Chapter 4: Working Capital

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4.1 Working Capital is an Instrument of Company

About Working Capital Management

There are two concepts of working capital viz. quantitative and qualitative. Some people also define the two concepts as gross concept and net concept. According to quantitative concept, the amount of working capital refers to ‘total of current assets’. That we call current assets? Smith1 called, ‘circulating capital’. Current assets are considered to be gross working capital in this concept.

The qualitative concept gives an idea regarding source of financing capital. According to qualitative concept the amount of working capital refers to “excess of current assets over current liabilities.” L.J. Guthmann defined working capital as “the portion of a firm’s current assets which are financed from long–term funds.

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

It is necessary to understand the meaning of current assets and current liabilities for learning the meaning of working capital, which is explained below. Current assets – It is rightly observed that “Current assets have a short life span. These type of assets are engaged in current operation of a business and normally used for short–term operations of the firm during an accounting period i.e. within twelve months. The two important characteristics of such assets are, (i) short life span, and (ii) swift transformation into other form of assets. Cash balance may be held idle for a week or two, account receivable may have a life span of 30 to60 days, and inventories may be held for 30 to 100 days.

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

Current liabilities—The firm creates a Current Liability towards creditors (sellers) from whom it has purchased raw materials on credit. This liability is also known as accounts payable and shown in the balance sheet till the payment has been made to the creditors. The claims or obligations which are normally expected to mature for payment within an accounting cycle are known as current liabilities. These can be defined as “those liabilities where liquidation is reasonably expected to require the use of existing resources properly classifiable as current assets, or the creation of other current assets, or the creation of other current liabilities.”

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

**Structure of Working Capital**

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

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

Figure .1 depicting ‘Working Capital Cycle’ makes it clear that the amount of cash is obtained mainly from issue of shares, borrowing and operations. Cash funds are used to purchase fixed assets, raw materials and used to pay to creditors. The raw materials are processed; wages and overhead expenses are paid which in result produce finished goods for sale. Figure 4.1

The sale of goods may be for cash or credit. In the former case, cash is directly received while in later case cash is collected from debtors. Funds are also generated from operation and sale of fixed assets. A portion of profit is used for payment of interest, tax and dividends while remaining is retained in the business. This cycle continues throughout the life of the business firm.

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Classification of Working Capital

The quantitative concept of Working Capital is known as gross working capital while that under qualitative concept is known as net working capital.

Working capital can be classified in various ways. The important classifications are as given below:

Conceptual classification – There are two concept of working capital quantitative and qualitative. The quantitative concept takes into account as the current assets while the qualitative concept takes into account the excess of current assets over current liabilities. Deficit of working capital exists where the amount of current liabilities exceeds the amount of current assets. The above can be summarized as follows:

(i) Gross Working Capital = Total Current Assets
(ii) Net Working Capital = Excess of Current Assets over Current Liabilities

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

(i) Cash Working Capital – This is calculated from the information contained in profit and loss account. This concept of working capital has assumed a great significance in recent years as it shows the adequacy of cash flow in business. It is based on ‘Operating Cycle Concept’s which is explained later in this chapter.

(ii) Balance Sheet Working Capital – The data for Balance Sheet Working Capital is collected from the balance sheet. On this basis the Working Capital can also be divided in three more types, viz., gross Working Capital, net Working Capital and Working Capital deficit. Classification on the Basis of Variability – Gross Working Capital can be divided in two categories viz., (i) permanent or fixed working capital,
and (ii) Temporary, Seasonal or variable working capital. Such type of classification is very important for hedging decisions.

(i) Temporary Working Capital—Temporary Working Capital is also called as fluctuating or seasonal working capital. This represents additional investment needed during prosperity and favorable seasons. It increases with the growth of the business. "Temporary working capital is the additional assets required to meet the variations in sales above the permanent level.

This can be calculated as follows:

Temporary Working Capital = Total Current Assets – permanent Current Assets

(ii) Permanent Working Capital—It is a part of total current assets which is not changed due to variation in sales. There is always a minimum level of cash, inventories, and accounts receivables which is always maintained in the business even if sales are reduced to minimum. Amount of such investment is called as permanent working capital. “Permanent Working Capital is the amount of working capital that persists over time regardless of fluctuations in sales. This is also called as regular working capital.

Vital Role of Working Capital Management

For smooth running an enterprise, adequate amount of working capital is very essential. Efficiency in this area can help, to utilize fixed assets gainfully, to assure the firm’s long-term success and to achieve the overall goal of maximization of the shareholders, fund. Shortage or bad management of cash may result in loss of cash discount and loss of reputation due to non-payment of obligation on due dates. Insufficient inventories may be the main cause of production held up and it may compel the enterprises to purchase raw materials at unfavorable rates. Like-wise facility of credit sale is also very essential for sales promotions. It is rightly observed that “many a times business failure takes place due to lack of working capital”. Adequate working capital provides a cushion for bad days, as a concern can pass its period of depression without much difficulty. O’ Donnel et al. correctly explained the significance of adequate working capital and mentioned that to avoid interruption in the production schedule and
maintain sales, a concern requires funds to finance inventories and receivables.” The adequacy of cash and current assets together with their efficient handling virtually determines the survival or demise of a concern. An enterprise should maintain adequate working capital for its smooth functioning. Both, excessive working capital and inadequate working capital will impair the profitability and general health of a concern. The dangers of excessive working capital are as follows:

Heavy investment in fixed assets – A concern may invest heavily in its fixed assets which are not justified by actual sales. This may create situation of over capitalization.

Reckless purchase of materials- Inventory is purchased recklessly which results in dormant slow moving and obsolete inventory. At the same time it may increase the cost due to mishandling, waste, theft, etc.

Speculative tendencies -Speculative tendencies may increase and if profit is increased dividend distribution will also increase. This will hamper the image of a concern in future when speculative loss may start.

Liberal credit - Due to liberal credit, size of accounts receivables will also increase. Liberal credit facility can increase bad debts and wrong practices will start, regarding delay in payments.

Carelessness - Excessive working capital will lead to carelessness about costs which will adversely affect the profitability.

Paucity of working capital is also bad and has the following dangers:

1. Implementation of operating plans becomes difficult and a concern may not achieve its profit target.

2. It is difficult to pay dividend due to lack of funds.

3. Bargaining capacity is reduced in credit purchases and cash discount could not be availed.

4. An enterprise loses its reputation when it becomes difficult even to meet day-to-day commitments.

5. Operating inefficiencies may creep in when a concern cannot meet it financial promises.
6. Stagnates growth as the funds are not available for new projects.

7. A concern will have to borrow funds at an exorbitant rate of interest in case of need.

8. Sometimes, a concern may be bound to sale its product at a much reduced rates to collect funds which may harm its image.

**Meaning of Working Capital Management**

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

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

(1) To determine the magnitude of current assets or “level of working capital” and

(2) To determine the mode of financing or “hedging decisions.”

**Significance of Working Capital Management**

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

Working capital has acquired a great significance and sound position in the recent past for the twin objects of profitability and liquidity. In period of rising capital costs and scare funds, the working capital is one of most important areas requiring management
review. It is rightly observed that, “Constant management review is required to maintain appropriate levels in the various working capital accounts.”

Mainly the success of a concern depends upon proper management of working capital so “working capital management has been looked upon as the driving seat of financial manager.”

It consumes a great deal of time to increase profitability as well as to maintain proper liquidity at minimum risk. There are many aspects of working capital management which make it an important function of the finance manager. In fact we need to know when to look for working capital funds, how to use them and how measure, plan and control them.

A study of working capital management is very important for internal and external experts. Sales expansion, dividend declaration, plants expansion, new product line, increase in salaries and wages, rising price level, etc., put added strain on working capital maintenance. Failure of any enterprise is undoubtedly due to poor management and absence of management skill.

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


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

**Theory of Working Capital Management**

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

**Principles of Working Capital Management**

The following are the principles of working capital management:

Principles of the risk variation—Risk here refers to the inability of firm to maintain sufficient current assets to pay its obligations. If working capital is varied relative to sales, the amount of risk that a firm assumes is also varied and the opportunity for gain or loss is increased. In other words, there is a definite relationship between the degree of risk and the rate of return. As a firm assumes more risk, the opportunity for gain or loss increases. As the level of working capital relative to sales decreases, the degree of risk increases. When the degree of risk increases, the opportunity for gain and loss also increases. Thus, if the level of working capital goes up, amount of risk goes down, and vice-versa, the opportunity for gain is like-wise adversely affected.

Principle of equity position—According to this principle, the amount of working capital invested in each component should be adequately justified by a firm’s equity position. Every rupee invested in the working capital should contribute to the net worth of the firm.

Principle of cost of capital—this principle emphasizes that different sources of finance have different cost of capital. It should be remembered that the cost of capital moves inversely with risk. Thus, additional risk capital results in decline in the cost of capital.

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Principle of maturity of payment—a company should make every effort to relate maturity of payments to its flow of internally generated funds. There should be the least disparity between the maturities of a firm’s short-term debt instruments and its flow of internally generated funds, because a greater risk is generated with greater disparity. A margin of safety should, however, be provided for any short-term debt payment.

**Operating Cycle**

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

i. Conversion of cash into raw materials.

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

iii. Conversion of work in process into finished goods.

iv. Conversion of finished goods into debtors and bills receivables through sales.

v. Conversion of debtors and bills receivables into cash.

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

**Operating Cycle of Manufacturing Concerns**

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The duration of the operating cycle is equal to the sum of the duration of each of these stages less the credit period allowed by the suppliers of the firm. In symbols,

$$O = R + W + F + D - C$$

Where,

- $O$ = duration of operating cycle.
- $R$ = raw material storage period.
- $W$ = work-in-process period.
- $F$ = finished goods storage period.
- $D$ = debtors collection period, and
- $C$ = creditors payment period.
The components of the operating cycle may be calculated as follows:

Average stock of raw materials and stores

\[ R = \]  

Average raw material and stores consumption per day

Average work-in-process inventory

\[ W = \]  

Average cost of production per day

Average finished goods inventory

\[ F = \]  

Average cost of goods sold per day per day

Average book debts

\[ D = \]  

Average credit sales per day

Average trade creditors

\[ C = \]  

Average credit purchase per day

**Account Receivable Management**

Accounts receivable represent the amount due from customers (book debts) or debtors as a result of selling goods on credit. “The term debtors is defined as ‘debt’ owned to the firm by customers arising from sale of goods or services in the ordinary
course of business.” The three characteristics of receivables—the element of risk, economic value and futurity explain the basis and the need for efficient management of receivables. The element of risk should be carefully analyzed. Cash sales are totally riskless but not the credit sales, as the same has yet to be received. To the buyer the economic value in goods and services process immediately at the time of sale, while the seller expects an equivalent value to be received later on. The cash payment for goods and services received by the buyer will be made by him in a future period. The customer from whom receivables or book debts have to be collected in future are called Trade debtor and represent the firm’s claim on assets.

Receivables management, also termed as credit management, deals with the formulation of credit policy, in terms of liberal or restrictive, concerning credit standard and credit period, the discount offered for early payment and the collection policy and procedures undertaken. It does so in such a way that taken together these policy variables determines an optimal level of investment in receivables where the return on that investment is maximum to the firm. The credit period extended by business firm usually ranges from 15 to 60 days. When goods are sold on credit, finished goods get converted into accounts receivable (trade debtors) in the books of the seller. In the books of the buyer, the obligation arising from credit purchase is represented as accounts payable (trade creditors). “Accounts receivable is the total of all credit extended by a firm to its customer.”

A firm’s investment in account receivable depends upon how much it sells on credit and how long it takes to collect receivable. Accounts receivable (or sundry debtors) constitute the 3rd most important assets category for business firm after plant and equipment and inventories and also constitute the 2nd most important current assets category for business firm after inventories.

Poor management of accounts receivables are: neglect of various overdue account, sharp rise in the bad debt expense, and the collection of debts expense and taking the discount by customers even though they pay after the discount date and even after the net date. Since accounts receivable represent a sizable investment on the part of most firms in the case of public enterprises in India it forms 16 to 20 per cent of current assets. Efficient management of these accounts can provide considerable saving to the firm. Factors involving in Receivable management:
1. The terms of credit granted to customers deemed creditworthy.
2. The policies and practices of the firm in determining which customers are to be granted credit.
3. The paying practices of credit customers.
4. The vigor of the sellers, collection policies and practice.
5. The volume of credit sales.

**Goals of Receivable Management**

The basic goal of credit management is to maximize the value of the firm by achieving a tradeoff between the liquidity (risk and profitability). The purpose of credit management is not to maximize sales, nor to minimize the risk of bad debt. If the objective were to maximize sales, then the firm would sell on credit to all. On the contrary, if minimization of bad debt risk were the aim, then the firm would not sell on credit to anyone. In fact, the firm should manage its credit in such a way that sales are expanded to an extent to which risk remains within an acceptable limit. Thus to achieve the goal of maximizing the value, the firm should manage its trade credit.

The efficient and effective credit management does help to expand sales and can prove to be an effective tool of marketing. It helps to retain old customers and win new customers. Well administered credit means profitable credit accounts. The objectives of receivable management is to promote sales and profits until that point is reached where the return on investment is further funding of receivables is less than the cost of funds raised to finance that additional credit.

Granting of credit and its management involve costs. To maximize the value of the firm, these costs must be controlled. These thus include the credit administration expenses, b/d losses and opportunity costs of the funds tied up in receivable. The aim of credit management should be to regulate and control these costs, not to eliminate them altogether. The cost can be reduced to zero, if no credit is granted. But the profit foregone on the expected volume of sales arising due to the extension of credit.

**Debtors involve funds, which have an opportunity cost. Therefore, the investment in receivables or debtors should be optimized. Extending liberal credit pushes sales and**
thus results in higher profitability but the increasing investment in debtor’s results in increasing cost. Thus a trade off should be sought between cost and benefits to bring investment in debtors at an optimum level. Of course the level of debtors, to a great extent is influenced by external factors such as industry norms, level of business activity, seasonal factors and the degree of completion. But there are a lot of internal factors include credit terms, standards, limits and collection procedures. The internal factors should be well administered to optimize the investment in debtors.

**Credit Management**

In order that the credit sales are properly managed it is necessary to determine following factors:

1. Credit Policy
2. Credit Evaluation of Individual Buyers
3. Credit Sanction Decisions
4. Control and Monitoring of Receivables

**Credit Policy**

The first stage of credit sales is to decide policy in which most important variable is whether credit sales should be made or not and if yes to what extent i.e. what percentage of sales should be done on cash and what percentage on credit. The discussion with cement companies marketing and financé department clearly suggest that the credit policy is more dependent upon market forces and less on company specially in periods when there is excessive competition which has happened a number of times in the history of cement industry after decontrol and manufactures have been forced to provide credit if they wanted full utilization of capacity. If in the market there is practice of providing credit, those companies who do not fall in line have lower sales and so lower utilization of instilled capacity. The management has to weigh whether it should avoid risk of realization and problem of arranging funds for larger sales on credit or decide for reduced capacity utilization thereby resulting in higher cost per ton of cement produced. Actually the policy should
be based on cost benefit analysis of these factors but often policy is decided without detailed calculations. In actual practice when one waits to push sales the marketing department pressurizes the management to provide liberal credit to buyers to realize sales targets.

Credit Rating

The second virtual point of credit policy is to whom to give credit and whom it should be denied. Whether it should be given to everyone or on selective basis? As per standards one can workout impact of credit sales on profits by following formulae:

\[ \Delta P = \Delta S (1-V) - K \Delta I - B, \Delta S \]

in the above formula

\( \Delta P = \) Change in profit
\( \Delta S = \) Change in sales
\( V = \) Ratio of variable cost to sales
\( K = \) Cost of capital i.e. interest cost of credit
\( \Delta I = \) Increase in receivables investment
\( B = \) Bad debts ratio on additional sales

The change in profits (\( \Delta P \)) is dependent upon ratio of variable cost and fixed cost and change in sales. The figure is worked out by deducting variable cost from sales i.e. Sales minus variable cost are change in profits.

The above formula appears to be very simple but for policy purposes it requires that policy maker should be able to estimate precisely the impact of credit on sales value, the variable cost and bad debts besides the cost of capital. In practice besides the cost of capital, it is very difficult to measure extent of increase in sales as a result of credit and it is only broad estimate of sales department. Similarly, it is very difficult if not impossible to workout likely bad debts. The variable cost can be worked out with great precision if proper costing system is maintained. Because of difficulties in quantifying various variables in the formulae often credit policy is decided without working details on prevailing market conditions and the need of the company to push
sales at a point of time. It has been by various companies that no details are worked.

**Credit Period**

The credit period is the time length for which seller agrees to provide credit to the buyers. It varies according to the practice of trade and varies between 15 to 60 days. In some cases for an early payment pre-agreed discount is given to induce buyer make an early payment. For late payment in the agreement there is provision for interest payment by buyer. If credit is given for longer period it induces to push up sales but this is true only when one provides longer period credit than competitors. The customer-distributor, dealer, consumers is attracted to a firm who provides longer period credit. The impact of credit on profits and sales can be worked out from the following formula:

\[ \Delta P = \Delta S (1-V)K\Delta 1-b, \Delta S \]

The various components are as under:

- \( \Delta P \): Change in profit
- \( \Delta S \): Change in sales
- \( \Delta 1 \): Change in investments receivables
- \( V \): Ratio of variable cost to sales
- \( K \): Cost of giving credit
- \( b \): bad debits ratio to increased credit

The discussion with the industry suggests that they rarely take decision on period of credit based on formula. It is market conditions and practices in the trade, which decides the period of credit and hardly any calculations of cost are done. In practice it is marketing department whose advice plays an important and deciding role. In the period when sales have to be pushed up more credit is provided and there is no uniform policy overtime. During rainy season (July-Sep.) when demand is generally slack more liberal credit is granted than rest of the year. Further, when stocks accumulate due to sluggish sales, producers accept the terms of their customers and traders about the period of credit but when market conditions are tight, the seller becomes more strict in providing credit.
Optimum Credit Policy

Credit policy refers to those decision variables that influence the amount of trade credit i.e. the investment in receivables. The firm’s investment in receivable are affected by general economic conditions, industry norms, pace of technological change, competition etc. Though the firm has no control on these factors, yet they have a great impact on it and it can certainly influence the level of trade credit through its credit policy within their constraints imposed externally. The purpose of any commercial enterprise is the earning of profit. Credit itself is utilized to increase sales, but sales must return a profit. Further, whenever some external factors change, the firm can accordingly adopt its credit policy. R. J. Chambers says, “The responsibility to administer credit and collection policies may be assigned to a financial executive or marketing executive or both of them jointly depending upon the original structure and the objectives of the firm.”

Different types of credit policy are:

1. Loose or Expansive Credit Policy– Firms following this policy tend to sell on credit to customers very liberally. Credits are granted even to those whose credit worthiness is not proved, not known and are doubtful.

Advantages of Loose or Expansive Credit Policy:

(i) Increase in Sales (higher sales),

(ii) Increase in profit (higher profit),

Disadvantages of Loose or Expansive Credit Policy:

(i) Heavy bad/debts.

(ii) Problem of liquidity

(iii) Increase in cost of credit management.
2. Tight or Restrictive Credit Policy—Firms following this policy are very selective in extending credit. They sell on credit, only to those customers who had proved credit worthiness.

**Advantages of Tight of Restrictive Credit Policy:**

(i) Minimize cost.

(ii) Minimize chances of bad debts.

(iii) Higher sales in long run. (iv) Higher profit in long run.

(v) Do not pose the serious problem of liquidity. Disadvantages of Tight or Restrictive Credit Policy: (i) Restrict Sales.

(ii) Restrict Profit Margin. Benefits of Credit Extension:

i. Increases the sales of the firm.

ii. Makes the credit policy liberal.

iii. Increase the profits of the firm

iv. The market value of the firms share would rise.

**Cost of Credit Extension:**

i. Bad debt losses

ii. Production and selling cost

iii. Administrative expenses

iv. Cash discounts and opportunity cost.
Aspects of Credit Policy: (i) Credit terms

(a) Credit Period

(b) Cash Discounts

(ii) Credit Standard

(iii) Collection policy or collection efforts.

(i) Credit terms – The stipulations under which the firm sells on credit to its customers are called credit terms.

(a) Credit Period – The time duration for which credit is extended to the customers is referred to as credit period. It is the length of time for customers under which they are allowed to pay for their purchases. It is generally varies between 15-60 days. When a firm does not extend any credit the credit period would obviously be zero. It is generally stated in terms of a net date, for example, if firm allows 30 days of credit with no discount to induce early payments credit then its credit terms are stated at ‘net 30’. Usually the credit period of the firm is governed by industry norms, but firms can extend credit for longer duration to stimulate sales. If the firm’s bad debts build up, it may tighten up its credit policy as against the industry norms. According to Martin H. Seidhen, “Credit period is the duration of time for which trade credit is extended. During this period the overdue amount
must be paid by the customer. The length of credit period directly affects the volume of investment in receivables and indirectly the net worth of the company. A long credit period may blast sales but it also increase investment in receivables and lowers the quality of trade credit.”

(b) Cash Discounts – It is another aspect of credit terms. Many firms offer to grant cash discount to their customers in order to induce them to pay their bill early. The cash discount terms indicate the rate of discount and the period for which discount has been offered. If a customer does not avail this offer, he is expected to make the payment by the net date. In the words of Martin H. Seiden “Cash Discount prevents debtors from using trade credit as a source of Working Capital.”

Liberalizing the cash discount policy may mean that the discount percentage is increased and or the discount period is lengthened. Such an action tends to enhance sales (because the discount is regarded as price reduction), reduce the average collection period (as customers pay promptly). Cash Discount is a premium on payment of debts before due date and not a compensation for the so-called prompt payment.

(iii) Credit Standard - The credit standard followed by the firm has an impact of sales and receivables. The sales and receivables level are likely to be high, if the credit standard of the firm are relatively low. In contrast, if the firm has relatively low credit standard, the sales and receivables level are expected to be relatively high. The firm’s credit standards are influenced by three “C” of credit. (a) Character – the willingness of the customers to pay, (b) Capacity – the ability of the customers to pay, and (c) Condition – the prevailing economic conditions.

Normally a firm should lower its credit standards to the extent profitability of increased sales exceed the associated costs. The cost arising due to credit standard realization are administrative cost of supervising additional accounts and servicing increased volume of receivables, bad debt losses, production and selling cost and cost resulting from the slower average collection period.

The extent to which credit standard can be liberalized should depend upon the matching between the profits arising due to increased sales and cost to be
incurred on the increased sales.

(iii) Collection policy- This policy is needed because all customers do not pay the firm’s bill in time. There are certain customers who are slow payers and some are non-payers. Therefore he collection policy should aim at accelerating collections from slow payers and non-payers and reducing bad debt losses. According to R. K. Mishra, “A collection policy should always emphasize promptness, regularity and systematization in collection efforts. It will have a psychological effect upon the customers, in that; it will make them realize the attitude of the seller towards the obligations granted.”

The collection program of the firm aimed at timely collection of receivables, any consist of many things like monitoring the state of receivable, dispatch of letter to customers whose due date is approaching, telegraphic and telephone advice to customers around the due date, threat of legal action to overdue accounts, legal action against overdue accounts.

The firm has to be very cautious in taking the steps in order to collect from the slow paying customers. If the firm is strict in its collection policy with the permanent customers, who are temporarily slow payers due to their economic conditions, they will get offended and may shift to competitors and the firm may lose its permanent business. In following an optimal collection policy the firm should compare the cost and benefits. The optimal credit policy will maximize the profit and will consistent with the objective of maximizing the value of the firm.

Credit Evaluation

Before granting credit to a prospective customers the financial executive must judge, how creditworthy is the customer. In judging the creditworthiness of a customer, often financial executive keep in mind as basic criteria the four (i) Capital –refers to the financial resources of a company as indicated primarily by the financial statement of the firm. (ii) Capacity – refers to the ability of the customers to pay on time. (iii) Character – refers to the reputation of the customer for honest and fair dealings. (iv) Collateral – represents the security offered by the customer in the form of mortgages. Credit evaluation involves a large number of activities ranging from credit investigation to contact with customers, appraisal review, follow up, inspection and recovery. These
activities required decision-making skills which can partly be developed through experience but partly it has to be learned externally. This is particularly true in area of pre-credit appraisal and post-credit follow up.

It is an important element of credit management. It helps in establishing credit terms. In assessing credit risk, two types of error occur – (i) A good customer is misclassified as a poor credit risk. (ii) A bad customer is misclassified as a good credit risk.

Both the errors are costly. Type (i) leads to loss of profit on sales to good customer who are denied credit. Type (ii) leads in bad debt losses on credit sales made to risky customer. While misclassification errors cannot be eliminated wholly, a firm can mitigate their occurrence by doing proper credit evaluation.

Three broad approaches used for credit evaluation are:

A. Traditional Credit Analysis - This approach to credit analysis calls for assuming a prospective customer in terms of 5 of credit: (i) Character, (ii) Capacity, (iii) Capital, (iv) Collateral, and (v) Conditions.

To get the information on the 5 firm may rely on the following.

1. Financial statements
2. Bank references
3. Trade references
4. Credit agencies
5. Experience of the firm
6. Prices and yields on securities

B. Sequential Credit Analysis – This method is more efficient method than above method. In this analysis, investigation is carried further if the benefits of such analysis outweigh its cost.

C. Numerical Credit Scoring – This system involves the following steps.

1. Identifying factors relevant for credit evaluation.
2. Assign weights to these factors that reflect their relative importance.
3. Rate the customer on various factors, using a suitable rating scale (usually a 5 pt. Scale or a 7pt. Scale is used).

4. For each factor, multiply the factor rating with the factor weight to get the factor score.

5. Add all the factors score to get the overall customer rating index.

6. Based on the rating index, classify the rating index.

D. Discriminant Analysis - The credit index described above is somewhat ad hoc in nature and is based on weight which is subjective in nature. The nature of discriminate analysis may be employed to construct a better risk index.

Under this analysis the customers are divided into two

Categories:

1. Who pay the dues (X)

2. Who have defaulted (O)

   The straight line seems to separate the X’s from O’s, not completely but does a fairly good job of segregating the two groups.

   The equation of this straight line is

   \[ Z = 1 \text{Current Ratio} + 0.1 \text{return on equity} \]

   A customer with a Z score less than 3 is deemed credit worthy and a customer with a Z score less than 3 is considered not credit worthy i.e. the higher the Z score the stronger the credit rating.

(V) Risk Classification Scheme - On the basis of information and analysis in the credit investigation process, customers may be classified into various risk categories.

Risk Categories Description

1. Customers with no risk of default

2. Customer with negligible risk of default (< 2%)

3. Customer with less risk of default (2% to 5%)

4. Customer with some risk of default (5% to 10%)
5. Customer with significant risk of default (> 10%)

Credit Granting Decision - After assessing the credit worthiness of a customer, next step is to take credit granting decision.

There are two possibilities: (i) No repetition of order.

Profit = P (Rev-Cost) – (1-P) Cost

Where P is the probability that the customer pays his dues, (1-P) is the probability that the customer defaults, Rev is revenue for sale and cost is the cost of goods sold.

The expected profit for the refuse credit is 0. Obviously, if the expected profit of the course of action offer credit is positive; it is desirable to extend credit otherwise not.

(ii) Repeat Order - In this case, this would only be accepted only if the customer does not default on the first order. Under this, once the customer pays for the first order, the probability that he would default on the second order is less than the probability of his defaulting on the first order. The expected profit of offering credit in this case.

Expected profit on initial order + Probability of payment and repeat order x expected profit on repeat order.

\[ P1 \times (Rev1 - Cost1) - (1-P1) Cost1 + P1 \times [P2(Rev2-Cost2)-(1 - P2) Cost2] \]

The optimal credit policy, and hence the optimal level of accounts receivable, depends upon the firm’s own unique operating conditions. Thus a firm with excess capacity and low variable production cost should extend credit more liberally and carry a higher level of accounts receivable than a firm operating a full capacity on a slim profit margin. When a sale is made, the following events occur:

i. Inventories are reduced by the cost of goods sold.

ii. Accounts receivable are increased by the sales price, and
iii. The differences are recorded as a profit. If the sale is for cash.

Generally two methods have been commonly suggested for monitoring accounts receivable.

(1) Traditional Approach
   (a) Average collection period
   (b) Aging Schedule

(2) Collection Margin approach or Payment Pattern Approach
   (a) Average Collection Period (AC): It is also called Day Sales Outstanding (DSOI) at a given time ‘t’ may define as the ratio of receivable outstanding at that time to average daily sales figure.

   According to this method accounts receivable are deemed to be in control if the ACP is equal to or less than a certain norm. If the value of ACP exceeds the specified norm, collections are considered to be slow.

   If the company had made cash sales as well as credit sales, we would have concentrated on credit sales only, and calculate average daily credit sales.

   The widely used index of the efficiency of credit and collections is the collection period of number of day’s sales outstanding in receivable. The receivable turnover is simply ACP/360 days. Thus if receivable turnover is six times a year, the collection period is necessarily 60 days.

   (b) Aging Schedule – An aging schedule breaks down a firm’s receivable by age of account. The purpose of classifying receivables by age group is to gain a closer control over the quality of individual accounts. It requires going back to the receivables’ ledger where the dates of each customer’s purchases and payments are available.

   To evaluate the receivable for control purpose, it may be considered desirable to compare this information with earlier age classification in that very firm and also to compare this information with the experience of other firms of same nature. Financial executives get such schedule prepared at periodic intervals for control purpose.

   So we can say Aging Schedule classifies outstanding accounts receivable at a given point of time into different age breakers. The actual aging schedule of the firm is
compared with some standard aging schedule to determine whether accounts receivable are in control. A problem is indicated if the actual aging schedule shows a greater proportion of receivable, compared with the standard aging schedule, in the higher age group. An inter firm comparison of aging schedule of debtors is possible provided data relating to monthly sales and collection experience of competitive firm are available. This tool therefore, cannot be used by an external analyst who has got no approach to the details of receivable.

The above both approaches have some deficiencies. Both methods are influenced by pattern of sales and payment behavior of customer. The aging schedule is distorted when the payment relating to sales in any month is unusual, even though payments relating to sales in other months are normal.

II. Payment Pattern Approach - This pattern is developed to measure any changes that might be occurring in customer’s payment behavior.

It is defined in terms of proportion or percentage. For analyzing payment pattern of several months, it is necessary to prepare a conversion matrix which shows the credit sales in each month and the pattern of collection associated with it.

The payment pattern approach is not dependent on sales level. It focuses on the key issue, the payment behavior. It enables one to analyze month by month pattern as against the combined sales and payment patterns.

From the collection pattern, one can judge whether the collection is improving, stable, or deteriorating. A secondary analysis is that it provides a historical record of collection percentage that can be useful in projecting monthly receipts for each budgeting period.

Control of Accounts Receivable

Some of the important techniques for controlling accounts receivable are ratio analysis, discriminate analysis, decision tree approach, and electronic data processing. Information system with regard to receivables turnover, age of each account, progress of collection size of bad debt losses, and number of delinquent accounts is also used as one of the control measures.

Ratio analysis is widely used in the control of accounts receivable. Some of the
important ratios used for this purpose are discussed below:

(1) **Average collection Period (Receivables x 365/Annual Credit Sales):**

    The average collection period indicates the average time it takes to convert receivables into cash. Too low an average collection period may reflect an excessively restrictive credit policy and suggest the need for relaxing credit standards for an acceptable account. On the other hand too high an average collection period may indicate an excessively liberal credit policy leading to a large number of receivables being past due and some being not collectable.

(2) **Receivables Turnover (Annual Credit Sales/Receivables):**

    This ratio also indicates the slowness of receivables. Both the average collection period ratio and receivables ratio must be analyzed in relation to the billing terms given on the sales. If the turnover rates are not satisfactory when compared with prior experience, average industry turnover and turnover ratios of comparable companies in the same industry, an analysis should be made to determine whether there is any laxity in the credit policy or whether the problem is in collection policy.

(3) **Receivables to Sales (Receivables/Annual Credit Sales x100)**

    Receivables can be expected to fluctuate in direct relation to the volume of sales, provided that sales terms and collection practices do not change. The tendency towards more lenient credit extension as would be suggested by slackening of collections and increase in the number of slow paying accounts needs to be detected by carefully watching the relationship of receivables to sales. When credit sales figures for a period are not available, total sales figures may be used. The receivables figures in the calculation ordinarily represent year-end receivables. In the case of firms with seasonal sales, year-end receivables figures may be deceptive. Therefore, an average of the monthly closing balances figures may be more reliable.

(4) **Receivables as percentage of Current Assets (Receivables/Total Current Assets Investment)**

    The ratio explains the amount of receivables per rupee of current asset
investment and its size in current assets. Comparison of the ratio over a period offers an index of a firm’s changing policies with regard to the level of receivables in the working capital.

Some other ratios are:

1. Size of receivable = receivable/total current assets
2. Size of debtors = debtors/total current assets
3. Size of loans and advances = loans and advances/total current assets

The size of receivables of selected companies has been given in table 4.2

**Size of Receivables of the Selected Cement Companies for the years**

**from 2007-08 to 2011-12**

<table>
<thead>
<tr>
<th>Year</th>
<th>ACC</th>
<th>Maihar</th>
<th>Ultratech</th>
<th>Ambuja</th>
<th>Prism `</th>
<th>Cement</th>
<th>Jaypee</th>
<th>Industry Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007-08</td>
<td>0.68</td>
<td>0.52</td>
<td>0.35</td>
<td>0.58</td>
<td>0.54</td>
<td>0.53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008-09</td>
<td>0.61</td>
<td>0.43</td>
<td>0.35</td>
<td>0.55</td>
<td>0.72</td>
<td>0.53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009-10</td>
<td>0.67</td>
<td>0.46</td>
<td>0.52</td>
<td>0.63</td>
<td>0.79</td>
<td>0.61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010-11</td>
<td>0.64</td>
<td>0.43</td>
<td>0.54</td>
<td>0.61</td>
<td>0.84</td>
<td>0.61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011-12</td>
<td>0.62</td>
<td>0.38</td>
<td>0.54</td>
<td>0.66</td>
<td>0.87</td>
<td>0.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company Average</td>
<td>0.64</td>
<td>0.44</td>
<td>0.46</td>
<td>0.61</td>
<td>0.75</td>
<td>0.58</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 4.4 The size of receivable of all the cement companies shows fluctuating trend

[31]
throughout the study period except UltraTech, and Prism. Both the companies show increasing trend. The minimum size of receivable in ACC is 0.61 (2008-09), Maihar is 0.38 (2011-12), UltraTech is 0.35 (2007-08) and (2008-09), Prism Cement is 0.55 (2008-09) and in Jaypee Cement is 0.54 (2007-08). The maximum size of receivable in ACC is 0.66 (2007-08), Maihar is 0.52 (2007-08), UltraTech is 0.54 (2011-12), and Prism cement is 0.66 (2011-12) and in Jaypee cement is 0.87 (2011-12). The study of the composition of receivables is a very important tool to evaluate the management of receivables. It assists to The average collection period of selected cement companies has been given in table

**Average Collection Period in Selected Cement Companies for the years from 2007-08 to 2011-2012 (in days) Table 4.3**

<table>
<thead>
<tr>
<th>Year</th>
<th>ACC</th>
<th>Maihar</th>
<th>UltraTech</th>
<th>Prism</th>
<th>Jaypee</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007-08</td>
<td>34</td>
<td>36</td>
<td>7</td>
<td>46</td>
<td>18</td>
</tr>
<tr>
<td>2008-09</td>
<td>43</td>
<td>36</td>
<td>7</td>
<td>47</td>
<td>20</td>
</tr>
<tr>
<td>2009-10</td>
<td>43</td>
<td>33</td>
<td>8</td>
<td>49</td>
<td>22</td>
</tr>
<tr>
<td>2010-11</td>
<td>41</td>
<td>27</td>
<td>10</td>
<td>48</td>
<td>37</td>
</tr>
<tr>
<td>2011-12</td>
<td>26</td>
<td>28</td>
<td>10</td>
<td>37</td>
<td>47</td>
</tr>
<tr>
<td>Company Average</td>
<td>39</td>
<td>32</td>
<td>8</td>
<td>45</td>
<td>29</td>
</tr>
</tbody>
</table>

Source: Based on data provided in Appendix

The minimum Average Collection Period in ACC is 34 (2007-08), Maihar is 27 (2010-11), UltraTech is 7 (2007-08 and 2008-09), Prism Cement is 37 (2011-12) and in Jaypee Cement is 18 (2007-08). The maximum Average Collection Period in ACC is 43 (2008-09 and 2009-10), Maihar is 36 (2007-08 and 2008-09), UltraTech is 10 (2010-11 and 2011-12), and Prism Cement is 49 (2009-10) and in Jaypee Cement is 47 (2011-12).
Inventories occupy the most strategic position in the structure of working capital.

[33]
of most business enterprises. It constitutes the largest component of current asset in most business enterprises. In the sphere of working capital, the efficient control of inventory has passed the most serious problem to the cement mills because about two-third of the current assets of mills are blocked in inventories. The turnover of working capital is largely governed by the turnover of inventory. It is therefore quite natural that inventory which helps in maximize profit occupies the most significant place among current assets.

**Meaning and Definition of Inventory**

In dictionary meaning of inventory is a “detailed list of goods, furniture etc.” Many understand the word inventory, as a stock of goods, but the generally accepted meaning of the word ‘goods’ in the accounting language, is the stock of finished goods only. In a manufacturing organization, however, in addition to the stock of finished goods, there will be stock of partly finished goods, raw materials and stores. The collective name of these entire items is ‘inventory’. The term ‘inventory’ refers to the stockpile of production a firm is offering for sale and the components that make up the production. The inventory means aggregate of those items of tangible personal property which

(i) Are held for sale in ordinary course of business.

(ii) Are in process of production for such sales.

(iii) They are to be currently consumed in the production of goods or services to be available for sale.

Inventories are expandable physical articles held for resale for use in manufacturing a production or for consumption in carrying on business activity such as merchandise; goods purchased by the business which are ready for sale. It is the inventory of the trader who does not manufacture it.

**Finished Goods**

Goods being manufactured for sale by the business which are ready for sale?
Materials

Articles such as raw materials, semi-finished goods or finished parts, which the business plans to incorporate physically into the finished production.

Supplies

“Article, which will be consumed by the business in its operation but will not physically as they are a part of the production

The short inventory may be defined as the material, which is either saleable in the market or usable directly or indirectly in the manufacturing process. It also includes the items which are ready for making finished goods in some other process or by comparing them either by the concern itself and/or by outside parties. In other words, the term inventory means the material having any one of the following characteristics. It may be

1. Saleable in the market,
2. Directly saleable in the manufacturing process of the business,
3. Usable directly in the manufacturing process of the undertaking, and
4. Ready to send to the outside parties for making usable and saleable productions out of it.

In the present study raw materials, stores and spare parts, finished goods and work-in-process have been included inventories. Firm also manufactures inventory to supplies.

Supplies included office and plant cleaning materials (soap, brooms etc. Oil, fuel, light bulbs and the likes). These materials do not directly enter into the production process, but are necessary for production process. Inventory constitutes the most significant part of current assets of a large majority of companies in India. For example, on an average inventories are more than 57 per cent of current assets in public limited companies and about 60.5 percent in govt. companies in India. Therefore it is absolutely imperative to manage inventories efficiently & effectively in order to avoid unnecessary investment in them. An undertaking neglecting the management of inventories will be jeopardizing its long run profitability and may fail ultimately. It is possible for a company to reduce its level of inventories to a considerable degree e.g. 10 to 20 per cent
without any adverse effect on production and sales.

**Management of Inventories**

Inventories consist of raw materials, stores, spares, packing materials, coal, petroleum products, works-in-progress and finished products in stock either at the factory or deposits. It is most important component of current assets in the cement industry and was 42 per cent of total current assets for sample companies as on March 31, 2004. In other industries too it is very important component of total investment.

The maintenance of inventory means blocking of funds and so it involves the interest and opportunity cost to the firm. In many countries especially in Japan great emphasis is placed on inventory management. Efforts are made to minimize the stock of inputs and outputs by proper planning and forecasting of demand of various inputs and producing only that much quantity which can be sold in the market.

The inventory cost is not only interest on stocks but also cost of store building for storage, insurance and obsolesce and movement of inputs from place of storage to the factory where the materials have to be finally used to convert them into finished goods. In Japan industries have adopted concept of JIT (Just in Time) and components, materials are received when required for which detailed instructions are given to suppliers. There are many engineering companies who receive components directly at assembly point and that too only for 3-4 hours requirements at a time. Even in case of bulk materials like iron ore, which is imported from abroad, the minimum possible inventory is kept.

As against this by and large in India the inventory of coal, raw materials and packing materials is very high and many items become junk or obsolete causing heavy loss to the enterprise. Lack of inventory planning in India has been pointed out by various committees but due to uncertainties in supplies, problem of timely receipt of railway wagons, lack of planning and unreliable suppliers the investment in inventories is quite high. The fluctuation in demand affects inventory of finished product of which cement industry has been a victim many times.

The situation in cement industry has been analyzed in this chapter after studying the principles of inventory control and relating it with cement industry.
In case of raw materials the first requirement is to study lead time between the
date of order and receipt in the factory and same is applicable in case of coal.

In case of cement industry the basic raw material i.e. lime stone is not purchased
from the market but form one’s own queries which are within 10 to 15 Km distance from
factory and only in few cases distance is more up to 50 Km. It is transported to curing
mills by trucks, rail or overhead ropeways to the factory. The only uncertainty is with
regard to problem of quarrying in quarries, which may be affected due to labour
problem, problem in supplies of electricity or explosives. But in spite of these factors
industry feels that 3-4 days of stock of raw material is enough. This, from any standard is
on the high side when self-produced raw material is used. Actually for ideal situation
there should be stock for a few hours, requirement and at the most for one day need. The
industry is keeping larger stocks of limestone because of uncertainties in quarrying and
transportation.

**Objectives of Inventory Management**

The primary objectives of inventory management are:

(i) To minimize the possibility of disruption in the production schedule of a firm for
    want of raw material, stock and spares.

(ii) To keep down capital investment in inventories.

So it is essential to have necessary inventories. Excessive inventory is an idle
resource of a concern. The concern should always avoid this situation. The investment
in inventories should be just sufficient in the optimum level. The major dangers of
excessive inventories are:

(i) The unnecessary tie up of the firm’s funds and loss of profit.

(ii) Excessive carrying cost, and

(iii) The risk of liquidity.

The excessive level of inventories consumes the funds of business, which cannot
be used for any other purpose and thus involves an opportunity cost. The carrying cost,
such as the cost of shortage, handling insurance, recording and inspection, are also
increased in proportion to the volume of inventories. This cost will impair the concern
profitability further. On the other hand, a low level of inventories may result in frequent interruptions in the production schedule resulting in under-utilization of capacity and lower sales. The aim of inventory management thus should be to avoid excessive inventory and inadequate inventory and to maintain adequate inventory for smooth running of the business operations. Efforts should be made to place orders at the right time with the right source to purchase the right quantity at the right price and quality.

The effective inventory management should

(i) Maintain sufficient stock of raw material in the period of short supply and anticipate price changes.

(ii) Ensure a continuous supply of material to production department facilitating uninterrupted production.

(iii) Minimize the carrying cost and time.

(iv) Maintain sufficient stock of finished goods for smooth sales operations.

(v) Ensure that materials are available for use in production and production services as and when required.

(vi) Ensure that finished goods are available for delivery to customers to fulfill orders, smooth sales operation and efficient customer service.

(vii) Minimize investment in inventories and minimize the carrying cost and time.

(viii) Protect the inventory against deterioration, obsolescence and unauthorized use.

(ix) Maintain sufficient stock of raw material in period of short supply and anticipate price changes.

(x) Control investment in inventories and keep it at an optimum level.

Problems faced by management:

(i) To maintain a large size inventories for efficient and smooth production and sales operation.

(ii) To maintain only a minimum possible inventory because of inventory holding cost and opportunity cost of funds invested in inventory.

(iii) Control investment in inventories and keep it at the optimum level.
Inventory management, therefore, should strike a balance between too much inventory and too little inventory. The efficient management and effective control of inventories help in achieving better operational results and reducing investment in working capital. It has a significant influence on the profitability of a concern.

**Inventory Control**

Inventory control is concerned with the acquisition, storage, handling and use of inventories so as to ensure the availability of inventory whenever needed, providing adequate provision for contingencies, deriving maximum economy and minimizing wastage and losses. Hence Inventory control refers to a system, which ensures the supply of required quantity and quality of inventory at the required time and at the same time prevent unnecessary investment in inventories. It is one of the most vital phases of material management. Reducing inventories without impairing operating efficiency frees working capital that can be effectively employed elsewhere. Inventory control can make or break a company. This explains the usual saying that “inventories” are the graveyard of a business.

Designing a sound inventory control system is in a large measure for balancing operations. It is the focal point of many seemingly conflicting interests and considerations both short range and long range.

The aim of a sound inventory control system is to secure the best balance between “too much and too little.” Too much inventory carries financial rises and too little reacts adversely on continuity of productions and competitive dynamics. The real problem is not the reduction of the size of the inventory as a whole but to secure a scientifically determined balance between several items that make up the inventory.

The efficiency of inventory control affects the flexibility of the firm. Insufficient procedures may result in an unbalanced inventory. Some items out of stock, other overstocked, necessitating excessive investment. These inefficiencies ultimately will have adverse effects upon profits. Turning the situation round, difference in the efficiency of the inventory control for a given level of flexibility affects the level of investment required in inventory. The less efficient is the inventory control, the greater is the investment required. Excessive investment in inventories increase cost and reduce profits, thus, the effects of inventory control of flexibility and on level of
investment required in inventories represent two sides of the same coin.

Control of inventory is exercised by introducing various measures of inventory control, such as ABC analysis fixation of norms of inventory holdings and reorder point and a close watch on the movements of inventories.

Inventories Control Techniques

ABC Analysis of Inventories

The ABC inventory control technique is based on the principle that a small portion of the items may typically represent the bulk of money value of the total inventory used in the production process, while a relatively large number of items may from a small part of the money value of stores. The money value is ascertained by multiplying the quantity of material of each item by its unit price.

According to this approach to inventory control high value items are more closely controlled than low value items. Each item of inventory is given A, B or C denomination depending upon the amount spent for that particular item. “A” or the highest value items should be under the tight control and under responsibility of the most experienced personnel, while “C” or the lowest value may be under simple physical control.

It may also be clear with the help of the following examples:

“A” Category – 5% to 10% of the items represent 70% to 75% of the money value.

“B” Category – 15% to 20% of the items represent 15% to 20% of the money.

“C” Category – The remaining number of the items represent 5% to 10% of the money

<table>
<thead>
<tr>
<th>Particulars</th>
<th>A item</th>
<th>B item</th>
<th>C item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Requirement</td>
<td>Tight</td>
<td>Moderate</td>
<td>Loose</td>
</tr>
<tr>
<td>Check</td>
<td>Exact Close</td>
<td>Exact Some</td>
<td>Estimated</td>
</tr>
<tr>
<td>Expenditure</td>
<td>Regular</td>
<td>Some</td>
<td>Little No</td>
</tr>
<tr>
<td>Posting Safety</td>
<td>Industrial</td>
<td>Individual</td>
<td>Group/none</td>
</tr>
<tr>
<td>Stock</td>
<td>Low</td>
<td>Medium</td>
<td>Lare</td>
</tr>
</tbody>
</table>

[40]
Money value

The relative position of these items show that items of category A should be under the maximum control, items of category B may not be given that much attention and item C may be under a loose control.

Advantages of ABC Analysis

1. It ensures a closer and a more strict control over such items, which are having a sizable investment in there.
2. It releases working capital, which would otherwise have been locked up for a more profitable channel of investment.
3. It reduces inventory-carrying cost.
4. It enables the relaxation of control for the ‘C’ items and thus makes it possible for a sufficient buffer stock to be created.
5. It enables the maintenance of high inventory turnover rate.

Fixation of Norms of Inventory Holdings

Either by the top management or by the materials department could set the norms for inventories. The top management usually sets monetary limits for investment in inventories. The materials department has to allocate this investment to the various items and ensure the smooth operation of the concern. It would be worthwhile if norms of inventories were set by the management by objectives, concept. This concept expects the top management to set the inventory norms (limit) after consultation with the materials department. A number of factors enter into consideration in the determination of stock levels for individual items for the purpose of control and economy. Some of them are:

1. Lead time for deliveries.
2. The rate of consumption.
3. Requirements of funds.
4. Keeping qualities, deterioration, evaporation etc.
5. Storage cost.
6. Availability of space.
7. Price fluctuations.
8. Insurance cost.
10. Seasonal consideration of price and availability.
11. EOQ (Economic Order Quantity), and
12. Government and other statutory restriction

Any decision involving procurement storage and uses of item will have to be based on an overall appreciation of the influence of the critical ones among them. Material control necessitates the maintenance of inventory of every item of material as low as possible ensuring at the same time, its availability as and when required for production. These twin objectives are achieved only by a proper planning of inventory levels. It the level of inventory is not properly planned, the results may either be overstocking or under stocking. If a large stock of any item is carried it will unnecessarily lock up a huge amount of working capital and consequently there is a loss of interest. Further, a higher quantity than what is legitimate would also result in deterioration. Besides there is also the risk of obsolescence if the end product for which the inventory is required goes out of fashion. Again, a large stock necessarily involves an increased cost of carrying such as insurance, rent handling charges. Under stocking which is other extreme, is equally undesirable as it results in stock outs and the consequent production holds ups. Stoppage of production in turn, cause idle facility cost. Further, failure to keep up delivery schedules results in the loss of customers and goodwill. These two extreme can be avoided by a proper fixation of two important inventory level viz, the maximum level and the minimum level. The fixation of inventory levels is also known as the demand and supply method of inventory control. Carrying too much or too little of the inventories is detrimental to the company. If too little inventories are maintained, company will have to encounter frequent stock outs and incur heavy ordering costs. Very large inventories subjects the companies to heavy inventory carrying cost in addition to unnecessary tie up of capital. An efficient inventory management, therefore, requires the company to maintain inventories at an optimum level where inventory costs are minimum and at the same time there is no stock out
which may result in loss of sale or stoppage of production. This necessitates the
determination of the minimum and maximum level of inventories.

**Minimum Level**

The minimum level of inventories of their reorder point may be determined on the following bases:

1. Consumption during lead-time.
2. Consumption during lead-time plus safety stock.
3. Stock out costs.
4. Customers irritation and loss of goodwill and production hold costs.

To continue production during Lead Time it is essential to maintain some inventories. Lead Time has been defined as the interval between the placing of an order (with a supplier) and the time at which the goods are available to meet the consumer needs.

There are sometimes fluctuations in the lead-time and/or in the consumption rate. If no provision is made for these variations, stock out may take place causing disruption in the production schedule of the company. The stock, which takes care to the fluctuation in demand, varies in lead-time and consumption rate is known as safety stock. Safety stock may be defined as the minimum additional inventory, which serves as a safety margin or buffer or cushion to meet an unanticipated increase in usage resulting from an unusually high demand and or an uncontrollable late receipt of incoming inventory. It can be determined on the basis of the consumption rate, plus other relevant factor such as transport bottleneck, strikes or shutdowns.

In the case of uncertainty, the probabilistic approach may be applied to determine the safety margin. To avoid stock out arising out of such eventualities, companies always carry some minimum level of inventories including safety stock. Safety stock may not be static for all the times. A change in the circumstances and in the nature of industry demand, necessitates are adjusted in its level. In this study an effort has been made to examine how the current companies determine their minimum level for re-order inventories, safety stock, whether a level of study is maintained throughout the year or not.
For each type of inventory a maximum level is set that demand presumably will not exceed as well as a minimum level representative a margin of safety required to prevent out of stock condition. The minimum level also governs the ordering point. An order to sufficient size is placed to bring inventory to the maximum point when the minimum level is reached.

Maximum Level

The upper limit beyond which the quantity of any item is not normally allowed to rise is known as the “Maximum Level”. It is the sum total of the minimum quantity, and ECQ. The fixation of the maximum level depends upon a number of factors, such as, the storage space available, the nature of the material i.e. chances of deterioration and obsolescence, capital outlay, the time necessary to obtain fresh supplies, the ECQ, the cost of storage and government restriction.

Re-Order Level

Also known as the ‘ordering level’ the reorder level is that level of stock at which a purchase requisition is initiated by the storekeeper for replenishing the stock. This level is set between the maximum and the minimum level in such a way that before the material ordered for is received into the stores, there is sufficient quantity on hand to cover both normal and abnormal circumstances. The fixation of ordering level depends upon two important factors viz, the maximum delivery period and the maximum rate of consumption.

Re-Order Quantity

The quantity, which is ordered when the stock of an item falls to the reorder level, is know as the reorder quantity or the EOQ or the economic lot size. Although it is not a stock level as such, the reorder quantity has a direct bearing upon the stock level in as much as it is necessary to consider the maximum and minimum stock level in determining the quantity to be ordered. The re-order quantity should be such that, when it is added to the minimum quantity, the maximum level is not exceeded. The re-order quantity depends upon two important factors viz, order costs and inventory carrying
costs. It is, however, necessary to remember that the ordering cost and inventory carrying cost are opposed to each other. Frequent purchases in small quantities, no doubt reduce carrying cost, but the ordering costs such as the cost inviting tenders of placing order and of receiving and inspection, goes up. If on the other hand purchases are made in large quantities, carrying costs, such as, the interest on capital, rent, insurance, handling charges and losses and wastage, will be more than the ordering costs. The EOQ is therefore determined by balancing these opposing costs.

**Economy Order Quantity**

The EOQ refers to the order size that will result in the lowest total of order and carrying costs for an item of inventory. If a firm place unnecessary orders it will incur unneeded order costs. If a firm places too few order, it must maintain large stocks of goods and will have excessive carrying cost. By calculating an economic order quantity, the firm identifies the number of units to order that result in the lowest total of these two costs.

The constraints and assumption followed:

1. Demand is known-- Using past data and future plans a reasonably accurate prediction of demand can often be made. This is expressed in unit sold in a year.
2. Sales occur at a constant rate-- This model may be used for goods that are sold in relatively constant amount throughout the year. A more complicated model is needed for firms whose sales fluctuate in response to their seasonal cyclical factors.
3. Cost of running of goods is ignored-- Cost associated with storage, delays or lost sales are not considered. These costs are considered in the determination of safety level in the re-order point subsystem.
4. Safety stock level is not considered-- The safety stock level is the minimum level of inventory that the firm wishes to hold as a protection against running out. Since the firm must always be above this level the EOQ need not be considered the safety stock level.

Total Ordering Cost (TOC)\(=\frac{A}{Q}\times O\)
Average Inventory=$Q/2$

Total Carrying Cost (TCC)=$(Q/2)*C$

Total Inventory Cost=TOC+TCC  Total Cost=$(AO/2)+(QC/2)$

Where $A=$total annual demand $Q=$Quantity order in units $O=$Order cost per order $C=$Carrying cost per unit

The basic formula is $EOQ = 2(U)(OC) CC\%PP$

Where 2=mathematical factor that occurs during the deriving of the formula, $U=$Units sold per year, a forecast provided by the marketing department. $OC=$Cost of placing each order for more inventory provided by cost accounting. $CC\%=$ Inventory carrying cost expressed as a percentage of the average value of the inventory, an estimate usually provided by cost accounting. $PP=$ Purchase price per each unit of inventory supplied by the purchasing department.

**Trial and error approach**

Select a number of possible lot (Order) sizes to purchase, then determine the total cost for each lot size chosen, now select the ordering quantity that minimizes the total cost. Quantity Discount and Order Quantity

The standard EOQ analysis is based on the assumption that the price per unit remains constant irrespective of the order size. When quantity discount are available which is often the case, price per unit is influenced by the ordered quantity. This violates the applicability of the EOQ formulas. However the EOQ framework can still be used as a starting point for analyzing the problem.

To determine the optimal order size when quantity discount is available, the following procedures may be followed:

1. Determine the order quantity using the standard EOQ formula assuming no quantity discount.
2. If $Q$ enable the firm to get quantity discount then it represents the optimal order size.
3. If $Q$ is less then the minimum order size required for quantity discount (call it-
G2) compute to change in profit as a result of increasing the order quantity from O1 to O2 as follows.

\[=AD+[A/Q1-A/Q2]O-[Q2((P-D)/2-(Q1PC/2)]\]

= Change in profit, A = total demand, D = discount per unit when quantity discount in available, Q1 = EOR assuming no discount, Q2 = minimum order size required for quantity discount, O = order cost, P = Purchase price without discount, C = carrying cost

4. If change in profit is positive = Q2
   If change in profit is positive = Q1

Uncertainty and Safety Stock

In practice, the demand or usage of inventory is not generally known with certainty. Usually it fluctuates at a given period of time. In this case formula is (Maximum daily usage rate x Maximum lead time) – (Average daily usage rate x Average lead time).

**Reorder Point**

The reorder point is the level of inventory at which the firm places an order in the amount of EOQ. If the firm places the order when the inventory reaches the reorder point, the new goods will arrive before the firm runs out of goods to sell. In designing reorder point subsystem; three items of information are needed as inputs to the subsystem.

1. **Usage rate**-- This is the rate per day at which the item is consumed in production or sold to customers. It is expressed in units. It may be calculated by dividing annual sales by 365 days. If the sales are 50,000 units the usage rate is 50,000/365 = 137 Units per day.

2. **Lead time**-- This is the amount of time between placing an order and receiving goods. This information is usually provided by the purchasing department. The time to allow for an order to arrive may be estimated from a check of the company’s record and the time taken in the past for different suppliers to fill orders.

3. **Safety stock**-- The minimum level of inventory may be expressed in terms of
several days’ sales. The level can be calculated by multiplying the usage rate and time in the number of days that the firm wants to hold as a protection against shortages.

\[
\text{Re-order point} = (\text{Usage rate}) (\text{Lead time} + \text{Days of safety})
\]

\[
= (\text{Lead Time} \times \text{Consumption rate}) + \text{Safety stock}.
\]

The probabilistic approach is found to be cumbersome and unfeasible for a multi period problem. It is proposed an order point whereby an order is placed. When inventory reaches so many units (See Arthur Snyder, “Principle of inventory management,”

\[
\text{Re-order point} \ S (L)+F\sqrt{SR(L)} \ L =
\]

\[
\text{Lead Time}
\]

\[
R = \text{Average number of units per order}
\]

\[
F = \text{Stock out acceptance factor}.
\]

The foregoing analysis is based on certain simplifying assumption. In the real world some additional consideration ought to be taken into account:

(i) Anticipated scarcity of raw material

(ii) Expected price charge

(iii) Obsolescence risk

(iv) Government restriction on inventory

(v) Competitive market.

Pricing of Raw Materials

When issues are made out of various lots purchased at varying prices, the problem arises as to which of the receipt price should be adopted for valuing the materials requisitions.

1. First in first out Materials received first will be issued first. The price of the earliest consignment is taken first and when that consignment is exhausted the price of the next consignment is adopted and so on. This method is suitable in times of falling prices, because the material charge to production will be high while the replacement cost of materials will be low.
2. Last in first out Materials received last will be issued first. The price of the last consignment is taken first and when that consignment is exhausted the price of the second last consignment is adopted and so on. In timing of rising prices this method will show a charge to production, which is closely related to current price levels provided that the last purchase is made recently.

3. Weighted average cost method under this method, material issued is priced at the weighted average cost of material in stock: \( WAC = \frac{\text{Value of material in stock}}{\text{Quantity in stock}} \).

4. Standard price method under this method a standard price is predetermined. The price of issues predetermined for a stated period taken into account all the factors affecting price such as anticipated market trends, transportation charges, and normal quantity of purchase. Standard prices are determined for each material and material requisition is priced at standards irrespective of the actual purchase price. Any difference between the standard and actual price results in materials price variance.

5. Current price

According to this method, material issued is priced at their replacement or realizable price at the time of issue. So the cost at which identical material could be purchased from the market should be ascertained and used for valuing material issues.

**Perpetual Inventory System**

Another method of inventory control is the maintenance of inventory control on a continuous basis. After the material are received into the stores, the storekeeper will arrange for the storing of each item in the allotted rack, bin, shelf or other receptacles and attach a card to each bin for the purpose of making entries there-in, relating to the receipts, issues and balance. The bin card or the locker card, this becomes a perpetual inventory record for each item of stores. If the stores balance is recorded on continuous basis after every receipt and issue, the record is said to be one of perpetual inventory and the method of recording is called the perpetual inventory system. Thus the perpetual inventory is a method of recording store balance after every receipt and issue to facilitate
regular checking and to obviate closing down for stock locking

As a perpetual inventory record, the bin card records the receipt, issues and the balance of every item of stores only in physical quantities, and not in value. This feature of the bin card is in accordance with the accepted principle that the storekeeper true to his designation, should be responsible for the safe keeping of the items of stores entrusted to him, and his accounting for stores should always be in physical quantities and not in value. The perpetual inventory system includes continues stock taking also.

Stocktaking or stock verification is done mainly with a view to finding out whether the book balances as revealed by the stock records agree with the physical or the ground balance. Although, therefore, stock verification is one of the tools of inventory control, and is done for exercising control over the stock of every item, is an integral part of material control for the purpose of preparing the B/S, the physical verification of stock must be done at the end of year.

Such verification at the end of the year is known as the periodical stock taking as against the continuous stocktaking, which is done throughout the year. The periodic stock taking method usually adopted by concerns which cannot maintain perpetual inventory records due to the nature of the items which are usually stored in open yards and not in bins and as a such, bin cards cannot be employed for them, or do not want to maintain such records and employ stock verification staff to do the work of stock checking throughout the year. Under this method of stocktaking, the verification of the whole of the stock and its valuation are accomplished only once at the close of the financial year and difference in stock is adjusted only once. As such, the stock in hand would tend to be accurate for the balance sheet purposes. It is also possible to find out slow moving items. Nevertheless, the periodic inventory has its own disadvantage. In the first place, it becomes necessary to close down the factory on the day of stock taking. Secondly, discrepancies in stock cannot be corrected by an executive action immediately as and when they occur. Thirdly, since all the items are checked only once in a particular day, a surprise verification will not be possible. Lastly, reason for the discrepancies cannot be found out because of the long interval between two consecutive verifications.

These disadvantages of the periodical inventory system are overcome in the case of the perpetual inventory system. Under this method of continuous stock verification the purpose of verification is carried on throughout the year by a specially trained staff. This
duty is to verify a few selected items in details so that each item is checked up a number of times during the year. The day and time of checking not being known to the staff, they are taken by a surprise. As such, not only secrecy of the items to be verified cannot maintain, a manipulation of every type can be prevented. Discrepancies are located, reasons are ascertained, the necessary adjustment is made in the accounting records, and correlative action is taken then and there to prevent their recurrence. The advantages of a continuous stocktaking where perpetual inventory records are maintained may thus be summarized as follows:

(i) The elaborate and costly work involved in periodic stock taking can be avoided.

(ii) The stock verification can be done without the necessity of closing down the factory.

(iii) The preparation of interim financial statement becomes possible.

(iv) Discrepancies are easily located and corrected immediately.

(v) It ensures a reliable check on the stores.

(vi) It exercises a moral influence on the stores staff.

(vii) Fast and slow moving items can be distinguished and the fixation of proper stock levels prevents not only over-stocking, but under-stocking also.

(viii) A perpetual inventory record of the nature of the bin cards enables the storekeeper to keep an eye on the stock levels, and replenish the stock of every item whenever the limit falls to the reorder level.

(ix) It provides reliable information to the management of the number of units, and the value of every item of stores.

(x) It ensures secrecy of the items that are verified.

Factors Influences the Level of each Component of Inventory

**Raw Material Inventory:**

1. The volume of safety stock against material shortages that interrupt production.

2. Considerations of economy in purchase.
3. The outlook for future movements in the price of materials.
4. Anticipated volume of usage and consumption.
5. The efficiency of procurement and inventory control function.
6. The operating costs of carrying the stocks.
7. The costs and availability of funds for investment in inventory.
8. Storage capacity.
9. Re-component cycle.
10. Indigenous or foreign.
11. The lead-time of supply.
12. Formalities for importing.

**Work-in-process Inventory:**

1. The length of the complete production process.
2. Management policies affecting length of process time.
3. Length of process in runs.
4. Action that speed up the production process, e.g. adding second or third production shifts.
5. Management’s skills in production scheduling and control.
7. Sales expectations.
8. Level of sales and new orders.
9. Price level of raw materials used, wages and other items that enter production cost and the value added in production.
10. Customer requirements.
11. Usual period of aging.
Finished Goods Inventory:

1. The policy of the management to gear the production to meet the firm order in hand.
2. The policy to produce for anticipated orders and stock keeping.
3. Goods required or the purpose of minimum and safety stocks.
4. Sales policies of the firm.
5. Need for maintaining stability in production.
6. Price fluctuations for the product.
7. Durability, spoilage and obsolescence.
8. Distribution system.
9. Ability to fill orders immediately.
10. Availability of raw material on seasonal basis while customer’s demand spread throughout the year.
11. Storage capacity.

Stores and Spares Inventory:

1. Nature of the product to be manufactured and its lead-time of manufacture.
2. State of technology involved.
3. Consumption’s patterns.
4. Lead time of supply.
5. Indigenous or foreign.
7. Capacity utilization.
8. Importing formalities.
Some of the important inventory policies relates to:

1. Minimum, maximum and optimum stocks;
2. Safety stocks, order quantities, order levels and anticipated stocks;
3. Waste, scrap spoilage and defective;
4. Policies relating to alternative use;
5. Policies relating to order filling;

Measure of Effectiveness of Inventory Management

1. Size of Inventory = Total inventory/Total Current assets
2. Size of Raw material Inventory = Raw material inventory / total inventory
3. Size of Work in Process Inventory = Work in process Inventory/Total Inventory
4. Size of Stores and Spares parts Inventory = Stores and Spares parts inventory/Total Inventory
5. Size of Finished Goods Inventory = Finished goods inventory/Total inventory
6. Overall inventory turnover ratio = Cost of goods sold/average total inventories at cost
7. Raw material inventory turnover ratio = Annual consumption of Raw material / Average Raw material inventory
8. Work-in-process inventory turnover ratio =Cost of manufacture/average work-in-process inventory at cost
9. Finished Goods inventory turnover ratio = Cost of goods sold / Average finished stock
10. Stores and spare parts inventory turnover ratio = Stores and Spares consumed /Average stock of stores and spares
11. Age of Finished Goods inventory = 365/Finished Goods inventory turnover ratio
12. Average age of raw material inventory = 365/Raw material inventory turnover ratio

14. Age of Stores and spare parts inventory = 365/Stores and spare parts inventory turnover ratio

15. Inventory holding period = 365/Inventory turnover ratio

Control and Review

The efficiency of inventory control affects the flexibility of the firm. There are several tools of inventory control. Some of these are:

(1) The economic order quantity which enables determination of optimal size of order to place on the basis of demand or usage of the inventory.

(2) The technique of safety stocks to overcome problems of uncertainty.

(3) The order point formula, which tells us, the optimal point at which to reorder a particular item of inventory.

Together, these tools provide the means for determining an optimal average level of inventory for the firm. Ratio analysis has a wider application as a measure of inventory control among most manufacturing firms. Some of the important ratios are explained below:

(1) Inventory to Sales (Total Inventory/Sales for the Period)

The ratio explains variations in the level of investment. An increase in inventory levels, substantially beyond that which might be expected from an increase in sales, may reflect such phenomena as the result of a conscious policy shift to higher stock levels, of unintended accumulation of unsold stocks, and of inventory speculation, or simply stocking in anticipation of an almost certain surge of orders.

(2) Inventory Turnover (Cost of Goods Sold/Average Inventory)

The ratio tells us the rapidity with which the inventory is turned over into receivables through sales. Generally, the higher the inventory turnover, the more efficient the management of a firm is. However, a relatively high inventory turnover ratio may be the result of too low a level of inventory and frequent stock outs. Therefore, the ratio must be judged in relation to the past and expected future ratios of the firm and in relations of similar firms or the industry average or both.
(3) Sales to Inventory (Annual Net Sales/Inventory at the End of Fiscal Period)

The ratio indicates the volume of sales in relation to the amount of capital invested in inventories. When inventory for a firm is larger in relation to sales (the condition which causes it to have a lower net sales to inventory ratio than other firms) the firm’s rate of return is less since it has more working capital tied up in inventories than has the firm with a higher ratio.

(4) Inventory to Current Assets (Total Inventory/Total Current Assets)

The ratio indicates the amount of investment in inventory per rupee of current assets investment. Generally an increasing proportion of inventory is indicative of inefficient inventory management. The ratio may also indicate the state of liquidity position of concern. The lower the inventory to current assets lowers the liquidity as compared to other current assets, viz., receivables, cash and marketable securities.

(5) Inventories Expressed in Terms of Number of Days Sales (Inventory/Sales x 365)

The ratio indicates the size of inventory in terms of number of day’s sales. For this purpose first the sales per day are calculated and inventory is divided by the amount of sales per day. The increasing inventory in terms of number of day’s sales may indicate either accumulation of inventory or decline in sales. Inventory for this purpose is assumed to include finished goods only. While the former situation signifies poor inventory management, them later indicates the poor performance of the marketing department.

(6) Sundry Creditor to Inventory (Sundry Creditors/Inventory)

The ratio reveals the extent to which inventories are procured through credit purchases. Inventories for this purpose are assumed to include raw materials and stores and spares only. If the ratio is less than unity, it reveals that the credit available is lower than the total inventory required. It also explains the extent of inventory procured through cash purchases. Indirectly it emphasizes the inventory financing policy of the firm. If the ratio is more than one, it explains that the entire inventory is purchased on credit.

(7) Inventory to Net Working Capital (Inventory/Net Working Capital)

The ratio explains the amount of inventory per rupee of equity/long-term
financed portion of current assets. A higher ratio may mean greater amount of net working capital investment in inventory. In order to control each category of inventory, the following ratios can be calculated.

The size of inventory of selected cement companies has been presented in table 4.4:

**Size of Inventory of Selected Cement Companies for the years from 2007-08 to 2011-12**

<table>
<thead>
<tr>
<th>Year</th>
<th>ACC</th>
<th>Maihar</th>
<th>Ultrtech</th>
<th>Ambuja</th>
<th>Prism</th>
<th>Jaypee</th>
<th>Industry Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007-08</td>
<td>0.27</td>
<td>0.37</td>
<td>0.51</td>
<td>0.40</td>
<td>0.37</td>
<td>0.38</td>
<td></td>
</tr>
<tr>
<td>2008-09</td>
<td>0.31</td>
<td>0.41</td>
<td>0.35</td>
<td>0.38</td>
<td>0.26</td>
<td>0.34</td>
<td></td>
</tr>
<tr>
<td>2009-10</td>
<td>0.27</td>
<td>0.40</td>
<td>0.31</td>
<td>0.29</td>
<td>0.19</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td>2010-11</td>
<td>0.32</td>
<td>0.47</td>
<td>0.36</td>
<td>0.33</td>
<td>0.14</td>
<td>0.33</td>
<td></td>
</tr>
<tr>
<td>2011-12</td>
<td>0.34</td>
<td>0.51</td>
<td>0.41</td>
<td>0.22</td>
<td>0.12</td>
<td>0.32</td>
<td></td>
</tr>
<tr>
<td>Company Average</td>
<td>0.31</td>
<td>0.43</td>
<td>0.39</td>
<td>0.32</td>
<td>0.22</td>
<td>0.33</td>
<td></td>
</tr>
</tbody>
</table>

Source: Based on data provided in Appendix

Five cement companies under study have kept at different levels of inventory during the study period from 2007-08 to 2011-12. Table 4.4 gives a clear picture of inventory kept by the five companies. The size of inventory of all the cement companies’ shows fluctuating trend throughout the study period except India Cement that shows decreasing trend. The minimum size of inventory in ACC is 0.27 (2007-08). Maihar is 0.37 (2007-08) Ultratech is 0.31 (2009-10), Prism Cement is 0.22 (2011-12) and in Jaypee Cement is 0.12 (2011-12). The maximum size of inventory in ACC is 0.34 (2011-12), Maihar is 0.51 (2011-12), Ultratech is 0.51 (2007-08), and Prism Cement is 0.40 (2007-08) and in India Cement is 0.37 (2007-08).
Table 4.5 Inventory holding period of Selected Cement Companies for the years from 2007-08 to 2011-12 (In days)

<table>
<thead>
<tr>
<th>Year</th>
<th>ACC</th>
<th>Maihar</th>
<th>Ultratech</th>
<th>Prism</th>
<th>Jaypee</th>
<th>Industry Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007-08</td>
<td>84</td>
<td>52</td>
<td>153</td>
<td>136</td>
<td>12</td>
<td>110</td>
</tr>
<tr>
<td>2008-09</td>
<td>87</td>
<td>49</td>
<td>135</td>
<td>135</td>
<td>157</td>
<td>113</td>
</tr>
<tr>
<td>2009-10</td>
<td>75</td>
<td>49</td>
<td>113</td>
<td>99</td>
<td>119</td>
<td>91</td>
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<tr>
<td>2010-11</td>
<td>71</td>
<td>43</td>
<td>102</td>
<td>97</td>
<td>113</td>
<td>85</td>
</tr>
<tr>
<td>2011-12</td>
<td>79</td>
<td>62</td>
<td>106</td>
<td>78</td>
<td>121</td>
<td>89</td>
</tr>
<tr>
<td>Company Average</td>
<td>79</td>
<td>51</td>
<td>122</td>
<td>109</td>
<td>127</td>
<td>98</td>
</tr>
</tbody>
</table>

Source: Based on data provided in Appendix

In above table gives a clear picture of inventory holding period kept by the five companies. The inventory-holding period of all the cement companies shows fluctuating trend throughout the study period expect Shree Cement that shows decreasing trend. The minimum inventory holding period in ACC is 71 (2010-11), Maihar is 43 (2010-11), Ultratech is 102 (2010-11), Prism Cement is 78 (2011-12 and in Jaypee Cement is 85 (2010-11).The maximum inventory-holding period in ACC is 87 (2008-09), Maihar is 62 (2011-12), Ultratech is 106 (2011-12), and Prism Cement is 97 (2007-08) and in Jaypee Cement is 113 (2008-09).

**Inventory Turnover (Cost of Goods Sold/Average Inventory)**

The ratio tells us the rapidity with which the inventory is turned over into receivables through sales. Generally, the higher the inventory turnover, the more efficient the management of a firm is. However, a relatively high inventory turnover ratio may be the result of too low a level of inventory and frequent stock outs. Therefore, the ratio must be judged in relation to the past and expected future ratios of the firm and in relations of similar firms or the industry average or both.
Sales to Inventory (Annual Net Sales/Inventory at the End of Fiscal Period)

The ratio indicates the volume of sales in relation to the amount of capital invested in inventories. When inventory for a firm is larger in relation to sales (the condition which causes it to have a lower net sales to inventory ratio than other firms) the firm’s rate of return is less since it has more working capital tied up in inventories than has the firm with a higher ratio.

Inventory to Net Working Capital (Inventory/Net Working Capital)

The ratio explains the amount of inventory per rupee of equity / long-term financed portion of current assets. A higher ratio may mean greater amount of net working capital investment in inventory. The Inventory of net Working Capital of selected cement companies has been given in table 4.6

Inventory to net Working Capital of Selected Cement Companies for the years from 2007-08 to 2011-12

<table>
<thead>
<tr>
<th>Year</th>
<th>ACC</th>
<th>Maihar</th>
<th>Ultratech</th>
<th>Prism</th>
<th>Jaypee</th>
<th>Industry Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007-08</td>
<td>0.85</td>
<td>0.55</td>
<td>0.74</td>
<td>0.69</td>
<td>0.66</td>
<td>0.70</td>
</tr>
<tr>
<td>2008-09</td>
<td>0.66</td>
<td>0.70</td>
<td>0.47</td>
<td>0.64</td>
<td>0.35</td>
<td>0.56</td>
</tr>
<tr>
<td>2009-10</td>
<td>0.63</td>
<td>0.71</td>
<td>0.54</td>
<td>0.46</td>
<td>0.28</td>
<td>0.52</td>
</tr>
<tr>
<td>2010-11</td>
<td>0.91</td>
<td>1.13</td>
<td>0.66</td>
<td>0.48</td>
<td>0.20</td>
<td>0.71</td>
</tr>
<tr>
<td>2011-12</td>
<td>0.97</td>
<td>-2.09</td>
<td>0.86</td>
<td>0.35</td>
<td>0.16</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Company Average 0.80 0.24 0.86 0.52 0.33 0.55

Source: Based on data provided in Appendix

The inventory of net working capital of all the cement company’s shows fluctuating trend throughout the study period except India Cement, which shows decreasing trend. The minimum value of inventory in net working capital in ACC is 0.63 (2009-10), Maihar is -2.09 (2011-12), Ultratech is 0.47 (2008-09), Prism Cement is 0.35 (2011-12) and in Jaypee Cement is 0.16(2011-12).
The maximum value of inventory to net working capital in ACC is 0.97 (2011-12), Maihar is 1.13 (2010-11), Ultratech is 1.86 (2011-12), and Prism Cement is 0.69 (2007-08) and in Jaypee Cement is 0.66 (2007-08).

4.2 Factor Effecting Working Capital

Factors Influencing Working Capital Requirement

Numerous factors can influence the size and need of working capital in a concern. So no set rule or formula can be framed. It is rightly observed that, “There is no precise way to determine the exact amount of gross or net working capital for every enterprise. The data and problem of each company should be analyzed to determine the amount of working capital.

Briefly, optimum level of current assets depends upon following determinants.

Nature of business--Trading and industrial concerns require more funds for working capital. Concerns engaged in public utility services need less working capital. For example, if a concern is engaged in electric supply, it will need less current assets, firstly due to cash nature of the transactions and secondly due to sale of services. However, it will invest more in fixed assets.

In addition to it, the investment varies concern to concern, depending upon the size of business, the nature of the product, and the production technique.

Conditions of supply--If the supply of inventory is prompt and adequate, less funds will be needed. But, if the supply is seasonal or unpredictable, more funds will be invested in inventory. Investment in working capital will fluctuate in case of seasonal nature of supply of raw materials, spare parts and stores.

Production policy--In case of seasonal fluctuations in sales, production will fluctuate accordingly and ultimately requirement of working capital will also fluctuate. However, sales department may follow a policy of off-season discount, so that sales and production can be distributed smoothly throughout the year and sharp, variations in working capital requirement are avoided.

Seasonal Operations--It is not always possible to shift the burden of production and sale to slack period. For example, in case of sugar mill more working capital will be
needed at the time of crop and manufacturing.

Credit Availability-- If credit facility is available from banks and suppliers on favorable terms and conditions, less working capital will be needed. If such facilities are not available more working capital will be needed to avoid risk.

Credit policy of enterprises--In some enterprises most of the sale is at cash and even it is received in advance while, in other sales is at credit and payments are received only after a month or two. In former case less working capital is needed than the later. The credit terms depend largely on norms of industry but enterprise some flexibility and discretion. In order to ensure that unnecessary funds are not tied up in book debts, the enterprise should follow a rationalized credit policy based on the credit standing of the customers and other relevant factors.

Growth and expansion--The need of working capital is increasing with the growth and expansion of an enterprise. It is difficult to precisely determine the relationship between volume of sales and the working capital needs. The critical fact, however, is that the need for increased working capital funds does not follow growth in business activities but precedes it. It is clear that advance planning is essential for a growing concern.

Price level change— with the increase in price level more and more working capital will be needed for the same magnitude of current assets. The effect of rising prices will be different for different enterprises.

Circulation of working capital— less working capital will be needed with the increase in circulation of working capital and vice-versa. Circulation means time required to complete one cycle i.e. from cash to material, from material to work-in-progress, form work-in-progress to finished goods, from finished goods to accounts receivable and from accounts receivable to cash.

Volume of sale-- This is directly indicated with working capital requirement, with the increase in sales more working capital is needed for finished goods and debtors, its vice versa is also true.

Liquidity and profitability—there is a negative relationship between liquidity and profitability. When working capital in relation to sales is increased it will reduce risk and profitability on one side and will increase liquidity on the other side.
Management ability — Proper co-ordination in production and distribution of goods may reduce the requirement of working capital, as minimum funds will be invested in absolute inventory, non-recoverable debts, etc.

External Environment — with development of financial institutions, means of communication, transport facility, etc., needs of working capital is reduced because it can be available as and when needed.

**Determinants of Working Capital**

There are no set rules or formulas to determine the working capital requirement of a firm. A number of factors influence the need and quantum of the working capital of a firm. These are discussed below:

Nature of industry– The composition of an asset is related to the size of a business and the industry to which it belongs. Small companies have smaller proportion of cash, requirements and inventory than large corporations. Need of working capital is thus determined by the nature of an enterprise.

Demand of creditors– Creditors are interested in the security of loans. They want their advances to be sufficiently covered. They want the amount of security in assets which are greater than liabilities.

Cash requirements– Cash is one of the current assets which are essential for the successful operations of the production cycle. Cash should be adequate and properly utilized. A minimum level of cash is always needed to keep the operations going.

General nature of business– The general nature of a business is an important determinant of the level of the working capital. Working capital requirements depends upon the general nature and its activity on work. They are relatively low in public utility concerns in which inventories and receivables are rapidly converted into cash. Manufacturing organizations, however, face problems of slow turn-over of inventories and receivables, and invest large amount in working capital.

Time– The level of working capital depends upon the time required to manufacture goods. If the time is longer, the amount of working capital required is greater and vice-versa. Moreover, the amount of working capital depends upon inventory
turnover and the unit cost of goods that are sold. The greater this cost, the larger is the amount of working capital.

Volume of sales– This is the most important factor affecting the size and component of working capital. A firm maintains current assets because they are needed to support the operational activities which results in sales. The volume of sales and the size of the working capital are directly related to each other. As the volume of sales increases, there is an increase in the investment of working capital in the cost of operations, in inventories and in receivables.

Terms of purchases and sales– If the credit terms of purchases are more favorable and those of sales less liberal, less cash will be invested in inventory. With more favorable credit terms, working capital requirements can be reduced as a firm gets time for payment to creditors or suppliers.

Inventory turnover– If the inventory turnover is high, the working capital requirements will be low. With good and efficient inventory control, a firm is able to reduce its working capital requirements.

Receivables turnover– It is necessary to have effective control over receivables. Prompt collection of receivables and good facilities for setting payables result into low working capital requirements.

Business cycle–Business expands during periods of prosperity and decline during a period of depression. Consequently, more working capital is required during periods of prosperity and less during the periods of depression.

Variation in sales– A seasonal business requires the maximum amount of working capital for a relatively short period of time.

Production cycle– The time taken to convert raw material into finished products is referred to as the production cycle or operating cycle. The longer the duration of production cycle, the greater is the requirement of working capital. Utmost care should be taken to shorten the period of the production cycle in order to minimize working capital requirements.

Liquidity and profitability– If a firm desires to take a greater risk for bigger gains
or losses, it reduces the size of its working capital in relation to its sales. If it is interested in improving its liquidity, it increases the level of its working capital. However, this policy is likely to result in a reduction of sales volume and, therefore, of profitability. A firm, therefore, should choose between liquidity and profitability and decide about its working capital requirements accordingly.

Profit planning and control—The level of working capital is decided by management in accordance with its policy of profit planning and control. Adequate profit assists in the generation of cash. It makes it possible for management to plough back a part of earnings into the business and substantially build up internal financial resources.

Activities of the firm—A firm’s stocking of heavy inventory or selling on easy credit term calls for a higher level of working capital than a firm selling services or making cash sales.

**Forecasting of Working Capital**

To forecast the working capital requirement for the next year the following formula may be used:

\[(\text{Estimated cost of goods sold} \times \text{Operating Cycle}) + \text{Desired Cash Balance}\]

**Control of Working Capital**

Working capital requirement depends upon the level of operation and the length of operating cycle. Monitoring the duration of the operating cycle is an important ingredient of working capital control. In this context, the following points should bear in mind:

1. The duration of the raw material stage depends on regularity of supply, transportation time, price fluctuations and economy of bulk purchase. For imported materials it takes a longer time.

   Example – X Ltd. expects its cost of goods sold for the forthcoming year to be Rs. 2 crore. The present operating cycle of the firm is 78 days. The firm plans to reduce its

   Operating cycle to 73 days and desired cash balance is Rs.5 lakh.

[64]
The expected working capital requirement would be,

\[
2,00,00,000 \times \frac{73}{365} + 5,000 = Rs. 45,00,000
\]

2. The duration of the work-in-process depends on the length of manufacturing cycle, consistency in capacities at different stages, and efficient coordination of various inputs.

3. The duration of the finished goods depends on the pattern of production and sales. If production is fairly uniform throughout the year but sales are highly seasonal or vice versa, the duration of finished goods tends to be long.

4. The duration at the debtor’s stage depends on the credit period granted, discounts offered for prompt payment, and efficiency and rigor of collection efforts.

It is helpful to monitor the behavior of overall operating cycle and its individual components. For this purpose time series analysis and cross section analysis may be done. In time series analysis the duration of the operating cycle and its individual components is compared over a period of time for the same firm. In cross section analysis the duration of the operating cycle and its individual components is compared with that of other firms of a comparable nature.

**Adequacy of Working Capital**

The importance of adequacy of working capital can hardly be over-emphasized. John L. O. Donnell and Milton S. Gladberg observe “Many a times business failure takes place due to lack of working capital.”19 Hence, working capital is considered as the life blood and the controlling nerve centre of a business. Inadequate working capital is business ailment. Therefore, a firm has to maintain a sound working capital. It should be adequate for the following reasons:

1. It protects a business from the adverse effects of shrinkage in the values of current assets.

2. It is possible to pay all the current obligations promptly and to take advantage of cash discounts.

3. It ensures, to a greater extent, the maintenance of a company’s credit standing and
provides for such emergencies as strikes, floods, fires etc.

(4) It permits the carrying of inventories at a level that would enable a business to serve satisfactorily the needs of its customers.

(5) It enables a company to extend favorable credit terms to its customers.

(6) It enables a company to operate its business more efficiently because there is no delay in obtaining materials, etc., because of credit difficulties.

(7) It enables a business to withstand periods of depression smoothly.

(8) There may be operating losses or decreased retained earnings.

(9) There may be excessive non-operating or extraordinary losses.

(10) The management may fail to obtain funds from other sources for purposes of expansion.

(11) There may be an unwise dividend policy

(12) Current funds may be invested in non-current assets

(13) The management may fail to accumulate funds necessary for meeting debentures on maturity.

(14) Increasing price may necessitate bigger investments in inventories and fixed asset.

4.3 Source of Working Capital

Conventional generalizations relating to financing of working capital suggest that an amount equal to the basic minimum of current assets should be financed from long-term source and that only seasonal needs of working capital should be financed from short-term sources. It is obvious that such an arrangement helps to keep the cost of working capital finance to the minimum for an enterprise and gives a rise to its rate of return on the total funds employed. Viewed thus, the sources of working finance can be classified into permanent and the current sources of working capital finance.

Structure of Working Capital

The study of structure of working capital is another name for the study of working [66]
capital cycle. In other words, it can be said that the study of structure of working capital is the study of the elements of current assets viz. inventory, receivable, cash and bank balances and other liquid resources like short-term or temporary investments. Current liabilities usually comprise bank borrowings, trade credits, assessed tax and unpaid dividends or any other such things. The following points mention relating to various elements of working capital deserves:

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

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

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

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

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

(1) To minimize idle cost of men and machines causes by shortage of raw materials, stores and spare parts.

(2) To keep down:

(a) Inventory ordering cost.
(b) Inventory carrying cost,
(c) Capital investment in inventories.
(d) Obsolescence losses

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

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

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

Cash and interest-bearing liquid assets—Cash is one of the most important tools of day-to-day operation, because it is a form of liquid capital which is available for assignment to any use. Cash is often the primary factor which decides the course of business destiny. The decision to expand a business may be determined by availability of cash and the borrowing of funds will frequently be indicated by cash position. Cash-in-hand, however, is a non-earning asset. This leads to the question as to what is the optimum level of this idle resource. This optimum depends on various factors such as the manufacturing cycle, the sale and collection cycle, age of the bills and on the maturing of debt. It also depends upon the liquidity of other current assets and the matter of
expansion. While a liberal maintenance of cash provides a sense of security, a lack of sufficiency of cash hampers day-to-day operations. Prudence, therefore, requires that no more cash should be kept on hand than the optimum required for handling miscellaneous transactions over the counter and petty disbursements etc. It has not become a practice with business enterprises to avoid too much redundant cash by investing a portion of their earnings in assets which are susceptible to easy conversion into cash. Such assets may include government securities, bonds, debentures and shares that are known to be readily marketable and that may be liquidated at a moment’s notice when cash is needed.

4.4 Analytical Study of Working Capital of Ultratech

Analysis of working capital methods– Various reasons may make it essential to analyze the working capital position of a business enterprise. One reason for analyzing the working capital position of a company is to see what will be found when financial statements are examined. A second reason is to enable management to detect trends and take corrective steps when the analysis indicates need for them. A third reason is to see what changes have taken place in the company over a period of time so that this knowledge may be used in setting guidelines. There are two important tools for analyzing the working capital position of an enterprise. One is the funds flow analysis and the other is ratio analysis.

1. Funds Flow Analysis of Working Capital– This analysis shows how funds have been procured for a business and how they have been employed. This technique helps to analyze changes in working capital components between two data. The comparison of current assets and current liabilities, as shown in the balance sheet at the beginning and at the end of a specific period, shows changes in each type of current assets as well as the sources from which working capital has been obtained.

   However, this technique does not throw light on the question whether the working capital is being used most effectively and whether the current financial position of the enterprise has improved.

2. Ratio Analysis of Working Capital– This is the most commonly used technique which deals practically with each and every aspect of working capital analysis. In
this technique, for each aspect of analysis certain ratios are computed and then results are drawn on the basis of trends shown by them against those fixed as guide–posts. Various ratios are used in analyzing the various aspects of the working capital position of an enterprise:

(a) Liquidity of Working Capital– An analysis of the liquidity of working capital is of use for both the short-term creditors and internal management or a business enterprise. To the former it communicates - the chances of receiving payment at the time of maturity, the margin of safety, if the unexpected should arise which may indicate whether the working capital is sufficient, the extent to which a concern has over- or under-invested the cash in its operating cycle. Two appropriate tests of this important feature of the working capital analysis are to be found in the computation of current and quick ratios. The details of the current and quick ratios have been discussed in the chapter where ratios have been computed and analyzed.

(b) Circulation of working capital– An analysis of circulation of working capital highlights the efficiency which working capital is being utilized. For this purpose various turnover ratios such as inventor turnover ratio, Receivables turnover ratio, cash turnover ratio etc. are calculated which show efficiency of the use of working capital in each or its components as well as on the whole. Generally the higher the level of these turnover ratios, the smaller would be the working capital requirements of an enterprise. The details of the above ratios have been given in the respective chapters. This aspect of the analysis of working capital focuses on the level of working capital. It helps an analyst to know whether the size of working capital maintained by an enterprise is excessive or short of or adequate to its requirements.

Various ratios can be computed to know the sufficiency of the size of working capital and movements in the quantum of working capital in successive periods. The two most important tools in this connection are the computation of the size of working capital in terms or “months’ cost of production” and “months’ average sales turn-over.” The results of these ratios when compared with the guide posts (as prevailing in the enterprise or in the industry), show whether the size or working capital maintained is of sufficient, inadequate or of an excessive
order. A comparison of working capital with other variables such as the output and sales over various years may also give a hint to an analyst about the trends in the growth of working capital. The use of index numbers, percentages and ratios may help to accomplish this task.

**References**


