.25
Variable	0.50	0.50
Cost per unit	4.50	4.25

Illustration 6

Solaris Ltd. sells goods in domestic market at a gross profit of 25%, not counting on depreciation as a part of the 'cost of goods sold'. Its estimates for next year are as follows:

Amounts ₹ In lakhs

Sales - Home at 1 month's credit	1,200
Exports at 3 months' credit, selling price 10 %below home price	540
Materials used (suppliers extend 2 months' credit)	450
Wages paid, ½ month in arrears	360
Manufacturing expenses, paid 1 month in arrears	540
Administrative expenses, paid 1 month in arrears	120
Sales promotion expenses (payable quarterly - in advance)	60
Income - tax payable in 4 instalments of which one falls in the next financial year	150

The company keeps 1 month's stock of each of raw materials and finished goods and believes in keeping ₹ 20 lakh as cash. Assuming a 15% safety margin, ascertain the estimated working capital requirement of the company (ignore work -in-process).

Solution:

Statement showing determination of Working Capital (Amount in ₹ lakhs)

Current Assets	(₹)	Computation	
Cash	20.00		
Raw Materials	37.50	(450 lakh / 12)	
Finished Goods	122.50	(1,470 lakh / 12)	
Debtors-Domestic market	100.00	(1,200 / 12)	
Export Market	135.00	(540 × 3 / 12)	
Sales Promotion Expense	15.00	(60 lakh × 3 / 12)	
Total Current Assets (A)	**430.00**		
Current Liabilities			(₹)
Raw Materials (450 × 2 / 12)			75.00
Wages (360 / 24)			15.00
Manufacturing Expenses (540 /12)			45.00
Administration Expenses (120/12)			10.00
Total Current Liabilities (B)			**145.00**
Net Current Assets (A-B)			**285.00**
Add: Safety Margin @ 15%			42.75
Working Capital Requirement			**327.75**

Working notes:

1. Cost of Production

	₹ in lakhs
Material used	450
Wages paid	360
Manufacturing exp	540
Administration exp	120
Total	1470

Tax aspect is ignored as it is to be paid out of profits.

Illustration 7

Camellia Industries Ltd. is desirous of assessing its Working Capital requirements for the next year. The finance manager has collected the following information for the purpose.

Estimated cost per unit of finished product	(₹ in lakh)
Raw materials	90
Direct labour	50
Manufacturing and administrative overhead (Excluding depreciation)	40
Depreciation	20
Selling overheads	30
Total Cost	230

The product is subject to excise duty of 10% (levied on cost of production) and is sold at ₹ 300 per unit.

Additional information:

i. Budgeted level of activity is 1,20,000 units of output for the next year.

ii. Raw material cost consists of the following:

Pig iron 65 per unit

Ferro alloys 15 per unit

Cast iron borings 10 per unit

iii. Raw materials are purchased from different suppliers, extending different credit period. Pig iron 2 months

Ferro alloys ½ months

Cast iron borings 1 month.

iv. Product is in process for a period of 1/2 month. Production process requires full unit (100 %) of pig iron and

ferroalloys in beginning of production. Cast iron boring is required only to the extent of 50 % in the beginning and the remaining is needed at a uniform rate during the process. Direct labour and other overheads accrue similarly at a uniform rate throughout production process.

v. Past trends indicate that the pig iron is required to be stored for 2 months and other materials for 1 month.

vi. Finished goods are in stock for a period of 1 month.

vii. It is estimated that one-fourth of total sales are on cash basis and the remaining sales are on credit. The past experience of the firm has been to collect the credit sales in 2 months.

viii. Average time-lag in payment of all overheads is 1 month and ½ month in the case of direct labour.

ix. Desired cash balance is to be maintained at ₹ 10 lakh.

You are required to determine the amount of net working capital of the firm. State your assumptions, if any.

Solution:

Determination of Net Working Capital of Camelia Industries Ltd.

Current Assets	(₹)	(₹)
Minimum desired cash balance	10,00,000	
Raw Materials:		
Pig iron	13,00,000	[1,20,000 × 65 × (2 / 12)]
Ferry alloys	1,50,000	[1,20,000 × 15 × (1 / 12)]
Cast iron borings	1,00,000	[1,20,000 × 10 × (1 / 12)]
Work-in-Progress	6,62,500	[1,20,000 × 132.5 (1/24)]
Finished goods	18,00,000	[1,20,000 × 180 × (1/ 12)]
Debtors	45,00,000	[1,20,000 × 300 × (2/12) × 3/4]
Total Current Assets: (A)	95,12,500	
Current liabilities	**(₹)**	**(₹)**
Creditors:		
Pig iron	13,00,000	[1,20,000 × 65 × (2/12)]
Ferry alloys	75,000	[1,20,000 × 15 × (1 / 24)]
Cast iron borings	1,00,000	[1,20,000 × 10 × (1 / 12)]
Outstanding Wages	2,50,000	[1,20,000 × 50 × (1 / 24)]
Outstanding Total Overheads	7,00,000	[1,20,000 × 70 × (1 / 12)]
Total Current Liabilities (B)	24,25,000	
Working Capital (A) - (B) = ₹95,12,500 – ₹24,25,000 = ₹70,87,500		

Working Notes: (₹ in Lakh)

1. Determination of Work-in-Progress

Particlars	Amount (₹)	Amount (₹)
*Determination of Work in Process		
Pig iron		65.00
Ferry alloys		15.00
Cast iron borings (0.5 × 10)		5.00
Other costs		
Cast iron borings	2.50	
Direct Labour (0.5 × 50)	25.00	
Manufacturing and administration Overheads (0.5 × 40)	20.00	47.50
		132.50

2. Finished goods have been taken at cost but Debtors have been taken at selling price.
3. The depreciation cost of ₹20 per unit, which is a non-cash item, has been ignored for valuation of work-in-progress and finished goods but considered for valuation of debtors.

Receivable Management

6.2

Receivables refers the book debts or debtors owed to the firm by customers arising from sale of goods or services in the ordinary course of business. These constitute an important component of the current assets of a firm. However, debt involves an element of risk and bad debts also. Hence, it calls for careful analysis the important dimensions of the efficient management of receivables within the framework of a firm's objectives of value maximization. The goal of receivables management is to maximize the value of the firm by achieving a tradeoff between risk and profitability.

6.2.1 Meaning and Objectives of Receivables Management

Management of receivables refers to planning and controlling of 'debt' owed to the firm from customer on account of credit sales. It is also called as trade credit management.

The objectives of receivables management are as follows:

(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.

6.2.2 Costs of Maintaining Receivables

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

(i) **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, 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.

(ii) **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.

(iii) **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.

(iv) **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 realised.

6.2.3 Benefits of Maintaining Receivables

Important benefits of maintaining receivables are as follows:

(i) **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.

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

(iii) **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.

6.2.4 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:

(i) **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.

(ii) **Credit Policies:** 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.

(iii) **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 (a) Credit period and (b) Cash discount.

6.2.5 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 "Tradeoff" between liquidity and profitability as shown in the chart below.

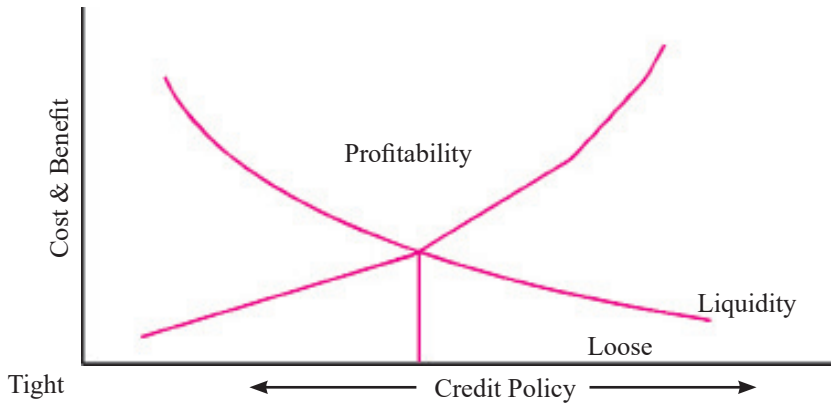

Figure 6.5: Optimum credit policy (Trade off between liquidity and profitability)

The following are the aspects of credit policy:

(a) Level of credit sales required to optimise the profit.

(b) Credit period i.e., duration of credit, whether it may be 15 days or 30 or 45 days etc.

(c) Cash discount, discount period and seasonal offers.

(d) Credit standard of a customer: 5 C's of credit:

  (i) Character of the customer i.e., willingness to pay.

  (ii) Capacity- ability to pay.

  (iii) Capital- financial resources of a customer.

  (iv) Conditions- special conditions for extension of credit to doubtful customers and prevailing economic and market conditions and;

(v) Collateral security.

(e) Profits.

(f) Market and economic conditions.

(g) Collection policy.

(h) Paying habits of customers.

(i) Billing efficiency, record-keeping etc.

(j) Grant of credit size and age of receivables.

6.2.6 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 are 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 organizations.

(ii) **Credit Terms:** Credit terms 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.

(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 minimises 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 stuck between the costs and benefits of different collection procedures or policies.

6.2.7 Credit Evaluation of Customer

Credit evaluation of the customer involves the following five stages:

Stage 1: 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 caes, Gazette notifications etc.

Stage 2: Credit analysis:

After gathering the above information about the customer, the credit-worthiness of the applicant is to be analysed by a detailed study of 5 C's of credit as mentioned above.

Stage 3: 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.

Stage 4: 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, ₹ 25,000 or ₹ 1,00,000 or so, depending upon the credit analysis and credit-worthiness of the customer.

Stage 5: 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. These facilities faster recovery.

6.2.8 Evaluation of Credit Policy

Example 1

Generally two methods of evaluating the credit policies to be adopted by a company – (a) Total Approach and (b) Incremental Approach. The formats for the two approaches are given as under:

Statement showing the Evaluation of Credit Policies (based on Total Approach)

Particulars	Present Policy	Proposed Policy I	Proposed Policy II	Proposed Policy III
	(₹)	(₹)	(₹)	(₹)
A. Expected Profit				
(a) Credit Sales	×××	×××	×××	×××

Particulars	Present Policy	Proposed Policy I	Proposed Policy II	Proposed Policy III
	(₹)	(₹)	(₹)	(₹)
(b) Total Cost other than Bad Debts				
(i) Variable Costs	×××	×××	×××	×××
(ii) Fixed Costs	×××	×××	×××	×××
	××××	××××	××××	××××
(c) Bad Debts	×××	×××	×××	×××
(d) Cash Discount				
(e) Expected Net Profit before Tax (a-b-c-d)	×××	×××	××	×××
(f) Tax	×××	×××	×××	×××
(g) Expected Profit after Tax (e – f)	××××	××××	××××	××××
B. Opportunity Cost of Investments in Receivables locked up in Collection Period	×××	×××	×××	×××
Net Benefits (A - B)	××××	××××	××××	××××

Comment:

The Policy should be adopted since the net benefits under this policy are higher as compared to other policies.

(i) Total Fixed Cost = [Average Cost per unit - Variable Cost per unit] × No. of units sold on credit under Present Policy

(ii) Opportunity Cost $= \frac{\text{Collection Period (Days)}}{365 \text{ (or } 360)} \times \frac{\text{Required Rate of Return}}{100}$

Example 2

Statement showing aluatithe Evon of Credit Policies (based on Incremental Approach)

Particulars	Present Policy	Proposed Policy I	Proposed Policy II	Proposed Policy III
	(₹)	(₹)	(₹)	(₹)
A. Incremental Expected Profit				
Credit Sales	×××	×××	×××	×××
(a) Incremental Credit Sales	×××	×××	×××	×××
(b) Less: Incremental Costs of Credit Sales				
(i) Variable Costs	×××	×××	×××	×××
(ii) Fixed Cost	×××	×××	×××	×××
(c) Incremental Bad Debt Losses	×××	×××	×××	×××

Particulars	Present Policy	Proposed Policy I	Proposed Policy II	Proposed Policy III
	(₹)	(₹)	(₹)	(₹)
(d) Incremental Cash Discount	×××	×××	×××	×××
(e) Incremental Expected Profit (a-b-c-d)	×××	×××	×××	×××
(f) Tax	×××	×××	×××	×××
(g) Incremental Expected profit after tax (e – f)	×××	×××	×××	×××
B. Required return on Incremental Investments				
(a) Cost of Credit Sales	×××	×××	×××	×××
(b) Collection Period (in days)	----	----	----	----
(c) Investment in Receivable (a × b/365 or 360)	×××	×××	×××	×××
(d) Incremental Investment in Receivables	×××	×××	×××	×××
(e) Required Rate of Return (in %)	%	%	%	%
(f) Required Return on Incremental Investments (d × e)	×××	×××	×××	×××
Incremental Net Benefits (A - B)	×××	×××	×××	×××

Comment:

The Policy should be adopted since net benefits under this policy are higher as compared to other policies.

(i) Total Fixed Cost = [Average Cost per unit - Variable Cost per unit] × No. of units sold on credit under Present Policy

(ii) Opportunity Cost

$$\text{Total Cost of Credit Sales} \times \frac{\text{Collection Period (Days)}}{365 \text{ (or } 360)} \times \frac{\text{Required Rate of Return}}{100}$$

Illustration 8

XYZ Corporation whose current sales are in the region of ₹6 lakh per annum and an average collection period of 30 days wants to pursue a more liberal policy to improve sales. A study made by a management consultant reveals the following information;

The selling price per unit is ₹ 3. Average cost per unit is ₹ 2.25 and variable costs per unit are ₹ 2. The current bad debt loss is 1%. Required return on additional investment is 20%. Assume a 360 days year. Which of the above policies would you recommend for adoption?

Solution:

A. Statement showing the Evaluation of Debtors Policies (Total Approach)

	Particulars	Present Policy 30 days	Proposed Policy A 40 days	Proposed Policy B 50 days	Proposed Policy C 60 days	Proposed Policy D 75 days
		(₹)	(₹)	(₹)	(₹)	(₹)
A.	Expected Profit					
	(a) Credit Sales	6,00,000	6,30,000	6,48,000	6,75,000	6,90,000
	(b) Total Cost other than Bad Debts					
	(i) Variable Costs [Sales × ₹ 2/ ₹ 3]	4,00,000	4,20,000	4,32,000	4,50,000	4,60,000
	(ii) Fixed Costs	50,000	50,000	50,000	50,000	50,000
		4,50,000	4,70,000	4,82,000	5,00,000	5,10,000
	(c) Bad Debts	6,000	9,450	12,960	20,250	27,600
	(d) Expected Profit [(a) - (b)-(c)]	1,44,000	1,50,550	1,53,040	1,54,750	1,52,400
B.	Opportunity Cost of Investments in Receivables	7,500	10,444	13,389	16,667	21,250
C.	Net Benefits (A-B)	1,36,500	1,40,106	1,39,651	1,38,083	1,31,150

Recommendation: The Proposed Policy A (i.e., increase in collection period by 10 days or total 40 days) should be adopted since the net benefits under this policy are higher as compared to other policies.

Working Notes:

(i) **Fixed Cost** = [Average Cost per unit - Variable Cost per unit] × No. of units sold

= [₹ 2.25 – ₹ 2.00] × (₹ 6,00,000/3)

= ₹ 0.25 × 2,00,000 = ₹ 50,000

(ii) **Opportunity Cost of Average Investments**

$$\text{Total Cost of Credit Sales} \times \frac{\text{Collection period (Days)}}{365 \text{ (or 360)}} \times \frac{\text{Required Rate of Return}}{100}$$

Present Policy = (4,50,000 × 30 / 360) × (20 / 100) = ₹ 7,500

Policy A = (4,70,000 × 40 / 360) × (20 / 100) = ₹ 10,444

Policy B = (4,82,000 × 50 / 360) × (20 / 100) = ₹ 13,389

Policy C = (5,00,000 × 60 / 360) × (20 / 100) = ₹ 16,667

Policy D = (5,10,000 × 75 / 360) × (20 / 100) = ₹ 21,250

(B) Another method of solving the problem is Incremental Approach. Here we assume that sales are all credit sales.

Particulars		Present Policy 30 day	Proposed Policy A 40 days	Proposed Policy B 50 days	Proposed Policy C 60 days	Proposed Policy D 75 days
		(₹)	(₹)	(₹)	(₹)	(₹)
A.	Incremental Expected Profit					
	(a) Incremental Credit Sales		30,000	48,000	75,000	90,000
	(b) Incremental Costs					
	(i) Variable Costs	4,00,000	20,000	32,000	50,000	60,000
	(ii) Fixed Costs	50,000	-	-	-	-
	(c) Incremental Bad Debt Losses	6,000	3,450	6,960	14,250	21,600
	(d) Incremental Expected Profit (a - b -c)]		6,550	9,040	10,750	8,400
B.	Required Return on Incremental Investments					
	(a) Cost of Credit Sales	4,50,000	4,70,000	4,82,000	5,00,000	5,10,000
	(b) Collection period	30	40	50	60	75
	(c) Investment in Receivable (a × b/360)	37,500	52,222	66,944	83,333	1,06,250
	(d) Incremental Investment in Receivables	-	14,722	29,444	45,833	68,750
	(e) Required Rate of Return (in %)		20	20	20	20
	(f) Required Return on Incremental Investments (d × e)		2,944	5,889	9,167	13,750
C.	Net Benefits (A - B)	-	3,606	3,151	1,583	5,350

Recommendation: The Proposed Policy 'A' should be adopted since the net benefits under this policy are higher than those under other policies.

(C) Another method of solving the problem is by computing the Expected Rate of Return.

$$\text{Expected Rate of return} = \frac{\text{Incremental Expected Profit}}{\text{Incremental Investment in Receivables}} \times 100$$

For Policy A = ₹6,550 / 14,722 × 100 = 44.49%
For Policy B = ₹9,040 / 29,444 × 100 = 30.70%
For Policy C = ₹10,750 / 45,833 × 100 = 23.45%
For Policy D = ₹8,400 / 68,750 × 100 = 12.22%

Recommendation: The Proposed Policy 'A' should be adopted since the Expected Rate of Return (44.49%) is more than the Required Rate of Return (20%) and is the highest among the given policies compared.

Illustration 9

ABC Corporation is considering relaxing its present credit policy and is in the process of evaluating two proposed policies. Currently the firm has annual credit sales of ₹ 50 lakhs and accounts receivable turnover ratio of 4 times a year. The current level of loss due to bad debts is ₹1,50,000. The firm is required to give a return of 25% on the investment in new accounts receivables. The company's variable costs are 70% of the selling price. Given the following information, which is the better option?

(Amount in ₹)

	Present Policy	Policy Option I	Policy option II
Annual credit sales	50,00,000	60,00,000	67,50,000
Accounts receivable turnover ratio	4 times	3 times	2.4 times
Bad debt losses	1,50,000	3,00,000	4,50,000

Solution:

Statement showing the Evaluation of Debtors Policies

	Particulars	Present Policy	Proposed Policy I	Proposed Policy II
		(₹)	(₹)	(₹)
A	**Expected Profit**			
	(a) Credit Sales	50,00,000	60,00,000	67,50,000
	(b) Total Cost other than Bad Debts:			
	(i) Variable Costs	35,00,000	42,00,000	47,25,000
	(c) Bad Debts	1,50,000	3,00,000	4,50,000
	(d) Expected Profit [(a) - (b) - (c)]	13,50,000	15,00,000	15,75,000
B	**Opportunity Cost of Investments in Receivables**	**2,18,750**	**3,50,000**	**4,92,188**
C	**Net Benefits (A - B)**	**11,31,250**	**11,50,000**	**10,82,812**

Recommendation: The Proposed Policy 'I' should be adopted since the net benefits under this policy is higher as compared to other policies.

Workings Notes: Calculation of Opportunity Cost of Average Investments

Opportunity Cost = Total Cost × Collection period / 12 × Rate of Return / 100

Present Policy = ₹ 35,00,000 × 3/12 × 25% = ₹ 2,18,750

Proposed Policy I = ₹ 42,00,000 × 4/12 × 25% = ₹ 3,50,000

Proposed Policy II = ₹ 47,25,000 × 5/12 × 25% = ₹ 4,92,188

Illustration 10

A firm is considering pushing up its sales by extending credit facilities to the following categories of customers:

(a) Customers with a 10% risk of non-payment, and

(b) Customers with a 30% risk of non-payment.

The incremental sales expected in case of category (a) are ₹40,000 while in case of category (b) they are ₹50,000.

The cost of production and selling costs are 60% of sales while the collection costs amount to 5% of sales in case of category (a) and 10% of sales in case of category (b).

You are required to advise the firm about extending credit facilities to each of the above categories of customers.

Solution:

Evaluation of Credit Policies

Category (a) 10% Risk of Non-payment

Particulars		(₹)
Incremental sales		40,000
Less: Bad debts @ 10%		4,000
Sales realized		36,000
Less: Cost of production and selling cost (40,000 × 60%)	24,000	
Less: Collection cost (40,000 × 5%)	2,000	26,000
Incremental profit		10,000

Category (b) 30% risk of non-payment

		(₹)
Incremental sales		50,000
Less: Bad debts @ 30% (50,000 × 30%)		15,000
Sales realized		35,000
Less: Cost of production and selling cost (50,000 × 60%)	30,000	
Less: Collection cost (50,000 × 10%)	5,000	35,000
Incremental profit		Nil

Comment: Advise to extend credit facility to category (a) customers alone.

Payable Management

6.3

A substantial part of purchases of goods and services in business are on credit terms rather than against cash payment. While the supplier of goods and services tend to perceive credit as a lever for enhancing sales or as a form of non-price instrument of competition, the buyer tends to look upon it as a loaning of goods or inventory. Generally, the supplier's credit is referred to as Accounts Payable, Trade Credit, Trade Bill, Trade Acceptance, Commercial Draft or Bills Payable depending on the nature of credit provided.

Payables or accounts payables are amounts due to vendors or suppliers for goods or services received that have not yet been paid for. They are short- term deferments of cash payments that the buyer of goods and services is allowed by the seller. Payables constitute current or short-term liabilities representing the buyer's obligation to pay a certain amount on a date in the near future for value of goods or services received. The sum of all outstanding amounts owed to vendors or suppliers or third-party is shown as the accounts payable balance on the company's balance sheet.

Payables management is the handling of a company's unpaid debts to third-party vendors for purchases made on credit. Account payables management involves tasks such as seeking trade credit lines, acquiring favorable terms of purchase, and managing the timing and flow of purchase.

6.3.1 Types of Payables or Trade Credits

Generally, Payables or Trade Credits may be classified into three types:

(a) Open Account

(b) Promissory Notes and

(c) Bills Payable

These are discussed briefly as under:

(a) Open Account: An open account is an arrangement between a business and a customer, where the customer can buy goods and services on a deferred payment basis. In this informal arrangement, the supplier, after satisfying himself about the credit-worthiness of the buyer, despatches the goods as required by the buyer and sends the invoice with particulars of quantity despatched, the rate and total price payable and the payment terms. The customer then pays the business at a later date. When purchases are made under this arrangement, the seller does not charge interest to the buyer. The buyer records his liability to the supplier in his books of accounts and this is shown as payables on open account. The buyer is then expected to meet his obligation on the due date.

(b) Promissory Note: The Promissory note is a formal document signed by the buyer promising to pay the amount to the seller at a fixed or determinable future time. It is a written agreement signed by drawer with a promise to pay the money on a specific date or whenever demanded. This note is a short-term credit tool which is not related to any currency note or banknote. Where the client fails to meet his obligation as per

open credit on the due date, the supplier may require a formal acknowledgement of debt and a commitment of payment by a fixed date.

(c) **Bills Payables:** Bills Payables are instruments drawn by the seller and accepted by the buyer for payment on the expiry of the specified duration. The bill will indicate the banker to whom the amount is to be paid on the due date, and the goods will be delivered to the buyer against acceptance of the bill. The seller may either retain the bill and present it for payment on the due date or may raise funds immediately thereon by discounting it with the banker. The buyer will then pay the amount of the bill to the banker on the due date.

6.3.2 Determinants of Payables/Trade Credit

(a) **Size of the firm:** Smaller firms have increasing dependence on trade credit as they find it difficult to obtain alternative sources of finance as easily as medium or large sized firms. At the same time, larger firms that are less vulnerable to adverse turns in business can command prompt credit facility from the supplier, while smaller firms may find it difficult to sustain credit worthiness during periods of financial strain and may have reduced access to credit due to weak financial position.

(b) **Industry category:** Different categories of industries show varying degrees of dependence on trade credit. In certain lines of business, the prevailing commercial practices may stipulate purchases against payment in most cases. Monopoly firms may insist upon cash on delivery. There could be instances where the firm's inventory, turnover every fortnight but the firm enjoys thirty days credit from suppliers, whereby the trade credit not only finances the firm's inventory but also provides part of the operating funds or additional working capital.

(c) **Nature of product:** Products that sell faster or which have higher turnover may need shorter term credit. Products with slower turnover take longer to generate cash flows and will need extended credit terms.

(d) **Financial position of seller:** The financial position of the seller will influence the quantities and period of credit he wishes to extend. Financially weak suppliers will have to be strict and operate on higher credit terms to buyers. On the other hand, financially stronger suppliers can dictate stringent credit terms but may prefer to extend liberal credit so long as the transactions provide benefits in excess of the costs of extending credit. Suppliers with working capital crunch will be willing to offer higher cash discounts to encourage early payments.

(e) **Terms of sale:** The magnitude of trade credit is influenced by the terms of sale. These terms fall into several broad categories according to the net period within which payment is expected. When the terms of sale are only on cash basis, there can be two situations, viz., Cash on Delivery (COD) and Cash before Delivery (CBD). Under these two situations, the seller does not extend any credit.

(f) **Degree of risk:** Estimate of credit risk associated with the buyer will indicate what credit policy is to be adopted. The risk may be with reference to buyer's financial standing or with reference to the nature of the business the buyer is in.

(g) **Cash discount:** Cash discount influences the effective length of credit. Failure to take advantage of the cash discount could result in the buyer using the funds at an effective rate of interest higher than that of alternative sources of finance available.

(h) **Nature and extent of competition:** Monopoly status facilitates imposition of tight credit term whereas intense competition will promote the tendency to liberalise credit. Newly established companies in competitive fields may more readily resort to liberal trade credit for promoting sales than established firms which are more formal in deciding on credit policies.

(i) **Datings:** In seasonable industries, sellers frequently use datings to encourage customers to place their orders before a heavy selling period. The need for an air-conditioner is felt in the summer, leading to heavy ordering

at a particular point of time. This has double advantages. For manufacturer, they can schedule production more conveniently and reduce the inventory levels. Whereas, the buyer has the advantage of not having to pay for the goods until the peak, of the selling period. Under this arrangement, credit is extended for a longer period than normal.

6.3.3 Computation of Cost of Credit or Payables

Cost of credit can be calculated in two situations:

To calculate nominal cost of credit on an annual basis of not considering discount, the formula is:

$$\frac{d}{(100-d)} \times \left(\frac{365 \text{ days}}{t}\right)$$

Where,

d= Size of discount or discount percentage (%)

t=Allowed payment days – discount days

Illustration 11

A supplier of X Ltd. offers the company 2/15 net 40 payment terms. To translate the shortened description of the payment terms, the supplier will allow a 2% discount if paid within 15 days, or a regular payment in 40 days. Determine the cost of credit related to these terms.

Solution:

Cost of credit can be calculated by using the following formula:

$$\frac{d}{(100-d)} \times \left(\frac{365 \text{ days}}{t}\right)$$

Where,

d = Size of discount or discount percentage (%)

t = Allowed payment days – discount days

$$= \frac{2}{(100-2)} \times \left(\frac{365 \text{ days}}{40-15}\right)$$

$$= \frac{2}{(98)} \times \left(\frac{365 \text{ days}}{25}\right)$$

$$= 0.0204 \times 14.4$$

$$= 0.29376$$

i.e., 29.4%

The above formula does not take into account the compounding effect and. So, the cost of credit shall be even higher. The cost of lost cash discount can be estimated by the formula:

$$\left(\frac{100}{100-\text{d}}\right)^{\frac{365}{\text{t}}} - 1$$

Inventory Management

6.4

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 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 inventory 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 inventory constitute about 50 to 60 % of current assets, the management of inventories is crucial to successful Working Capital Management. Working capital requirements are influenced by inventory holding. Hence, there is a need for effective and efficient management of inventory A good inventory management is important to the successful operations of the most of the organizations, unfortunately the importance of inventory is not always appreciated by top management. This may be due to a failure to recognize the link between inventory and achievement of organisational goals or due to ignorance of the impact that inventory can have on costs and profits. Inventory management refers to an optimum investment in inventory. It should neither be too low to effect the production adversely nor too high to block the funds unnecessarily. Excess investment in inventory is unprofitable for the business. Both excess and inadequate investment in inventory is 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.

The purpose of inventory management is to determine and maintain the optimum level of inventory investment.

6.4.1 Techniques of Inventory Management

The financial managers should aim at an optimum level of inventory on the basis of the trade-off between cost and benefit to maximize owner's health. Many mathematical models are available to handle inventory management problems. These are discussed below:

1. Economic Order Quantity
2. Fixing Levels of Materials
   (a) Minimum Level
   (b) Maximum Level
   (c) Reorder Level
   (d) Danger Level
3. ABC Inventory Control
4. Perpetual Inventory System

5. VED classification
6. Just-In-Time
7. FSN Analysis
8. Inventory Turnover Ratio

These are discussed below:

1. Economic Order Quantity: (EOQ)

The total costs of a material usually consist of Buying Cost, Total Ordering Cost and Total Carrying Cost. Economic Order Quantity is 'The size of the order for which both ordering and carrying cost are minimum'.

Ordering Cost: The costs which are associated with the ordering of material. It includes cost of staff posted for ordering of goods, expenses incurred on transportation, inspection expenses of incoming material etc.

Carrying Cost: The costs for holding the inventories. It includes the cost of capital invested in inventories. Cost of storage, Insurance etc.

Buying Cost: Amount paid / payable to the supplier for the goods. It includes the purchasing price plus all non-deductible taxes.

The assumption underlying the Economic Ordering Quantity: The calculation of economic order of material to be purchased is subject to the following assumptions: -

(a) Ordering cost per order and carrying cost per unit per annum are known and they are fixed.

(b) Anticipated usage of material in units is known.

(c) Cost per unit of the material is constant and is known as well.

(d) The quantity of material ordered is received immediately i.e lead time is Zero.

The famous mathematician 'WILSON' derived the formula used for determining the size of order for each purchase at minimum ordering and carrying costs, which is as below:

Economic Ordering Quantity = $\sqrt{\frac{2AO}{C}}$

Where,

A = Annual demand

O = Ordering Cost

C = Carrying Cost

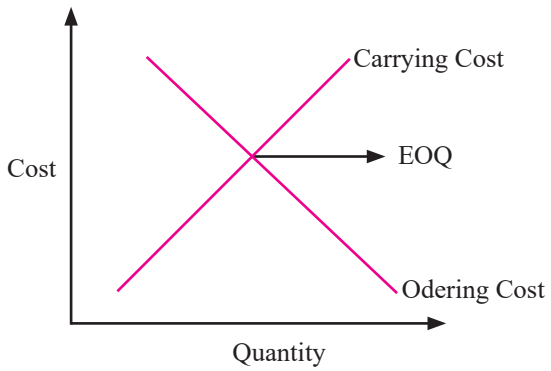

Figure 6.6: Graphical Representation of EOQ

Illustration 12

Calculate the Economic Order Quantity from the following information. Also state the number of orders to be placed in a year.

Consumption of materials per annum	:	10,000 kg
Order placing cost per order	:	₹ 50
Cost per kg. of raw materials	:	₹ 2
Storage costs	:	8% on average inventory

Solution:

Economic Ordering Quantity = $\sqrt{\frac{2AO}{C}}$

Where,

A = Annual demand

O = Ordering Cost

C = Carrying Cost

$$EOQ = \sqrt{\frac{2 \times 10,000 \times 50}{\frac{2 \times 8}{100}}}$$

$$EOQ = \sqrt{\frac{2 \times 10,000 \times 50 \times 25}{4}}$$

EOQ = 2,500 Kg

$$\text{No. of orders to be placed in a year} = \frac{\text{Total consumption of material per annum}}{EOQ}$$

$$= \frac{10,000 \text{ kg}}{2,500 \text{ kg}} = 4 \text{ Orders per year}$$

Illustration 13

The average annual consumption of a material is 18,250 units at a price of ₹36.50 per unit. The storage cost is 20% on an average inventory and the cost of placing an order is ₹ 50. How much quantity is to be purchased at a time?

Solution:

Economic Ordering Quantity = $\sqrt{\frac{2AO}{C}}$

Where,

A = Annual demand

O = Ordering Cost

C = Carrying Cost

$$EOQ = \sqrt{\frac{2 \times 18{,}250 \text{ units} \times \text{₹}50}{\text{₹}36.50 \times 20\%}}$$

$$EOQ = \sqrt{\frac{18{,}25{,}000}{7.3}}$$

EOQ = 500 Units

2. Fixing Levels of Materials

A. Maximum Level:

The Maximum Level indicates the maximum quantity of an item of material that can be held in stock at any time. The stock in hand is regulated in such a manner that normally it does not exceed this level.

While fixing the level, the following factors are to be taken into consideration:

(a) Maximum requirement of the store for production purpose, at any point of time.

(b) Rate of consumption and lead time.

(c) Nature and properties of the Store: For instance, the maximum level is necessarily kept low for materials that are liable to quick deterioration or obsolescence during storage.

(d) Storage facilities that can be conveniently spared for the item without determinant to the requirements of other items of stores.

(e) Cost of storage and insurance.

(f) Economy in prices: For seasonal supplies purchased in bulk during the season, the maximum level is generally high.

(g) Financial considerations: Availability of funds and the price of the stores are to be kept in view. For costly items, the maximum level should be as low as possible. Another point to be considered is the future market trend. If prices are likely to rise, the concern may like to stock-piling for keeping large stock in reserve for long-term future uses and in such a case, the level is pushed up.

(h) Rules framed by the government for import or procurement. If due to these and other causes materials are difficult to obtain and supplies are irregular the maximum level should be high.

(i) The maximum level is also dependent on the economic ordering quantity.

Maximum Level

Re-Order Level + Re-Order Quantity – (Minimum Rate of Consumption × Minimum Re-Order Period)

B. Minimum Level:

The Minimum Level indicates the lowest quantitative balance of an item of material which must be maintained at all times so that there is no stoppage of production due to the material being not available.

In fixing the minimum level, the following factors are to be considered: -

(a) Nature of the item: For special material purchased against customer's specific orders, no minimum level is necessary. This applies to other levels also.

(b) The minimum time (normal re-order period) required replenishing supply: This is known as the Lead Time and are defined as the anticipated time lag between the dates of issuing orders and the receipt of materials. Longer the lead time, lower is minimum level, the re-order point remaining constant.

(c) Rate of consumption (normal, minimum or maximum) of the material.

Minimum Level

Re-Order level – (Normal Rate of Consumption × Normal Re-Order Period)

C. Re-Order Level:

When the stock in hand reaches the ordering or re-ordering level, store keeper has to initiate the action for replenish the material. This level is fixed somewhere between the maximum and minimum levels in such a manner that the difference of quantity of the material between the Re-ordering Level and Minimum Level will be sufficient to meet the requirements of production up to the time the fresh supply of material is received.

The basic factors which are taken into consideration in fixing a Re-ordering Level for a store item include minimum quantity of item to be kept, rate of consumption and lead time which are applied for computing of this level.

Re-Ordering level

Minimum Level + Consumption during lead time

Or

Minimum Level + (Normal Rate of Consumption × Normal Re-order Period)

Another formula for computing the Re-Order level is as below:

Re-Order level

Maximum Rate of Consumption × Maximum Re-Order period (lead time)

D. Danger Level

It is the level at which normal issue of raw materials are stopped and only emergency issues are only made. This is a level fixed usually below the Minimum Level. When the stock reaches this level very urgent action for purchases is indicated. This presupposed that the minimum level contains a cushion to cover such contingencies. The normal lead time cannot be afforded at this stage. It is necessary to resort to unorthodox hasty purchase procedure resulting in higher purchase cost.

The practice in some firms is to fix danger level below the Re-Ordering Level but above the Minimum Level. In such case, if action for purchase of an item was taken when the stock reached the Re-Ordering Level, the Danger Level is of no significance except that a check with the purchases department may be made as soon as the Danger Level is reached to ensure that everything is all right and that delivery will be made on the scheduled date.

Danger Level

Normal Rate of Consumption × Maximum reorder Period for emergency purchases

Illustration 14

The components A and B are used as follows:

Normal usage.....300 units per week each

Maximum usage .....450 units per week each

Minimum usage .....150 units per week each

Reorder Quantity .....A- 2,400 units; B- 3,600 units.

Reorder period..... A -4 to 6 weeks, B -2 to 4 weeks.

Calculate for each component:

(a) Re-order Level, (b) Minimum Level, (c) Maximum Level and (d) Average Stock Level

Solution:

	Particulars	A	B
(a)	Reorder Level (ROL) [Max. Consumption × Max. Re-order Period]	2,700 units (450 × 6)	1,800 units (450 × 4)
(b)	Minimum Level [ROL – (Normal Consumption × Normal Re-order period)]	1,200 units [2,700 – (300×5)]	900 units [1,800 – (300 × 3)]
(c)	Maximum Level [ROL + ROQ – (Min. Consumption × Min. Re-order Period)]	4,500 units [2,700 + 2400 – (150×4)]	5,100 units [1,800 + 3,600 – (150 × 2)]
(d)	Average Stock Level [Min. Level + Max. Level] / 2 Or [Min. Level + ½ Re-order Quantity]	2,850 units [4,500 + 1,200 / 2] (or) 2,400 units 1,200 + ½ (2,400)	3,000 units [5,100 + 900 / 2] (or) 2,700 units 900 + ½ (3,600)

3. ABC Analysis:

The "ABC Analysis" is an analytical method of stock control which aims at concentrating efforts on those items where attention is needed most. It is based on the concept that a small number of the items in inventory may typically represent the bulk money value of the total materials used in production process, while a relatively large number of items may present a small portion of the money value of stores used resulting in a small number of items be subjected to greater degree of continuous control.

Under this system, the materials stocked may be classified into a number of categories according to their importance, i.e., their value and frequency of replenishment during a period. The first category (we may call it group 'A' items) may consist of only a small percentage of total items handled but combined value may be a large portion of the total stock value. The second category, naming it as group 'B' items, may be relatively less important. In the third category, consisting of group 'C' items, all the remaining items of stock may be included which are quite large in number but their value is not high.

This concept may be clear by the following example:

Category	No. of Items	% of the Total No. of Items	Value (₹)	% of the Total Value Item	Average Value (₹)
A	75	6	70,000	70	933
B	375	30	20,000	20	53
C	800	64	10,000	10	12
	1250	100	1,00,000	100	998

Category 'A' items represent 70% of the total investment but as little as only 6% of the number of items.

Maximum control must be exercised on these items. Category 'B' is of secondary importance and normal control procedures may be followed. Category 'C' comprising of 64% in quantity but only 10% in value, needs a simpler, less elaborate and economic system of control.

The advantages of ABC analysis are:

(a) Closer and stricter control of those items which represent a major portion of total stock value is maintained.

(b) Investment in inventory can be regulated and funds can be utilized in the best possible manner. 'A' class items are ordered as and when need arises, so that the working capital can be utilized in a best possible way.

(c) With greater control over the inventories, savings in material cost will be realized.

(d) It helps in maintaining enough safety stock for 'C' category of items.

(e) Scientific and selective control helps in the maintenance of high stock turnover ratio.

4. Perpetual Inventory System

Perpetual Inventory System may be defined as 'a system of records maintained by the controlling department, which reflects the physical movements of stocks and their current balance'. Thus, it is a system of ascertaining balance after every receipt and issue of materials through stock records to facilitate regular checking and to avoid closing down the firm for stock taking. To ensure the accuracy of the perpetual inventory records (bin Card and Stores Ledger), physical verification of stores is made by a programme of continuous stock taking.

The operation of the perpetual inventory system may be as follows:

(a) The stock records are maintained and up to date posting of transactions are made there in so that current balance may be known at any time.

(b) Different sections of the stores are taken up by rotation for physical checking. Every day some items are checked so that every item may be checked for a number of times during the year.

(c) Stores received but awaiting quality inspection are not mixed up with the regular stores at the time of physical verification, because entries relating to such stores have not yet been made in the stock records.

(d) The physical stock available in the store, after counting, weighing, measuring or listing as the case may be, is properly recorded in the bin cards / Inventory tags and stock verification sheets.

Perpetual inventory system should not be confused with continuous stock taking; Continuous stock taking is an essential feature of perpetual inventory system. Perpetual inventory means the system of stock records and continuous stock taking, whereas continuous stock taking means only the physical verification of the stock records with actual stocks.

In continuous stock taking, physical verification is spread throughout the year. Everyday 10 to 15 are taken at random by rotation and checked so that the surprise element in stock verification may be maintained and each item may be checked for a number of times each year. On the other hand, the surprise element is missing in case of periodical checking, because checking is usually done at the end of year.

Advantages of Perpetual Inventory System:

(a) The system obviates the need for the physical checking of all items of stock and stores at the end of the year.

(b) It avoids the dislocation of the routine activities of the organisation including production and despatch.

(c) A reliable and detailed check on the stores is maintained.

(d) Errors, irregularities and loss of stock through other methods are quickly detached and through necessary action recurrence of such things in future is minimized.

(e) As the work is carried out systematically and without undue haste the figures are readily available.

(f) Actual stock can be compared with the authorized maximum and minimum levels, thus keeping the stocks within the prescribed limits. The disadvantages of excess stocks are avoided and capitalised up in stores materials cannot exceed the budget.

(g) The recorder level of various items of stores are readily available thus facilitating the work of procurement of stores.

(h) For monthly or quarterly financial statements like Profit and Loss Account and Balance Sheet the stock figures are readily available and it is not necessary to have physical verification of the balances.

5. VED Analysis

VED stands for Vital, Essential and Desirable- analysis is used primarily for control of spare parts. The spare parts can be classified into three categories i.e Vital, Essential and Desirable- keeping in view the criticality to production.

Vital: The spares, stock-out of which even for a short time will stop the production for quite some time, and where in the stock-out cost is very high are known as Vital spares. For a car Assembly Company, Engine is a vital part, without the engine the assembly activity will not be started.

Essential: The spares or material absence of which cannot be tolerated for more than few hours or a day and the cost of lost production is high and which is essential for production to continue are known as Essential items. For a car assembly company 'Tyres' is an essential item, without fixing the tyres the assembly of car will not be completed.

Desirable: The Desirable spares are those parts which are needed, but their absence for even a week or more also will not lead to stoppage of production. For example, CD player, for a car assembly company.

Some spares though small in value, may be vital for production, requires constant attention. Such spares may not pay attention if the organization adopts ABC analysis.

6. FSN Analysis

FSN analysis is the process of classifying the materials based on their movement from inventory for a specified period. All the items are classified in to F-Fast moving, S- Slow moving and N-Non-moving Items based on consumption and average stay in the inventory. Higher the stay of item in the inventory, the slower would be the movement of the material. This analysis helps the store keeper / purchase department to keep the fast-moving items always available & take necessary steps to dispose off the non-moving inventory.

7. Just-in-Time (JIT)

Just in time (JIT) is a production strategy that strives to improve a business return on investment by reducing in-process inventory and associated carrying costs. Inventory is seen as incurring costs, or waste, instead of adding and storing value, contrary to traditional accounting. In short, the Just-in-Time inventory system focuses on "the right material, at the right time, at the right place, and in the exact amount" without the safety net of inventory.

The advantages of Just-in-Time system are as follows: -

(a) Increased emphasis on supplier relationships. A company without inventory does not want a supply system problem that creates a part shortage. This makes supplier relationships extremely important.

(b) Supplies come in at regular intervals throughout the production day. Supply is synchronized with production demand and the optimal amount of inventory is on hand at any time. When parts move directly from the truck to the point of assembly, the need for storage facilities is reduced.

(c) Reduces the working capital requirements, as very little inventory is maintained.

(d) Minimizes storage space.

(e) Reduces the chance of inventory obsolescence or damage.

8. Inventory Turnover Ratio

Inventory Turnover:

Inventory Turnover signifies a ratio of the value of materials consumed during a given period to the average level of inventory held during that period. The ratio is worked out on the basis of the following formula:

$$\textbf{Inventory Turnover Ratio} = \frac{\text{Value of material consumed during the period}}{\text{Value of average stock held during the period}}$$

The purpose of the above ratio is to ascertain the speed of movement of a particular item. A high ratio indicates that the item is moving fast with a minimum investment involved at any point of time. On the other hand, a low ratio indicates the slow-moving item. Thus, Inventory Turnover Ratio may indicate slow moving dormant and obsolete stock highlighting the need for appropriate managerial actions.

Illustration 15

Compute the Inventory Turnover Ratio from the following:

Opening Stock - ₹1,00,000

Closing Stock - ₹1,60,000

Material Consumed - ₹7,80,000

Solution:

$$\text{Inventory Turnover Ratio} = \frac{\text{Value of material consumed during the period}}{\text{Value of average stock held during the period}}$$

$$\text{Average Stock} = \frac{\text{Opening Stock} + \text{Closing Stock}}{2}$$

$$\text{Average Stock} = \frac{₹1,00,000 + ₹1,60,000}{2}$$

$$= ₹\ 1,30,000$$

$$\therefore \text{ Inventory Turnover Ratio} = \frac{₹7,80,000}{₹1,30,000}$$

$$= 6.$$

Illustration 16

Two components A and B are used as follows:

Normal usage = 50 per week each

Re-order quantity = A- 300; B-500

Maximum usage = 75 per week each

Minimum usage = 25 per week each

Re-order period: A - 4 to 6 weeks; B - 2 to 4 weeks

Calculate for each component

(a) Re-order level; (b) Minimum level; (c) Maximum level; (d) Average stock level.

Solution:

	Particulars	A	B
(a)	Reorder Level [Max. Consumption × Max. Re-order Period]	450 units (75 × 6)	300 units (75 × 4)
(b)	Minimum Level [ROL – (Normal Consumption × Normal Re-order period)]	200 units [450 – (50 × 5)]	150 units [300 – (50 × 3)]
(c)	Maximum Level [ROL + ROQ – (Min. Consumption × Min Re-order period)]	650 units [450 + 300 – (25 × 4)]	750 units [300 + 500 – (25 × 2)]
(d)	Average Stock Level [Min. Level + Max. Level] / 2 or [Min. Level + ½ × ROQ]	425 units [200 + 650 / 2] (or) or 350 units 200 + ½ (300)	450 units [150 + 750 / 2] (or) or 400 units 150 + ½ (500)

Illustration 17

X Ltd. buys its annual requirement of 36,000 units in six installments. Each unit costs ₹1 and the ordering cost is ₹25. The inventory carrying cost is estimated at 20% of unit value. Find the total annual cost of the existing inventory policy. How much money can be saved by using E.O.Q?

Solution:

Economic Ordering Quantity = $\sqrt{\frac{2AO}{C}}$

Where,

A = Annual demand

O = Ordering Cost

C = Carrying Cost

$$EOQ = \sqrt{\frac{2 \times 36,000 \times ₹\ 25}{₹\ 1 \times 20\%}}$$

$$EOQ = \sqrt{\frac{18,00,000}{₹\ 1 \times 20\%}}$$

EOQ = 3,000 Units

	Particulars	Existing Policy (₹)		EOQ (₹)	
(i)	Purchase Cost	(36,000 × 1)	36,000	(36,000 × 1)	36,000
(ii)	Ordering Cost	[36,000 / 6,000 × 25]	150	[36,000 / 3,000 × 25]	300
(iii)	Carrying Cost	[1/2 × 6,000 × 1 × 20%]	600	[1/2 × 3,000 × 1 × 20%]	300
			36,750		36,600

Saving by using EOQ = ₹ 36,750 – ₹ 36,600 = ₹ 150

Illustration 18

The annual demand for an item is 3,200 units. The unit cost is ₹6 and inventory carrying charges is 25% p.a. If the cost of one procurement is ₹150, determine:

(a) E.O.Q (b) No. of orders per year (c) Time between two consecutive orders.

Solution:

(a) Economic Ordering Quantity = $\sqrt{\frac{2AO}{C}}$

$$EOQ = \sqrt{\frac{2 \times 3,200 \times ₹150}{₹6 \times 25\%}}$$

$$EOQ = \sqrt{\frac{9,60,000}{1.5}}$$

EOQ = 800 units

(b) No. of orders per year = A / EOQ = 3200 / 800 = 4 orders

(c) Time between two consecutive orders = No. of months in years / No. of orders

= 12/4 = 3 Months

Illustration 19

A company manufactures a special product which requires a component 'Alpha'. The following particulars are collected for the year 2021.

(i) Annual demand of Alpha 8,000 units

(ii) Cost of placing an order ₹ 200 per order

(iii) Cost per unit of Alpha ₹ 400

(iv) Carrying cost % p.a. 20%

The company has been offered a quantity discount of 4% on the purchase of 'Alpha' provided the order size is 4,000 components at a time.

Required:

(a) Compute the economic order quantity.

(b) Advise whether the quantity discount offer can be accepted.

Solution:

(a) Calculation of Economic Order Quantity

$$\text{Economic Ordering Quantity} = \sqrt{\frac{2AO}{C}}$$

$$EOQ = \sqrt{\frac{2 \times 8,000 \times ₹\ 200}{₹\ 400 \times 20\%}}$$

EOQ = 200 units

(b) Evaluation of profitability of different options of order quantity

(i) When EOQ is ordered (₹)

Purchase Cost	(8,000 units × ₹ 400)	32,00,000
Ordering Cost Carrying Cost	[(8,000 units / 200 units) × ₹ 200]	8,000
	(200 units × ₹ 400 × ½ × 20/100	8,000
Total Cost		**32,16,000**

(ii) When quantity discount is accepted (₹)

Purchase Cost	(8,000 units × ₹ 384)	30,72,000
Ordering Cost Carrying Cost	[(8,000 units / 4,000 units) × ₹ 200]	400
	(4,000 units ₹ 384 × ½ × 20/100)	1,53,600
Total Cost		**32,26,000**

Advise: The total cost of inventory is lower if EOQ is adopted. Hence, the company is advised not to accept the quantity discount.

Management of Cash and Cash Equivalents

6.5

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, there is a need for cash management. It is concerned with the managing of (i) cash inflows and outflows of the firm; (ii) cash flows within the firm and (iii) cash balances held by the firm at a point of time by financing deficit or investing surplus cash.

Significance of Cash Management

The cash management assumes significance for the following reasons:

(i) **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.

(ii) **Management of cash flows:** This is another important aspect of cash management. Synchronisation 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 dividends etc. Hence, the cash flows should be managed for better cash management.

(iii) **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 point of time. The cost of excess cash and danger of inadequate cash should be matched to determine the optimum level of cash balances.

(iv) **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.

6.5.1 Motives of holding Cash

Motives or desires for holding cash refers to various purposes. The purpose may be different from person to person and situation to situation. G.A. Pogue (1969) in his research paper Cash Management: A System Approach, stated

three motives for holding cash such as (i) Transaction motives; (ii) Precautionary motives and (iii) Speculative motives. These are discussed below:

(i) **Transaction Motives:** A firm needs cash for making transactions in the day-to-day operations. The cash is needed to make payments for purchases, wages, salaries, other expenses, taxes, dividend, etc. The need to hold cash would not arise if there were perfect synchronisation between cash receipts and cash payments. When cash payments exceed cash receipts, the firm would maintain some cash balance to be able to make required payments. For transactions purpose, a firm may invest its cash in marketable securities. Generally, the firm will purchase securities whose maturity corresponds with some anticipated payments whose timing is not perfectly matched with cash receipts.

(ii) **Precautionary Motives:** Precautionary motive refers to hold cash as a safety margin to act as a financial reserve. In addition to the non-synchronization of anticipated cash inflows and outflows in the ordinary course of business, a firm may have to pay cash for purposes which cannot be predicted or anticipated. A firm may have to face emergencies such as strikes and lock-up from employees, increase in cost of raw materials, funds and labor, fall in market demand and so on. But how much cash is held against these emergencies depends on the degree of predictability associated with future cash flows. If there is high degree of predictability, less cash balance is sufficient. Some firms may have strong borrowing capacity at a very short notice, so that they can borrow at the time when emergencies occur. Such a firm may hold very minimum amount of cash for this motive.

(iii) **Speculative Motives:** It refers to the need to hold cash in order to be able to take advantage of negotiating purchases that might happen, appealing interest rates and positive exchange rate fluctuations. Some firms hold cash in excess than transaction and precautionary needs to involve in speculation.

The advantages of speculative motives for holding cash are:

(a) An opportunity to purchase raw materials a reduced price on payment of immediate cash;

(b) Delay purchases of raw materials on the anticipation of a decline in price;

(c) A chance to speculate on interest rate movements by buying securities when interest rates are expected to decline; and

(d) Make a purchase at a favorable price.

Besides, another motive to hold cash balance is to compensate banks for providing certain services and loans.

(iv) **Compensating Motives:** Banks provide a variety of services to business firms such as clearance of cheque, credit information, transfer of funds and so on. Bank either charge commission, fees for these services or seek indirect compensation. Usually, clients are required to maintain a minimum balance of cash to the bank. This balance is called compensating balance. Firms cannot utilize this balance for transaction purposes, rather banks can use this amount to earn a return.

6.5.2 Objectives of Cash Management

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. Keeping in view, these two conflicting aspects of cash management, it requires to determine the need of cash balances and review of the approaches to achieve optimum cash balances. There is a need to discuss the factors affecting cash needs.

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:

(a) 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 coincided 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.

(b) Short Costs: short costs are defined as the expenses incurred as a result of shortfall of cash. The short costs include, 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 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.

(c) Cost of Excess Cash 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.

(d) Uncertainty in Business: The first requirement of cash management is a precautionary cushion to cope with irregularities in cash flows, unexpected delays in collections and disbursements and defaults. The uncertainty can be overcome through accurate forecasting of tax payments, dividends, capital expenditure etc. and ability of the firm to borrow funds through over draft facility.

(e) 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.

6.5.3 Models of Cash Management

The strategies for cash management or cash management models are discussed in detail in the following lines:

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. Cash budget involves various elements.

The first element of a cash budget is the selection of period of time i.e., budget period. It is called planning horizon. The planning horizon means the time span and the sub-periods within that time span over which cash flows are to be projected.

The second element of the cash budget is the selection of the factors that have a bearing on cash flows. The factors are generally divided into two broad categories: (a) Operating and (b) Financial.

II. Determining Optimal Level of Cash holding by the Company

The optimal level of cash holding by a company can be determined with the help of the following models:

(a) Inventory Model (Economic Order Quantity) to Cash Management (Baumol Model)

(b) Stochastic (Miller-Orr) Model

(c) Probability Model

These are discussed below:

(a) Inventory Model (EOQ) to Cash Management (Baumol Model)

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 whereas cost of giving to the market means cost of liquidating marketable securities in cash.

Optimum level of cash balance can be determined as follows:

$$C = \sqrt{\frac{2A \times F}{O}}$$

Where,

C = Optimum cash balance

A = Annual (or monthly) cash disbursement

F = Fixed cost per transaction

O = Opportunity cost of one rupee per annum (or per month)

Assumptions of the Baumol Model:

The following are the assumptions of Baumol's model:

(i) The first assumption of this model is that the firm is able to forecast correctly and precisely the amount of cash required by it. Cash needs of the firms are known with certainty.

(ii) The firm makes its cash payments uniformly over a period of time. Thus, the cash payments arise uniformly over the future time period.

(iii) The firm very well understands the opportunity cost of the cash held by it. The opportunity cost of interest for gone by not investing in marketable securities. Such holding cost per annum is assumed to be constant.

(iv) The transaction cost of the firm is constant and known. The transaction cost is the cost incurred whenever the firm converts its short-term securities to cash.

(v) The surplus cash is invested into marketable securities and those securities are again disposed off to convert them again into cash. Such purchase and sale transactions involve certain costs like clerical brokerage registration and other costs. The cost to be incurred for each such transaction is assumed to be constant / fixed. In practice, it would be difficult to calculate the exact transaction cost.

(vi) The short-term marketable securities can be freely brought and sold. Existence of free market for marketable securities is a perquisite of the Baumol model.

Limitations of the Baumol Model

The limitations in Baumol's Model are as follows:

(i) The model can be applied only when the payments position can be reasonably assessed.

(ii) The major demerit of this model is that it does not allow the cash flows to fluctuate. The cash flows are assumed to be constant and known over the time period, which practically is not possible in real world. Firms are not able to use their cash balance uniformly.

(iii) Similarly, the firms cannot predict their daily cash inflows and outflows.

(iv) Degree of uncertainty is high is predicting the cash flow transactions. Behaviour of cash inflow and out flow is assumed to be too smooth and certain. Cash inflow and outflow of businesses are too erratic. Dail cash balance may fluctuate, leading to an unpredictable pattern of cash flow. Thus, at no point an ideal optimum cash balance C be maintained practically.

(v) The model merely suggests only the optimal balance under a set of assumptions. But in actual situation it may not hold good. Nevertheless, it does offer a conceptual framework and can be used with caution as a benchmark.

Illustration 20

The outgoings of X Ltd. are estimated to be ₹ 5,00,000 p.a., spread evenly throughout the year. The money on deposit earns 12% p.a. more than money in a current account. The switching costs per transaction are ₹150. Calculate to optimum amount to be transferred.

Solution:

According to Baumol, the optimum amount to be transferred each time is ascertained as follows:

$$C = \sqrt{\frac{2AF}{O}}$$

Where, C = Optimum transaction size

A = Estimate cash outgoings per annum i.e., ₹ 5,00,000

F = Fixed Cost per transaction i.e., ₹ 150

O = Opportunity cost of one rupee per annum = Interest rate on fixed deposit i.e. 12% p.a.

$$C = \sqrt{\frac{2 \times 150 \times 5,00,000}{0.12}} = ₹\ 35,355 \text{ say } ₹\ 35,000$$

Number of transaction p.a.	= ₹ 5,00,000/ ₹35,000	= 14 transactions
Average balance in the short notice account	= ₹ 35,000/2	= ₹ 17,500
Aggregate of Fixed cost	= 14 transactions × ₹ 150	= ₹ 2,100

Illustration 21

ABC Ltd. has an estimated cash payments of ₹8,00,000 for a one-month period and the payments are expected to steady over the period. The fixed cost per transaction is ₹250 and the interest rate on marketable securities is 12% p.a. Calculate the optimum transaction size.

Solution:

The optimum transaction size will be calculated as under:

$$C = \sqrt{\frac{2AF}{O}}$$

Where, A = Estimate monthly cash payment i.e., ₹ 8,00,000

F = Cost per transaction i.e., ₹ 250

O = Interest per annum i.e., 12%p.a. (For one month, the rate of interest is 1% or 0.01)

Optimum Cash Balance $= \sqrt{\frac{2 \times 250 \times 8,00,000}{0.01}}$ = ₹ 2,00,000

Optimum transaction size = ₹ 2,00,000

Average Cash Balance = ₹ 2,00,000/2 = ₹ 1,00,000

Number of Transactions = ₹ 8,00,000 / ₹ 2,00,000 = 4 Transactions

(b) Stochastic (Miller-Orr) Model:

The important limitation of the Baumol Model is that it does not allow the cash flows to fluctuate. So, the firms do not use their cash balance uniformly nor are they able to predict daily cash inflows and outflows. The Miller-Orr overcomes this shortcoming and allows for daily cash variation.

This model assumes that net cash flows are normally distributed with a zero value of mean and standard deviation. Miller-Orr model provides two control limits, Upper control Limit (UCL) and Lower Control Limit (LCL) as well as return point. When the cash flows of the firm fluctuate randomly and hit the upper limit, then it buys sufficient marketable securities to come back to a normal level of cash balance i.e., return point. Similarly, when the firm's cash flows wander and hit the lower limit, then the firm sells sufficient marketable securities to bring the cash balance back to the normal level i.e., return point. This is shown in a diagram below:

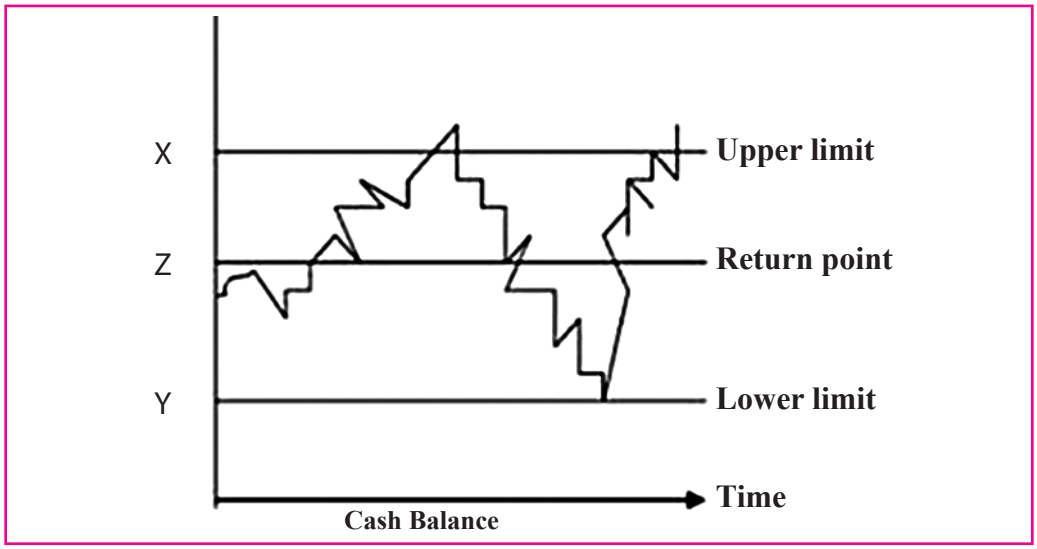

Figure 6.7: Stochastic (Miller-Orr) Model

The difference between the upper limit and the lower limit depends on the following factors:

(a) Transaction costs (c)

(b) Interest rate (k)

(c) Standard deviation of the net cash flows

The optimal point of cash balance (Z) is determined by using the formula:

$$Z = \left(\frac{3}{4} \times \frac{c\sigma^2}{k} \right)^{\frac{1}{3}}$$

Where,

Z = Target cash balance (Optimal cash balance)

c = Transaction cost

k = Interest rate

σ = Standard deviation of net cash flows.

It is observed from the above that the upper and lower limits will be far off from each other, if transaction cost is higher or cash flows show greater fluctuations. The limits will come closer as the interest increases. Z is inversely related to the interest rate. The upper and lower control limits can be shown:

Upper limit = Lower limit + Z

Return Point = Lower limit + Z

Limitations: This model is subjected to some practical problems

(i) 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.

(ii) The cost of time devoted by financial managers in dealing with the transfers of cash to securities and vice versa.

(iii) The model does not take into 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 the real-life situations.

Illustration 22

The management of X Ltd. has a policy of maintaining a minimum cash balance of ₹5,00,000. The standard deviation of the company's daily cash flows is ₹2,00,000. The annual interest rate is 14%. The transaction cost of buying or selling securities is ₹150 per transaction. Determine the upper control limit and the return point cash balance of X Ltd. as per the Miller-Orr Model.

Solution:

The optimal point of cash balance (Z) is determined by using the formula:

$$Z = Z = \left(\frac{3}{4} \times \frac{c\sigma^2}{k}\right)^{\frac{1}{3}}$$

Where,

Z = Target cash balance (Optimal cash balance)

c = Transaction cost

k = Interest rate

σ = Standard deviation of net cash flows.

$$Z = \left(\frac{3}{4} \times \frac{150 \times 2,00,000}{0.14/365}\right)^{\frac{1}{3}} = ₹\ 2\ 22,227$$

The upper control limit = Lower Limit +3Z

= ₹5,00,000 + (3×₹222,227)

= ₹1,181,680

Return Point = Lower Limit + Z

= ₹500,000 + ₹222,227

= ₹727,227

Average cash balance = Lower Limit + 4/3Z

= ₹500,000 + 4/3(₹222,227)

= ₹802,969.

(c) Probability Model

According to this model, a finance manager has to estimate probabilistic out comes 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:

(i) Cash is invested in marketable securities at the end of the planning period say a week or a month.

(ii) Cash inflows take place continuously throughout the planning period.

(iii) Cash inflows are of different sizes.

(iv) Cash inflows are not fully controllable by the management of firm.

(v) Sale of marketable securities and other short-term investments will be affected at the end of the planning period.

The probability model prescribed the decision rule for the finance manager that he 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.

(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 moment a payment to the company is mailed and the moment 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.

(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;

(ii) Making pay roll periods less frequent;

(iii) Solving disbursement by use of drafts;

(iv) Playing the float;

(v) Centralised payment system;

(vi) By transferring funds from one bank to another bank firm can maximize its cash turnover.

Illustration 23

United Industries Ltd. projects that cash outlays of ₹ 37,50,000 will occur uniformly throughout the coming year. United plans to meet its cash requirements by periodically selling marketable securities from its portfolio. The firm's marketable securities are invested to earn 12% and the cost per transaction of converting securities to cash is ₹ 40.

(a) Use the Baumol Model to determine the optimal transaction size of marketable securities to cash.

(b) What will be the company's average cash balance?

(c) How many transfers per year will be required?

(d) What will be the total annual cost of maintaining cash balances?

Solution:

(a) Optimal size = $\sqrt{\frac{2FA}{0}} = \sqrt{\frac{2\times40\times37,50,000}{0.12}} = 50,000$

(b) Average cash balance = ₹25,000

(c) No of transactions per year = ₹37,50,000/50,000 = 75

(d) Total annual cost

Transaction cost	=	75 × ₹40	= ₹3,000
Opportunity cost	=	₹50,000 × 1/2 × 12%	= ₹3,000
			= ₹6,000

Illustration 24

The Cyberglobe Company has experienced a stochastic demand for its product. With the result that cash balances fluctuate randomly. The standard deviation of daily net cash flows is ₹1,000, The company wants to impose upper and lower bound control limits for conversion of cash into marketable securities and vice-versa. The current interest rate on marketable securities is 6%. The fixed cost associated with each transfer is ₹1,000 and minimum cash balance to be maintained is ₹10,000.

Compute the upper limit, return point and average cash balances.

Solution:

The optimal point of cash balance (Z) is determined by using the formula:

$Z = Z = \left(\frac{3}{4}\times\frac{c\sigma^2}{k}\right)^{\frac{1}{3}}$

Where,

Z = Target cash balance (Optimal cash balance)

c = Transaction cost =₹1,000

k = Interest rate = 6%/365 (daily)

σ = Standard deviation of net cash flows= ₹1,000

$$z = \left(\frac{3}{4} \times \frac{1,000 \times 1,000^2}{0.06/365} \right)^{\frac{1}{3}} = ₹3,573$$

The upper control limit	= Lower Limit +3Z	= ₹10,000 + (3 × ₹3,573)
		= ₹10,000 + ₹10,719
		= ₹20,719
Return Point	= Lower Limit + Z	= ₹10,000 + ₹3,573
		= ₹13,573
Average cash balance	= Lower Limit + 4/3Z	= ₹10,000 + 4/3 × (₹3,573)
		= ₹10,000 + ₹4,764
		= ₹14,764

Financing Working Capital

6.6

Long-term sources of finance primarily support fixed assets and secondarily provide the margin money for working capital. Whereas, short-term sources of finance more or less exclusively support the current assets. The need for working capital financing mainly because the investment in working capital/current assets i.e., raw materials, work-in-progress, finished goods and receivables which are typically fluctuates during the year. The main sources of working capital finance are shown below in a diagram:

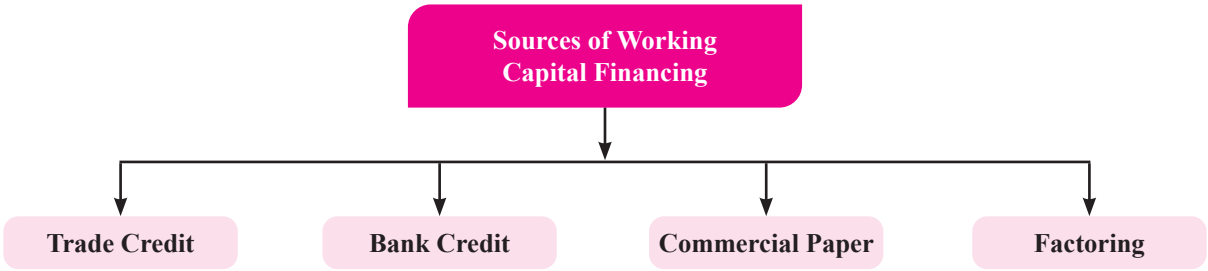

Figure 6.8: Sources of Working Capital Financing

The two important sources of finance for working capital are: (a) trade credit and (ii) bank credit or borrowings. Other sources of finance for working capital are (c) factoring and (d) commercial paper.

(a) Trade Credit

Trade credit represents the credit extended by the supplier of goods and services. In practice, the purchasing firms do not have to pay cash immediately for the purchase made. This deferral of payments is a short-term financing that is called trade credit. Trade credit 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 in different industries. Trade credit is mostly an informal arrangement and is granted on an open account basis. Open account trade credit appears as sundry creditors known as accounts payable. Trade credit may also take the form of bills payable.

(b) Bank Credit/ Borrowings

Working capital advances by commercial banks represents the most important source for financing current assets. In India, banks may give financial assistance in different shapes and forms. The usual form of bank credits are as follows:

(i) Overdraft

(ii) Cash Credit

(iii) Loans

(iv) Bills Purchased and Bills Discounting

(v) Letter of Credit

(vi) Working Capital Term Loan

(vii) Funded Interest Term Loan

These are discussed below:

(i) Overdrafts: Under the overdraft arrangement, a borrower is allowed to withdraw funds in excess of the balance in his current account up to a pre-determined limit for borrowing is specified by the bank. Though the overdraft amount is repayable on demand, it generally continues for a longer period by annual renewals of the limits. Interest is charged on daily balances on the amount actually withdrawn subject to some minimum charges. The borrower operates the account through cheques.

(ii) Cash Credit: The cash credit is a very popular method of bank finance for working capital in India. It is more or less similar to overdraft facility. Under this method, a borrower is allowed to withdraw funds from the bank up to a sanctioned credit limit.

(iii) 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.

(iv) Purchase / Discounting 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 to goods like a railway receipt or a bill of lading) and may be payable on demand or after a usance 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.

(v) Letter of Credit: Letter of Credit is a formal document issued by a bank on behalf of customer, mentioning the conditions under which the bank will honour the commitments of the customer. 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.

(vi) Working Capital Term Loan: At the time the computation of maximum permissible bank finance under the third method or new system of lending, in some cases the net working capital was negative while in others it was equal to 25 % of working capital gap. The Tandon Committee allowed this deficiency to be financed, in addition to the permissible bank finance, by banks. This kind of credit facility is called working capital term loan. The working capital term loan was not allowed to be raised in the subsequent years. For additional credit requirement arising in subsequent years, the borrower's long-term sources were required to provide 25 % of the additional working capital gap. The banks could grant regular term loans against fixed assets.

(vii) Funded Interest Term Loan (FITL): As per the Reserve Bank of India, the unrealised portion of interest in the existing borrowal accounts may be funded and treated as funded interest term loan. The FITL will have a repayment period of 7 years inclusive of a moratorium period of 2 years.

(c) Commercial Paper

Commercial paper is an unsecured, short-term promissory note issued by highly reputed and credit rated companies, mostly on a discount basis. Generally, large firms with considerable financial strength are able to issue commercial paper. Features, issuers and other aspects of commercial paper are discussed in section 6.3.3.

(d) Factoring

Factoring, as a fund based financial service, provides resources to finance receivables as well as facilities the collection of receivables. It is another method of raising short-term finance through accounts 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 fall outs 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.

6.6.1 Maximum Permissible Bank Finance (MPBF) Calculation

Maximum Permissible Banking Finance (MPBF) in Indian Banking Sector is mainly a method of working capital assessment. 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 MPBF, 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 and the Chore Committee.

However, in recent years, in the wake of financial liberalization, 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.

Dehejia Committee Report

The committee analysed the deficiencies of the then existing system of bank lending, based on cash credit system in 1968. The committee concluded that the diversion of bank finance for the acquisition of fixed and other non-current assets was made possible by the banker's fixation on security under the cash credit lending system. The committee found that while theoretically commercial bank lending was for short-term purposes, in actual practice, it was not so. According to their report, a large part of bank lending was really long-term in character, and was repayable on demand only in name.

The major weaknesses in the then existing system of working finance to industry, as pointed out by the Dehejia Committee and again identified by the Tandon Committee, are summarized below:

(i) It is the borrower who decides how much he would borrow; the banker does not decide how much he

would lend and is, therefore, not in a position to do credit planning.

(ii) The bank credit is treated as the first source of finance and not as supplementary to other sources of finance.

(iii) The amount of credit extended is based on the amount of security available, not on the level of operations of borrower.

(iv) Security does not by itself ensure safety of bank funds since all bad and sticky advances are secured advances; safety essentially lies in the efficient follow-up of the industrial operations of the borrower.

Tandon Committee Report

The recommendations of the Dehejia Committee regarding plugging the loop holes in the existing credit system and change in the lending policy of the banks remained unimplemented. As a result, banks 'oversold credit' and large part of it remained unutilized. There was no exchange of information between the banks and the customer. The Reserve Bank in July, 1974, formed a committee under the chairmanship of Shri P.L. Tandon, then Chairman of the Punjab National Bank to review the system.

The recommendations of the Tandon Committee are based on the following notions:

(a) Operating plan: The borrower should indicate the likely demand for credit. So, the borrower should draw operating plans for the ensuing year and supply them to the banker. This procedure will facilitate credit planning at the banks' level.

(b) Production-based financing: The banker should finance only the genuine production needs of the borrower. The borrower should maintain reasonable levels of inventory and receivables; he should hold just enough to carry on his target production.

(c) Partial bank financing: The working capital needs of the borrower cannot be entirely financed by the banker. The banker will finance only a reasonable part of it; for the remaining the borrower should depend upon his own funds, generated internally and externally.

Major recommendations of the committee are being summarized below:

(i) Inventory and Receivable Norms: The Committee pointed out that the borrower should be allowed to hold only a reasonable level of current assets, particularly inventory and receivables. Only the normal inventory, based on a production plan, lead time of supplies, economic ordering levels and reasonable factor of safety, should be financed by the banker. The committee suggested that for fifteen major industries excluding heavy engineering and highly seasonal industries, like sugar, the norms were applied to all industrial borrowers including small scale industries with aggregate limits from the banking system in excess of ₹10 lakh.

(ii) Lending norms: The Committee felt that the main function of a banker as a lender was to supplement the borrower's resources to carry an acceptable level of current assets. This norm highlighted the following issues such as: (a) the level of current assets must be reasonable and based on norms, (b) a part of the fund requirements for carrying current assets must be financed from long-term funds comprising owned funds and term borrowings, including other non-current liabilities. The banker was required to finance only a part of the working capital gap; the other part was to be financed by the borrower from the long-term sources. Working capital gap is defined as current assets minus current liabilities, excluding bank borrowings. Current assets will be taken at estimated values or values as per the Tandon Committee norms, whichever is lower. Current assets will consist of inventory and receivables, referred to as chargeable current assets (CCA) and other current assets (OCA).

(iii) Maximum Permissible Bank Finance (MPBF): The Committee suggested three methods of determining the permissible level of bank borrowings. These three methods are discussed later on.

(iv) **Style of credit:** The Committee reviewed the deficiencies of lending system also suggested a change in the style of bank lending. The Committee recommended the bifurcation of total credit limit into fixed and fluctuating parts. The fixed component was to be treated as a demand loan for the year representing the minimum level of borrowings, which the borrower expected to use throughout the year. The fluctuating component was to be taken care of by a demand cash credit. The cash credit portion could be partly used by way of bills.

(v) **Information system:** Another important recommendation of the Tandon Committee related to the flow of information from the borrower to the bank. The Committee argued for the greater flow of information, both for operational purposes and for the purpose of supervision and follow-up credit. Information was sought to be provided in three loans—operating statement, quarterly budget and funds flow statement.

The Tandon Committee Report has been widely debated and criticized. At the same time, it is true that bankers found difficulties in implementing the committee's recommendations. However, the Tandon Committee report has brought about a perceptible change in the outlook and attitude of both the bankers and their customers. The report has helped in bringing a financial discipline through a balanced and integrated scheme for bank lending.

Methods of Maximum Permissible Bank Finance (MPBF)

The Tandon Committee suggested three methods of assessing Maximum Permissible Bank Finance which are discussed below:

First Method

In this method, the borrower will contribute 25 % of the working capital gap; the remaining 75 % can be financed from bank borrowings. This method will give a minimum current ratio of 1:1.

Thus, the MPBF: 0.75 (CA-CL)-CL

Current Ratio will be: $CR = \frac{CA}{(CL+MPBF)}$

Second Method

In the second method, the borrower will contribute 25% of the total current assets. The remaining of the working capital gap (i.e., the working capital gap less the borrower's contribution) can be bridged from the bank borrowings. This method will give a current ratio of 1.3:1.

The permissible bank borrowings with an example of above two methods are shown below:

Particulars	1st Method (₹)	2nd Method (₹)
Current Assets (CA)	100	100
Current liabilities, excluding bank borrowings, (CL)	20	20
Working Capital Gap (CA-CL) [A-B]	80	80
Borrower's Contribution	20 25% of (C)	25 25% of (A)
Permissible Bank Finance (C-D)	60	55

Third Method

In the third method, borrower will contribute 100 % of core assets, as defined and 25 % of the balance of current assets. The remaining of the working capital gap can be met from the borrowings. This method will further strengthen the current ratio.

After introducing the new system of lending, in some cases the net working capital was negative while in others it was equal to 25% of working capital gap. Then the Committee allowed this deficiency to be financed, in addition to the permissible bank finance, by banks. However, it was regularized over a period of time depending upon the funds generating capacity and ability of the borrower. This type of credit facility was called working capital term loan. Generally, the working capital term loan was not allowed to be raised in the subsequent years. For additional credit requirement arising in subsequent years, the borrower's long-term sources were required to provide 25% of the additional working capital gap. The banks could grant regular term loans against fixed assets.

Illustration 25

Compute "Maximum Bank Borrowings" permissible under Method I, II & III of Tandon Committee norms from the following figures and comment on each method.

Current Liabilities		₹ in lakh	Current Assets	₹ in lakh
Creditors for purchases	200		Raw materials	400
Other current liabilities	100	300	Work in progress	40
Bank borrowings including bills discounted with bankers		400	Finished goods	180
			Receivable including bills discounted with bankers	100
			Other current assets	20
Total		**700**	**Total**	**740**

Assume core current assets are ₹190 lakhs.

Solution:

As per Tandon Committee norms -

Method 1

Under Method 1 the proprietor should contribute 25% of Working Capital Gap from their long-term source of finance and the balance is the Maximum Permissible Bank Borrowings.

In the given problem -

Working Capital Gap

Working Capital Gap = Current Assets - Current Liabilities (except bank borrowings)

Particulars	₹ in lakh
Total Current Assets	740
Less: Current liabilities excluding bank borrowings	300
Working Capital Gap	440
Less: Contribution from long term source of finance (25%)	110
Maximum Permissible Bank Borrowings	330

Comment: Maximum Permissible Bank Borrowings under method 1 is ₹.330 lakhs. But existing bank borrowing is ₹ 400 lakhs. Therefore, the excess bank borrowings of ₹ 70 lakhs convert into term loan.

Method 2

Under Method- 2 the proprietor should contribute 25% of Current Assets from their long-term source of finance and the balance is the Maximum Permissible Bank Borrowings.

In the given problem -

Particulars	₹ in lakh
Total Current Assets	740
Less: Current liabilities excluding bank borrowings	300
Working Capital Gap	440
Less: Contribution from long term source of finance (25% of 740)	185
Maximum Permissible Bank Borrowings	255

Comment: Maximum Permissible Bank Borrowings under method 2 is ₹ 255 lakhs. But existing bank borrowing is ₹ 400 lakhs.

Therefore, the excess bank borrowings of ₹ 145 lakhs convert into term loan.

Method 3

Under Method 3 the proprietor should contribute the entire investment in Core Current Assets and 25% of remaining current assets from their long-term source of finance and the balance is the Maximum Permissible Bank Borrowings.

In the given problem -

Particulars	₹ in lakh
Total Current Assets	740
Less: Current liabilities excluding bank borrowings	300
Working Capital Gap	440
Less: Contribution from long term source of finance (190+ 25% of (740-190))	328
Maximum permissible bank borrowings	112

Comment: Maximum permissible bank borrowings under method 3 is ₹ 112 lakh. But existing bank borrowing is ₹ 400 lakh.

Therefore, the excess bank borrowings of ₹ 288 lakhs convert into term loan.

Chore Committee Report

In April 1979, the Reserve Bank of India constituted a working group to review the system of cash credit under the chairmanship of Mr. K.B. Chore. The main terms of reference for the group were to review the cash credit system and suggest modifications and/or alternate types of credit facilities to promote greater credit discipline and relate credit limits to production. The major recommendations of the Committee are as follows:

(i) Reduced dependence on bank credit: Borrowers should contribute more funds to finance their working capital requirements, and reduce dependence on bank credit. Therefore, the group recommended firms to be placed in the second method of lending as explained by the Tandon Committee. In case the borrower was unable to comply with this requirement immediately, he would be granted excess borrowing in the form of working capital term loan (WCTL). WCTL should be repaid in semi-annual instalments for a period not exceeding five years and at a higher rate of interest than under the cash credit system would be charged.

(ii) Credit limit to be separated into 'peak level' and 'normal non-peak level' limits: Banks should appraise and fix separate limits for the 'peak level' and 'normal non-peak level' credit requirements for all borrowers in excess of ₹10 lakh, indicating the relevant periods. Within the sanctioned limits for these two periods the borrower should indicate in advance, his need for funds during a quarter. Any deviation in utilization beyond 10% tolerance limit should be treated as an irregularity and appropriate action should be taken.

(iii) Existing lending system to continue: The existing system of three types of lending such as Cash credit, loans and bills should continue. Cash credit system should, however, be replaced by loan and bills wherever possible. Cash credit accounts in case of large borrowers should be scrutinized once in a year. Bifurcation of cash credit account into demand loan and fluctuating cash credit component, practiced as per the Tandon Committee recommendation should discontinue. Advances against book debts should be converted to bills wherever possible and at least 50% of the cash credit limit utilized for financing purchase of raw material inventory should also be changed to this bill system.

(iv) Information system: The discipline relating to the submission of quarterly statements to be obtained from the borrowers, under the existing system, should be strictly adhered to in respect of all borrowers having working capital limits of ₹50 lakhs and over from the banking system.

6.6.2 Commercial Paper

Commercial Paper (CP) is an unsecured money market instrument issued in the form of a promissory note. However, the important features of commercial paper are as follows:

(i) In India, the maturity period of commercial paper usually ranges from 91 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 either directly placed with investors who intend holding it till its maturity.

Hence, there is no well-developed secondary market for commercial paper.

Commercial Paper: Eligibility, Use and Maturity

Eligibility and Use

In India, the Reserve Bank of India regulates the issue of commercial papers. Those companies are allowed to issue commercial papers which have a tangible net worth of ₹5 crore, i.e., ₹50 million, the fund based working

capital limit of not less than ₹5 crore, and the firm should be listed and it is required to obtain necessary credit rating from credit rating agencies. The minimum current ratio should be 1.33:1. All issue expenses will be borne by the issuing company. These norms imply that only the large, highly rated companies are able to operate in the commercial paper market in India.

The Vaghul Working Group had recommended that the size of a single issue should be at least ₹1 crore and the size of each commercial paper should not be less than ₹5 lakh. The RBI had provided for the minimum issue of ₹25 lakh (rather than ₹5 lakh as recommended by the Vaghul Committee)

Maturity Period

As per the RBI Guidelines, initially, corporates were permitted to issue CP with a maturity between a minimum of three months and a maximum of upto six months from the date of issue. Since October 18, 1993, the maximum maturity period of CP was increased to less than one year. Subsequently, the minimum maturity period had been reduced from time to time and since May 25, 1998, it was reduced to 15 days. Presently, CP can be issued for maturity period between a minimum of 15 days and a maximum upto one year from the date of issue.

In USA, there is no prescription of minimum and maximum maturity period of CP but for practical matter, it is limited upto 270 days. However, 1-day to 7-day CPs are very popular of which 1-day CP constitutes the substantial component of the CP market. In UK also, there is no restriction but in France, initial maturity ranges from 1 day to upto 1 year.

Cost

Though the Reserve Bank of India regulates the issue of commercial paper, the market determines the interest rate. In USA, the interest rate on a commercial paper is a function of prime lending rate, maturity, credit-worthiness of the issuer and the rating of the paper provided by the rating agency.

In India, the cost of a CP will include the following components:

- Discount
- Rating charges
- Stamp duty
- Issuing and Paying Agent (IPA) charges

Interest rate on commercial paper is generally less than the bank borrowing rate. A firm does not pay interest on commercial paper rather sells it at a discount rate from face value. The yield of commercial papers can be calculated as follows:

$$\text{Interest yield} = \frac{\text{Face value - Sale price}}{\text{Sale price}} \times \frac{360 \text{ days}}{\text{Days of maturity}}$$

Suppose a firm sells 120-day commercial paper (₹100 face value) for ₹96 net, the interest yield will be 12.5%.

$$\text{Interest yield} = \frac{₹\,100 - ₹\,96}{₹\,96} \times \frac{360 \text{ days}}{120 \text{ days}}$$

$$= 0.125$$

$$= 12.5\%$$

Interest on CP is tax deductible: therefore, the after-tax interest will be less. Assuming that the firm's marginal tax rate is 35 %, the after-tax interest yield is 8.13%.

Therefore, interest yield after tax = 0.125 (1 – 0.35) = 0.0813 or 8.13%.

Illustration 26

XYZ Ltd. issued commercial paper as per the following details:

Date of issue	17th December, 2023
Date of Maturity	17th March, 2024
Size of issue	₹10 crore
No. of Days	90 Days
Interest rate	11.25%
Face value	₹100

What was the net amount received by the company on issue of commercial paper?

Solution:

Interest yield for investor of commercial paper

$$\frac{\text{Face Value} - \text{Net amount realised}}{\text{Net amount realised}} \times \frac{360}{\text{Maturity period}}$$

$$0.1125 = \frac{100 - \text{Net amount realised}}{\text{Net amount realised}} \times \frac{360}{90}\text{days}$$

Or, Net amount realised = ₹ 9.73 crore

Thus, the company issues a commercial paper worth ₹10 crore and company receive ₹9.73 crore

6.6.3 Export Financing – Pre-Shipment and Post-Shipment Packing Credit

Export finance is a process of funding the exporters to facilitate their business in the global market. In simple words, it is a cash flow solution for exporters to cater to their production and other global transaction requirements including working capital. International businessmen require export finance when they want to assure the affordability of the production of goods along with an assurance of getting paid on-time while sending goods to another country.

Importance of Export Finance

Export finance services help the exporters mitigate their risk of default of payment on the hands of the importers as well as fills the gap between manufacturers and overseas suppliers. The exporter agrees on the payment terms of the importer and ships the goods overseas but the payment is at risk to be received later. Export finance allows the businesses to sell their goods & services to another country and enables them to get access to working capital requirements before the importer pays the amount for the purchased products.

There are several other reasons to get export finance such as:

- To establish a new export business with secured financial support;
- To cater to your business's working capital requirements;
- To expand your business in the global market etc.

Types of Export Finance/Credit

Export finance can broadly be classified under tow heads:

Pre-shipment Finance:

This includes –

(i) Packing Credit, and

(ii) Advance against receivables from the Government like duty back, international price reimbursement scheme (IPRS) etc.

Post-shipment Finance:

This consists of -

(i) Purchased/discounted/negotiated of export documents,

(ii) Advance against bills sent on collection basis,

(iii) Advance against exports on consignment basis,

(iv) Advance against indrawn balances, and

(v) Advance against receivables form the Government like duty draw back etc.

Pre-shipment Export Credit or Packing Credit

'Pre-shipment / Packing Credit' means any loan or advance granted or any other credit provided by a bank to an exporter for financing the purchase, processing, manufacturing or packing of goods prior to shipment / working capital expenses towards rendering of services on the basis of letter of credit opened in his favour or in favour of some other person, by an overseas buyer or a confirmed and irrevocable order for the export of goods / services from India or any other evidence of an order for export from India having been placed on the exporter or some other person, unless lodgement of export orders or letter of credit with the bank has been waived. Packing credit is sanctioned/granted on the basis of letter of credit or a confirmed and irrevocable order for the export of goods / services from India or any other evidence of an order for export from India.

Pre-shipment Finance is issued by a financial institution when the seller wants the payment of the goods before shipment. The main objectives behind pre-shipment finance or pre-export finance are to enable exporter to:

- Procure raw materials.
- Carry out manufacturing process.
- Provide a secure warehouse for goods and raw materials.
- Process and pack the goods.
- Ship the goods to the buyers.
- Meet other financial cost of the business.

Requirement of getting Packing Credit

This facility is provided to an exporter who satisfies the following criteria

- A ten-digit importer/exporter code number allotted by DGFT.
- Exporter should not be in the caution list of RBI.
- If the goods to be exported are not under OGL (Open General Licence), the exporter should have the required license /quota permit to export the goods.

Packing credit facility can be provided to an exporter on production of the following evidences to the bank:

- Formal application for release the packing credit with undertaking to the effect that the exporter would be

ship the goods within stipulated due date and submit the relevant shipping documents to the banks within prescribed time limit.

- Firm order or irrevocable L/C or original cable / fax / telex message exchange between the exporter and the buyer.
- Licence issued by DGFT if the goods to be exported fall under the restricted or canalized category. If the item falls under quota system, proper quota allotment proof needs to be submitted.

The confirmed order received from the overseas buyer should reveal the information about the full name and address of the overseas buyer, description quantity and value of goods (FOB or CIF), destination port and the last date of payment.

Eligibility

Pre shipment credit is only issued to that exporter who has the export order in his own name. However, as an exception, financial institution can also grant credit to a third-party manufacturer or supplier of goods who does not have export orders in their own name.

In this case some of the responsibilities of meeting the export requirements have been out sourced to them by the main exporter. In other cases where the export order is divided between two more than two exporters, pre shipment credit can be shared between them.

Post-shipment Export Finance

Post-shipment finance or credit means any loan or advance granted or any other credit provided by a bank to an exporter of goods / services from India from the date of extending credit after shipment of goods / rendering of services to the date of realisation of export proceeds as per the period of realization prescribed by Reserve Bank of India (RBI). This includes any loan or advance granted to an exporter, in consideration of, or on the security of any duty drawback allowed by the Government from time to time. As per extant guidelines of RBI, the period prescribed for realisation of export proceeds is 12 months from the date of shipment.

Post-shipment advance can mainly take the form of -

(i) Export bills purchased / discounted/negotiated.

(ii) Advances against bills for collection.

(iii) Advances against duty drawback receivable from Government

(v) Advance against exports on consignment basis

(vi) Advance against undrawn balances

(i) Export bills purchased/discounted/negotiated

In the first two instances, the exporter submits the bill of lading or airway bill, commercial invoice, packing list, certificate of origin, purchase order and other necessary export documents with the bank. The bank extends post-shipment credit at a concessional interest rate by purchasing or discounting these bills. In the third option (export bills negotiated), finance is provided under a letter of credit – a document issued by the importer's bank (called an issuing bank) as a promise to pay the exporter an agreed upon sum of money. Post-shipment credit under a letter of credit is considered more secure as the issuing bank guarantees payment to the lending bank.

(ii) Advances against bills for collection

Instead of submitting export bills for discount or purchase, the exporter may arrange for them to be sent to the overseas buyer for collection of payment. In such a scenario, the bank grants the exporter an advance against a portion of the collection bills. When payment is received from the importer, it is credited as post-shipment credit. Exporters use this option when there are discrepancies in bills drawn under the letter of credit.

(iii) Advances against duty drawback receivable from Government

In India, duty drawback is a government scheme that supports exports by offering exporters a rebate on customs and excise duties charged on imported or excisable material used in the production of goods meant for export. It is disbursed by the customs department on submission of export documents. Banks offer credit against such duty drawback receivable from the government after confirming the exporter's eligibility. The lending bank must also be authorized to receive the claim amount from the concerned government authority.

(iv) Advance against export on consignment basis

Banks also extend post-shipment credit against exports made on consignment basis – which means the exporter ships the goods to an agent, who sells the goods and makes remittances to the exporter as and when the goods are sold. The exporter receives payment only for the quantity that gets sold. Precious and semi-precious stones, tea, coffee, and wool are examples of goods exported on consignment basis. To avail of post-shipment credit against such exports, the exporter must provide an undertaking that the sales proceeds will be delivered by a specified date. The advance is adjusted against the proceeds realized later.

(v) Advance against undrawn balance

In some cases, exporters leave a small portion of the invoice value undrawn for final adjustments towards differences in exchange rates, consignment weight, quality factors, and so on. This undrawn balance is usually 10 % of the total invoice value. Banks offer advances against undrawn balances provided the exporter gives an undertaking that they will make good on the balance amount within six months of the payment due date or date of shipment, whichever is earlier. The lender also takes into account the importer's track record before making such an advance.

Who can get post-shipment finance?

- All kinds of exporters, including merchant exporters, manufacturer exporters, export houses, trading houses, and manufacturers who supply to merchant exporters, export houses and trading houses.
- Both individuals as well as companies involved in export.
- Any other legal entity engaged in the export of goods.

What documents are required for post-shipment credit?

An exporter will be expected to submit shipping documents that serve as evidence that the goods have been shipped for export. These include:

- Bill of lading/airway bill

- Commercial invoice
- Packing list
- Certificate of origin
- Inspection certificate
- Insurance certificate
- Import Export Code (IEC) certificate
- Additionally, an original copy of the letter of credit is mandatory if credit has been availed under the letter of credit

Apart from these documents, the lender might demand additional documents depending on the type of post-shipment credit availed.

Solved Case 1

From the following projections of XYZ Ltd for the next year, you are required to work out the working capital (WC) required by the company. (₹)

Annual sales	14,40,000
Cost of production including depreciation, ₹120000	12,00,000
Raw material purchases	7,05,000
Monthly expenses	30,000
Anticipated opening stock of raw materials	1,40,000
Anticipated closing stock of raw materials	1,25,000
Inventory norms:	
Raw material (month)	2
Work-in-progress (days)	15
Finished goods (month)	1

The firm enjoys a credit of 15 days on its purchases, and allows 1 month's credit on its supplies. The company has received an advance of ₹15,000 on sales orders.

You may assume that production is carried on evenly throughout the year, and the minimum cash balance desired to be maintained is ₹10,000.

Solution:

Statement showing determination of Net Working Capital (NWC)	(₹)	(₹)
(A) Current assets:		
Cash balance		10,000
Inventories:		
Raw materials: Opening stock	1,40,000	
Add purchases	7,05,000	
Less closing stock	1,25,000	
Annual consumption	7,20,000	
Two months requirements = (₹720000 × 2 / 12)		1,20,000
Work-in-process (yearly cost of production excluding depreciation):		
(₹12,00,000 – ₹1,20,000) [₹10,80,000* × 1)/(2 × 12)]		45,000
Finished goods (₹10,80,000)/12		90,000
Debtors (₹10,80,000)/12		90,000**
Total		**3,55,000**
(B) Current liabilities:		
Trade creditors (₹ 7,05,000 ×1 / 2 × 1 / 12)		29,375
Advances received from debtors		15,000
Total		**44,375**
(C) Net Working Capital (A – B)		**3,10,625**

*[₹7,20,000 + ₹3,60,000 (monthly expenditure, ₹30,000 × 12)]

**It is assumed that there is neither a opening nor closing stock of finished goods and, therefore, cost of sales is ₹10,80,000, excluding depreciation.

Solved Case 2

XYZ Ltd. sells its products on a gross profit of 20 % on sales. The following information is extracted from its annual accounts for the current year ended March 31. (₹)

Sales at 3 months' credit	40,00,000
Raw material	12,00,000
Wages paid–average time lag 15 days	9,60,000
Manufacturing expenses paid-one month in arrears	12,00,000
Administrative expenses paid-one month in arrears	4,80,000
Sales promotion expenses-payable half-yearly in advance	2,00,000

The company enjoys one month's credit from the suppliers of raw materials and maintains 2-month's stock of raw materials and 1.5 months' stock of finished goods. The cash balance is maintained at ₹1,00,000 as a precautionary measure. Assuming a 10 % margin, find out the working capital requirements of XYZ Ltd.

Solution:

Statement showing the determination of working capital	(₹)	(₹)
(A) Current Assets:		
Cash balance		1,00,000
Inventories:		
Raw materials (₹12,00,000 × 2 /12)	2,00,000	
Finished goods (₹32,00,000 × 1.5/12)	4,00,000	6,00,000
Debtors (₹32,00,000 × 3) / 12		8,00,000
Prepaid sales expenses (₹2,00,000 × 6) / 12		1,00,000
Total		16,00,000
(B) Current Liabilities:		
Creditors for goods (₹12,00,000 × 1) / 12		1,00,000
Wages (₹9,60,000 × 0.5)/12		40,000
Manufacturing expenses (₹12,00,000 × 1) / 12		1,00,000
Administrative expenses (₹4,80,000 × 1) / 12		40,000
Total		2,80,000
(C) Net Working Capital (A – B)		13,20,000
Add: Margin (0.10)		1,32,000
Net working capital requirement		14,52,000

Working notes	**(₹)**
Sales	40,00,000
Less: gross profit (0.20)	8,00,000
Cost of production	32,00,000

Solved Case 3

ABC Ltd wishes to arrange for overdraft facilities with its bankers during the period April to June of a particular year when it will be manufacturing mostly for stock.

a. Prepare a cash budget for the above period from the following data, indicating the extent of bank facilities the company will require at the end of the each month.

Month	Sales (₹)	Purchases (₹)	Wages (₹)
February	1,80,000	1,24,000	12,000
March	1,92,000	1,44,000	14,000
April	1,08,000	2,43,000	11,000
May	1,74,000	2,46,000	10,000
June	1,26,000	2,68,000	15,000

b. 50% of the credit sales are realised in the month following the sales, and the remaining sales in the second month following; creditors are paid in the month following the purchase.

c. Cash in bank on April 1 (estimated) ₹25,000.

Solution:

Cash Budget of ABC Ltd: April-June			
	April (₹)	**May (₹)**	**June (₹)**
(A) Cash inflows: collections			
(i) During month of sale	--	--	--
(ii) During second month (0.50)	90,000	96,000	54,000
(iii) During third month (0.50)	96,000	54,000	87,000
Total	1,86,000	1,50,000	1,41,000
(B) Cash outflows			
Purchase (one-month time-lag)	1,44,000	2,43,000	2,46,000
Wages (paid same month)	11,000	10,000	15,000
Total	1,55,000	2,53,000	2,61,000
(C) Net cash receipts (deficits)	31,000	(1,03,000)	(1,20,000)
Cash at start of month (overdraft	25,000	56,000	(47,000)
Cash balance (overdraft) (cumulative)	56,000	(47,000)	(1,67,000)
(Overdraft) facilities required		(47,000)	(1,20,000)

Exercise

A. Theoretical Questions:

⊙ **Multiple Choice Questions**

1. Working capital is calculated as _____
   A. Core current assets less core current liabilities
   B. Current assets less current liabilities
   C. Core current assets less current liabilities
   D. Liquid assets less current liabilities

2. The basic current liabilities are _____
   A. accounts payable and bills payable
   B. bank overdraft
   C. outstanding expenses.
   D. All of the above

3. There are two concepts of working capital – gross and ____
   A. Zero
   B. Net
   C. Cumulative
   D. distinctive

4. Working capital is also known as___ capital.
   A. Current asset
   B. Operating
   C. Projecting
   D. Operation capital

5. _____ working Capital refers to the firm's investment in current assets.
   A. Zero
   B. Net
   C. Gross
   D. Distinctive

6. In finance, "working capital" means the same thing as _____ assets.
   A. Current
   B. Fixed
   C. Total
   D. All of the above

7. _____ working capital refers to the difference between current assets and current liabilities.
   A. Zero
   B. Net
   C. Gross
   D. Distinctive

8. A _____ net working capital will arise when current assets exceed current liabilities.
   A. Summative
   B. Negative
   C. Excessive
   D. Positive

9. A _____ net working capital occurs when current liabilities are in excess of current assets.
   A. Positive
   B. Negative
   C. Excessive
   D. Zero

10. _____is not an advantages of trade credit.
   A. buyout financing
   B. informality
   C. easy availability
   D. flexibility

11. _____ refers to the funds, which an organisation must possess to finance its day to day operations.
   A. Retained earnings
   B. Fixed capital
   C. Working Capital
   D. All of the above

12. Investment in current assets should be _____
   A. just adequate
   B. more
   C. less
   D. maximum

13. _____ varies inversely with profitability.
   A. Risk
   B. Assets
   C. Liquidity
   D. Revenue

14. Capital intensive firms rely on _____
   A. debt
   B. retained earnings
   C. short term debts
   D. Equity

15. On the basis of _____, working capital is classified as gross working capital and net working capital.
    A. concept
    B. time
    C. future
    D. work

16. _____ cycle analyzes the accounts receivable, inventory, and accounts payable cycles in terms of a number of days?
    A. Business
    B. Current asset
    C. Operation
    D. Operating

17. _____ method is not used for calculating working capital cycle.
    A. Trial and error method
    B. Regression analysis method
    C. Percentage of sales method
    D. Operating cycle approach

18. On the basis of _____, working capital may be classified as: 1) Permanent or fixed working capital. 2) Temporary or variable working capital.
    A. concept
    B. time
    C. future
    D. work

19. Operating cycle is also called as _____
    A. Business cycle
    B. Working capital cycle
    C. Working cycle
    D. Current asset cycle

20. Spontaneous financing consists of _____
    A. a line of credit
    B. short-term loans
    C. accounts receivable
    D. accounts payable

21. Conversation of marketable securities into cash entails a fixed cost of ₹1,000 per transaction. What will be the optimal conversation size as per Baumol model of cash management?
    A. ₹ 315,628
    B. ₹ 316,228
    C. ₹ 317,678
    D. ₹ 318,426

22. Average collection period is 2 months, cash sales and average receivables are ₹5,00,000 and ₹6,50,000 respectively. The sales amount would be-
    A. ₹ 40,00,000
    B. ₹ 42,00,000
    C. ₹ 44,00,000
    D. ₹ 48,50,000

23. If the current ratio is 2.4:1 and working capital is ₹25,20,000, find the amount of current assets and current liabilities.
    A. Current Assets ₹ 43,20,000 and Current Liabilities ₹ 18,00,000
    B. Current Assets ₹ 44,00,000 and Current Liabilities ₹ 18,50,000
    C. Current Assets ₹ 45,50,000 and Current Liabilities ₹ 19,00,000
    D. Current Assets ₹ 46,60,000 and Current Liabilities ₹ 19,30,000

24. X Ltd. distributes its products to more than 500 retailers. The company's collection period is 30 days and keeps its inventory for 20 days. The operating cycle would be
    A. 40 Days
    B. 43 Days
    C. 45 Days
    D. 50 Days

Answers:

1	**D**
4	**B**
7	**B**
10	**S**
13	**C**
16	**D**
19	**B**
22	**C**

2	**D**
5	**C**
8	**D**
11	**C**
14	**A**
17	**A**
20	**D**
23	**A**

3	**B**
6	**A**
9	**B**
12	**A**
15	**A**
18	**B**
21	**B**
24	**D**

⊙ **State True or False**

1. Working capital is primarily required due to non-synchronous nature of the expected cash inflows and required cash outflows.
2. Higher net working capital leads to higher liquidity and higher profitability.
3. Conservative approach warrants that long-term fund should be used to finance the permanent part of the current assets and the temporary/seasonal requirements should be financed by short-term funds.
4. According to hedging approach, current assets should be financed from long-term sources.
5. Trade-off plan, in general, is considered an appropriate financing strategy for working capital.
6. There is an inverse relationship between the length of operating cycle of a firm and its working capital requirements.

7. In general, manufacturing enterprises require higher working capital than trading firms.
8. The longer the production cycle, the higher is the working capital needed or vice- versa.
9. There is a positive correlation between level of business activity and working capital needs of a business firm.
10. Efficiency of operation accelerates the pace of cash cycle of a firm but it does not affect its working capital requirements.
11. A firm should carry higher working capital than required to execute smoothly its planned level of business activity.
12. The entire sum of net profit earned by a corporate can, per-se, be considered a source of financing working capital.
13. Cash cost approach is an appropriate basis of computing working capital requirements of a business firm.
14. Working capital tied up with debtors should be estimated in relation to the selling price.
15. From the perspective of determining net working capital, all current liabilities including short-term sources of finance are considered.
16. Cash, in a narrow sense, implies currency and bank balances only.
17. Cash, in broad sense, includes marketable securities and time deposits in banks.
18. Transaction, precautionary and speculative are three motives for holding cash.
19. Speculative motive cash balance serves to provide a cushion to meet unexpected contingencies.
20. To meet the payment schedule and to minimize funds committed to cash balance are two basic objectives of cash management.
21. Costs caused due to inadequate cash are referred to as short costs.
22. Baumol model takes into account all motives of holding cash.
23. Miller-Orr model assumes that cash balances randomly fluctuate between an upper bound and lower bound.
24. Orgler's model is based on the use of a simple linear programming model.
25. Cash budget is based on operating cash flows.
26. The higher the period of cash cycle, the higher is cash turnover.
27. Time taken by the bank in collecting payment from the customer's bank is referred to as deposit float.
28. Investment in marketable securities is intended to obtain a return on temporarily idle cash.
29. The financial framework of analysis of various decision areas in receivable management should factor all measurable costs and benefits.

Answers:

1	**T**	**2**	**F**	**3**	**F**
4	**F**	**5**	**T**	**6**	**F**

7	T
10	F
13	T
16	F
19	F
22	F
25	F
28	T

8	T
11	F
14	F
17	T
20	T
23	T
26	F
29	T

9	T
12	F
15	F
18	F
21	T
24	F
27	F

⊙ Fill in the Blanks

1. Higher net working capital leads to _____ (higher / lower) liquidity and higher profitability.
2. Baumol model takes into account all motives of holding _____.
3. Working Capital equals the aggregate value of current assets _____ aggregate value of current liabilities.
4. _____ = Inventory alteration period + Receivables alteration period.
5. Cash conversion cycle = _____ – Payable delay period.
6. Gross Working Capital refers to the firm's investment in _____.
7. There exists a close association between sales fluctuations and invested amounts in _____.
8. Under the conventional method, ... enters into the calculation of working capital.
9. A company's operating cycle naturally consists of three most important activities: _____, _____ and _____
10. The _____ shows the time period over which additional no impulsive sources of working capital financing must be obtained to carry out the firm's actions.
11. The unit price of producing goods would not differ with the amount _____
12. There are _____ among the borrowing and lending rates for savings and financing of equivalent risk.
13. _____deals with the likelihood that a firm will encounter financial difficulty, such as the incapability to pay bills on time.
14. Short-term interest rates tend to change _____ over time than long-term interest rates.
15. The _____ level of working capital investment is the level predictable to maximize shareholder's assets.
16. _____ single working capital investment strategy is necessarily most favourable for all organizations.
17. The objective of a corporation is to generate value for it's_____.
18. Under _____ working capital strategy, investment in current assets is extremely low.
19. Too much working capital is expensive, falling _____ and _____.

Answer:

1	**higher**	**2**	**cash**	**3**	**minus**
4	**Operating cycle**	**5**	**Operating cycle**	**6**	**Current Assets**
7	**Current assets**	**8**	**Cash**	**9**	**Purchasing resources, producing the product, selling the product**
10	**Cash alteration cycle**	**11**	**Produced**	**12**	**Spreads**
13	**Risk**	**14**	**More**	**15**	**Most favourable**
16	**No**	**17**	**Shareholders**	**18**	**Aggressive**
19	**Profitability, return on capital**				

⊙ Short Essay Type Questions

1. What do you mean by Working Capital?
2. Discuss different types of Working Capital.
3. What are the significances of Working Capital Management?
4. Explain in brief the Working Capital Cycle and Cash Cycle.
5. Discuss the importance of Receivables Management.
6. What do you mean by Payable Management? Explain.
7. What do you mean by Inventory Management? Explain.
8. State the objectives of Cash Management.
9. Write a short note on 'Monthly Cash Flow Forecast'.
10. How to calculate Maximum Permissible Bank Finance (MPBF)?
11. Write a short note on Commercial Paper.

⊙ Essay Type Questions

1. Discuss different models of Cash Management.
2. What is Export Financing? Discuss about Pre-Shipment and Post-Shipment Packing Credit.
3. How are net working capital, liquidity, technical insolvency, and risk related?
4. What is the basic premise of the hedging approach for meeting funds requirements? What are the effects of this approach on the profitability and risk?
5. What is the conservative approach to financing funds requirements? What kind of profitability-risk trade-off is involved?
6. If a firm has constant funds requirement throughout the year, which, if any, of the three financing plans is preferable? Why?
7. Length of operating cycle is a major determinant of working capital needs of a business firm. Explain.
8. Distinguish between: (a) Gross working Capital and Net Working Capital, (b) Permanent and Temporary Working Capital (c) Production and Operating Cycle.

B. Numerical Questions:

⊙ Comprehensive Numerical Problems

1. ABC Ltd. has the following selected assets and liabilities: (₹)

Cash	45,000
Retained earnings	1,60,000
Equity share capital	1,50,000
Debtors	60,000
Inventory	1,11,000
Debentures	1,00,000
Provision for taxation	57,000
Expenses outstanding	21,000
Land and building	3,00,000
Goodwill	50,000
Furniture	25,000
Creditors	39,000

You are required to determine (i) gross working capital, and (ii) net working capital.

2. While preparing a project report on behalf of a client, you have collected the following data. Estimate the net working capital required for that project. Add 10% to your computed figure to allow for contingencies.

Estimated cost per unit of production	(₹)
Raw material	80
Direct labour	30
Overheads (exclusive of depreciation)	60
Total	**170**

Additional information

(i) Selling price, ₹200 per unit.

(ii) Level of activity, 1,04,000 units of production per annum.

(iii) Raw material in stock, average 4 weeks.

(iv) Work-in-progress (assume 50% completion stage), average 2 weeks.

(v) Finished goods in stock, average 4 weeks.

(vi) Credit allowed by suppliers, average 4 weeks.

(vii) Credit allowed by debtors, average 8 weeks.

(viii) Lag in payment of wages, average 1.5 weeks.

(ix) Cash in bank is expected to be ₹25,000.

You may assume that the production is carried on evenly throughout the year (52 weeks) and wages and overheads accrue similarly. All sales are on credit.

3. The balance sheet of X Ltd. stood as follows as on March 31 of the current year.

Liabilities	(₹)	Assets	(₹)
Current liabilities (CL)	2,000	Current assets (CA)	8,000
Long-term funds	22,000	Fixed assets (FA)	16,000
	24,000		24,000

If Current assets earn 2%, Fixed assets earn 14%, Current liabilities cost 4% and long-term funds cost 10%, calculate (a) total profits on assets and the ratio of Current assets to total assets, (b) the cost of financing and the ratio of Current liabilities to total assets, and (c) net profitability of the current financial plan.

4. Prudential Ltd. has investigated the profitability of its assets and the cost of its funds. The results indicate:

(i) Current assets earn 1 %

(ii) Fixed assets earn 13 %

(iii) Current liabilities cost 3 %

(iv) Average cost of long-tern funds, 10 %

The current balance sheet is as follows:

Liabilities	(₹)	Assets	(₹)
Current liabilities	5,000	Current assets	10,000
Long-term funds	35,000	Fixed assets	30,000
	40,000		40,000

(a) What is the net profitability?

(b) The company is contemplating lowering its net working capital to ₹3,500 by (i) either shifting current assets into fixed assets, or (ii) shifting ₹1,500 of its long-term funds into current liabilities. Work out the profitability for each of these alternatives. Which one do you prefer and why?

(c) Can both these alternatives be implemented simultaneously? How would it affect the net profitability?

Answers:

1	(i) ₹2,16,000, (ii) 99,000.
2	₹49,66,000
3	(a) ₹2,400; 0.33 (b) ₹2,280; 0.08 (c) ₹120
4	(a) ₹350, (b) (i) ₹530 (ii) ₹455; Profitability is more under alternative (b) (i), (c) ₹635.

Unsolved Case(s)

1. An engineering company is considering its working capital investment for the next year. Estimated fixed assets and current liabilities for the next year are ₹5.20 crore and ₹84.6 crore, respectively. Sales and profit before interest and taxes (PBIT) depend on current assets investment—particularly inventories and book debts. The company is examining the following alternative working capital policies:

₹ (Crore)

Working capital policy	Investment in current assets	Estimated sales	EBIT
Conservative	9.00	24.60	2.46
Moderate	7.80	23.00	2.30
Aggressive	5.20	20.00	2.00

You are required to calculate the following for each policy (a) rate of return on total assets, (b) net working capital position, (c) current ratio, and (d) current asset to fixed asset ratio.

Also discuss the return-risk trade-offs of the three policies.

2. P Ltd. wishes to evaluate its cash conversion cycle. A financial analyst company, X Ltd. indicates that on an average the firm holds items in inventory for 80 days, pays its suppliers 40 days after purchase and collects its receivables after 60 days. The company's annual sales (on all credit) are about ₹100 crore. Its cost of goods sold represent 70% of sales and purchases represent about 30% of cost of goods sold. Assume a 365-day year.

   (a) What is P Ltd.'s operating cycle (OC) and cash conversion cycle (CCC)?

   (b) What amount of rupees does P Ltd. invested in (i) inventory, (ii) accounts receivable (iii) accounts payable and (iv) total CCC.

   (c) If P Ltd. shorten its cash conversion cycle by reducing its inventory holding period by 10 days, what effect would it have on its total resource investment in (b) (iv) above.

   (d) If P Ltd. shorten its cash conversion cycle by 10 days, would it be best to reduce the inventory holding period, reduce the receivable collection period, or extend the accounts payable period? Why?

3. R Ltd. feels a lock-box system can shorten its accounts receivable collection period by 3 days. Credit sales are estimated at ₹ 365 lakh per year, billed on a continuous basis. The firm's opportunity cost of funds is 15%. The cost of lock box system is ₹ 50,000.

   (a) Will you advise 'R' to go for lock-box system?

   (b) Will your answer be different if accounts receivable collection period is reduced by 5 days?

References:

- Banerjee Bhabatosh, Financial Policy and Management Accounting, PHI, Eighth Edition.
- Bodie, Zvi et al, Investments, Tata McGraw-Hill Publishing Company Limited New Delhi: 2002.
- Chambers, Donald R., and Nelson J. Lacey. "Corporate Ethics and Shareholder Wealth Maximization." Financial Practice and Education 6 (Spring–Summer 1996), 93– 96.
- Chandra Prasanna, Financial Management, Theory and Practice, McGraw Hill., 2019.
- Fama, Eugene F; French, Kenneth R (Summer 2004). The Capital Asset Pricing Model: Theory and Evidence. Journal of Economic Perspectives. 18 (3): 25–46.
- Fischer Donald E, and Jordon Ronald J., Security Analysis and Portfolio Management, PHI.
- Francis, Jack Clark, Investments: Analysis and Management, McGraw-Hill, Inc. New York: 1991.
- H. Markowitz, Portfolio Selection: Efficient Diversification of Investments, John Wiley & Sons, 1959.
- Khan, M Y and P K Jain, Financial Management- Text, Problems and Cases, McGraw-Hill Publishing Co., New Delhi, 2019.
- Pandey I.M., Financial Management, Pearson, 12th Edition, 2021.
- Ross, Stephen. A, "The Arbitrage Theory of Capital Asset Pricing," Journal of Economic Theory, Vol. 13, (December, 1976).
- Solomon, E, Theory of Financial Management, Columbia University Press (New York), 1969.
- Van Horne James C. and Wachowicz John M., Jr. Fundamentals of Financial Management, Prentice Hall, 13th Edition, 2008.
- Ramamoorthy, V E, Working Capital Management, Institute of Financial Management and Research Madras, 1976
- Baumol, WJ, 'The Transaction Demand for Cash: An Inventory Theoretic Approach', Quarterly Journal of Economics, LXV November, 1952, pp 545-56
- Miller, MH and Orr, D, 'A Model of the Demand for Money in Firms', Quarterly Journal of Economics, LXX Aug., 1966, pp 413-435.
- Orgler, YE, Cash Management: Methods and Models, Wadsworth Publishing Company, Balmont, California, 1970.