5.1 The Preliminary Remarks

Working capital consists of investment in inventories, receivables, temporary investment, advances and deposits required to be made for supplies and services, prepaid expenses and cash necessary to meet contingencies.

While trying to control working capital requirements one has to think of the gross figures and while developing a long-range plan one has to take short-term liabilities for supplies and services and also liabilities for dividend and taxes. Gross working capital less the short-term liabilities constitutes net working capital. Inventory is a form of cash and credit and so are receivables and other components of working capital. The primary input is in the form of cash or credit, credit being an equivalent of cash in an important sense. The basic input therefore is cash. Cash, which is put into a business in the form of shareholder’s funds and long-term loans for the acquisition of fixed assets, are not considered here expect to the extent of parts of such investment recovered as depreciation in annual installments.

Working capital management is, therefore, essentially cash management, which includes credit management. The other important aspect of the concept is that the working capital amount represented by inventories and receivables, in a balance sheet, is a static figure on a given date, representing the money invested in working capital. It does not indicate what happened during the year, the “highs” and “lows” it touched, how the monetary interrelationships varied as between the various components of working capital and why. The study of such variations with a view to evolve suitable systems to forecast variations for bringing them within a framework of financial discipline is the essence of working capital management.

In this chapter it is proposed to explain the principles of management of all components of working capital. The topics in this chapter are dealt in the following order-cash flow mechanic, cash management, management of marketable securities, inventory management, management of trade credit, management of current liabilities.

5.2 Cash Flow Mechanics

Cash flow’s into the business in the form of shareholder’s money and long term loans as primary sources of funds for purchase of fixed assets. Suppliers of materials and services
provide a second source of credit. Banks provide cash credit facilities for financing working capital requirements. These are the cash and credit inputs. The flow of working capital starts with the purchase of raw material, employment of labour and incurring overhead expenses; the flow goes through the work-in-progress to finished goods. When the finished goods are sold, it is finally converted into cash again when book debts are realized. The working capital is required throughout the whole process of production. At the end of the cycle, a part of the material purchased remains in the stores and a part of the finished goods may also remain in the company’s finished goods inventory. A part of the difference between the sale amount and the paid out cost of sale represents depreciation recovery and the balance represents surplus on sales. The outgoing cash flows are in the form of interest on borrowings, dividend to shareholders, loan repayments and taxes.

**5.3 Cash Management**

One of the main tasks of financial management is to hold and maintain an adequate, but not excessive, cash position. Cash is an obvious and inescapable input for a company’s operations and as such it has to be available at suitable intervals according to needs on a continuing basis.

According to the eminent British Economist, Lord Keynes, the desire to hold cash can be attributed to one or more of the following three motives:

(i) The transaction motive, (ii) the precautionary motive and (iii) the speculative motive.

The transaction motive arises from the need for ready funds to make payments falling due in the ordinary course of day-to-day business, such as payments for purchases, wages, operating expenses, taxes and dividends. The operating needs have to be promptly met and any delay will hamper production and profitability. The aim of effective cash management is to ensure the smooth functioning of day-to-day business, so that the operating and contractual payments are promptly made.

The precautionary motive comes from a desire to keep a cash reserve or buffer to meet unexpected contingencies.

The speculative motive covers instances where the intention is to hold cash to be able to take advantage of shifts in security prices, arising from changes in interest rates and other
factors.
If the firm could perfectly forecast its needs for cash, it would not have to be concerned with unexpected occurrences or emergencies that require cash. As this is not possible, the firm must be prepared for contingencies.
In addition to these needs for cash, several important factors may be identified as affecting the size of the cash balance maintained by a firm.

(1) Availability of short-term credit:

To avoid unnecessarily large balances of cash for contingency or opportunity needs, most firms attempt to make arrangements to borrow money in case of unexpected needs. The loan would be charged at the prevailing interest rate for its corporate customers whenever the request is made. With such an arrangement, the firm will pay a slightly higher rate of interest than on long-term loan, but will have to pay interest only during the period the money is actually needed. As a line of credit allows a firm to rely upon a guaranteed loan for unexpected needs, it reduces the size of the balance needed in the cash account.

(2) Money market rates:

The money market consists of the institutions and individuals who lend or borrow money as part of the normal course of business activity. The interest charged on any loan will be affected by a number of factors, including the size of the loan and the credit rating of the borrower. Perhaps the most important factor in the overall level of interest rates is the availability of money to lend. If money is plentiful, interest rates will be low. If money is scarce, interest rates will be high.
How does the level of interest rates, high or low, affect the size of the cash balance maintained by a firm? If money will bring only a low return in the money markets, a firm may choose not to invest it. Since the profit is small it may not be worth to make the loan. Thus, the firm will keep excess cash in its bank account and this has the effect of increasing cash balances. On the other hand, if the interest rates are very high, every extra rupee will be invested. High money market rates will attract funds from firms that otherwise would
not invest for the short term.

(3) Variations in cash flow:

In addition to contingency needs, some firms experience wide fluctuations in cash flows as a routine matter. If a firm requires its customers to pay their bills on the tenth day of the month, it will receive a much larger cash inflow at that time than at other times during the month. This firm will have a larger average cash balance than will a firm that collects its receivables throughout the month.
As a general rule, a firm with steady inflows and outflows will be able to maintain a fairly uniform cash balance. The balance will also be lower than in firms with widely fluctuating flows. The firm will be able to predict its future cash balances more accurately and will have less difficulty with cash management.

(4) Compensating balances:

If a firm has borrowed money from a bank the loan agreement may require the firm to maintain a minimum balance of cash in its bank. This is called a compensating balance. In effect, this requires the firm to use the services of the bank, making loan and gives the bank a guaranteed deposit of money on which it pays no interest. Another reason for a compensating balance is that the bank is expected to provide certain free services to the company. The interest free deposit is the bank compensation for its advice and assistance.
A requirement to maintain a minimum cash balance will increase the amount of cash the firm must hold. However this does not in fact increase the firm’s liquidity. Since the firm cannot really have liquidity from that funds.

5.3.1 How much to hold?
The following factors will determine the extent of cash holding:
1. The expected net cash flows based on the cash forecasts, taking note of the long-range and short-term cash needs of the company.
2. Expectations as to the degree of possible deviations from forecasts. To anticipate
changes in cash flows under varying circumstances the profitability concept can be applied.
3. The maturity schedules or the structure of the different liabilities of the company.
4. The facility of readily draws able borrowing power in times of emergency.
5. Management’s views and attitudes in the matter of liquidity risks, varying between caution and adventure.

5.3.2 Need to have a cash balance

It is required for patty cash payments; Outflows of a non-routine nature such as increase in the inventory dividend debt repayments; for building up of cash resources for investment purposes; for prestige sign and goodwill requirement; and to absorb shocks of irregular inflows to meet regular commitments.

5.3.3 Safety level of cash on hand

An important factor in determining the size of the firms cash balance is the safety level established by the treasurer. In setting policies for the firm's cash management, the treasurer considers the differing needs and other factors that affect the amount of cash needed. Then he must establish the minimum cash, the firm needs to protect it against the risks associated with cash balance errors.

Examples of risks or costs of errors in cash management are the following:
1. Default- The failure to pay interest or principal payments on firm’s fixed obligations is a default and may result in liquidation or legal action by the firm’s creditors.
2. Overdue bills: The failure to pay short term obligations, such as payment dues is less serious than default on long term debts, but may result in a lowering of the firm’s credit rating in the business community. This may result in higher interest rates when the firm applies for future loans or may cause creditors to refuse to make supplies on credit.
3. Lost savings on purchases: Inadequate cash may cause the firm to lose opportunities to make special cash purchases or take generous trade discounts on purchases of goods.
Determining the safety level for cash

The financial manager may develop the firm’s safety level of cash with the aid of financial ratios.

1. During normal periods- one ratio would compare the normal daily outflows of cash with the firm’s cash on hand. The financial manager must provide the desired days of cash available in order to use the ratio. From the accounting department, he gets the average daily cash overflow. The ratio is:

   Safety level of cash needed = Desired days of cash * Average daily outflow

For example, suppose a financial manager feels that a safety level should provide sufficient cash to cover cash payments for 7 days. The firm’s average daily outflows of cash are Rs.6000. The safety level is: $7 \times 6000 = 42,000$.

2. During peak periods- this ratio measures the safety level as compared to the firm’s busiest period. The highest daily outflows during the month are substituted in the preceding formula for average daily outflows. The financial manager may also be willing to manage with fewer days of cash during the busy period, so this factor may change. The formula is:

   Safety level of cash needed = Desired days of cash at busiest period * Average of highest daily cash outflows.

For example, the cash outflows during 3 busiest days in the firm are, say, Rs.7, 500, Rs.8000 and Rs.8, 500. Then the average highest daily cash outflow will be Rs.8000. (Rs.7, 500 + Rs.8, 000 + Rs.8, 500 divided by 3). If the manager desired 5 days of cash available during the peak periods, the safety level would be $8000 \times 5 = 40, 000$.

Monitoring the safety level

In the following table, the actual cash balance is compared with the outflows to give the days of cash available. This is then compared to the days of cash desired to see if the firm is above or below its safety level.
The table (5-1): Using Ratios to Determine and Monitor Safety Levels of Cash

<table>
<thead>
<tr>
<th>Period</th>
<th>Formula to determine safety level of cash</th>
<th>Formula to calculate days of cash available</th>
<th>Desired days of cash available</th>
<th>Excess or deficiency of cash</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Normal</td>
<td>Safety level=desired days of cash * Average daily outflows 6 * 30000=180000</td>
<td>Days of cash available = Average cash balance / Average daily outflows 100000/30000=3.3 days</td>
<td>6 days</td>
<td>Deficiency</td>
</tr>
<tr>
<td>b) Peak</td>
<td>Safety level=desired days at peak * Highest outflows 4 * 50000=200000</td>
<td>Days available = High cash balance + peak outflows 120000/30000=2.4 days</td>
<td>4 days</td>
<td>Deficiency</td>
</tr>
</tbody>
</table>

5.3.4 Cash Planning

The transactions in the ordinary course of the business of a company generate cash inflows and outflows. Granting that operations are carried out efficiently and successfully, the cash inflow can be expected to be substantially more than the cash outflows, presenting a long run pattern of accumulation of cash from current operations. The short-run course, however, will not be smooth and steady and will be affected by a variety of pressures and fluctuations, which may be attributed to seasonal factors, unexpected, market returns, production problems or financing difficulties. Financial planning by effective coordination of the inflows and outflows of cash can be directed to see that the fluctuations are smooth and gradual.

The short-term financial management is built around its two prime and interrelated
ingredients, profit and cash management. The objective of cash planning is to provide advance signals as to:

1. What are the amounts of cash that are needed to attain short-run profit objective?
2. How much of these cash requirements can be met out of the cash generated from current income?
3. What are the magnitudes of the ebbs and flows of cash emanating from operations, and what are the sizes and frequencies of the resulting cash surpluses and deficits?
4. What are the sources of cash and under what conditions or in what contexts are they available?

The sources of cash and the uses of cash need to be carefully planned. It is essential that a certain minimum cash balance is ever kept ready for emergency use. The level of production, pattern of demand, credit terms for purchases and sales, sources and prompt availability of credit, pattern of operating expenses, etc., are factors that vary from industry to industry and company to company. The levels of adequacy of cash also vary correspondingly.

If excess cash is indicated in the cash plan, decision has to be taken on appropriate utilization by making short-term investments, allowing some build-up in inventories, liberalizing credit terms, acquiring some fixed assets or repaying liabilities, even ahead of schedule. If cash shortages are expected, action called for may cover sale of some short term investments, increasing the proportion of cash sales to total sales, vigorous collection of out standings, sale of some inventories, sale of disposable fixed assets and as a final resort, borrowing funds from outside.

### 5.3.5 Cash Forecasting

Once the financial manager has identified the firm’s policies on cash flow management, he must face the problem of predicting the amount and timing of future inflows and outlays of cash. This is a difficult process for most firms because cash flows are very variable.
Goals of cash forecasting
The forecasting of cash flows is designed to help the firm, achieve its twin goals of liquidity and profitability.

1. Liquidity- By predicting cash surpluses or shortages, the firm achieves liquidity, i.e., sufficient money in the bank to pay debts as they become due.

2. Profitability- Accurate cash forecasting achieves profits by allowing the firm to take profitable discounts on purchases, invest surplus funds, or reduce the costs of maintaining idle cash balances.

Long-range planning is gradually emerging as a key component of corporate management, particularly among large and well-established companies. Corporate long-range planning can be regarded as a function of the correlation of sales, production, research and financing. The forecasting and planning process involves four essential steps: (1) The economic forecast, (2) The sales forecast, (3) The production forecast, and (4) The financial forecast. The estimate of fundamental business and economic trends form the setting in which a company has to define its own projected activity levels, market share and growth and diversification plan. A wide range of economic intelligence, from within the company and from external published sources or other outside agencies can aid in economic forecasting. The corporate planner has also the choice of variety of forecasting techniques, including the gross national product approach and the econometric, model building approach. Against this backdrop of the outlook for the national economy, the company has to structure its sales forecast, incorporating specific influences of factors such as the trends of capital expenditure outlays and consumer expenditures.

Then follows the elaborate process of tuning up and estimating production to caster to the projected sales levels.

The three estimates- on the general economic front, the company sales and the production pattern- have to be woven into a financial fabric, in order to gain an insight into the extent of additional fixed capital and working capital required. An inevitable part of the long-range financial forecast is the statement of sources and uses of funds, detailing the total inflow of funds, for each year of the forecast period, and the corresponding expected
disbursements of funds. This process of matching the funds available against the funds required leads to projection of increase or decrease in funds during the forecast period, at annual intervals. The finance manager, thus, has an advance indication of anticipated financial requirements.

The problem for business management is not whether to forecast, but how to forecast. Management must decide whether its forecasting will be done mainly by hunch and instinct, or whether forecast will be prepared as intelligently as possible.¹

**Importance of Cash Forecasting**

A manufacturing company seeks to achieve its profit objective, by manufacturing goods and selling them in such a way that a surplus is generated. To do this, it needs plant and machinery and land building, workers and technicians and stock of raw material. If a generation of surplus has to be achieved, some planning is necessary, as to how much amount is to be invested in capital assets, how much inventory is to be acquired for conversion and also maintaining some material in stock, how many persons have to be employed for administration, supervision and for actual conversion of raw material into finished products, how much money is required to pay for salaries and expenses, so that cost of material used and other cost of conversion may be recovered in the amount of sales during the period. If the amount of sales is more than the cost of material, operating costs, interest and depreciation, which represent the cost of production during the period; a surplus is earned. For each, requirements are assessed on the basis of coordinated divisional plans such as investment plans, sales plans and production plans, which include inventory plans. These plans involve certain cash inflows and certain cash outflows.

**Benefit of Cash Forecasting**

Any concern should consider the capital expenditure fund. It involves immediate transfer of cash from working capital to fixed assets, which will ultimately flow, back into working capital through depreciation provisions and so recovery through sales of goods. Cash

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Chapter Five

Management of Various Aspects of Working Capital

forecast can help to guide plan of capital expenditure. It reduce bank overdraft by utilizing cash effectively. It helps to forecast the situation after payment of taxes and dividend, to anticipate miscellaneous income. It plans and executes debt collection procedure, inflows, outflows and cash needs. It coordinates operational plans of sales, productions, manpower, etc., so as to bring about as much balance as possible. Cash flow consists of cash inflows and cash outflows. Cash inflow includes revenue from owners i.e. shareholders, credit loans from banks, by sale of assets, cash sales, collection after realization of credit sales, etc.

Cash outflow includes purchase of inventories, payment of wages, overheads, purchase of fixed assets, interest, payment of loan installment, payment of dividends, taxes and other outflows.

Forecasting period

It is important to determine the forecast period because the use of a forecast depends upon the period covered by the budget. Forecasts are of two kinds’ short-term forecast and long-term forecast. Short-term forecasts prepared in detail are regarded as financial working tools. Considerable care will have to be exercised in preparing short-term forecasts. Short-term forecasts could cover a week, month, quarter or twelve months. However, it depends upon how tight the company’s cash position is. A company with a very tight cash position may have to watch even daily or weekly. If the company’s position is comparatively comfortable it may operate monthly cash forecast.

The purpose of the short-term forecast is as follows:

1. A short-term forecast determines the day-to-day cash needs for operating business on a week-to-week basis.
2. It helps to provide more correct information regarding receipts and payments.
3. It enables short-term borrowings to be arranged.
4. It enables surplus cash to be invested in short-term deposits so that cash in excess of requirement may not remain idle with the company.

It may however be noted in this context that a short-term forecast by itself would not be effective unless it is coordinated with medium-term and long-term forecasts. Long-term forecasts extending from three years to ten years are a part of corporate planning.
Long-term plans determine long-term cash needs. They enable long-term borrowing to be arranged. They help to take financial decisions on long-term basis. For a company, long-term plans are vital and short-term plans are only the working details.

**Methods of Cash Forecasting**

There are two methods of cash forecasting:

(i) Cash flow method, which plots out the estimated receipts and disbursements.

(ii) The adjusted earnings method, which is essentially that used in the balance sheet projection.

(i) **The Cash Flow Forecast** – the most basic and comprehensive method of predicting the amount and the times of future needs is through preparation of a cash flow forecast. Essentially, the cash flow forecast is a tabulation of the plans of the firm in terms of their impact on the receipts and expenditures of cash in future periods. The basic theory of the cash flow forecast is simple – it seeks merely to predict when and in what quantity receipts of cash will come into the firm and when and in what quantity payment of cash will be made.

In the cash forecast, all anticipated receipts of cash are included. Usually, the financial planner is interested in revealing not only the total outflow and inflow over an extended period, such as a year, but also the timing of the cash flows within this period. In most cash forecasts, receipts and disbursements are broken down by months. If uneven inflow and outgo are anticipated within the monthly intervals, it may be necessary to break the forecast down into weakly or even daily period if maximum needs are to be brought to light.

(ii) **The Adjusted Earnings Method** – the Performa balance sheet method of forecasting funds requirements is built around a forecast of the size of key balance sheet items at a selected date or dates in the future. Four major steps are involved in building a balance sheet forecast.

The first is a forecast of the net investment required in each of the assets in order to carry
out operations at the level planned on the date involved – say a date 6 months ahead.
Second, listing of the liabilities that can be counted on without special negotiation.
Third, the estimation of net worth on that date.
Fourth, the comparison of the total of projected assets with the total sources of funds –
debs and net worth.
In using the balance sheet approach the forecaster is reasoning essentially as follows: to
carry out our plans, certain predictable investment in assets is required. On the other hand,
certain spontaneous sources of credit can be counted. The owners' investment in the
business as of the future date can also be predicted. It indicated sources fall short of
meeting the desired investment in the various assets, the amount by which the sources must
be expanded or asset investment held down is made apparent. If the expected sources are
more than cover the needed assets investment, a measure is provided of the cash cushion
above minimum working balance needs or of cash available for uses beyond those
envisaged in the original planning estimates.
A roughly estimated balance sheet might give an approximate idea of financial needs and
so serve as a substitute for a more elaborate cash budget. With the compilation of a cash
budget, basic figures become available for a more exact balance sheet projection. Such a
projection can be analyzed by financial management to determine whether it is likely to
satisfy suppliers of funds when subjected to analysis. Steps may be taken to remedy
unsatisfactory ratios. Any lack of liquidity or excessive debt can be discovered by this
projection and steps may be taken to check an undesirable drift that might threaten
solveny.
In the preparation of the cash budget, sales and then the subsequent inflow of cash from
customers, receivables had to be estimated. These figures are used to estimate the accounts
receivable for the projected year-end balance sheet. (Initial Accounts Receivable + Credit
Sales for year – Collections during Year = Estimated Final Accounts Receivable). The
required estimates of goods purchased and used during the period provide the basis for a
projected inventories figure. Analysis of other projected transactions provides the data for
other working capital accounts, such as accounts payable and the various accruals. The
projected cash balance reflects both the effect of transactions that reach the point of a cash
transfer and any financing that are planned.
The working capital section of the balance sheet projection is particularly important in determining solvency. All current assets and current liabilities must be considered, rather than cash alone, because so many transactions – such as purchases and sales on credit – have delayed impact on cash. Accruals affect the working capital position even though they do not immediately change the cash balance. When accrued interest income is added into the current assets or accrued wages into the current liabilities, the working capital position has been altered, although both are cash transactions that will occur after the date of the balance sheet in which they appear. Consequently the designation of sales as a source of funds, rather than of cash, recognizes that the immediate effect of a credit sale is to convert inventory into a receivable rather than into cash.

5.3.6 Cash Budget

Cash budget is a schedule to record cash inflows and outflows over a period with a view to locate the timing and magnitude of cash surplus and shortage. It draws the attention of the financial executive for taking timely action to solve this problem of cash surplus and shortage.

Cash budgets are prepared to forecast liquidity in terms of cash receipts and payments on a day – to – day, week – to – week or month – to – month basis.

For a company operating a good system of budgetary control, the preparation of a cash budget is a relatively smooth exercise. The several functional budgets will normally provide details of the relevant monthly cash receipts or disbursements to be transferred to the cash budget.

The preparation of the short-run forecasts or cash budgets set the framework for management of cash flow and cannot be considered as the final act in cash management process. The operations of the business enterprise may often deviate from the planned courses with instantaneous changes in cash requirements and such deviations have to be promptly identified and necessary follow-up action be initiated. Minor shifts can be tackled by marginal operational readjustments such as postponing certain discretionary payments and speedy collection of book debts. These can be viewed as course correction measures but their effectiveness depends upon a good reporting system that highlights such changes without loss of time.
Periodic reports that provide a comparison of the actual developments in relation to budgeted figures will help to decide whether, when and to what extent financial plans need to be modified in the light of the existing gap between plan and performance. The daily cash report is the best way for obtaining a running comparison between the forecast cash flows and the actual cash flows. Even though the cash budgets are generally not set up on a daily basis, the daily cash report indicating the opening cash balance of the day, the cash receipts and payments during the course of the day and the closing balance for the day is a very useful document. Its scrutiny over a period of consecutive days will confirm whether the rate of cash flow is conforming to the expectations or not. Another periodic report of considerable importance in comparing and analyzing the significant details of actual cash flows, for the month and for the year to date, with the relevant projections in the cash budget is the "monthly cash budget report". The designing and implementation of overall cash control systems call for a variety of planning-decisions, covering location of banking facilities, information process, and transfer of funds in similar aspects. Any system, in use, has to be constantly kept under review and modified to meet new and changing situations and needs.

5.4 Marketable Securities

5.4.1 Reason for holding marketable securities

Marketable securities typically provide much lower yield than operating assets of the company. Why would a company have such large holding of low yielding assets? There are two basic reasons for these holding; first, they serve as a substitute for cash balance and second, they are used as a temporary investment. These points are considered below:

(i) Marketable securities as a substitute for cash: some firms hold portfolios of marketable securities in lieu of larger cash balances, liquidating part of the portfolio to increase the cash account when cash outflows exceed inflows. In such situations, the marketable securities could be a substitute for transaction balance, precautionary balances or speculative balances or all of these.

(ii) Marketable securities held as a temporary investment: whenever a firm has over 1 or 2 per cent of its total assets invested in marketable securities, changes are good that
these funds represent a strictly temporary investment. Such temporary investments generally occur for one of the following three reasons:

(a) Seasonal or cyclical operations: companies engaged in seasonal operations frequently have surplus cash flows during a part of the year and insufficient cash flows during other months. Such companies may purchase marketable securities during their periods of surplus cash and then liquidate them when cash deficits occur. Other companies particularly those having violent price fluctuations, attempt to accumulate cash or near-cash securities during down turns in order to be ready to finance additional assets when business returns to normal.

(b) To meet known financial requirements: if a major plant construction programme is planned for the near future or if a bond issue is about to mature, a firm may build up its marketable securities portfolio to provide the required funds.

(c) Immediately following the sale of long-term securities: an expanding firm has to sell long-term securities periodically. The funds from such sales can be invested in marketable securities, which can in turn, be sold to provide funds, as they are needed for permanent investments in operating assets.

5.4.2 Strategies Regarding Marketable Securities Holding

There are three types of strategies. It is arranged under plans. A, B and C. Under plan A, firm would hold no marketable securities relying completely on bank loans to meet seasonal peaks. Under plan B, firm would stockpile marketable securities during stock periods then sell these securities to raise funds for peak needs. Under plan C, it is a compromise under this alternative the company would hold some securities, but not enough to meet all its peak needs.

Plan A is most risky. The firm's current ratio is always lower than under the other plans, indicating that it might encounter difficulties either in borrowing the funds needed or in repaying the loans. On the other hand, plan A requires no holding of low-yielding marketable securities and this will probably lead to a relatively high expected rate of return on both total assets and net worth.

It is difficult to prove that one strategy is better than another. In principle, the practice of
holding marketable securities reduces the expected rate of return. Although we can quantify the costs of the following more conservative policies. This cost is the average percentage differential between the return received on marketable securities and the interest rate paid on the long-term debt. It is almost possible to quantify the benefits of such a policy in terms of how much it reduces the risk.

5.4.3 Factors Influencing the Choice of Securities
A wide variety of securities is available. These securities have different degrees of risks regarding the safety of capital invested and regularity of return. We first consider the characteristics of different securities.

Safety of capital invested risk: the risk that an issuer will be unable to make interest payments or to reply the principal amount on schedule is known as default risk. The prices of long-term bonds are much more sensitive than are prices of short-term securities, e.g., if treasurer purchases at par 1 lakh rupees of twenty five year Government bonds paying 5 per cent interest and interest rates rise to 9 per cent, the market value of the bonds would fall and there would be a loss of about 40 per cent.

Regularity of return risk: an asset that can be sold in large quantities as nearer as to its quoted market price is defined as being highly liquid. The higher a security's risk, the higher the return on the security. Thus corporate treasurers must make a trade-off between risks and return when choosing investments for their marketable securities portfolios.

5.5 Inventory Management
Inventory management is a very important area. It is one in which considerable economy can be achieved; it is the area in which there is much to be desired. Inventory control is often mistaken for sophisticated mathematical models for computing economic order quantities (EOQ) or reordering points (ROP) or things like that. While these are certainly important, some of the basic control systems, which are capable of yielding rich dividend, are conspicuous by their absence in many large and medium size companies both in the public and private sectors.
5.5.1 Organizing the Inventory Management

An effective organization is absolutely essential for effective inventory management. Inventory management is a part of production management. The main structure of organization could take the form as shown below:²

**Figure (5-1) shows Works manager,**

![Diagram of Works Manager]

**Figure (5-2) shows Materials manager,**

![Diagram of Materials Manager]

In medium and large concerns the material management functions could take the organizational form as given in figure (5-1);

i) Stores management will be responsible for storing material received into the stores,

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issuing material and materials planning.

   ii) Goods Inward Department will be responsible for receiving material as per
       purchase orders, inspecting the material received as to quantity and specifications as per
       purchase orders, preparing the receipt-document, sending the inspected material to stores
       and returning the rejected material back to the suppliers.

   iii) Buying department is responsible for maintaining records of vendors, analysis and
       vendor rating and placing orders at most economical prices on the most acceptable vendors.

   iv) Market research department is responsible for locating alternative sources of
       supply, develop new vendors, and develop sources of import substitutions and value
       analysis studies for cost reduction.

These are only the structural outlines. The actual organization depends upon the scope of
functions, delegation of work and workloads.

Manufacturing concerns use raw materials and suppliers, goods in process and finished
goods, which create problems in the management of working capital. Raw materials
include the items, which are held in their original form for processing and production.
Goods in process are raw materials upon which work has been performed to change their
size, physical or chemical properties. Finished goods include completely manufactured and
inspected goods that are ready for sale.

The area of inventory management covers the following individual phases: determining the
size of inventory to be carried, establishing timing schedules, procedures and lot sizes for
new orders, ascertaining minimum safety levels, co-coordinating sales, production and
inventory policies providing proper storage facilities, arranging the receipt, disbursement
and procurement of materials, developing the form of recording these transactions,
assigning responsibilities for carrying out the inventory control functions and providing the
reports necessary for supervising this overall activity.

5.5.2 The Need to Hold Inventory
Holding some inventory is an inescapable necessity, for the following reasons:

   1) There is the obvious inability to mach deliveries of materials to their usage, on a
day-to-day basis. Procurement and production do not constitute one continuous stream, but
are distinct steps. There is no escape from the necessity to plan adequate stocks of raw
materials and supplies to ensure smooth and uninterrupted flow of production.

2) Very often, there may be justification for uncoupling the procurement and production functions, such as when bulk purchase offers handsome discount that may more than offset the costs of storage and handing or when in the face of steep rising trend in costs of materials, which is expected to persist, bulk purchase at current price may also undoubtedly be in the interests of the company from the viewpoint of profitability and availability.

3) In the case of certain vital or critical suppliers such as spares and tools, the question involved is not one of meeting a continuous demand for consumption but is one of insuring against long periods of production hold-up for want of an important component, part or tool, that cannot be procured immediately when needed.

4) Economics of large batch production of components might influence decision in favor of their bulk production, though inventories might get built up in the "components stores" resulting in extra storage costs, but at any rate, not exceeding the saving on bulk production lines.

5) To except to maintain a completely balanced production flow, without any in-process spill-over, is to ask for the impossible. So some quantum of work-in-process inventory is not a matter of choice, but one of compulsion. But a good deal can be done to keep this quantum to the minimum.

6) Vagaries in supply and demand for the product can often manifest themselves abruptly and to varying degrees. Naturally it is essential that buffer stocks be kept at the outlets providing the link between the manufacturing point and the consumers. The line of distinction, however, has to be drawn between stock-outs and excessive stocks.

5.5.3 Benefits of Holding Inventories
As shown in figure (5-3), by holding inventories the firm is able to separate the processes of purchasing, producing and selling. If firms are not willing to hold adequate raw materials and finished goods, purchasing would take place only when immediate production and sales are anticipated. When a customer signs a purchase agreement, the firm will not be able to offer timely delivery. When the firm schedules production runs, it will achieve none of the economies the longer runs provide. Inventories are used to provide cushions so that
the purchasing, production, and sales functions can proceed at their own optimum paces.

**Figure (5-3) shows benefits of holding inventories:**

- Firms Hold Inventories to Separate Producing Which Helps To
  - Purchasing
  - Avoid Losses of Sales
  - Giant Quantity Discount
  - Reduce Order Cost
  - Achieve Efficient Production
  - Selling

In achieving the separation of these functions, the firm realizes a number of specific benefits:

1. **Avoiding losses of sales:** If the firm does not have goods available for sale, it will lose the order. Customers requiring immediate delivery will purchase the goods from the firm’s competitors, and others will decide that they do not need the goods after all, if they have to wait for delivery. The ability of the firm to give quick service and to provide prompt delivery is closely tied with the proper management of inventory.

2. **Gaining quantity discounts:** If a firm is willing to maintain large inventories in selected product lines, it may be able to make bulk purchases of goods as higher discounts. Suppliers will offer a greatly reduced price if the firm will order twice or thrice its normal requirements. By paying less for its goods, the firm will be able to increase profits, as long as the costs of maintaining the inventories are less than the amount of the discount.

3. **Reducing order costs:** Whenever a firm places an order, it incurs certain costs. Forms must be typed, checked, approved, and mailed. When goods arrive, they must be accepted, inspected, and counted. The invoice must be checked with the goods and then sent to the accounting department, so that the supplier can be paid. The variable costs, associated with individual orders, can be reduced if the firm places a few large, rather than numerous small orders.

4. **Achieving efficient production runs:** Once an assembly line or piece of machinery is prepared to receive certain raw materials and perform selected production operations, a set up cost has been incurred. This cost must be absorbed in the subsequent production run. Inventories assist the firm to achieve efficient production in the long run. If the firm has to change its set ups frequently, it would experience high unit costs of production.
Adequate inventories also protect against shortages that would delay or halt production. If the firm has scheduled a long run and begins production, only to discover a shortage of a vital raw material, the production may be halted at a considerable cost to the firm.

5.5.4 Risks and Costs Associated with Inventories:
When a firm holds goods for future sale, it exposes itself to a number of risks and costs. The effective management of inventory involves a trade-off between having to little and too much inventory. In achieving this trade-off, the financial manager should realize that risks and costs might be closely related. Some costs, such as the purchase price of the goods, involve little risk and may be calculated in advance with some accuracy. Other costs, such as damage to the goods in the warehouse, are incurred only when a risk materializes. Risks may be viewed as possible future costs hence; may be included as cost items.

To examine inventory from the cost side, five categories of costs are identified:
Direct costs which are immediately connected to buying and holding goods –

a) Material costs
b) Order costs
c) Carrying costs
   i) Storage costs
   ii) Insurance
   iii) Obsolescence and spoilage
   iv) Damage or theft
d) Cost of funds tied up in inventory
e) Cost of running out of goods.

The five costs of holding inventories are the following:

1) Materials costs – These are the cost of purchasing the goods plus transportation and handling. This may be calculated by adding the purchase price, the delivery charges and the sales tax paid on goods (if any).

2) Order costs – These are the variable costs of placing an order for the goods. Each separate shipment involves certain expenses connected with requesting and receiving materials.
3) Carrying costs – These are the expenses of storing goods. Once the goods have been accepted, they become part of the firm's inventories. The following are examples of different kinds of carrying costs:

a) Storage costs – The first must provide for storage space, usually through the operation of a warehouse or supply room. The firm must employ workers to move, clean, count, record and protect the goods. All of these activities dealing with the physical holding of the goods are considered storage costs.

b) Insurance – In spite of the best precautions, firms must protect against hazards such as fire and accidents in the warehouse. Larger amounts of inventory require larger amounts of insurance. The insurance premiums represent a carrying cost on inventory.

c) Obsolescence and spoilage – Firm keeping large stocks of goods have to undertake the risk of not being able to sell the goods at a convenient price. Obsolescence is the cost of being unable to sell goods because of current market factors deriving from change in styles, tastes or other factors. If a product is no longer wanted, the firm will have to sell it at a fraction of its value or destroy it. Spoilage occurs when a product is not salable at a convenient price because of deterioration during storage.

d) Damage or Theft – Although a firm will make every effort to protect goods against damage and safeguard items against pilferage, goods may be damaged and stolen. A protection of these expenses will not be covered by insurance and will be a loss to the firm.

4) Cost of funds tied up in inventory – Whenever a firm commits its resources to inventory, it is using funds those otherwise may be available for other purposes. A portion of the inventory will be financed by trade credit from suppliers and will involve no cost. If the firm is considering an expansion of inventory, and plans to borrow funds, the firm has to pay an interest on the additional debt.

5) Cost of running out of goods – Whenever a firm incurs a shortage of products, it incurs costs. If the firm is unable to fulfill an order, it risks losing a sale. If the firm runs out of raw materials, it may force a costly shutdown of the production process. Adequate inventory helps to reduce additional costs and cost revenues due to shortage.
5.5.5 Inventory Management System

To manage its inventories, a firm should utilize a systematic approach to inventory management. A system approach considers in a single goal. In the case of inventory systems the goal is to minimize costs.

A system for effective inventory management involves three sub-systems:

a) Economic order quantity,
b) Re-order points, and
c) Stock level.

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

A number of varying mathematical models are available to calculate the economic order quantity.

Generally, they minimize a cost function without attempting to derive the formula; a simple calculation may be made when we assume the following:

1. Demand is known – Although it is difficult to predict accurately the firm’s level of sales for individual items, the marketing manager must provide a sales forecast. Using past data and future plans, a reasonably accurate production demand can often be made. This is expressed in units sold per year.

2. Sales occur at a constant rate – This model may be used for goods that are sold in relatively constant amounts throughout the year. A more complicated model is needed for firms, whose sales fluctuate in response to seasonal or other cyclical factors.

3. Costs of running out of goods are ignored – Costs associated with shortages, delays, or lost, sales are not considered. These costs are considered in the determination of safety level in the re-order point sub-system.

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 formula need not consider the cost of maintaining the safety stock level.

Formula - \[ EOQ = \frac{(2)(U)(OC)}{(CC\%)(PP)} \]

Where \(2\) = mathematical factors 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 individual order for more inventory, provided by cost accounting.

\(CC\%\) = inventory carrying costs expressed as a Percentage of the average value of the Inventory, an estimate usually provided by cost accounting.

\(PP\) = Purchase price for each unit of inventory, supplied by the purchasing department.

b) Re-order points, sub-system – An important question in any inventory-management system is, “When should an order be placed so that the firm does not run out of goods?” The answer, expressed in terms of units of inventory, is providing by the re-order point sub-system.

The re-order point is the level of inventory at which the firm places an order, in amount of the economic order quantity. If the firm places the order when the inventory reaches the re-order point, the new goods will arrive before the firm runs out of goods to sell.

In designing a re-order point sub-system, three items of information are needed as inputs to the sub-system:

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 360 days. If the sales are 50,000 units, the usage rate is 50,000/360, or 140 units per day.
A more complicated analysis may be used with computer-based re-order point sub-systems. The usage rate can be adjusted to reflect seasonal or cyclical factors and will result in differing re-order points at different times in the year.

2. Lead-time – This is the amount of time between placing an order and receiving the 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 records and the time taken in the past for different suppliers to fill orders.

3. Safety stock level – This minimum level of inventory may be expressed in terms of a number of day’s sales. The level can be calculated by multiplying the usage rate times, the number of days the firm wants to hold as a protection against shortages. For example, the firm may wish to hold sufficient inventory for 15 days of production in the event its order for raw materials does not arrive on time. In this case, the safety stock level is 15 days, and it is calculated in terms of units of inventory, by multiplying 15 times the daily usage rate.

To calculate the re-order point, the following formula is used:

\[ \text{Re-order point} = (\text{UR}) \times (\text{LT}) + (\text{UR}) \times (\text{days of safety}) \]

Where \( \text{UR} \) = Usage rate,

\( \text{LT} \) = lead time, and

Days of safety = days of safety stock desired by the firm.

c) Stock level Sub-System – This stock-level sub-system keeps track of the goods held by the firm, the issuing of goods, and the arrival of orders. It is made up of the records of accounting for the goods in stock. Thus, the stock level sub-system maintains records of the current level of inventory. For any period of time, the current level is calculated by taking the beginning inventory, adding the inventory received, and subtracting the cost of goods sold. Whenever this sub-system reports that an item is at, or below the re-order point level, the firm will begin to place an order for the item.

### 5.5.6 Sellers Analysis, Key to Effective Buying

In an engineering industry, the cost of raw material and bought out components in the total production cost could be anywhere between 40 per cent and 60 per cent and sometimes even more. It is difficult to dispose off unwanted plant and equipment.
The total cost of production includes material costs, labour costs, overheads cost and operating margin also.

Practically, nothing can be done about the cost of labour. At best, labour efficiency and idle time could be improved. Most of the overhead cost comprises of interest, depreciation, salaries, etc., which are more or less fixed costs. They can certainly be imported by better utilization of facility. But, material cost is the biggest chunk. It should be the endeavor of every company, to strive to reduce the inventory holding and inventory costs, because it would not only reduce direct material cost; but also borrowings and the interest thereon.

Some of the common problems in the working of the purchase departments are:

1) Long interval lead times
2) Long external lead times
3) Dependence of fewer supply sources
4) Absence of price-trend studies
5) Inability to locate vendors who can supply according to delivery schedule accepted by them and supply of material of required specification at a reasonable prices.

It should be the primary responsibility of this department:

1. To study and develop reliable statistical indices by material classification groups, to see how advantage can be taken of price trends, of course, within prescribed parameters on inventory holdings.

2. To locate new sources of supply. In any case, it is always advantageous to farm out supplies among two or three reliable suppliers.

3. To locate sub-contractors who can fabricate parts to satisfy exacting specifications.

5.5.7 The Inventory Dilemma

Three kinds of inventories have relevance’s to manufacturing companies – raw materials, work-in-progress and finished goods. The factors that have bearing on the levels of raw materials inventories are the expected production volumes, seasonal aspects of production,
the dependability of the source of supply and the degree of efficiency attending materials planning and procurement as also production scheduling an performance. 
The size of work-in-progress inventory depends largely on the production cycle, indicated by the time span between the introduction of raw material into production and the emergence of the finished product at the end of the production line.
The level of finished goods inventories is generally a reflection of the coordination between production and sales. Marginal adjustment in credit terms may often assist in off-loading accumulating finished goods inventories.

5.5.8 **Tandon Committees on Inventory Management:**
The Reserve Bank of India set up a study group under the chairmanship of Mr. P.L. Tandon. They have made suggestions for prescribing inventory norms for different industries both in the private and public sectors and indicate the broad criteria for deviating from these norms.
Tandon Committee has described four types of inventories, namely, Flabby inventory, Profit-making inventory, Safety inventory and Normal inventory. There is no uniformity in approach among banks in assessing working capital requirements especially with regard to inventories. Norms cannot be absolute or rigid. Deviations from norms may be necessary under certain circumstances, e.g., power cuts, strikes; transport delays bunched receipt of raw materials, etc. Deviations should be for known specific circumstances and situations and allowed for agreed period which should be relatively short. Norms should be kept under constant review.
The RBI has accepted the norms suggested by Tandon Study Group and these should be applied in respect of both the existing and new borrowers with immediate effect. In the case of all existing borrowers if their levels of inventories and receivables are excessive on the basis of the suggested norms the matter should be discussed with them and a programme for a phased reduction therein worked out. In case the excess levels continue without justification, while the bank may not abruptly stop operations in the borrowers accounts, which may upset the normal functioning, it may, after a reasonable period of about two months, consider whether it should charge a higher rate of interest on the portion of the borrowings considered as excessive. To keep a watch in this regard, banks may call
for additional information. The control, should, however, be exercised with the flexibility and understanding of the circumstances which may warrant deviation from the norms for temporary periods.

5.5.9 The Essential Steps for effective Inventory management

These are the following:

1. A comprehensive and well classified list of items in inventories
2. ABC analysis of inventory items.
3. Setting stock levels for the different items
4. Perpetual inventory and
5. Evaluation through selected inventory ratios.

1. A comprehensive inventory list - In big organizations where numerous categories of items are held in stock, and is beyond the capacity of human memory to know and remember the vast multitude of inventory items, a well set form of communication is necessary. A full list of items in stock, duly coded, classified and presented, with indications of the location and wherever necessary, prices, will save much confusion and prevent duplication of purchases.

The general stock list will have to be updated periodically, to reflect the current status of stocks. In this process, new items will get included in the list, as and when they are recognized as regularly needed items, and items that are no longer needed, will get removed from the list.

A list of items and their quantities in finished goods, storages, as at the end of each month can be a good information basis for marketing division, to examine instances of slow moving products and to take necessary corrective action.

2. ABC analysis – ABC (Always Better Control): analysis is a selective approach, aimed at keeping the investment low and at the same time, avoiding stock-outs of critical items.

The ABC analysis or the Proportional Value Analysis involves the following steps.

1. A list of all the items held in inventory is prepared and particulars concerning the annual consumption, volume, the unit cost rate and the annual consumption, value of each item are tabulated.
2. The list is recast the items are ranked in the descending order of their individual total value of annual consumption, and also the running serial number for each item in the list is given.

3. The running cumulative total of the annual consumption values is recorded starting from the first item downwards and also the percentage of the cumulative figure against each item to the grand total value of annual consumption is indicated.

4. Each serial number in the list as a percentage of the total number of items therein is expressed.

5. A comparative look at the percentage will show that relatively few, represent a bulk of annual consumption value. These constitute the limited family of high value items, which can be ranked as “A” category items.

For class "A" items, constituting the expensive few, the greatest attention requires to be devoted and the tight control is exercised. For the items of inventories of this group, the stress will be on utmost care in storing, minimum holding, maximum turnover and utmost sped in processing. Any anticipated change in sales and production plans, has to be interpreted quickly in terms of corresponding change in projected usage for these valuable items, so that, timely action can be taken to prevent investment in scheduled items. In respect of class "A" items, the preference will be in favor of frequent ordering and low safety stocks through it will involve enhanced expediting costs. The saving in investment will more than compensate the extra ordering and expediting costs.

The high value nature of class "A" items, should further attract close attention to all possible avenues of profit improvement, through effective price negotiations with vendors, design changes for material saving and increased material productivity through better equipment, better methods and better tooling.

Extending the principle of selective inventory control further, class "B" items may not command such extensive and close attention as applied to class "A" category. Nevertheless, they have to be managed with some degree of caution. They have to be subjected to a reasonable degree of control and review with the aim of effecting economies in use and saving in investment.

The class "C" category constitutes the large family of small value items. There is no need to devote considerable time and expenses to design and install elaborates methods of
control and review. Simple controls will do. Ordering frequency for these items can be drastically reduced and higher safety stocks maintained. Otherwise, with the very large number of items covered, any adherence to elaborate methods will lead to substantial ordering and expediting costs being incurred will exceed the negligible benefits.

ABC analysis enables decisions to be taken regarding:

a) Delegation of authority to purchase and consequently creation of the necessary organization. As a result of effective delegation, considerable processing time is reduced and also the internal lead-time. It also enables responsibility to be assigned specifically.

b) Inventory policy regarding the amount, which can be allowed to be tied up.

c) Fixing of priorities for developing alternate sources of supply and also for developing import substitutes.

d) Method of ordering, taking into account factors such as EOQ, safety stocks, etc.,

e) Cost reduction by value analysis.

The ABC analysis should be by annual consumption value of an item and not the unit cost of it because a small unit cost item may account for a sizable consumption value during a given period.

3. **Setting stock levels for the different items:** A number of factors have to be considered for the determination of stock levels of individual items, for purposes of control and economy. Among them are:

i) Rate of consumption

ii) Lead time for deliveries

iii) Capital needed

iv) Keeping qualities, deterioration and evaporation etc.

v) Space availability

vi) Storage costs

vii) Price fluctuations

viii) Obsolescence costs

ix) Seasonal considerations regarding price & delivery

x) Economic ordering quantity

xi) Insurance costs and
xii) Government restrictions.

The Minimum-Maximum System.
This is a simple and widely used system, aimed at controlling stock levels of individual items, which have high usage and major value. A ceiling for a maximum level is fixed for each item, in terms of its number or relevant unit of measurement, which is not to be exceeded. This acts as a general, safeguard against over-investment in inventory. To avoid stock-out situation and adverse consequences on production or sales, a floor level or a maximum level is fixed for each of the important inventory items. The aim is to manage the replenishment so that, the stock of the individual item does not fall below this level. There are various practices such as the fixation of a danger level even below the minimum level, to trigger off rush action for replenishment even at extra costs. The stock level at which the order for replenishment has to be released is called the Re-order Point, has to take note of the vagaries in consumption rates and possible shifts in procurement lead time, due to delayed dispatches by suppliers or transport bottlenecks.

The minimum level is established on the basis of the average consumption rate and the lead-time required to procure the item.

In determining the ‘maximum level’, considerations of finance, storage space required, import licensing policies and the nature of commodity, assume importance. Maximum level will be equivalent to the minimum level plus the re-ordering quantity.

The success of such system depends to a large extent on prompt and reliable recording of the transactions and timely reporting of events and situations that require attention.

Stock service levels – The ideal to be aimed for is the maintenance of stocks at their lowest level, consistent with serving the needs of production and sales requirements. This service may range from the possibility of there always being stocks on hand to fulfill every requirement at any time, that is, 100 per cent service, to where there would be no stock available to service orders, or a nil services. It will require at the outset, a distinct importance to be placed on this aspect of the need of supplies to fulfill production and/or sales requirements.

To ensure that there is never any lack of stock for production, it may be necessary to carry heavy base stocks.
Minimizing inventory costs cannot be the sole criterion. The service to be rendered to
production and sales must also be considered.

If demands on stock were made on a regular basis, an inventory cycle would emerge from
the operation, which has been presented in figure (5-4);

**Figure (5-4) shows Inventory cycle: - even demand and no buffer stock**

On the OX axis time is shown and on the OY axis units are shown.

Q = Quantity, the size of the purchase order.

Q/2 = the average inventory maintained over any given period.

The above figure shows a situation where demand is fairly even over regular periods of
time and replenishment takes place just as the nil position at the base is reached. The steps
represent the actual withdrawals from stock.

In practice, demands are not made so evenly nor can stock be run down to nil just as each
new order arrives. Rather, demands are made often unevenly and while the delivery times
may be regular, the slope of the demand is steeper. On some occasions, stocks fall more
rapidly and this upsets the calculated sufficient holding. In this case, unless a buffer stock
is held in excess of normal requirements, a gap would result, causing either a delay in
production or the non-fulfillment of customer’s orders. Such buffer stocks add to the expense already involved in maintaining additional working capital. This type of demand is shown in figure (5-5);

Figure (5-5) shows Inventory Cycle – Uneven demand and buffer stock,

\[ Q \]

\[ Q/2 \]

units

\[ B \]

\[ Y \]

\[ X \]

0-------------\( T_1 \)-------------\( T_2 \)-------------\( T_3 \)-------------\( T_4 \)

Time

Q = Quantity

Q/2 = the average inventory maintained

B = Buffer stock.

It reveals the irregularity of the requisitioning and the retention of a buffer stock, which on one occasion is shown as being exceeded. It is possible to calculate the average demand during delivery or lead-time. The variations likely to occur make it possible to avoid the expense of retaining excessive buffer stocks and at the same time, place orders on the most profitable basis.

The following are the inherent Cost Considerations while taking Inventory Decisions

1) Ordering costs and costs of acquiring inventories

2) Carrying costs or costs of maintaining inventories

3) Stock out costs
In the case of raw materials or supplies, the term ‘ordering costs’ has to be interpreted to cover not merely the costs connected with the order placement but also the subsequent costs arising from and related to such individual supply order. It will include the cost of purchase order forms, the clerical and order processing costs in purchase department, the postage, the stationery costs of ‘receiving notes’ and ‘inspection notes’, the costs of related staff work in receiving and inspection departments and the specific costs for recording and processing the concerned supply bill for payments.

Carrying cost: Among the cost elements that have to be considered in determining inventory-carrying cost are:

1. The cost of storage space, in terms of rent or depreciation on buildings, etc.
2. Property taxes on stores buildings
3. Property insurance
4. Cost of deterioration or obsolescence, depending on the nature of items in inventory.
5. Storage handling costs
6. Storage costs and
7. Cost of funds

Stock out cost: If some items run out of stock, and there is a hold up in production, what are the cost implications? Or a particular product is not in stock at the time a customer has asked for it and he cancels his order how much this incidence will, cost the business? While we can, in general terms, indicate the impact of these ‘stock out’ situations, measuring the related costs or the quantum of profits lost is just impossible.

**How much to buy?** The optimum size of the purchase order lot is a fundamental inventory decision area. This optimum size is popularly referred to as Economic Order Quantity. This order size has to give the minimum annual total costs for ordering and holding, to quality as the ‘best’ or ‘least cost’ quantity level.

**What to order?** A straightforward approach to this situation is the two-bin system. The total inventory held of a given item can be split into two groups: One small, and the other large. The small group, placed in the small bin, will contain sufficient numbers of item to meet the consumption needs during the lead-time for procurement. The balance will be placed in
the large bin for routine issue for production. At that point of time, when the large bin gets
exhausted, the order for replenishment will be released and further issues for production
will be made from the small bin. Just before the small bin gets empty, the replenishment is
expected to arrive enabling the two bins to be refilled.

4. Perpetual inventory System: In addition to the fixation of stock or re-order levels
for individual items in inventory, especially the important ones, a system of perpetual
inventory or a continuous stock taking can cover almost all items. The stock verification is
undertaken throughout the year, taking care to see that each item gets checked at least once
a year or more often where necessary. Items, the stocks of which are to be verified can be
selected at random. If on verifying the selected items, fairly close to minimum level,
shortages are spotted, the situation may demand instant action to replenish stock. Thus, the
perpetual inventory system, provides a cross check for the information furnished by bin
cards and enables correction of recording errors, rendering them reliable as basis for
inventory decisions.

Perpetual inventory system compels prompt updating of stock records on a continuous
basis. Perpetual inventory helps prompt detection of discrepancies, facilitating speedy
investigation.

5. Evaluation through selected inventory ratios. While a variety of tools and techniques
aid planning of investment in inventories, there is a simultaneous need for constant feed-
back on the liquidity and profitability conditions of existing inventories. A package of
measuring tools can be used for this purpose, comprising of ‘inventory turnover’ ratios.
These ratios are generally regarded as indices of inventory efficiency.

As a measure of effectiveness of the overall inventory management, either of the two
following turnover rates can be computed, based on annual figures:

\[
\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Average total inventories at cost}}
\]

\[
\text{Inventory turnover} = \frac{\text{Net Sales}}{\text{Average total inventories at cost}}
\]

Rates can also be computed individually for the major inventory categories:
Raw materials:

\[
\text{Inventory turnover} = \frac{\text{Cost of Raw material consumed}}{\text{Average raw material inventory at cost}}
\]

\[
\text{Work-in-progress} = \frac{\text{Cost of manufactures}}{\text{Average work in progress inventory at cost}}
\]

(Inventory turnover)

\[
\text{Finished goods} = \frac{\text{Cost of goods sold}}{\text{Average finished goods inventory at cost}}
\]

(Turnover percentage)

\[
\text{Raw material} = \frac{\text{Average raw materials inventory at cost} \times 100}{\text{Cost of raw materials consumed}}
\]

(Turnover percentage)

Period taken to

\[
\text{Turnover raw} = \frac{\text{Average raw materials inventory at cost} \times 365}{\text{Cost of raw material consumed}}
\]

Materials inventory

Average age of

\[
\text{Raw materials in} = \frac{\text{Average raw materials inventory at cost} \times 365}{\text{Total purchases of raw materials at cost}}
\]

Inventory

Average age of

\[
\text{Finished goods} = \frac{\text{Average finished goods inventory at cost} \times 365}{\text{Cost of goods manufactured}}
\]

Inventory
The inventory ratios are not to be taken as conclusive evidence of the wisdom or otherwise of inventory management policies. They provide certain, broad indications and can only be regarded as sufficient basis for a more elaborate and through investigation of the causes of the seemingly apparent deficiencies, if any, in inventory management. The following other points also should be considered.

1. **Storage Techniques:**
The physical storage of inventories is a function of the physical properties of the items stored. The method of storage of foodstuffs would be different from the method of storing nuts and bolts.

2. **Obsolescence:**
This depends upon the prevailing market conditions and on the nature of the product being made. A stock of iron ore is unlikely to become obsolete but spare parts for a particular design or product type may well become obsolete as the result of super session. A systematic policy must be laid down with definite responsibility and clear-cut procedures for continuous review of inventory for eliminating obsolete stocks.

3. **Physical Checking:**
Physical verification of inventory with the recorded figures should be a continuous activity. This will ensure that, the recorded inventory agrees with the physical inventory. Verification may be done by weighing, counting, measuring or estimating. The purpose of this verification is that losses due to theft, deterioration and obsolescence can be removed and accounted for, according to the prescribed procedures.
Verification may be made:
   a) Continuously during the year so that every section of the inventory and every item is covered at least once or
   b) At the end of the year when the unit is shut down when everything could be checked.

4. **Supply of control data:**
Control data may be supplied in the form of monthly control information.
The aspects of inventory position may be covered in the monthly report:

a) Total investment for financial control.

b) Balance or mix of inventory for operating control.

A better method would be to compare actual with standards.

5. **Buying strategy based on price indices:**
Whenever a statement of Inventory is prepared showing increase or decrease of inventory against standard norms, the statement should furnish this information by material classification.

Another area of inventory management which needs investigation and which would yield rich dividends is the management of indirect inventory.

In most cases, the concept of inventory control is applied to production material because production times are more amenable to control. The standard inventory control models are more easily applicable to production material than to non-production material because inventory norms for production material in terms of maximum and minimum quantities to be held in stock, consumption rates, recording levels, economic order quantities, lead times, can be more easily established. But the segment of the inventory, which often escapes notice of management, is the non-production inventory.

5.5.10 **Inventory Valuation Practices and their Implications**
Many methods of materials costing and inventory valuation have come into use. Among the more common methods of costing materials and valuing inventories are:

1. First in first out method
2. Last in first out method
3. Moving (weighted) average method
4. Month-and average cost method
5. Standard or predetermined cost method
6. Market price at date of issue method.

1. **First in first out method** – Here the earliest acquired stock is assumed to be used first. This method is claimed to be accurate, for the reason that the materials are changed into
production at actual cost in the order of receipt. The closing inventories are valued at the 
most recent prices.

2. Last in first out – Cost of production and cost of goods sold are based on the cost of 
materials most recently purchased. The inventories will reflect the earlier purchase prices.

3. Moving Average Method – This method has the promise that materials enter a given 
job or process more or less accidentally so far as the specific units and specific costs are 
concerned. An average cost of all units in stock at the time of issue on a given job is a 
satisfactory measure of materials cost.

4. Month-and Average Cost Method – In situations where most of a company’s purchases 
are made on a month-to-month basis and a good quantity out of this is purchased towards 
the end of the month to cater for the following month’s operations, this approach will be 
suitable. The average cost at the close of each month can be applied as the price for issues 
during the following months.

5. Standard or predetermined cost – a predetermined, budgeted or estimated price 
reflecting a normal or an expected future price is used for pricing issues. Inventories also 
get valued at standard or predetermined price, unless a firm’s decision has been taken to 
value items at actual cost under FIFO or LIFO procedure.

6. Market price at the date of issue – The intention is to charge production at a current and 
significant price.

For a large majority of undertakings inventory management policies and practices concern 
a crucial area of assets management, inadequate attention to which will adversely affect 
profits and pose numerous problems.

Inventory management has to find the right balance between inadequacy and surplus or 
establish the right compromise between over-investment and under-investment in 
inventories, as the basic step towards improving profitability.

5.6 Management of Trade Credit

The well-known form of trade credit is the book debt. From the viewpoint of seller, the 
item ‘trade debtors’ or ‘bock-debts’ represents a claim or an asset. The objectives of credit 
management are as follows:
Chapter Five

Management of Various Aspects of Working Capital

Primarily credit management has to sustain and promote the twin corporate goals of liquidity and profitability. To do this, the credit policies, procedures and practices have to be so turned as to –

1. Obtain the maximum volume of sales for a given period,
2. Maintain proper control over the quantum or amount of investment in debtors,
3. Exercise control over the cost of credit and collections.

Credit management has assumed a pattern of its own. In a vast country like India, the business responsibility of credit management is assumed by the wholesalers and dealers who know local factors and also know their clients.

In respect of industrial goods, which have to be sold directly to customers, goods are usually sold through banks due to the absence of credit information and credit lines. Generally there are three types of transactions:

a) Goods delivered against documents negotiable immediately or against bank draft or thorough bank.

b) Goods distributed through wholesalers and dealers so that the manufacturer get payment immediately.

c) Goods sold on credit to customers without having sufficient credit information regarding them. A large number of companies come under this category.

There are two types of sales, which are significant in a study of credit management because the “outstanding receivables” arising from these two categories are quite sizable and problematic. They are:

a) Receivables of companies who sell their products directly on credit and

b) Sale to government companies through the Directorate General of Supplies and Disposal.

Credit planning has to be based on a clear understanding of how changes in sales affect earnings.

If average receivables are; R
The amount of sale is; S
And cost of sale is; C

Margin is represented by \((S-C) / S\) the earnings on receivables are
R x (S – C) / S. The total earnings for the year is R x(S – C) / S multiplied by the number of times receivables are turned over.

E = R x (S – C) / S x S / R

S/R being a measure of the number of times the amount of receivables is turned over. A similar formula can be evolved to measure earnings on inventory.

E=I x (S-C) / S x C / I

Where I is the inventory and C / I is the number of times inventory is turned over and (S – C) / S is a measure for make up.

Turnover of receivables means realizations of cash. For a given rate of invoicing, it is possible to increase the number of times receivables are turned over by reducing the collection time and realizing invoices faster. Two months receivables mean three times turnover. This is the principle on which receivables turnover is related to cash generation.

5.6.1 Credit Policies

The credit policy formulation has rarely been a matter of deliberate decision. By and large, credit policy of a company depends upon –

a) The nature of industry,

b) The market that the company enjoys,

c) Monopolistic or other privileges which the company enjoys,

d) The plant capacity installed and utilized, and demand for the company’s plant capacity and other means to keep the plant going,

e) The reputation of the company as a manufacturer of quality product. If the reputation and quality are good, the company cannot only dictate its own credit terms but also get higher prices than those of its competitors.

f) The financial standing of the company.

Interest on receivables is a part of the total cost of sale. The Reserve Bank of India implemented that receivables in excess of the prescribed norms are not eligible for bank finance. This means that if the company has not enough accumulated surplus, it may have to go into the capital market with an equality issue. All forms of borrowing will be restricted if it is for working capital needs in excess of the prescribed norms. The
importance of credit management becomes even more important if the company has enough cash to invest in receivable because in such a case the need to save as much as possible, being a distinct possibility cannot be avoided.

5.6.2 Credit Planning

One of the main corporate objectives generally is to generate surplus, not only for financing expansion and diversification necessitated by the need to replace products which are in declining sectors of the product range life cycle, but also to contain the erosion in money values. To increase sales steadily is the primary task of any company. Increasing sales through the instrument of credit policy: the first steps in the management of credit are to establish suitable credit lines for different customer's class. To start with, it could be the basis of the sales manager's judgment. But a system must be created to get the necessary information for decision-making.

1. Customers are classified by product line and by customer class. An ABC analysis should then be made to determine the list of customers whose accounts must be systematically studied. A systematic study of the significant accounts would reveal, who meets debt obligations on due dates and who does not and among those who do not meet debt obligations on due dates, how frequently lapses occur. This analysis discloses how invoices are actually realized.

2. To get a more complete picture of the financial standing of customers, business, their statements of accounts could be studied. Statements of account reveal not only the liquidity of business, but also profitability and surplus generation.

Organizing debt collection: It is sometimes though that offer of each discount or attractive trade discounts can induce faster payments. In the debt collection system following stages is included:

1) Invoices are generally required to be sent with;
   a) Railway Receipt or the Goods Consignment Note
   b) Inspection and test certificates by the prescribed inspecting authorities
   c) Maintenance manuals
   d) Bank guarantees in certain cases.
2) Dispatch of goods has to be according to the terms of order, acceptance regarding mode of transport, type of packing, delivery dates and delivery terms. It is necessary to ensure that all conditions as required are fulfilled.

3) More frequently, delay in debt collection is due to the absence of list of outstanding for effective follow-up. It is necessary to
   a) Establish clear-cut payment procedures,
   b) Prepare periodically statement of customer’s accounts,
   c) Assign specific responsibility for debt collection.

The customers account should disclose:
   a) Total net amount due as on a given date
   b) The net amount broken down into dues outstanding for 30 days, 45 days, 60 days, 180 days and over 180 days after the due dates.
   c) Indication regarding promptness in past payments
   d) Customer class code
   e) Details of cheques received, date and number of invoices, debit notes and credit notes.

Credit policy has close relevance to pricing strategy as also to the volume of business transacted in any given period. Well-administrated credit can provide a good push to sales and serve as an effective tool for sales promotions. It can win new customers and keep them as profitable credit accounts.

Funds looked up in debtors have opportunity costs. Excessive tie-up in outstanding will amount to denial of funds for more remunerative alternative uses. To avert over-investment in debtors, the control has to be exercised over the quality as well as the amount of book debts. The level of book debts is influenced by external factors such as industry conventions as to terms of sale, impact of changes in general level of business activity on the volume of credit sales and other seasonal factors. While these external influences may defy control, there are a host of internal, controllable factors that deserve attention.

Dynamic credit management covers the entire range of activities, starting with the initial consideration of a positive account and ending with the review of the results achieved with an eye on required modifications to credit policy and practice.
There are the influences on credit policy of the two conflicting factors:

1) Liquidity and
2) Profitability

The liquidity factor concerns: (a) the prospects of the book debts being realized when they fall due, and (b) the prospects of reducing the duration of the credit term, without affecting profitability.

To improve profitability one can resort to easy or laxer credit policy as a booster to sales, but the implications are:

a) Chances of extending credit to those with weak credit standing,
b) Unduly long credit terms,
c) Tendency to expand credit to suit customer’s needs and,
d) Lack of attention to overdue accounts.

5.6.3 Credit Standards

If a firm makes credit sales to only the strongest of customers it will never have bad debt losses nor it will incur much in the way of expenses for a credit department. On the other hand, it will probably be losing sales and the profit foregone on these lost sales could be larger than the costs it has avoided. Determining the optical credit standards involves equating the marginal costs of credit to the marginal profit on the increased sales. Marginal costs include production and selling costs.

5.6.4 The 5 C’s of Credit

Since credit costs and credit quality are correlated, it is important to judge the quality of an account. First, how should we define ‘quality’? Perhaps the best way would be in terms of the probability of default. These probability estimates are, for most parts, subjective estimates. Whereas credit evaluation is a well-established practice. A good credit manager can make a reasonably accurate judgment of the probability of default by different classes of customers. To evaluate credit risk, credit managers consider the five C’s of Credit – Character, Capital, Capacity, Collateral and Conditions.

Character refers to the probability that a customer will try to honour his obligations. This factor is of considerable importance, because, every credit transaction implies a promise to
pay. Will the debtor make an honest effort to pay his debts or is he likely to get away with it? Experienced credit men insist that the moral factor is the most important issue in a credit evaluation.

Capacity is a subjective judgment of the customer’s ability to pay. It is gauged by his past record, supplemented by physical observation of the customer’s plant or stores and business methods.

Capital is measured by the general financial position of the firm, as indicated by a financial ratio analysis, with special emphasis on the risk-ratios – the debt/asset ratio, the current ratio and the times interest earned ratio.

Collateral is represented by assets, the customer may offer as a pledge to secure the credit extended to him. Finally, conditions refer to the impact of general economic trends in the firm or to special developments in certain areas of economy that may affect the customer’s ability to meet his obligations.

5.6.5 Credit terms
The terms of credit specify: (1) the period for which credit is extended and (2) the discount, if any, that is given for early payment.

5.6.6 Credit Period
Lengthening the credit period stimulates sales, but there is a cost to tying up funds in receivables, e.g., if a firm changes its terms from net 30 days to net 60 days the average receivables for the year may rise from Rs.1,00,000 to Rs.3,00,000 with Rs.2,00,000 increase caused partly by the longer credit terms and partly by the larger volume of sales. If the cost of capital needed to finance the investment in receivables is 8 per cent, then the marginal cost of lengthening the credit period is Rs. 16,000 (Rs.2,00,000 x 8 per cent). If the incremental profit-sales price minus all direct production selling and credit costs associated with the additional sales – exceeds Rs.16,000, then the change in credit policy is profitable. Determining the optional credit period involves, locating that period where marginal profits on increased sales are exactly offset by costs of carrying the higher amount of accounts receivable.
5.6.7 Cash discount
The effect of granting each discount may be analyzed similarly to the credit period. If a firm increases the rate of discount, it may attract customers who want to take discounts, thereby increasing gross sales. Also, the average collection period will be shortened, as some old customers will pay more promptly to the advantage of the discount. Offsetting these benefits, the cost of discounts taken can be observed.

5.6.8 Collection Policy
Collection policy refers to the procedure the firm follows to obtain payment of past due accounts.
The collection process can be expensive in terms of both, out-of-pocket expenditures and loss goodwill. Some firmness is needed to prevent an undue lengthening in the collection period and to minimize outright losses. Again, a balance must be struck between the costs and benefits of different collection policies.
The easy credit policy involves:

1) Extending credit to a mere risky class of customers,
2) Extending the allowable payment period,
3) Raising the cash discount allowed for prompt payments, and
4) Reducing the pressure of the collection procedure on overdue accounts.
The tough credit policy involves:

1) Tightening credit standards,
2) Reducing credit term, and
3) Increasing the collection efforts on overdue accounts.
It will not only result in lower sales but also in lower bad debt losses and a smaller investment is accounts receivable.

5.6.9 Measuring Effectiveness of Debt Collection
Cash is the most liquid of all assets. Speed with which receivables are converted into cash is the acid test for the effectiveness in debt collection. A study of the invoicing pattern and cash inflows would reveal:
a) The average number of days within which an invoice gets paid – fully, 90 per cent payment, 95 per cent, 10 per cent and 5 per cent balances. Each invoice should project its own payment date. Receipt patterns should be studied for each class of customers, taking into account the credit terms offered and payments received to determine the period of maturity for each class of sales.

b) Assuming that the sales and realizations are uniformly spread over the period, which however seldom happens, the ratio of sales to receivables at the end of each week given a fairly good idea of how realization and invoicing are progressing. Other evaluation criteria are turnover ratios:

1. Sales / Receivables
2. Bad Debts / Invoiced Sales

c) Cost of credit is an important measure of the effectiveness of debt collection. The volume of sales could remain constant but receivables may vary. One effect of such movement is the cost of credit, cost of borrowings to finance outstanding receivables. Sources of finance may be banks, fixed deposits or shareholders’ contribution. That the measure may not be influenced by the source of finance, either the cost of receivables could be reckoned at the bank’s borrowing rate or cost of financing could be computed for each source separately and then added.

5.6.10 Effective of the Firm’s Credit Policy

The optimum level of accounts receivable, depends on the firm’s own unique operating conditions. How a firm with excess capacity and variable production costs should extend credit more liberally and carry a higher level of accounts receivable than a firm operating at full capacity. However, in spite of the individualized nature of the credit management process, it is still useful to analyses the effectiveness of the firm’s credit policy in an overall aggregate sense.

The ratio of average collection period is calculated in the steps:

1. Divide annual sales by 360 to find the average sales per day.
2. Divide sales per day into the balance sheet item “accounts receivable” to find how long, on an average, the firm must wait after making a sale to receive payment.
1. Sales per day = Annual sales / 360

2. Average collection period = Receivable /Sales per day (1)

Management analyses the firm’s average collection period and its aging schedule in comparison with industry averages, recent trends and the firm’s credit terms to see how effectively the credit department is operating.

Investors – both, stockholders and bank loan officers – should pay close attention to accounts receivable management. Otherwise, they could be misled by the current financial statements and later suffer serious losses on their investments.

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,
   iii) The difference is recorded as a profit.

If the sale is against cash, the profit is definitely earned, but if the sale is on credit, the profit is not actually earned till the amount is collected.

5.6.11 Credit Information

While information granting credit to a customer, satisfaction in two counts become essential:

1) That the payment will be received in full, and
2) That the payment will be received on the due date.

Different Source of Credit Information:

1. Trade References

Almost invariably, the prospective customer is required to furnish two or three trade references, including some trade creditors. This is a very valuable source that provides speedy and authentic information at minimum cost. It is advisable to send a brief questionnaire incorporating essential aspects of information required so that the response from the referees will be specific and purposeful. The information sought may comprise of:

   (a) The maximum amount recently settled by the customer,
   (b) Terms of credit/discount offered to the customer,
(c) Payment experience with the customer,
(d) Maximum credit limit granted to the customer,
(e) Number of years of dealings with the customer,
(f) General rating of customer.

2. **Bank References**
Seeking banker's opinion of the customer is another source of helpful information. The customer can be asked to advise his banker to provide the required credit information and the bank can then be approached. This source suffers from some limitations. The banker seldom comes with categorical answers to pointed questions about his customer. He takes shelter under guarded phrases and general statements which are hardly helpful to the credit investigator.

3. **Credit Bureau Reports**
In furnishing trade references, the customer will invariably give only the names of parties with whom his accounts are in good standing. Credit bureau organization on national and regional scales, provide signal service in advanced countries enabling creditors to exchange information concerning their common customers.
While some of these credit bureaus are privately owned, others are in the form of mutually established associations for specific industry or trade groups or chambers of commerce. It provides valuable and authentic credit information for their members’ other business prospects. Ledger experience gathered from members, financial and business sections of local newspapers, other clippings from trade publications, periodicals and journals are all inputs for the individual master cards or credit records.

4. **Ledger Experience**
The sales ledger or the debtors ledger, if promptly maintained can be valuable source of essential data for security and interpretation. The schedule of debtors with details of the bills and amounts due can be extracted form the ledger at regular intervals, providing first-hand information for review of each customer’s behavior in the matter of settlement of dues. However, this source of reference will not be available in the case of new customers.
5. Published Financial Statements and Other Published Source

Scrutiny of audited and published balance sheets and profit and loss statements of prospective clients can provide insight into their financial position and performance trends. The published financial statements of companies can be obtained without much difficulty, from the companies themselves direct or from other sources. Difficulties may, however, be experienced in getting them from firms or individuals.

6. Salesman’s Interviews and Reports

First hand information based on personal contact and dialogue has much significance in appraisal of credit risk. Salesman or representatives may often be reluctant to assume responsibility for credit and collection functions. They have the closest view of the customer’s activities, progress and problems and are best equipped to provide critical feedback information of relevance to credit decision.

5.6.12 Credit Investigation

The process of gathering credit information is itself part of the credit investigation activity. Among the factors that exert influence on the extent of credit investigations in a given situation are:

1. The type of customers,
2. The customer’s business line,
3. The nature of product,
4. The size of customer order, and
5. Company’s credit policies and practices.

The cost incurred to collect this information and carry out the investigation justify themselves in terms of saving in collection and follow-up costs or prevention of the bad debt losses. It pays to introduce effective methods and procedures to collect record and analyze essential credit information.

5.6.13 Calculating the Profitability of Extending Credit Facilities

While extending credit facilities to customers various factors such as return on investment, average collection period, bad debts etc, have to be considered, which are given bellow;
a. The Required Return on Investment –
When considering in detail the financial aspect of any proposed extension of credit to
debtors, it is necessary to estimate the increased sales likely to arise, the adjusted length of
the average collection period, the normal return expected on investments made by the
company and the bad debts likely to arise.
   i. As the marginal cost of sales figures are available, it is necessary to calculate the
   P/V ratio, i.e. Profit to Volume ratio in order to arrive at the increased contribution on the
   additional Sales.
   Formula:
   Profit to Volume Ratio = Sales – Variable costs / Sales x 100 or:
                          = Fixed costs + Net Profit / Sales x 100
   Additional Sales = Estimated Sales / (P/v) ratio = Contribution
   ii) Present average investment in trade debtors = Cost of sales / 12
   iii) Average investment in trade debtors after change in policy credit = Projected
       investment
   iv)      Additional investment in trade debtors = (iii) – (ii)
   v)       Return required on additional inv. = 20 per cent of (iv)
   vi)      Additional profit available = (i) – (v)

b) The cost of Default Risk:
The longer the credit terms are extended; greater will be the risk of bad debts. It is
necessary for the management accountant also to bring to notice the additional costs likely
to arise due to default in the settlement of debts.

5.6.14 Effectiveness of Credit Management

A clear assignment of responsibilities for the credit function and a statement of related
objectives provide the proper setting for the effectiveness of credit operations to be
measured. Generally the responsibilities and objectives go unstated; hence there is no clear
basis for appraisal of credit operations. The objectives of credit management can be spelt out as:

1. Obtain maximum sales
2. Keep bad debts losses to the minimum
3. Minimize the cost of investment in book debts and

The following measures may serve to assess the effectiveness of the credit granting function.

1) **Credit Sales Index**
Credit sales, expressed as percentage of total sales in a period may indicate the extent to which the company has to rely on credit based transactions for marketing its products.

2) **Rejection Index**
The rigidity in the grant of credit can be known normally from the ratio of applications rejected, to applications received from prospective customers seeking credit facilities.

3) **Risk Classification of Customer Accounts**
A periodic review of the number of accounts falling in selected risk classifications can serve to indicate whether the general level of risk is rising and assuming disturbing proportions.

4) **Bad Debts Loss Index**
The amount of loss by way of bad debts, as percentage of credit sales, shows the extent of loss due to credit risk. The bad debts ratio is generally recognized as a measure of the net consequences of credit decisions for the period under consideration.

The potential for improving the standard of management of book debts in the various industrial units in India is increased and any attempt at rationalization in this area can make solid contributions to corporate profits and growth.

### 5.7 Management of Current Liabilities
As per the sources of finance for working capital, following four categories have been listed:

1. Trade creditors,
2. Current provisions and non-bank short-term borrowings
3. Short-term bank borrowings
Trade dues and other sundry creditors, current provisions and non-bank short-term borrowings together, constitute the non-bank current liabilities. ‘Total current assets ‘ minus ‘total non-bank current liabilities’ represents the ‘working capital gap’. The ‘working capital gap’ is partly met by bank borrowings or cash credit facilities, the balance being supported by equity and/or long-term borrowings. The part that is supported by equity and/or long-term borrowings, representing ‘total current assets’ minus ‘total current liabilities’ is referred to as ‘net working capital’.

The major shifts are in ‘trade dues and other sundry creditors’ and short-term borrowings. When bank finance tended to becomes expensive and relatively tough to obtain, the shock is primarily transferred to ‘trade dues and other sundry creditors’ by allowing these liabilities to rise to as increasing extent.

5.7.1 Managing Current Liabilities

Current liabilities constitute debts that are payable in cash within a short-term period of a year or less. Until this liability falls due for payment, it serves, as a short-term source of finance to support the working capital needs. While the promptness in discharging the short-term debts on due dates determines the solvency and creditworthiness of the company, it is also essential that credit opportunities be availed of to the best extent possible in terms of amount and duration. If credit facilities are not asked for and obtained, it will amount to waste of available resources.

One approach is to relate current liabilities to current assets. An intention to keep a current ratio of 2:1 would mean that the current liabilities are not to exceed 50 per cent of the value of current assets. If current liabilities tend to exceed the company’s self-set norms of current ratio and/or quick ratio means the ratio between current assets minus inventories and current liabilities, it would amount to over-stretching this handy source of finance.

Another approach to planning and control of current liabilities involves measuring ‘net current debt’ against cash earnings.

Net current debt is the difference between current liabilities and liquid assets, where liquid assets are each, near-cash and accounts receivable. Cash earning can be measured in a number of ways.

A current liquidity measure is defined by –
Current liability = (Net current debt x 365) / Earning before tax  \textbf{or:}

Current liquidity = (Current liabilities – liquid assets) / profit before taxes x 365

Another method advocated by Howard to decide on the ‘safe’ current liability level involves the determination of the ‘standard liquidity flow period’ on the basis of the following formula:

\[
\text{Standard liquidity flow period} = \frac{(E - \text{LTO})}{E}
\]

Where \(E\) = pretax earnings plus depreciation added back, and \(\text{LTO}\) = Long-term outgoings covering application of funds to use other than settlement of current liabilities.

5.7.2 Managing Trade Creditors

As part of current liabilities, the planning and control approaches have relevance to the management of ‘trade creditors’. The aim should be to ensure that the average age of outstanding trade credit is neither excessive nor too low.

Any tendency to exact considerable extended credit terms is to be curbed. It may be easy to obtain protracted periods of credit from some suppliers who are making fresh entry into the market, but such suppliers would introduce in the price an element of interest for the extended credit allowed.

A measure of the average age of ‘trade creditors’ can be obtained had by the following formula:

Number of days purchases outstanding in trade creditors = (Average trade creditors) / Average purchases per day

If the normal terms of credit indicate an average of the months’ credit against purchase and if the computation based on above formula shows outstanding to creditors well exceeding 60 days, there is need for prompt action to bring the situation under control by:

\(a\)  Prompt arrangement to settle overdue bills, and

\(b\)  Being cautious in the matter of further credit purchases.

A company in the process of rapid expansion of activity may be tempted to bargain with the suppliers and avail enhanced credit period for its purchases. The funds thus generated, may mostly be used in acquisition of fixed assets for expansion and the consequences
would be an acute shortage of liquid funds, within a short period, when the due dates for settlement of trade creditors arrive.
One dictum can be: not be in a hurry to make the payment until the agreed due date. At the same time, avoid being named a late payer, and ensure settlement on due dates.
How about taking advantage of cash discounts for early payments? This could be a worthwhile proposition on two counts:

1. Where the business is in a liquid position and would like to apply the surplus funds towards reducing its current liabilities, and
2. If the quantum of discount offered is remunerative enough.

5.8 Tools of Working Capital Management

Working capital of an undertaking is represented by excess of current assets over current liabilities. This involves two types of controls, viz., financial and physical. The financial controls aim at maintaining sufficient flow of finance for the operations of the business whereas the physical controls involve development of proper procedures, inspection, etc., in the case of current assets especially inventory. The emphasis in this study has been on the financial aspects as stated earlier and therefore, the tools discussed here, include only the financial tools for working capital management.

5.8.1 Financial Statements

Financial statements form an important tool in the hands of the management of any enterprise for the purpose of working capital management. Analysis and interpretation of financial statements provide a valuable data to the management and the conclusions derived therefore, would be useful in making policy decisions both short-term and long-term in nature. However, while using financial analysis as a tool, its limitations must be kept in mind. As Clemens has observed, “financial analysis will not give an absolute answer to every question of doubt, but it can and will point to the direction in which further inquiries should be made.”

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The term financial statement includes the balance sheet, the profit and loss account and the profit and loss appropriation account prepared at the end of the accounting period of any business undertaking. These statements are supplemented by various schedules such as the schedule of fixed assets, current assets, reserves and surpluses, current liabilities, etc. Such schedules provide valuable information relating to certain items stated in the balance sheet or the profit and loss account.

Besides the annual reports, which contain the financial statements, which are statutory of nature, the management can use other statements for specific purpose either based upon the financial statements or specially prepared statements for eliciting additional information.

The financial statement analysis was started by the bankers in the 1890’s as a basic for determining eligibility for credit. During the early part of the present century the technique of ratio analysis was developed as a part of voluntary statements. In the initial period, “Myer, who had too little understanding of their significance, began to use them in unwarranted ways. Subsequent writers, however, have sought to clarify the use of ratios and have stressed their limitations”.  

Though financial statements have been used for years as important tools in the hands of management, one must not neglect the nature of these statements. They are not entirely statements of fact but are to large extent, expressions of opinions. This typical nature of financial statements have been neatly brought out, a number of years ago, by the American Institute of Accountants as follows:

Financial statements are prepared for the purpose of presenting a periodical review or report by the management and deal with status of the investment in the business and the results achieved during the period under review. They reflect a combination of recorded facts, accounting conventions, and personal judgments, and the judgments and conventions applied affect them materially. The soundness of the judgments necessarily depends on the competence and integrity of those who make them and their adherence to generally accepted accounting principles and conventions.

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Financial statements have proved to be a valuable aid in policy decisions. Financial statements help the process of evaluation of past performance with a view to interpret the present position of the enterprise and decide the future course of action.

5.8.2 Financial Ratio Analysis

Financial ratio analysis calculates and compares various ratios of amounts and balances taken from the financial statements.

The main purposes of working capital ratio analysis are:

- to indicate working capital management performance; and
- to assist in identifying areas requiring closer management.

Three key points need to be taken into consideration when analyzing financial ratios:

- The results are based on highly summarized information. Consequently, situations which require control might not be apparent, or situations which do not warrant significant effort might be unnecessarily highlighted;
- Different departments face very different situations. Comparisons between them, or with global "ideal" ratio values, can be misleading;
- Ratio analysis is somewhat one-sided; favorable results mean little, whereas unfavorable results are usually significant.

However, financial ratio analysis is valuable because it raises questions and indicates directions for more detailed investigation. Though, some of the ratios have been mentioned in this chapter earlier, details of important ratios, which are of interest to those managing working capital, are as follows:

- Working capital ratio;
- Liquid interval measure;
- Stock turnover;
- Debtors Turnover ratio;
- Creditors ratio.
5.8.2.1 Working Capital Ratio

**Current Assets** divided by **Current Liabilities**

The working capital ratio (or current ratio) attempts to measure the level of liquidity, that is, the level of safety provided by the excess of current assets over current liabilities.

The "quick ratio" a derivative, excludes inventories from the current assets, considering only those assets most swiftly realizable. There are also other possible refinements.

There is no particular benchmark value or range that can be recommended as suitable for all government departments. However, if a department tracks its own working capital ratio over a period of time, the trends—the way in which the liquidity is changing—will become apparent.

5.8.2.2 Liquid Interval Measure

**Liquid Assets** divided by **Average Operating Expenses**

This is another measure of liquidity. It looks at the number of days that liquid assets (for example, inventory) could service daily operating expenses (including salaries).

5.8.2.3 Stock Turnover

**Cost of Sales** divided by **Average Stock Level**

This ratio applies only to finished goods. It indicates the speed with which inventory is sold—or, to look at it from the other angle, how long inventory items remain on the shelves. It can be used for the inventory balance as a whole, for classes of inventory, or for individual inventory items.

The figure produced by the stock turnover ratio is not important in itself, but the trend over time is a good indicator of the validity of changes in inventory policies.
In general, a higher turnover ratio indicates that a lower level of investment is required to serve the department.

Most departments do not hold significant inventories of finished goods, so this ratio will have only limited relevance.

5.8.2.4 Debtor Turnover Ratio

There is a close relationship between debtors and credit sales. If sales increase, debtors will increase, and conversely, if sales decrease debtors will decrease.

The best way to explain this relationship is to express it as the number of days that credit sales are carried on the books:

\[
\text{Credit..Sales..per..Period..} \times \text{Days..per..Period} \div \text{Average..Debtors}
\]

Where trading terms are 30 days net cash, and customers buy from day-to-day during the 30-day period and pay 30 days after a statement is rendered, a collection period of 45 days (the average between 30 and 60 days) would be satisfactory.

If the average collection period extends beyond 60 days, debtors are holding cash that should have flowed into the organization. This means that the organization is unable to satisfy pressing liabilities or to invest that cash.

The debtor ratio does not solve the collection problem, but it acts as an indicator that an adverse trend is developing. Remedial action can then be instigated.

5.8.2.5 Creditor Ratio

This ratio is much the same as the debtor ratio. It expresses the relationship between credit purchases and the liability to creditors. It can be stated as the number of days that credit purchases are carried on the books.
Credit..Purchases..per..Period..*..Days..per..Period
Average..Creditors

However, non-credit purchases (such as salaries) and non-cash expenses (such as depreciation) need to be excluded from "credit purchases" and any provisions need to be excluded from "creditors".

There is no need to pay creditors before payment is due. The objective of organization should be to make effective use of this source of free credit, while maintaining a good relationship with creditors.

As with debtors, if the organization has been granted credit terms of 30 days net cash, credit purchases should not be carried on the books for more than an average of 45 days. If payment is withheld for 60 days or more it is likely that creditors will become impatient and impose stricter and less convenient trading terms like, "cash on delivery".

The Public Finance Act 1989 (section 49) places a legal constraint on the amount of credit allowed to an organization. It restricts to a maximum of 90 days the purchase of goods and services through the use of a credit card or suppliers' credit.

Good management of working capital is part of good financial management. Effective use of working capital will contribute to the operational efficiency of an organization; optimum use will help to generate maximum returns.

Ratio analysis can be used to identify working capital areas which require closer management. Various techniques and strategies are available for managing specific working capital items.

Debtors, creditors, cash and in some cases inventories are the areas most likely to be relevant to departments\textsuperscript{6}.

\textsuperscript{6} www.treasury.govt.nz/publicsector/workingcapital/chap3.asp
In this regard, information obtained through structured questionnaire and also from the viewpoints of S.S.I managers, it has been observed that relatively 70 per cent of units had positive working capital, 20 percent of them had balanced working capital and remaining 10 per cent of them had negative working capital. Therefore, from the study it has been revealed that the current assets of most of the selected SSI units were more than their current liabilities.