CHAPTER II

WORKING CAPITAL MANAGEMENT AND ENGINEERING INDUSTRIES IN INDIA – AN OVERVIEW
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INDUSTRIES IN INDIA – AN OVERVIEW

INTRODUCTION

Working capital management is concerned with the problems that arise in attempting to manage the current assets, the current liabilities and the interrelationship that exists between them. The term current assets refer to those assets which in the ordinary course of business can be, or will be, converted into cash within one year without undergoing a diminution in value and without disrupting the operations of the firm. The major current assets are cash, marketable securities, accounts receivable and inventory. Current liabilities are those liabilities which are intended, at their inception, to be paid in the ordinary course of business, within a year, out of the current assets or earnings of the concern. The basic current liabilities are accounts payable, bills payable, bank overdraft, and outstanding expenses.

The good of working capital management is to manage the firm's current assets and liabilities in such a way that a satisfactory level of working capital is maintained. This is so because if the firm cannot maintain a satisfactory level of working capital, it is likely is become insolvent and may even be forced into bankruptcy. The current assets should be large enough to cover its current liabilities in order to ensure a
of the current assets must be managed efficiently in order to maintain
the liquidity of the firm while not keeping too high a level of any one of
them. Each of the short - term sources of financing must be
continuously managed to ensure that they are obtained and used in the
best possible way. The interaction between current assets and current
liabilities is, therefore, the main theme of the theory of working
management.

Concepts and Definitions of Working Capital

There are two concepts of working capital: gross and net.

The term gross working capital, also referred to as working
capital, means the total current assets.

The term net working capital can be defined in two ways (i) the
most common definition of net working capital (NWC) is the difference
between current assets and current liabilities, and (ii) alternate definition
of NWC is that portion of current assets which is financed with long -
term funds.

The task of the financial manager in managing working capital
efficiently is to ensure sufficient liquidity in the operations of the
enterprise. The liquidity of a business firm is measured by its ability to
satisfy short - term obligations as they become due. The three basic
measures of a firm's overall liquidity are (i) the current ratio, (ii) the
acid - test ratio, and (iii) the net working capital. The suitability of the
first two measures has already been discussed in detail in Chapter 6. In brief, they are very useful in interfirm comparisons of liquidity. Net working capital (NWC), as a measure of liquidity is not very useful for comparing the performance of different firms, but it is quite useful for internal control. The NWS helps in comparing the liquidity of the same firm over time. For purpose of working capital management therefore, NWC can be said to measure the liquidity of the firm. In other words, the goal of working capital management is to manage the current assets and liabilities in such a way that an acceptable level of NWC is maintained.

**The Common Definition of NWC and its implications** NWC is commonly defined as the difference between current assets and current liabilities. Efficient working capital management requires that firms should operate with some amount of NWC, the exact amount varying from to firm and depending, among other things, on the nature of industry. The theoretical justification for the use of NWC to measure liquidity is based on the premise that the greater the margin by which the current assets cover the short – term obligations, the more is the ability to pay obligations when they become due for payment. The NWC is necessary because the cash outflows and inflows do not coincide. In other words, it is the non-synchronous nature of cash flows that makes NWC necessary. In general, the cash outflows resulting
from payment of current liabilities are relatively predictable. The cash, inflows are, however, difficult to predict. The more predictable the cash inflows are, the less NWC will be required. A firm, say an electricity generation company, with almost certain and predictable cash inflows can operate with little or no NWC. But where cash inflows are uncertain, it will be necessary to maintain current assets at a level adequate to cover current liabilities, that is, there must be NWC.

Alternatively Net Working Capital (NWC) can be defined as that part of the current assets which are financed with long-term funds. Since current liabilities represent sources of short-term funds, as long as current assets exceed the current liabilities, the excess must be financed with long-term funds.

Determining Financing Mix

One of the most important decisions, involved in the management of working capital is how current assets will be financed. There are, broadly speaking, two sources from which funds can be raised for current asset financing; (i) short-term sources (current liabilities), and (ii) long-term sources, such as share capital, long-term borrowings, internally generated resources like retained earnings and so on. What proportion of current assets should be financed by current liabilities and how much by long-term resources? Decisions on such questions will determine the financing mix.
There are three basic approaches to determine an appropriate financing mix: (a) Hedging approach, also called the Matching approach; (b) Conservative approach, and (c) Trade-off between these two.

**Hedging Approach:** The term ‘hedging’ is often used in the sense of a risk-reducing investment strategy involving transactions of a simultaneous but opposing nature so that the effect of one is likely to counterbalance the effect of the other. With reference to an appropriate financing—mix, the term hedging can be said to refer to the process of matching maturities of debt with the maturities of financial needs. This approach to the financing decision to determine an appropriate financing mix is, therefore, also called as

**Matching approach.**

According to this approach, the maturity of the source of funds should match the nature of the assets to be financed. For the purpose of analysis, the current assets can be broadly classified into two classes.

1. Those which are required in a certain amount for a given level of operation and, hence, do not vary over time.

2. Those which fluctuate over time.

**Risk Considerations**

The two approaches can also be contrasted on the basis of the risk involved.
PLANNING OF WORKING CAPITAL

This section is concerned with the planning of working capital requirements. The aspects covered here are the need for working capital, the determinants of working capital and its computation.²

Need for Working Capital

The need for working capital (gross) or current assets cannot be overemphasized. Given the objective of financial decision making to maximize the shareholders’ wealth, it is necessary to generate sufficient profits. The extent to which profits can be earned will naturally depend, among other things, upon the magnitude of the sales. A successful sales programme is, in other words, necessary for earning profits by any business enterprise. However, sales do not convert into cash instantly; there is invariably a time-lag between the sale of goods and the receipt of cash. There is a need for working capital in the form of current assets to deal with the problem arising out of the lack of immediate realization of cash against goods sold. Therefore, sufficient working capital is necessary to sustain sales activity. Technically, this is referred to as the operating or cash cycle. The operating cycle can be said to be at the heart of the need for working capital. The continuing flow from cash to suppliers, to inventory, to accounts receivable and back into cash is what is called the operating cycle.³ In other words the term cash cycle refers
to the length of time necessary to complete the following cycle of events:

1. Conversion of cash into inventory;
2. Conversion of inventory into receivables;
3. Conversion of receivables into cash.

The operating cycle, which is a continuous process, is narrated as follows:-

**Operating Cycle:**

If it were possible to complete the sequences instantaneously, there would be no need for current assets (working capital). But since it is not possible, the firm is forced to have current assets. Since cash inflows and outflows do not match, firms have to necessarily keep cash or invest in short-term liquid securities so that they will be in a position to meet obligations when they become due. Similarly, firms must have adequate inventory to guard against the possibility of not being able to meet demand for their products. Adequate inventory, therefore, provides a cushion against being out of stock. It firms have to be competitive; they must sell goods to their customers on credit which necessitates the holding of accounts receivable. It is in these ways that an adequate level of working capital is absolutely necessary for smooth sales activity which, in turn, enhances the owner’s wealth.
The operating cycle consists of three phases. In phase I, cash gets converted into inventory. This includes purchase of raw materials, conversion of raw materials into work-in-progress, finished goods and finally the transfer of goods to stock at the end of the manufacturing process. In the case of trading organizations, this phase is shorter as there would be no manufacturing activity and cash is directly converted into inventory. The phase is, of course, totally absent in the case of service organizations.

In phase II of the cycle, the inventory is converted into receivables as credit sales are made to customers. Firms which do not sell on credit obviously not have phase II of the operating cycle.

The last phase, phase III, represents the stage when receivables are collected. This phase completes the operating cycle. Thus, the firm has moved from cash to inventory, to receivables and to cash again.

**Permanent and Temporary Working Capital**

The operating cycle, thus, creates the need for current assets (working capital). However, the need does not come to an end after the cycle is completed and it continues to exist. To explain this continuing need of current assets, a distinction should be drawn between permanent and temporary working capital.
Business activity does not come to an end after the realization of cash from customers. For a company, the process is continuous and, hence, the need for a regular supply of working capital. However, the magnitude of working capital required is not constant, but fluctuating. To carry on business, a certain minimum level of working capital is necessary on a continuous and uninterrupted basis. For all practical purposes, this requirement is referred to as **permanent or fixed working capital**.

Any amount over and above the permanent level of working capital is temporary, fluctuating or variable working capital. The position of the required working capital is needed to meet fluctuations in demand consequent upon changes in production and sales as a result of seasonal changes.

Both kinds of working capital are necessary to facilitate the sales process through the operating cycle. Temporary working capital is created to meet liquidity requirements that are of a purely transient nature.

**Changes in Working Capital**

The changes in the level of working capital occur for the following three basic reasons (i) changes in the level of sales and / or operating expenses, (ii) policy changes, and (iii) changes in technology.
Changes in Sales and Operating Expenses

The first factor causing a change in the working capital requirement is a change in the sales and operating expenses. The changes in this factor may be due to three reasons: First, there may be a long-run trend of change. For instance, the price of a raw material, say oil, may constantly rise, necessitating the holding of a large inventory. The secular trends would mainly affect the need for permanent current assets. In the second place, cyclical changes in the economy leading to ups and downs in business activity influence the level of working capital, both permanent and temporary. The third source of change is seasonality in sales activity. Seasonality – peaks and troughs – can be said to be the main source of variation in the level of temporary working capital.

The change in sales and operating expenses may be either in the form of an increase or decrease. An increase in the volume of sales is bound to be accompanied by higher levels of cash, inventory and receivables. The decline in sales has exactly the opposite effect—a decline in the need for working capital. A change in the operating expenses—rise or fall—has a similar effect on the levels of working capital.

Policy Changes

The second major cause of changes in the level of working capital is because of policy changes initiated by the management. There is a
wide choice in the matter of current assets policy. The term current asset policy may be defined as the relationship between current assets and sales volume. A firm following a conservative policy in this respect having a very high level of current assets in relation to sales may deliberately opt for a less conservative policy and vice versa. These conscious managerial decisions certainly have an impact on the level of working capital.

**Technological Changes**

Finally, technological changes can cause significant changes in the level of working capital. If a new process emerges as a result of technological developments, which shortens the operating cycle, it reduces the need for working capital and vice versa.

**Determinants of working capital**

A firm should plan its operations in such a way that it should have neither too much not too little working capital. The total working capital requirement is determined by a wide variety of factors. These factors, however, affect different enterprises differently. They also vary from time to time. In general, the following factors are involved in a proper assessment of the quantum of working capital required.

**General Nature of Business**

The working capital requirements of an enterprise are basically related to the conduct of business. Enterprises fall into some broad
categories depending on the nature of their business. For instance, public utilities have certain features which have a bearing on their working capital needs. The two relevant features are: (i) the cash nature of business, that is, cash sale, and (ii) sale of services rather than commodities. In view of these features, they do not maintain big inventories and have, therefore, probably the least requirement of working capital.

The nature of their business is such that they have to maintain a sufficient amount of cash, inventories and book debts. They have necessarily to invest proportionately large amounts in working capital. The manufacturing enterprises fall, in a sense, between these two extremes. The industrial concerns require fairly large amounts of working capital though it varies from industry to industry depending on their asset structure. The proportion of current assets to total assets measures the relative requirements of working capital of various industries.

Available data in respect of companies in India confirm the wide variations in the use of working capital by different enterprises. The percentage of current assets to total assets was found to be the lowest in hotels, restaurants and eating houses (10-20 percent range), while in electricity generation and supply it was in the range of 20-30 percent. The enterprises in the tobacco, construction and trading groups had, as is to be expected, the highest component of working capital (80-
90 per cent range). The other industrial groups fall between these limits though there are very wide inter-industry variations.

**Production Cycle**

Another factor which has a bearing on the quantum of working capital is the production cycle. The term ‘production or manufacturing cycle’ refers to the time involved in the manufacture of goods. It covers the time-span between the procurement of raw materials and the completion of the manufacturing process leading to the production of finished goods. Funds have to be necessarily tied up during the process of manufacture, necessitating enhanced working capital. In other words, there is some time gap before raw materials become finished goods. To sustain such activities the need for working capital is obvious. The longer the time-span (i.e. the capital needed and vice versa. There are enterprises which, due to the nature of business, have a short operating cycle. A distillery, which has an ageing process, has generally to make a relatively heavy investment in inventory. The other extreme is provided by a bakery. The bakeries sell their products at short intervals and have a very high inventory turnover. The investment in inventory and, consequently, working capital is not very large.

Further, even within the same group of industries, the operating cycle may be different due to technological considerations. For economy in working capital, that process should be selected which has a
shorter manufacturing process. Having selected a particular process of manufacture, steps should be taken to ensure that the cycle is completed in the expected time. This underlines the need for effective organization and coordination at all levels of the enterprise. Appropriate policies concerning terms of credit for raw materials and other supplies can help in reducing working capital requirements. Often, companies manufacturing heavy machinery and equipment minimize the investment in inventory of working capital by requiring advance payment from customers as work proceeds against orders. Thus, a part of the financial burden relating to the manufacturing cycle time is passed on to others.

Business Cycle

The working capital requirements are also determined by the nature of the business cycle. Business fluctuations lead to cyclical and seasonal changes which, in turn, cause a shift in the working capital position, particularly for temporary working capital requirements. The variations in business conditions may be in two directions: (i). upward phase when boom conditions prevail, and (ii) downswing phase when economic activity is marked by a decline. During the upswing of business activity, the need for working capital is likely to grow to cover the lag between increased sales and receipt of cash as well as to finance purchases of additional material to cater to the expansion of the level of
activity. Additional fund may be required to invest in plant and machinery to meet the increased demand. The downswing phase of the business cycle has exactly an opposite effect on the level of working capital requirement. The decline in the economy is associated with a fall in the volume of sales which, in turn, leads to a fall in the level of inventories and book debts. The need for working capital in recessionary conditions is bound to decline. In brief, business fluctuations influence the size of working capital mainly through the effect on inventories. The response of inventory to business cycles is mild or violent according to nature of the business cycle.

Production policy

The quantum of working capital is also determined by production policy. In the case of certain lines of business, the demand for products is seasonal, that is, they are purchased during certain months of the year. What kind of production policy should be followed in such cases? There are two options open to such enterprises: either they confine their production only to periods when goods are purchased or they follow a steady production policy throughout the year and produce goods at a level to meet the peak demand. In the former case, there are serious production problems. During the slack season, the firms have to maintain their working force and physical facilities without adequate production and sale. When the peak period arrives, the firms have to
operate at full capacity to meet the demand. This kind of arrangement would not only be expensive but also inconvenient. Thus, serious difficulties will be encountered in trying to match production to the ebb and flow of the seasonal demand pattern. A better alternative is a steady production policy independent of shifts in demand for the finished goods. This means a large accumulation of finished goods (inventories) during the off-season and their abrupt sale during the peak season. The progressive accumulation of stock naturally requires an increasing amount of working capital which remains tied up for some months.

Working capital planning has to incorporate this pattern of requirement of funds when production and seasonal sales are steady. This strategy (steady production policy) is, however, not necessarily adopted by everyone. It may be possible, for instance, for some to follow a policy of diversification which enables them to engage the working force and the physical facilities in some other activity. If this is possible, there will be no major working capital problem. Moreover, the nature of some products may be such that accumulation of inventories may create special risk and cost problems. For them, a production to be in tune with the changing demands may be preferable. Therefore, production policies have to be formulated on the basis of the individual setting of each enterprise and the magnitude and dimension of the working capital problems will accordingly vary.
Credit Policy

The credit policy relating to sales and purchases also affects the working capital. The credit policy influences the requirement of working capital in two ways: (i) through credit terms granted by the firm to its customers / buyers of goods; (ii) credit terms available to the firm from its creditors.

The credit terms granted to customers have a bearing on the magnitude of working capital by determining the level of book debts. The credit sales result in higher book debts (receivables). Higher book debts mean more working capital. On the other hand, if liberal credit terms are available from the suppliers of goods (trade creditors), the need for working capital is less. The working capital requirements of a business are, thus, affected by the terms of purchase and sale, and the role given to credit by a company in its dealings with creditors and debtors.

Credit terms fixed by an enterprise are affected by the prevailing trade practices as well as changing economic conditions. If, for example, competition is keen, there would be pressure to grant generous credit terms. Nevertheless, there is wide scope for managerial discretion in working out a suitable credit policy relevant to each customer based on the merits of each case. For instance, liberal credit facilities can be extended on the basis of credit rating. This will avoid the problem of
having excess working capital. Similarly, the collection procedure can be so framed that funds, which would otherwise be available for meeting operating needs are not locked up. Thus, adoption of rationalized credit policies would be a significant factor in determining the working capital needs of an enterprise.

Such discretion may, however, not be available to a company which operates in a highly competitive market. To win and retain customers, it may be forced, among other things, to offer generous credit terms to them. The investment in book debts will consequently be of a higher order, necessitating large working capital in another way. To be able to enjoy consumer patronage on a continuous basis, a firm will have to offer a verity of products quite unlike a firm which has a hold on the market and, hence, does not need special efforts to satisfy customer requirements. The consequence of a higher level of inventories would be an additional need for working capital. The degree of competition is, therefore, an important factor influencing working capital requirements.

**Growth and Expansion**

As a company grows, it is logical to expect that a large amount of working capital is required. It is, of course, difficult to determine precisely the relationship between the growth in the volume of business of a company and the increasing its working capital. The composition of working capital in a growing company also shifts with economic
circumstances and corporate practices. Other things being equal, growth industries require more working capital than those that are static. The critical fact, however, is that the need for increased working capital funds does not follow the growth in business activities but precedes it. Advance planning of working capital is, therefore, a continuing necessity for a growing concern. Or else, the company may have substantial earnings but little cash.

**Vagaries in the Availability of Raw Material**

The availability or otherwise of certain raw material on a continuous basis without interruption would sometimes affect the requirement of working capital. There may be some materials which cannot be procured easily either because of their sources are few or they are irregular. To sustain smooth production, therefore, the firm might be compelled to purchase and stock them far in excess of genuine production needs. This will result in an excessive inventory of such materials. The procurement of some essential raw materials is difficult because of their sporadic supply. This happens very often with raw materials which are in short supply and are controlled to ensure equitable distribution. The buyer has in such cases very limited options as to the quantum and timing of procurement. It may so happen that a bulk consignment may be available but the firm may be short of funds, while when surplus funds are available the commodities may be in short
supply. This element of uncertainty would lead to a relatively high level of working capital. Finally, some raw materials may be available only during certain seasons. They would have to be necessarily obtained, when available, to provide for a period when supplies are lean. This will cause seasonal fluctuations in working capital requirements.

**Profit Level**

The level of profits earned differs from enterprise to enterprise. In general, the nature of the product, hold on the market, quality of management and monopoly power would by and large determine the profit earned by a firm. A priori, it can be generalized that a firm dealing in a high quality product, having a good marketing arrangement and enjoying monopoly power in the market, is likely to earn high profits and vice versa. Higher profit margin would improve the prospects of generating more internal funds thereby contributing to the working capital pool. The net profit is a source of working capital to the extent that it has been earned in cash. The cash profit can be found by adjusting non-cash items such as depreciation, outstanding expenses and losses written off, in the net profit.

But, in practice, the net cash inflows from operations cannot be considered as cash available for use at the end of cash cycle. Even as the company's operations are in progress, cash is used for augmenting stock, book debts and fixed assts. It must, therefore, be seen that cash
furthering the interest of the enterprise. It is in this contest that elaborate planning and projections of expected activities and the resulting cash inflows on a day-to-day, week-to-week and month-to-month basis assume importance because steps can then be taken to deal with surplus and deficit cash.

The availability of internal funds for working capital requirements is determined not merely by the profit margin but also by the manner of appropriating profits. The availability of such funds would depend upon the profit appropriations for taxation, dividend, reserves and depreciations.

**Level of Taxes**

The first appropriation out of profits is payment or provision for tax. The amount of taxes to be paid is determined by the prevailing tax regulations. The management has no discretion in this respect. Very often, taxes have to be paid in advance on the basis of the profit of the preceding year. Tax liability is, in a sense, short-term liability payable in cash. An adequate provision for tax payments is, therefore, an important aspect of working capital planning. If tax liability increases, it leads to an increase in the requirement of working capital planning. If tax liability increases, it leads to an increase in the requirement of working capital and vice versa. Management has no discretion in regard to the payment of taxes; in some cases non-payment may invite penal
action. There is, however, wide scope to reduce the tax liability through proper tax planning. The service of tax experts can be availed of to take advantage of the various concessions and incentives through avoidance as opposed to evasion of taxes. Tax planning can, therefore, be said to be an integral part of working capital planning.

**Dividend Policy**

Another appropriation of profits which has a bearing on working capital is dividend payment. The payment of dividend consumes cash resources and, thereby, affects working capital to that extent. Conversely, if the firm does not pay dividend but retains the profits, working capital increases. In planning working capital requirements, therefore, a basic question to be decided is whether profits will be retained or paid out to shareholders. In theory, affirm should retain profits to preserve cash resources and, at the same time, it must pay dividends to satisfy the expectations of investors. When profits are relatively small, the choice is between retention and payment. The choice must be made after taking into account all the relevant factors.

There are wide variations in industry practices as regards the interrelationship between working capital requirements and dividend payment. In some cases, shortage of working capital has been a powerful reason for reducing or even skipping dividends in cash. There are occasions, on the other hand, when dividend payments are continued
in spite of inadequate earnings in a particular year because of sound liquidity. Sometimes, the dilemma is resolved by the payment of bonus shares. This enables the payment of dividend without draining away the cash resources and, thus, without reducing working capital. Dividend policy is thus, a significant element in determining the level of working capital in an organization.

**Depreciation Policy**

Depreciation policy also exerts an influence on the quantum of working capital. Depreciation charges do not involve any cash outflows. The effect of depreciation policy on working capital is, therefore, indirect. In the first place, depreciation affects the tax liability and retention of profits. Depreciation is allowable expenditure in calculating net profits. Enhanced rates of depreciation lower the profits and, therefore, the tax liability and, thus, more cash profits. Higher depreciation also means lower disposable profits and, therefore, a smaller dividend payment. Thus, cash is preserved. In the second place, the selection of the method of depreciation has important financial implications. If current capital expenditure falls short of the depreciation provision, the working capital position is strengthened and there may be no need for short-term borrowing. If, on the other hand, the current capital expenditure exceeds the depreciation provision, either outside borrowing will have to be resorted to or a restriction on dividend
payment coupled with retention of profits will have to be adopted to prevent the working capital position from being adversely affected. It is in these ways that depreciation policy is relevant to the planning of working capital.

**Price Level Changes**

Changes in the price level also affect the requirements of working capital. Rising prices necessitate the use of more funds for maintaining an existing level of activity. For the same level of current assets, higher cash outlays are required. The effect of rising prices is that a higher amount of working capital is needed. However, in the case of companies which can raise their prices proportionately, there is no serious problem regarding working capital. Moreover, the price rise does not have uniform effect on all commodities. It is likely that some firms may not be affected at all. In brief, the implications of changing price levels on working capital position vary from company to company depending on the nature of its operations, its standing in the market and other relevant considerations.

**Operation Efficiency**

The operating efficiency of the management is also an important determinant of the level of working capital. The management can contribute to a sound working capital position through operating efficiency. Although the management cannot control the rise in prices,
it can ensure the efficient utilization of resources by eliminating waste, improving coordination, and a fuller utilization of existing resources, and so on. Efficiency of operations accelerates the pace of cash cycle and improves the working capital turnover. It releases the pressure on working capital by improving profitability and improving the internal generation of funds.

To conclude, the level of working capital is determined by a wide variety of factors which are partly internal to the firm and partly external (environment) to it. Efficient working capital management requires efficient planning and a constant review of the needs for an appropriate working capital strategy.
MANAGEMENT OF CASH AND MARKETABLE SECURITIES

Introduction

Cash management is one of the key areas of working capital management. Apart from the fact that it is the most liquid current asset, cash is the common denominator to which all current assets can be reduced because the other major liquid assets, that is, receivables and inventory get eventually converted into cash. This underlines the significance of cash management.

MOTIVES FOR HOLDING CASH

The term 'cash' with reference to cash management is used in two senses. In a narrow sense, it is used broadly to cover currency and generally accepted equivalents of cash, such as cheques, drafts and demand deposits in banks. The broad view of cash also includes near-cash assets, such as marketable securities and time deposits in banks. The main characteristics of these is that they can be readily sold and converted into cash. They serve as a reserve pool of liquidity that provides cash quickly when needed. They also provide a short-term investment outlet for excess cash and are also useful for meeting planned outflow of funds. Here, the term cash management is employed in the broader sense. Irrespective of the form in which it is held, a distinguishing feature of cash, as an asset, is that it has no earning power. If cash does not earn any return, why is it held? There are four
primary motives for maintaining cash balances: (i) Transaction motive; (ii) Precautionary motive; (iii) Speculative motive; and (iv). Compensating motive.

**Transaction Motive**

An important reason for maintaining cash balances is the **transaction motive**. This refers to the holding of cash to meet routine cash requirements to finance the transactions which a firm carries on in the ordinary course of business. A firm enters into a variety of transactions to accomplish its objectives which have to be paid for in the form of cash. For example, cash payments have to be made for purchases, wages, operating expenses, financial charges like interest, taxes, dividends, and so on. These receipts and payments constitute a continuous two-way flow of cash. But the inflows (receipts) and outflows (disbursements) do not perfectly coincide or synchronise. At times receipts exceed outflows while, at other times, payments exceed inflows. To ensure that the firm can meet its obligations when payments become due in a situation in which disbursements are in excess of the current receipts, it must have an adequate cash balance.

The requirement of cash balances to meet routine cash needs is known as the **transaction motive** and such motive refers to the holding of cash to meet anticipated obligations whose timing is not perfectly synchronized with cash receipts. If the receipts of cash and its
disbursements could exactly coincide in the normal course of operations, a firm would not need cash for transaction purposes. Although a major part of transaction balances are held in cash, a part may also be in such marketable securities whose maturity conforms to the timing of the anticipated payments, such as payment of taxes, dividends, and so on.

**Precautionary Motive**

In addition to the non-synchronization of anticipated cash inflows and outflows in the ordinary course of business, a firm may have to pay cash for purposes which cannot be predicted or anticipated. The unexpected cash needs at short notice may be the result of:

- Floods, strikes and failure of important customers
- Bills may be presented for settlement earlier than expected
- Unexpected slow down in collection of accounts receivable
- Cancellation of some order for goods as the customer is not satisfied; and
- Sharp increase in cost of raw materials.

The cash balances held in reserve for such random and unforeseen fluctuations in cash flows are called as **precautionary balances**. In other words, precautionary motive of holding cash implies the need to hold cash to meet unpredictable obligations. Thus, precautionary cash balance serves to provide a **cushion to meet unexpected contingencies**.
The more unpredictable are the cash flows, the larger is the need for such balances.

Another factor which has a bearing on the level of such cash balances is the availability of short-term credit. If a firm can borrow at short notice to pay for unforeseen obligations, it will need to maintain a relatively small balance and vice versa.

Such cash balances are usually held in the form of marketable securities so that they earn a return.

**Speculative Motive**

It refers to the desire of a firm to take advantage of opportunities which present themselves a unexpected moments and which are typically outside the normal course of business. While the precautionary motive is defensive in nature in that firms must make provisions to tide over un-expected contingencies, the **speculative motive** represents a positive and aggressive approach. Firms aim to exploit profitable opportunities and keep cash in reserve to do so. The speculative motive helps to take advantage of:

- An opportunity to purchase raw material at a reduced price on payment of immediate cash;
- A chance to speculate on interest rate movements by buying securities when interest rates are expected to decline;
• Delay purchases of raw materials on the anticipation of decline in prices; and
• Make purchase at favorable prices.

Compensating Motive

Yet another motive to hold cash balances is to compensate banks for providing certain services and loans.

Banks provide a verity of services to business firms, such as clearance of cheque, supply of credit information, transfer of funds, and so on. While for some of these services banks charge a commission of fee, for others they seek indirect compensation. Usually clients are required to maintain a minimum a minimum balance of cash at the bank. Since this balance cannot be utilized by the firms for transaction purposes, the banks themselves an use the amount to earn a return. Such balances are compensating balances.

Compensating balances are also required by some loan agreements between a bank and its customers. During periods when the supply of credit is restricted and interest rates are rising, banks require a borrower to maintain a minimum balance in his account as a condition precedent to the grant of loan. This is presumably to ‘compensate’ the bank for a rise in the interest rate during the period when the loan will be pending.
OBJECTIVES OF CASH MANAGEMENT

The basic objectives of cash management are two-fold: (a) to meet the cash disbursement needs (payment schedule); and (b) to minimize funds committed to cash balances. These are conflicting and mutually contradictory and the task of cash management is to reconcile them. 

Meeting Payments Schedule

In the normal course of business, firms have to make payments of cash on a continuous and regular basis to suppliers of goods, employees and so on. At the same time, there is a constant inflow of cash through collections from debtors. Cash is, therefore, aptly described as the 'oil to lubricate the ever-turning wheels of business: without it the process grinds to a stop'. A basic objective of cash management is to meet the payment schedule, that is to have sufficient cash to meet the cash disbursement needs of a firm.

The importance of sufficient cash to meet the payment schedule can hardly be overemphasized. The advantage of adequate cash are: (i) it prevents insolvency or bankruptcy arising out of the inability of a firm to meet its obligations; (ii) the relationship with the bank is not strained; (ii) it helps in fostering good relations with trade creditors and suppliers of raw materials, as prompt payment may help their own cash management; (iv) a cash discount can be availed of if payment is made within the due date. (v) it leads to a strong credit rating which enables
the firm to purchase goods on favorable terms and to maintain its line of credit with banks and other sources of credit; (vi) to take advantage of favorable business opportunities that may available periodically; and finally, (vii) the firm can meet unanticipated cash expenditure with a minimum of strain during emergencies, such as strikes, fires or a new marketing campaign by competitors. Keeping large cash balances, however, implies a high cost. The advantage of prompt payment of cash can well be realized by sufficient and not excessive cash.

FACTORS DETERMINING CASH NEEDS

The factors that determine the required cash balances are: (i) synchronization of cash flows, (ii) short costs, (iii).excess cash balance, (iv).procurement and management, and (v) uncertainty.

Synchronization of Cash Flows

The need for maintaining cash balances arises from the non-synchronization of the inflows and outflows of cash: If the receipts and payments of cash perfectly coincide or balance each other, there would be no need for cash balances. The first consideration in determining the cash need is, therefore, the extent of non-synchronization of cash receipts and disbursements. For this purpose, the inflows and outflows have to be forecast over a period of time, depending upon the planning horizon which is typically a one-year period with each of the 12 months being a sub period. The technique adopted is a cash budget. The
preparation of a cash budget is discussed in the next section of this chapter. A properly prepared budget will pinpoint the months / periods when the firm will have an excess or a shortage of cash.

**Short Costs**

Another general factor to be considered in determining cash needs is the cost associated with a shortfall in the cash needs. The cash forecast presented in the cash budget would reveal periods of cash shortages. In addition, there maybe some unexpected shortfall. Every shortage of cash – whether expected or unexpected – involves a cost ‘depending upon the severity, duration and frequency of the shortfall and how the shortage is covered. Expenses incurred as a result of shortfall are called short costs’. Included in the short costs are the following:

(i) **Transaction costs** associated with raising cash to tide over the shortage. This is usually the brokerage incurred in relation to the sale of some short-term near-cash assets such as marketable securities.

(ii) **Borrowing costs** associated with borrowing to cover the shortage. These include items such as interest on loan, commitment charges and other expenses relating to the loan.

(iii) **Loss of cash – discount**, that is, a substantial loss because of a temporary shortage of cash.
(iv) **Cost associated with deterioration of the credit rating** which is reflected in higher bank charges on loans, stoppage of supplies, demands for cash payment, refusal to sell, loss of image and the attendant decline in sales and profits.

(v) **Penalty rates** by banks to meet a shortfall in compensating balances.

**Excess Cash Balance Costs**

The cost of having excessively large cash balances is known as the excess cash balance cost. If large funds are idle, the implication is that the firm has missed opportunities to invest those funds and has thereby lost interest which it would otherwise have earned. This loss of interest is primarily the excess cost.

**Procurement and Management**

These are the costs associated with establishing and operating cash management staff and activities. They are generally fixed and are mainly accounted for by salary, storage, handling of securities, and so on.

**Uncertainty and Cash Management**

Finally, the impact of uncertainty on cash management strategy is also relevant as cash flows cannot be predicted with complete accuracy. The first requirement is a precautionary cushion to cope with
irregularities in cash flows, unexpected delays in collections and disbursements, defaults and unexpected cash needs.

The impact of uncertainty on cash management can, however, be mitigated through (i) improved forecasting of tax payments, capital expenditure, dividends, and so on; and (ii) increased ability to borrow through overdraft facility.

**Elements / Preparation of Cash Budget**

Thus, the principal aim of the cash budget, as a tool to predict cash flows over a given period of time, is to ascertain whether at any point of time there is likely to be an excess or shortage of cash. The preparation of a cash budget involves various steps. These may be described as the elements of the cash budgeting system.  

The first element of a cash budget is the selection of the period of time to be covered by the budget. It is referred to as the **planning horizon**. The planning horizon means the time span and the sub-periods within that time span over which the cash flows are to be projected. There is no fixed rule. The coverage of a cash budget will differ from firm depending upon its nature and the degree of accuracy with which the estimates can be made. As a general rule, the period selected should be neither too long nor too short. If it is too long, it is likely that the estimates will be inaccurate. If, on the other hand, the time span is too
small, many important events which lie just beyond the period cannot be accounted for and the work associated with the preparation of the budget becomes excessive.

The planning horizon of a cash budget should be determined in the light of the circumstances and requirements of a particular case. For instance, if the flows are expected to be stable and dependable, such a firm may prepare a cash budget covering a long period, say, a year and divide it into quarterly intervals. In the case of a firm whose flows are uncertain, a quarterly budget, divided into monthly intervals, may be appropriate. Where flows are affected by seasonal variation, monthly budgets, sub-divided on a weekly or even a daily basis, may be necessary. If the flows are subject to extreme fluctuations, even a daily budget may be called for. The idea behind subdividing the budgeting period into smaller intervals is to highlight the movement of cash from one sub-period to another. The sub-division will provide information on the fluctuations in the cash reservoir level during the time span covered by the budget.

The second element of the cash budget is the selection of the factors that have a bearing on cash flows. The items included in the cash budget are only cash items; non-cash items such as depreciation and amortization are excluded. The factors that generate cash flows are generally divided, for purpose of the construction of cash budget, into
two broad categories: (s) operating, and (b) financial. This two-fold classification of cash budget items is based on their nature. While the former category includes cash flows generated by the operations of the firms and are known as operating cash flows, the latter consists of financial cash flows.

CASH MANAGEMENT TECHNIQUES / PROCESSES

The basic strategies of cash management have been outlined in the preceding section. It has been shown that the strategic aspects of efficient cash management are: (i) efficient inventory management, (ii) speedy collection of accounts receivable, and (iii) delaying payments on accounts payable. There are some specific techniques and processes for speedy collection of receivables from customers and slowing disbursements. We discuss them in the present section.

Speedy Cash Collections

In managing cash efficiently, the cash inflow process can be accelerated through systematic planning and refined techniques. There are two broad approaches to do this. In the first place, the customers should be encouraged to pay as quickly as possible. Secondly, the payment from customers should be converted into cash without any delay.
Prompt Payment by Customers

One way to ensure prompt payment by customers is prompt billing. What the customer has to pay and the period of payment should be notified accurately and in advance. The use of mechanical devices for billing along with the enclosure of a self-addressed return envelope will speed up payment by customers. Another, and more important, technique to encourage prompt payment by customers is the practice of offering cash discounts. The availability of discount implies considerable saving to the customers. To avail of the facility, the customers would be eager to make payment early.

Early Conversion of Payments into Cash

Once the customer makes the payment by writing a cheque in favour of the firm, the collection can be expedited by prompt encashment of the cheque. There is a lag between the time a cheque is prepared and mailed by the customer and the time the funds are included into cash reservoir of the firm. Within this time interval three steps are involved: (a) transit or mailing time, that is, the time taken by the post offices to transfer the cheque from the customers to the firm. This delay or lag is referred to as postal float; (b) time taken in processing the cheques within the firm before they are deposited in the banks, termed as lethargy; and (c) collection time within the customer’s bank. This is called bank float. The early conversion of payment into cash, as a
technique to speed up collection of accounts receivable, is done to reduce the time lag between posting of the cheque by the customer and the realization of money by the firm. The postal float, lethargy and bank float are collectively referred to as deposit float. The term deposit float is defined as the sum of cheques written by customers that are not yet usable by the firm.

The collection of accounts receivable can be considerably accelerated, by reducing transit, processing and collection time. An important cash management technique is reduction in deposit float. This is possible if a firm adopts a policy of decentralized collections. We discuss below some of the important processes that ensure decentralized collection so as to reduce (i) the amount of time that elapses between the mailing of a payment by a customer, and (ii) the point the funds become available to the firm for use. The principal methods of establishing a decentralized collection network are (a) Concentration Banking, and (b) Lock-box System.

**Concentration Banking**

In this system of decentralized collection of accounts receivable, large firms which have a large number of branches at different places, select some of the strategically located branches as collection centers for receiving payment from customers. Instead of all the payments being collected at the head office of the firm, the cheques for a certain
geographical area are collected at a specified local collection centre. Under this arrangement, the customers are required to send their payments (cheques) to the collection centre covering the area in which they live and these are deposited in the local account of the concerned collection centre, after meting local expenses, if any. Funds beyond a predetermined minimum are transferred daily to a central or disbursing or concentration bank or account. A concentration bank is one with which the firm has a major account-usually a disbursement account. Hence, this arrangement is referred to as concentration banking.

**Slowing Disbursements**

Apart from speedy collection of accounts receivable, the operating cash requirement can be reduced by slow disbursements of accounts payable. In fact, slow disbursements represent a source of funds requiring no interest payments. There are several techniques to delay payment of accounts payable, namely, (i) avoidance of early payments; (ii) centralized disbursements; (iii) floats; and (iv) accruals.

**Avoidance of Early Payments**

One way to delay payments is to avoid early payments. According to the terms of credit, a firm is required to make a payment within a stipulated period. It entitles a firm to cash discounts. If, however, payments are delayed beyond the due date, the credit standing may be adversely affected so that the firms would find it difficult to secure trade
credit later. But if the firm pays its accounts payable before the due date it has no special advantage. Thus, a firm would be well advised not to make payments early, that is, before the due date.

Centralized Disbursements

Another method to slow down disbursements is to have centralized disbursements. All the payments should be made by the head office from a centralized disbursement account. Such an arrangement would enable a firm to delay payments and conserve cash for several reasons. Firstly, it involves increase in the transit time. The remittance from the head office to the customers in distant places would involve more mailing time than a decentralized payment by the local branch. The second reason for reduction in operating cash requirement is that since the firm has a centralized bank account, a relatively smaller total cash balance will be needed. In the case of a decentralized arrangement, a minimum cash balance will have to be maintained at each branch which will add to a large operating cash balance. Finally, schedules can be tightly controlled and disbursements made exactly on the right day.

MARKETABLE SECURITIES

This section presents a brief description of the marketable securities. Attention is focused on the meaning and characteristics of marketable securities, the general selection criterion and the basic types of such securities.
Meaning and Characteristics

Once the optimum level of cash balance of a firm has been determined, the residual of its liquid assets is invested in marketable securities. Such securities are short-term investment instruments to obtain a return on temporarily idle funds. In other words, they are securities which can be converted into cash in a short period of time, typically a few days. The basic characteristics of marketable securities affect the degree of their marketability / liquidity. To be liquid, a security must have two basic characteristics: a ready market and safety of principal. Ready marketability minimizes the amount of time required to convert a security into cash. A ready market should have both breadth in the sense of a large number of participants scattered over a wide geographical area as well as depth as determined by its ability to absorb the purchase / sale of large amounts of securities.

The second determinant of liquidity is that there should be little or no loss in the value of a marketable security over time. Only those securities that can be easily converted into cash without any reduction in the principal amount qualify for short-term investments. A firm would be better off leaving the balances in cash if the alternative were to risk a significant reduction in principal.
Selection Criterion

A major decision confronting the financial managers involves the determination of the mix of cash and marketable securities. Some of the quantitative models for determining the optimum amounts of marketable securities to hold in certain circumstances have been outlined in an earlier section. In general, the choice of the mix is based on a trade-off between the opportunity to earn a return on idle funds (cash) during the holding period, and the brokerage costs associated with the purchase and sale of marketable securities.

There are three motives for maintaining liquidity (cash as well as marketable securities) and, therefore, for holding marketable securities: transaction motive, safety / precautionary motive and speculative motive. Each motive is based on the premise that a firm should attempt to earn a return on temporarily idle funds. The type of marketable security purchased will depend on the motive for the purchase. An assessment of certain criteria can provide the financial manager with a useful framework for selecting a proper marketable securities mix. These considerations include evaluation of (i) financial risk, (ii) interest rate risk, (iii) taxability, (iv) liquidity, and (v) yield among different financial assets.
RECEIVABLES MANAGEMENT

Introduction

It was observed that a basic strategy to reduce the operating cash requirement of a firm is to accelerate the collection of receivables so as to reduce the average collection period. The receivables represent an important component of the current assets of a firm. The purpose of this present part is to analyse the important dimensions of the efficient management of receivables within the framework of a firm’s objectives of value maximization.

OBJECTIVES

The term receivables is defined as 'debt owed to the firm by customers arising from sale of goods or services in the ordinary course of business'. When a firm makes an ordinary sale of goods or services and does not receive payment, the firm grants trade credit and creates accounts receivable which could be collected in the future. Receivables management is also called trade credit management. Thus, accounts receivable represent an extension of credit to customers, allowing them a reasonable period of time in which to pay for the goods received.

The sale of goods on credit is an essential part of the modern competitive economic systems. In fact, credit sales and, therefore, receivables, are treated as a marketing tool to aid the sale of goods. The credit sales are generally made on open account in the sense that there
are no formal acknowledgements of debt obligations through a financial instrument. As a marketing tool, they are intended to promote sales and thereby profits. However, extension of credit involves risk and cost. Management should weigh the benefits as well as cost to determine the goal of receivables management. The objective of receivables management is 'to promote sales and profits until that point is reached where the return on investment is further funding receivables is less than the cost of funds raised to finance that additional credit (i.e cost of capital)'. The specific costs and benefits which are relevant to the determination of the objectives of receivables management are examined below.

Costs

The major categories of costs associated with the extension of credit and accounts receivable are (i) collection cost, (ii) capital cost, (iii) delinquency cost, and (iv) default cost.

Collection Cost Collection costs are administrative costs incurred in collecting the receivables from the customers to whom credit sales have been made. Include in this category of costs are: (a) additional expenses on the creation and maintenance of a credit department with staff, accounting records, records, stationery, postage and other related items; (b) expenses involved in acquiring credit information either through outside specialist agencies or by the staff of
the firm itself. These expenses would not be incurred if the firm does not sell on credit.

**Capital Cost**

The increased level of accounts receivable is an investment in assets. They have to be financed thereby involving a cost. There is a time-lag between the sale of goods to, and payment by, the customers. Meanwhile, the firm has to pay employees and suppliers of raw materials, thereby implying that the firm should arrange for additional funds to meet its own obligations while waiting for payment from its customers. The cost on the use of additional capital to support credit sales, which alternatively could be profitably employed elsewhere, is, therefore, a part of the cost of extending credit or receivables.

**Delinquency Cost**

This cost arises out of the failure of the customers to meet their obligations when payment on credit sales become due after the expiry of the credit period. Such costs are called delinquency costs. The important components of this cost are: (i) blocking — up of funds for an extended period, (ii) cost associated with steps that have to be initiated to collect the overdues, such as, reminders and other collection efforts, legal charges, where necessary, and so on.
Default Cost

Finally, the firm may not be able to recover the overdues because of the inability of the customers. Such debts are treated as bad debts and have to be written off as they cannot be realized. Such costs are known as default costs associated with credit sales and accounts receivable.

Benefits

Apart from the costs, another factor that has a bearing on accounts receivable management is the benefit emanating from credit sales. The benefits are the increased sales and anticipated profits because of a more liberal policy. When firms extend trade credit, that is, invest in receivables, they intend to increase the sales. The impact of a liberal trade credit policy is likely to take two forms. First, it is oriented to sales expansion. In other words, a firm may grant trade credit either to increase sales to existing customers or attract new customers. This motive for investment in receivables is growth-oriented. Secondly, the firm may extend credit to protect its current sales against emerging competition. Here, the motive is sales-retention. As result of increased sales, the profits of the firm will increase.

From the above discussion, it is clear that investments in receivables involve both benefits and costs. The extension of trade credit has a major impact on sales, costs and profitability. Other things being equal, a relatively liberal policy and, therefore, higher investments
in receivables, will produce larger sales. However, costs will be higher with liberal policies than with more stringent measures. Therefore, accounts receivable management should aim at a trade-off between profit (benefit) and risk (cost). That is to say, the decision to commit funds to receivables (or the decision to grant credit) will be based on a comparison of the benefits and costs involved, while determining the optimum level of receivables. The costs and benefits to be compared are marginal costs and benefits. The firm should only consider the incremental (additional) benefits and costs that result from a change in the receivables or trade credit policy.

While it is true that general economic conditions and industry practices have a strong impact on the level of receivables, a firm's investments in this type of current assets is also greatly affected by its internal policy. A firm has little or no control over environmental factors, such as economic conditions and industry practices. But it can improve its profitability through a properly conceived trade credit policy or receivable management.

CREDIT POLICIES

The firm's objective with respect to receivables management is not merely to collect receivables quickly, but attention should also be given to the benefit-cost trade-off involved in the various areas of accounts receivable management. The first decision area is credit policies.
The credit policy of a firm provides the framework to determine (a) whether or not to extend credit to a customer and (b) how much credit to extend. The credit policy decision of a firm has two broad dimensions; (i) Credit standards and (ii) Credit analysis. A firm has to establish and use standard in making credit decisions, develop appropriate sources of credit information and methods of credit analysis. We illustrate below how these two aspects are relevant to the accounts receivable management of a firm.

Credit Standards

The term 'credit standards' represents the basic criteria for the extension of credit to customers. The quantitative basis of establishing credit standards are factors such as credit ratings, credit references, average payments period and certain financial ratios. Since we are interested in illustrating the trade-off between benefit and cost to the firm as a whole, we do not consider here these individual components of credit standards. To illustrate the effect, we have divided the overall standards into (a) tight or restrictive, and (b) liberal or non-restrictive. That is to say, our aim is to show what happens to the trade-off when standards are relaxed or, alternatively, tightened. The trade-off with reference to credit standards covers (i) the collection cost, (ii) the
average collection period / cost of investment in accounts receivable, 
(iii) level of bad debt losses, and (iv) level of sales. These factors 
should be considered while deciding whether to relax credit standards or 
not. If standards are relaxed, it means more credit will be extended while 
if standards are tightened, less credit will be extended. The implications 
of the four factors are elaborated below.

Collection Costs

The implications of relaxed credit standards are (i) more credit, (ii) 
a large credit department to service accounts receivable and related 
matters, (iii) increase in collection costs. The effect of tightening of 
credit standards will be exactly the opposite. These costs are likely to be 
semi-variable. This is because up-to a certain point the existing staff 
will be able to carry on the increased workload, but beyond that, 
additional staff would be required. These are assumed to be included in 
the variable cost per unit and need not be separately identified.

Investments in Receivables or the Average Collection Period

The investment in accounts receivable involves a capital cost as 
funds have to be arranged by the firm to finance them till customers 
make payments. Moreover, the higher the average accounts receivable, 
the higher is the capital of carrying cost. A change in the credit 
standards – relaxation or tightening-leads to a change in the level of
accounts receivable either through a change in (a) sales, or (b) collections.

A relaxation in credit standards, as already stated, implies an increase in sales which, in turn, would lead to higher average accounts receivable. Further, relaxed standards would mean that credit is extended liberally so that it is available to even less creditworthy customers who will take a longer period to pay overdues. The extension of trade credit to slow-paying customers would result in a higher level of accounts receivable.

In contrast, a tightening of credit standards would signify (i) a decrease in sales and lower average accounts receivable, and (ii) an extension of credit limited to more creditworthy customers who can promptly pay their bills and, thus, a lower average level of accounts receivable.

Thus, a change in sales and change in collection period together with a relaxation in standards would produce a higher carrying costs, while changes in sales and collection period result in lower costs when credit standards are tightened. These basic reactions also occur when changes in credit terms or collection procedures are made. We have discussed these in the subsequent sections of this chapter.
Bad Debt Expenses

Another factor which is expected to be affected by changes in the credit standards is bad debt (default) expenses. They can be expected to increase with relaxation in credit standards and decrease if credit standards become more restrictive.

Sales Volume

Changing credit standards can also be expected to change the volume of sales. As standards are relaxed, sales are expected to increase; conversely; a tightening is expected to cause a decline in sales.

Credit Analysis

Besides establishing credit standards, a firm should develop procedures for evaluating credit applicants. The second aspect of credit policies of a firm is credit analysis and investigation. Two basic steps are involved in the credit investigation process: (a) obtaining credit information, and (b) analysis of credit information. It is on the basis of credit analysis that the decisions to grant credit to a customer as well as the quantum of credit would be taken.
Obtaining Credit Information

The first step in credit analysis is obtaining credit information on which to base the evaluation of a customer. The sources of information, broadly speaking, are (i) internal, and (ii) external.

Internal

Usually, firms require their customers to fill various forms and documents giving details about financial operations. They are also required to furnish trade references with whom the firms can have contacts to judge the suitability of the customer for credit. This type of information is obtained from internal sources of credit information. Another internal source of credit information is derived from the records of the firms contemplating an extension of credit. It is likely that a particular customer / applicant may have enjoyed credit facility in the past. In that case, the firm would have information on the behaviour of the applicant(s) in terms of the historical payment pattern. This type of information may not be adequate and may, therefore, have to be supplemented by information from other sources.

External

The availability of information from external sources to assess the credit-worthiness of customers depends upon the development of institutional facilities and industry practices. In India, the external
sources of credit information are not as developed as in the industrially advanced countries of the world. Depending upon the availability, the following external sources may be employed to collect information.

Financial Statements

One external source of credit information is the published financial statements, that is, the balance sheet and the profit and loss account. The financial statements contain very useful information. They throw light on an applicant’s financial viability, liquidity, profitability and debt capacity. Although the financial statements do not directly reveal the past payment record of the applicant, they are very helpful in assessing the overall financial position of a firm, which significantly determines its credit standing.

Bank References

Another useful source of credit information is the bank of the firm which is contemplating the extension of credit. The modus operandi here is that the firm’s banker collects the necessary information from the applicant’s banks. Alternatively, the applicant may be required to ask his banker to provide the necessary information either directly to the firm or to its bank.
Trade References

These refer to the collection of information from firms with whom the applicant has dealings and who on the basis of their experience would vouch for the applicant.

Credit Bureau Reports

Finally, specialist credit bureau reports from organizations specializing in supplying credit information can also be utilized.

Analysis of Credit Information

Once the credit information has been collected from different sources, it should be analyzed to determine the credit worthiness of the applicant. Although there are no established procedures to analyze the information, the firms should devise one to suit its needs. The analysis should cover two aspects: (i) quantitative, and (ii) qualitative.

Quantitative

The assessment of the quantitative aspects is based on the factual information available from the financial statements, the past records of the firm, and so on. The first step involved in this type of assessment is to prepare an Aging Schedule of the accounts payable of the applicant as well as calculate the average age of the accounts payable. This exercise will give an insight into the past payment pattern of the customer. Another step in analyzing the credit information is through a ratio analysis of the liquidity, profitability and debt capacity of the applicant.
These ratios should be compared with the industry average. Moreover, trend analysis over a period of time would reveal the financial strength of the customer.

**Qualitative**

The quantitative assessment should be supplemented by a qualitative / subjective interpretation of the applicant’s creditworthiness. The subjective judgment would cover aspects relating to the quality of management. Here, the references from other suppliers, bank references and specialist bureau reports would form the basis for the conclusions to be drawn. In the ultimate analysis, therefore, the decision whether to extend credit to the applicant and what amount to extend will depend upon the subjective interpretation of his credit standing.

**CREDIT TERMS**

The second decision area in accounts receivable management is the credit terms. After the credit standards have been established and the creditworthiness of the customers has been assessed, the management of a firm must determine the terms and conditions on which trade credit will be made available. The stipulations under which goods are sold on credit are referred to as **credit terms**. These relate to the repayment of
the amount under the credit sale. Thus, credit terms specify the repayment terms of receivables.

Credit terms have three components: (i) credit period in terms of the duration of time for which trade credit is extended—during this period the overdue amount must be paid by the customer; (b) cash discount, if any, which the customer can take advantage of, that is, the overdue amount will be reduced by this amount; and (c) cash discount period, which refers to the duration during which the discount can be availed of.

COLLECTION POLICIES

The third area involved in the accounts receivable management is collection policies. They refer to the procedures followed to collect accounts receivable when, after the expiry of the credit period, they become due. These policies cover two aspects: (i) degree of effort to collect the overdues, and (ii) type of collection efforts.
INVENTORY MANAGEMENT

INTRODUCTION

The term inventory refers to the stockpile of the products a firm is offering for sale and the components that make up the product. In other words, inventory is composed of assets that will be sold in future in the normal course of business operations. The assets which firms store as inventory in anticipation of need are (i) raw materials, (ii) work-in-process (semi—finished goods) and (iii) finished goods. The raw material inventory contains items that are purchased by the firm from others and are converted into finished goods through the manufacturing (production) process. They are an important input of the final product. The work-in-process inventory consists of items currently being used in the production in a multi-stage production process. Finished goods represents final or completed products which are available for sale. The inventory of such goods consists of items that have been produced but are yet to be sold.

Inventory, as a current asset, differs from other current assets because only financial managers are not involved. Rather, all the functional areas, finance, marketing, production, and purchasing, are involved. The view concerning the appropriate level of inventory would differ among the different functional areas. The job of the financial manager is to reconcile the conflicting viewpoints of the various
functional areas regarding the appropriate inventory levels in order to fulfill the overall objective of maximizing the owner's wealth. Thus, inventory management, like the management of other current assets, should be related to the overall objective of the firm. It is in this context that the present chapter is devoted to the main elements of inventory management from the viewpoint of financial managers. Attention is given here to basic concepts relevant to the management and control of inventory. The aspects covered are: (i) determination of the type of control required, (ii) the basic economic order quantity, (iii) the reorder point, and (iv) safety stocks. As a matter of fact, the inventory management techniques are a part of production management. But a familiarity with them is of great help to the financial managers in planning and budgeting inventory, hence, they are explained here. The Chapter concludes with the main points.

OBJECTIVES

The basic responsibility of the financial manager is to make sure the firm's cash flows are managed efficiently. Efficient management of inventory should ultimately result in the maximization of the owner's wealth. It implies that while the management should try to pursue the financial objective of turning inventory as quickly as possible, it should at the same time ensure sufficient inventories to satisfy production and sales demands. In other words, the financial manager has to reconcile
these two conflicting requirements. Stated differently, the objective of inventory management consists of two counterbalancing parts; (i) to minimize investments in inventory, and (ii) to meet a demand for the product by efficiently organizing the production and sales operations. These two conflicting objectives of inventory management can also be expressed in terms of cost and benefit associated with inventory. That the firm should minimize investment in inventory implies that maintaining inventory involves costs, such that the smaller the inventory, the lower is the cost to the firm. But inventories also provide benefits to the extent that they facilitate the smooth functioning of the firm: the larger the inventory, the better it is from this viewpoint. Obviously, the financial managers should aim at a level of inventory which will reconcile these conflicting elements. That is to say, an optimum level of inventory should be determined on the basis of the trade-off between costs and benefits associated with the levels of inventory.

Costs of Holding Inventory

One operating objective of inventory management is to minimize cost. Excluding the cost of merchandise, the costs associated with inventory fall into two basic categories: (i) Ordering or Acquisition of Set-up costs, and (i) Carrying costs. These costs are an important element of the optimum level of inventory decisions.
Ordering Costs

This category of costs is associated with the acquisition or ordering of inventory. Firms have to place orders with suppliers to replenish inventory of raw materials. The expenses involved are referred to as **ordering costs**. Apart from placing orders outside, the various production departments have to acquire materials from the stores. Any expenditure involved here is also a part of the ordering cost. Included in the ordering costs are costs involved in (i) preparing a purchase order or requisition form and (ii) receiving, inspecting, and recording the goods received to ensure both quantity and quality.

The cost of acquiring materials consists of clerical costs and costs of stationery. It is, therefore, called a set-up cost. They are generally fixed per order placed, irrespective of the amount of the order. The larger the orders placed, or the more frequent the acquisition of inventory made, the higher are such costs. From a different perspective, the larger the inventory, the fewer are the acquisitions and the smaller lower are the order costs. The acquisition costs are inversely related to the size of inventory they decline with the level of inventory. Thus, such costs can be minimized by placing fewer orders for a larger amount. But acquisition of a large quantity would increase the cost associated with the maintenance of inventory, that is, carrying costs.
Carrying Costs

The second broad category of costs associated with inventory are the **carrying costs**. They are involved in maintaining or carrying inventory. The cost of holding inventory may be divided into two categories.

1. Those that Arise Due to the Storing of Inventory

   The main components of this category of carrying costs are (i) storage cost, that is, tax, depreciation, insurance, maintenance of the building, utilities and janitorial services; (ii) insurance of inventory against fire and theft; (iii) deterioration in inventory because of pilferage, fire, technical obsolescence, style obsolescence and price decline, (iv) serving costs, such as, labour for handing inventory, clerical and accounting costs.

2. The Opportunity Cost of Funds

   This consists of expenses in raising funds (interest on capital) to finance the acquisition of inventory. If funds were not locked up in inventory, they would have earned a return. This is the opportunity cost of funds or the financial cost component of the cost.

   The carrying costs and the inventory size are positively related and move in the same direction. If the level of inventory increase, the carrying costs also increase and vice-versa.
The sum of the order and carrying costs represents the **total cost** of inventory. This is compared with the benefits arising out of inventory to determine the optimum level of inventory.

**Benefits of Holding Inventory**

The second element in the optimum inventory decision deals with the benefits associated with holding inventory. The major benefits of holding inventory are the basic functions of inventory. In other words, inventories perform certain basic functions which are of crucial importance in the firm's production and marketing strategies.

The basic function of inventories is to act as a buffer to decouple or uncouple the various activities of a firm so that all do not have to be pursued at exactly the same rate. The key activities are (1) purchasing, 2) production, and 3) selling. The term uncoupling means that these interrelated activities of a firm can be carried on independently. Without inventories, purchasing and production would be completely controlled by the sales schedules. If the sales of a firm increases, these two would also increase and vice-versa. In other words, purchase and production functions would depend upon the level of sales. It is, of course, true that in the long run, the purchasing and production activities are and, in fact, should be tied to the sales activity of a firm. But, if in the short term they are rigidly related, the three key activities cannot be carried out efficiently. Inventories permit short-term relaxation so that
each activity may be pursued efficiently. Stated differently, inventories enable firms in the short run to produce at a rate greater than purchase of raw materials and vice-versa, or to sell at a rate greater than production and vice-versa.

Since inventory enables uncoupling of the key activities of a firm, each of them can be operated at the most efficient rate. This has several beneficial effects on the firm’s operations. In other words, three types of inventory, raw materials, work-in-process and finished goods, perform certain useful functions. Alternatively, rigid tying (coupling) of purchase and production to sales schedules is undesirable in the short run as it will deprive the firms of certain benefits. The effect of uncoupling (maintaining inventory) are as follows.

**Benefits in Purchasing**

If the purchasing of raw materials and other goods is not tied to production / sales, that is, a firm can purchase independently to ensure the most efficient purchase, several advantages would become available. In the first place, a firm can purchase larger quantities than is warranted by usage in production or the sales level. This will enable it to avail of discounts that are available on bulk purchases. Moreover, it will lower the ordering cost as fewer acquisitions would be made. There will, thus, be a significant saving in the costs. Second, firms can purchase goods before anticipated or announced price increases. This will lead to a
decline in the cost of production. Inventory, thus, serves as a hedge against price increases as well as shortages of raw materials. This is a highly desirable inventory strategy.

**Benefits in Production**

Finished goods inventory serves to uncouple production and sale. This enables production at a rate different from that of sales. That is, production can be carried on at a rate higher or lower than the sales rate. This would be of special advantage to firms with seasonal sales pattern. In their case, the sales rate will be higher than the production rate during a part of the year (peak season) and lower during the off-season. The choice before the firm is either to produce at a level to meet the actual demand, this is, higher production during peak season and lower (or nil) production during off-season, or, produce continuously throughout the year and build up inventory which will be sold during the period of seasonal demand. The former involved discontinuity in the production schedule while the latter ensures level production. The level production is more economical as it allows the firm to reduce the cost of discontinuities in the production process. This is possible because excess production is kept as inventory to meet future demands. Thus, inventory helps a firm to coordinate its production scheduling so as to avoid disruptions and the accompanying expenses. ‘in brief, since
inventory permits least cost production scheduling, production can be carried on more efficiently.

**Benefits in work-in-Process**

The inventory of work-in-process performs two functions. In the first place, it is necessary because production processes are not instantaneous. The amount of such inventory depends upon technology and the efficiency of production. The larger the steps involved in the production process, the larger the work-in-process inventory and vice-versa. By shortening the production time, efficiency of the production process can be improved and the size of this type of inventory reduced.

In a multi-stage production process, the work-in-process inventory serves a second purpose also. It uncouples the various stages of production so that all of them do not have to be performed at the same rate. The stages involving higher set-up costs may be most efficiently performed in batches with a work-in-process inventory accumulated during a production run.

**Benefits in Sales**

The maintenance of inventory also helps a firm to enhance it sales efforts. For one thing, if there are no inventories of finished goods, the level of sales will depend upon the level of current production. A firm will not be able to meet demand instantaneously. There will be a lag depending upon the production process. If the firm has inventory, actual
sales will not have to depend on lengthy manufacturing processes. Thus, inventory serves to bridge the gap between current production and actual sales. A related aspect is that inventory serves as a competitive marketing tool to meet customer demands. A basic requirement in a firm's competitive position is its ability vis-à-vis its competitors to supply goods at short notice. Inventory, thus, ensures a continued patronage of customers. Moreover, in the case of firms having a seasonal pattern of sales, there should be a substantial finished goods inventory prior to the peak sales season. Failure to do so may mean loss of sales during the peak season.
WORKING CAPITAL FINANCING

INTRODUCTION

After determining the level of working capital, a firm has to decide how it is to be financed. The need for financing arises mainly because the investment in working capital/ current assets, that is, raw materials, work / stock-in-process, finished goods and receivables typically fluctuates during the year. Although long-term funds partly finance current assets and provide the margin money for working capital, such assets / working capital are virtually exclusively supported by short-term sources. The main sources of working capital financing namely, trade credit, bank credit, commercial papers, certificate of deposits and factoring are covered in this section.

TRADE CREDIT

Features

Trade credit refers to the credit extended by the supplier of goods and services in the normal course of transaction / business / sale of the firm. According to trade practices, cash is not paid immediately for purchases but after an agreed period of time. Thus, deferral of payment (trade credit) represents a source of finance for credit purchases.

There is, however, no formal / specific negotiation for trade credit. It is an informal arrangement between the buyer and the seller. There
are no legal instruments / acknowledgements of debt which are granted on an open account basis. Such credit appears in the records of the buyer of goods as sundry creditors / accounts payable.

A variant of accounts payable is bills / notes payable. Unlike the open account nature of accounts payable, bills / notes payable represent documentary evidence of credit purchases and a formal acknowledgement of obligation to pay for credit purchases on a specified (maturity) date failing which legal/penal action for recovery will follow. A notable feature of bills / notes payable is that they can be rediscounted and the seller does not necessarily have to hold it till maturity to receive payment. However, it creates a legally enforceable obligation on the buyer of goods to pay on maturity whereas the accounts payable have more flexible payment obligations. Although most of the trade credit is on open account as accounts payable, the suppliers of goods do not extend credit indiscriminately. Their decision whether or not to extend the trade credit as well as the quantum is based on a consideration of factors such as earnings record over a period of time liquidity position of the firm and past record of payment.

Advantages

Trade credit, as a source of short-term / working capital finance, has certain advantages. It is easily, almost automatically, available. Moreover, it is a flexible and spontaneous source of finance. The
availability and magnitude of trade credit is related to the size of operations of the firm in terms of sales / purchases. Trade credit is also an informal, spontaneous source of finance. Not requiring negotiation and formal agreement, trade credit is free from the restrictions associated with formal / negotiated source of finance / credit.

Costs

Trade credit does not involve any explicit interest charge. However, there is an implicit cost of trade credit. It depends on the credit terms offered by the supplier of goods. If the terms of the credit are, say, 45 days net, the payable amount to the supplier of goods is the same whether paid on the date of purchase or on the 45th day and, therefore, trade credit has no cost, that is, it is cost-free.

To sum up, as the cost of trade credit is generally very high beyond the discount period, firms should avail of the discount on prompt payment. If, however, they are unable to avail of the discount on prompt payment. If, however, they are unable to avail of discount, the payment of trade credit should be delayed till the last day of the credit (net) period and beyond without impairing their credit - worthiness. But a precondition for obtaining trade credit particularly by a new company is cultivating good relationship with suppliers of goods and obtaining their confidence by honouring commitments.
BANK CREDIT

Bank credit is the primary institutional source of working capital finance in India. In fact, it represents the most important source for financing of current assets\(^1\).

Forms of Credit

Working capital finance is provided by banks in five ways: (i) cash credits / overdrafts, (ii) loans, (iii) purchase / discount bills, (iv) letter of credit and (v) working capital term loans.

A rating and scoring model used by an Indian bank to assess working capital requirements of clients is also given.

Cash Credit / Overdrafts

Under cash credit / overdraft form / arrangement of bank finance the bank specifies a predetermined borrowing / credit limit. The borrower can draw / borrow up to the stipulated credit / overdraft limit. Within the specified limit / line of credit, any number of drawings / drawals are possible to the extent of his requirements periodically. Similarly, repayments can be made whenever desired during the period. The interest is determined on the basis of the running balance / amount actually utilized by the borrower and not on the sanctioned limit. However, a minimum (commitment) charge may be payable on the unutilized balance irrespective of the level of borrowing for availing of the facility. This form of bank financing of working capital is highly
attractive to the borrowers because, firstly, it is flexible in that although
borrowed funds are repayable on demand, banks usually do not recall
cash advances / roll them over and, secondly, the borrower has the
freedom to draw the amount in advance as and when required while the
interest liability is only on the amount actually outstanding. However,
cash credit / overdraft is inconvenient to the banks and hampers credit
planning.

**Loans**

Under this arrangement, the entire amount of borrowing is credited
to the current account of the borrower or released in cash. The borrower
has to pay interest on the total amount. The loans are repayable on
demand or in periodic installments. They can also be renewed from
time to time. As a form of financing, loans imply a financial discipline
on the part of the borrowers.

**Bills Purchased / Discounted**

This arrangement is of relatively recent origin in India. With the
introduction of the New Bill Market Scheme in 1970 by the Reserve
Bank of India (RBI), bank credit is being made available through
discounting of usance bills by banks. The RBI envisaged the
progressive use of bills as an instrument of credit as against the
prevailing practice of using the weekly - prevalent cash credit
arrangement for financing working capital. The cash credit arrangement
gave rise to unhealthy practices. As the availability of bank credit was unrelated to production needs, borrowers enjoyed facilities in excess of their legitimate needs. Moreover, it led to double financing. This was possible because credit was taken from different agencies for financing the same activity. This was done, for example, by buying goods on credit from suppliers and raising cash credit by hypothecating the same goods. The bill financing is intended to link credit with the sale and purchase of goods and, thus, eliminate the scope for misuse or diversion of credit to other purpose.

The amount made available under this arrangement is covered by the cash credit and overdraft limit. Before discounting the bill, the bank satisfies itself about the credit-worthiness of the drawer and the genuineness of the bill. To popularize the scheme, the discount rates are fixed at lower rates than those of cash credit, the difference being about 1-1.5 per cent. The discounting banker asks the drawer of the bill (i.e. seller of goods) to have his bill accepted by the drawee (buyers) banks before discounting it. The latter grants acceptance against the cash credit limit, earlier fixed by it, on the basis of the borrowing value of stocks. Therefore, the buyer who buys goods on credit cannot use the same goods as a source of obtaining additional bank credit.

The modus operandi of bill finance as a source of working capital financing is that a bill arises out of a trade sale-purchase transaction on
credit. The seller of goods draws the bill on the purchaser of goods, payable on demand or after a usance period not exceeding 90 days. On acceptance of the bill by the purchaser, the seller offers it to the bank for discount / purchase. On discounting the bill, the bank releases the funds to the seller. The bill is presented by the bank to the purchaser / acceptor of the bill on due date for payment. The bills can also be rediscounted with the other banks / RBI. However, this form of financing is not popular in the country.

**Term Loans for Working Capital**

Under this arrangement, banks advance loans for 3-7 years repayable in yearly or half – yearly installments.

**Letter of Credit**

While the other forms of bank credit are direct forms of financing in which banks provide funds as well as bear risk, letter of credit is an indirect form of working capital financing and banks assume only the risk, the credit being provided by the supplier himself.

The purchaser of goods on credit obtains a **letter of credit** from a bank. The bank undertakes the responsibility to make payment to the supplier in case the buyer fails to meet his obligations. Thus, the modus operandi of letter of credit is that the supplier sells goods on credit / extends credit (finance) to the purchaser, the bank gives a guarantee and bears risk only in case of default by the purchaser.
Mode of security

Banks provide credit on the basis of the following modes of security

Hypothecation

Under this mode of security, the banks provide credit to borrowers against the security of movable property, usually inventory of goods. The goods hypothecated, however, continue to be in the possession of the owner of these goods (i.e. the borrower). The rights of the lending bank (hypothecate) depend upon the terms of the contract between the borrower and the lender. Although the bank does not have physical possession of the goods, it has the legal right to sell the goods to realize the outstanding loan. Hypothecation facility is normally not available to new borrowers.

Pledge

Pledge, as a mode of security, is different from hypothecation in that in the former, unlike in the latter, the goods which are offered as security are transferred to the physical possession of the lender. An essential prerequisite of pledge, therefore, is that the goods are in the custody of the bank. The borrower who offers the security is, called a 'pawnor' (pledgor), while the bank is called the 'pawnee' (pledge). The lodging of the goods by the pledgor to the pledgee is a kind of bailment. Therefore, pledge creates some liabilities for the bank. It must take
reasonable care of goods pledged with it. The term 'reasonable care' means care which a prudent person would take to protect his property. He would be responsible for any loss or damage if he uses the pledged goods for his own purposes. In case of non-payment of the loans the bank enjoys the right to sell the goods.

**Lien**

The term 'lien' refers to the right of a party to retain goods belonging to another party until a debt due to him is paid. Lien can be of two types: (i) particular lien, and (ii) general lien. Particular lien is a right to retain goods until a claim pertaining to these goods is fully paid. On the other hand, general lien can be applied till all dues of the claimant are paid. Banks usually enjoy general lien.

**Mortgage**

It is the transfer of a legal / equitable interest in specific immovable property for securing the payment of debt. The person who parts with the interest in the property is called 'mortgagor' and the bank in whose favour the transfer takes place in the 'mortgagee'. The instrument of transfer is called the 'mortgage interest in the property is terminated as soon as the debt is paid. The mortgage interest in the property is terminated as soon as the debt is paid. Mortgages are taken as an additional security for working capital credit by banks.
Charge

Where immovable property of one person is, by the act of parties or by the operation of law, made security for the payment of money to another and the transaction does not amount to mortgage, the latter person is said to have a charge on the property and all the provisions of simple mortgage will apply to such a charge. The provision are as follows:

• A charge is not the transfer of interest in the property though it is security for payment. But mortgage is a transfer of interest in the property.
• A charge may be created by the act of parties or by the operation of law. But a mortgage can be created only by the act of parties.
• A charge need not be made in writing but a mortgage deed must be attested
• Generally, a charge cannot be enforced against the transferee for consideration without notice. In a mortgage, the transferee of the mortgaged property can acquire the remaining interest in the property, if any is left.

CERTIFICATE OF DEPOSISTS (CDS)

A CD is a document of title to a time deposit and can be distinguished from a conventional time deposit in respect of its free negotiability and, hence, marketability. In other words, CDs are a
marketable receipt of funds deposited in a bank for a fixed period at a specified rate of interest. They are bearer documents / instruments and are readily negotiable. They are attractive both to the bankers and the investors in the sense that he former is not required to encash the deposit prematurely, while the latter can sell the CDs in the secondary market before its maturity and thereby the instrument has liquidity / ready marketability.

The feasibility of introducing CDs was examined in 1982 by the Tambe Working Group but it did not recommend it, firstly, because of the absence of a secondary market, an administered interest rate structure on bank deposits and, secondly, the danger of CDs giving rise to fictitious transactions. The Vaghul Committee was also of the opinion that developing the CDs as a money market instrument would not be meaningful unless short-term interest rates were aligned with other rates in the system and the DFHI was set up.

Based on the recommendations of the Vaghul Committee, the RBI formulated a scheme in June 1989 for the issue of CDs by scheduled banks (excluding RRBs). The RBI guidelines provide the framework for its operations. In order to broaden the primary market, and also to develop an active secondary market, modifications have been introduced from time to time in the limit for issue of CDs, minimum size, denomination and so on.
FACTORYING

Factoring provides resources to finance receivables as well as facilitates the collection of receivables. Although such services constitute a critical segment of the financial services scenario in the developed countries, they appeared in the Indian financial scene only in the early nineties as a result of RBI initiatives. There are two bank sponsored organizations which provide such services: (i) SBI Factors and Commercial Services Ltd, and (ii) Canbank Factors Ltd. The first private sector factoring company, Foremost Factors Ltd, started operations since the beginning of 1997.

Definition

Factoring can broadly be defined as an agreement in which receivables arising out of sale of goods / services are sold by a firm (client) to the 'factor' (a financial intermediary) as a result of which the title of the goods / services represented by the said receivables passes on to the factor. Hence forth, the factor becomes responsible for all credit control, sales accounting and debt collection from the buyer(s). In a full service factoring concept (without recourse facility), if any of the debtors fails to pay the dues as a result of his financial inability / insolvency / bankruptcy, the factor has to absorb the losses.
Mechanism

Credit sales generate the factoring business in the ordinary course of business dealings; Realization of credit sales is the main function of factoring services. Once a sale transaction is completed, the factor steps in to realize the sales. Thus, the factor works between the seller and the buyer and sometimes with the seller’s banks together.

Functions of a Factor

Depending on the type / form of factoring, the main functions of a factor, in general terms, can be classified into five categories:

- Financing facility / trade debts;
- Maintenance / administration of sales ledger
- Collection facility / of accounts receivable;
- Assumption of credit risk / credit control and credit restriction;
  and
- Provision of advisory services
ENGINEERING INDUSTRIES IN INDIA

Engineering is a subject that ranges from large collaborations to small individual projects. Almost all engineering projects are beholden to some sort of financing agency: a company, a set of investors, or a government. The few types of engineering that are minimally constrained by such issues are pro bono engineering and open design engineering.\(^{11}\)

By its very nature engineering is bound up with society and human behavior. Every product or construction used by modern society will have been influenced by engineering design. Engineering design is a very powerful tool to make changes to environment, society and economics, and its application brings with it a great responsibility, as represented by many of the Engineering Institutions codes of practice and ethics.

Whereas medical ethics is a well-established field with considerable consensus, engineering ethics is far less developed, and engineering projects can be subject to considerable controversy. Just a few examples of this from different engineering disciplines are the development of nuclear weapons, the Three Gorges Dam, the design and use of Sports Utility Vehicles and the extraction of oil.\(^{12}\) There is a growing trend amongst western engineering companies to enact serious
Corporate and Social Responsibility policies, but may companies do not have these.

Engineering is a key driver of human development. Sub-Saharan Africa in particular has a very small engineering capacity which results in many African nations being unable to develop crucial infrastructure without outside aid\textsuperscript{13}. The attainment of many of the Millennium Development Goals requires the achievement of sufficient engineering capacity to develop infrastructure and sustainable technological development. All overseas development and relief NGOs make considerable use of engineers to apply solutions in disaster and development scenarios. A number of charitable organizations aim to use engineering directly for the good of mankind:

The \textbf{Motor Industry Research Association}, often known as MIRA, is a limited company based near Nuneaton in Hinckley and Bosworth, Leicestershire (near the Warwickshire boundary) in the United Kingdom, which provides product engineering research, testing, information and certification services to the automotive sector.

\textbf{Pooling of Expertise}

After World War Two, the UK car industry was finding it difficult to export to countries that it usually had little trouble finding markets for its wide range of cars. It was decided, by the government, to pool all the research resources of UK car manufacturers into one size to reduce costs
and possibly find new technological advances sooner that could be incorporated into all ranges of UK vehicle makes.

**Commercial organization**

Since 1975, the funding arrangements for belonging to the organization went from a membership subscription (or levy – mostly irrespective of the quantity of work that took place for individual manufacturers) for car companies to a fee-based system. Currently the site has around 110 million of test equipment. On 4 July 2001, the organization changed its name to **MIRA Ltd.** At this point it also became liable for corporation tax. It bought the Creative Automotive Design consultancy in March 2003\(^\text{14}\).

**Former airfield**

The proving ground which forms the largest area of **MIRA** is built on 760 acres of the former RAF Lindley airfield, named after the nearby Lindley Hall Farm. This farm has the notoriety of being the centre of England, if calculated by the centre of mass method, similar to a centroid. Meriden also claims the same honour. The Ashby and Nuneaton Joint Railway used to pass along the south-east perimeter of MIRA, and is now the Weddington Country Walk. The lines was open to freight until 1971, and had a station at Higham on the Hill on the perimeter of MIRA.
Functions

MIRA is a provider of product engineering, research, testing, information and certification to the worldwide automotive industry. It was developed to provide research for UK companies but, since the UK car manufacturing industry has steadily decreased (and companies such as Ford have own their proving ground at Dunton Technical Centre in Essex), it provides research to many overseas clients including those in the USA. It also does much work for the defence industry. The Midlands is still home to much of the UK car industry, with Jaguar Land Rove having a large research centre just south of Coventry at Whitley.

Steel

From Wikipedia, the free encyclopedia Steel is an alloy consisting mostly of iron with a carbon content between 0.2% and 2.1 % by weight, depending on the grade. Carbon is the most cost-effective alloying material for iron, but various other alloying elements are used such as manganese, Chromium, Vanadium and tungsten. Carbon and other elements act as a hardening agent, preventing dislocations in the iron atom crystal lattice from sliding past one another. Varying the amount of alloying elements and form of their presence in the steel (solute elements, precipitated phase) controls qualities such as the hardness, ductility, and tensile strength of the resulting steel. Steel with
increased carbon content can be made harder and stronger than iron, but is also more brittle\textsuperscript{15}.

Alloys with a higher carbon content are known as cast iron because of their lower melting point and castability. Steel is also distinguished from wrought iron, which can contain a small amount of carbon, but it is included in the form of slag inclusions. Two distinguishing factors are its increased rust resistance and better weldability.

Though steel had been produced by various inefficient methods long before the Renaissance, its use became more common after more efficient production methods were devised in the 17\textsuperscript{th} century. With the invention of the Bessemer process in the mid 19\textsuperscript{th} century, steel became a relatively inexpensive mass produced material. Further refinements in the process, such as basic oxygen steelmaking, further lowered the cost of production while increasing the quality of the metal. Today, steel is one of the most common materials in the world and is a major component in buildings, infrastructure, tools, ships, automobiles, machines and appliances. Modern steel is generally identified by various grades of steel defined by various standards organizations.

When iron is smelted from its ore by commercial processes, it contains more carbon than is desirable. To become steel, it must be melted and reprocessed to reduce the carbon to the correct amount, at which point other elements can be added. This liquid, is then
continuously cast into long slabs or cast into ingots. 96% of steel is continuously cast, while only 4000 ingots are cast per year. The ingots are then heated in a soaking pit and hot rolled into slabs, blooms, or billets. Slabs are hot or cold rolled into sheet metal or plates. Billets are hot or cold rolled into bars, rods, and wire. Blooms are hot or cold rolled into structural steel, such as I-beams and rails. In modern foundries these processes often occur in one assembly line, with ore coming in and finished steel coming out. Sometimes after a steels final rolling it is heat treated for strength, however this is relatively rare.16

Wootz steel and Damascus steel

Evidence of the earliest production of high carbon steel in the Indian Subcontinent was found in Samanalawewa area in Sri Lanka. Wootz steel was produced in India by about 300 BC. Along with their original methods of forging steel, the Chinese had also adopted the production methods of creating Wootz steel, an idea imported from India to China by the 5th century AD. This early steel-making method in Sri Lanka employed the unique use of a wind furnace, blown by the monsoon winds and produced almost pure steel. Also known as Damascus steel, wootz is famous for its durability and ability to hold an edge. It was originally created from a number of different materials including various trace elements. It was essentially a complicated alloy with iron as its main component. Recent studies have suggested that
carbon nanotubes were included in its structure, which might explain some of its legendary qualities, though given the technology available at that time, they were produced by chance rather than by design\textsuperscript{17}. Natural wind was used where the soil containing iron was heated up with the use of wood. The ancient Sinhalese managed to extract a ton of steel for every 2 tons of soil, a remarkable feat at the time. One such furnace was found in Samanalawewa and archaeologists were able to produce steel as the ancients did long ago.

**Modern steelmaking**

In Europe since 1600-s, the first step in producing steel has been the smelting iron ore into pig iron in a blast furnace from ore, charcoal, and air. Modern methods use coke instead of charcoal, which has proven to be a great deal cheaper.

**Steel industry**

It is common today to talk about "the iron and steel industry" as if it were a single entity, but historically they were separate products. The steel industry is often considered to be an indicator of economic progress, because of the critical role played by steel in infrastructural and overall economic development.

The economic boom in China and India has caused a massive increase in the demand for steel in recent years. Between 2000 and 2005, world steel demand increased by 6%. Since 2000, several Indian
and Chinese steel firms have risen to prominence like Tata Steel (which bought Corus Group in 2007), Shanghai Baosteel Group Corporation and Shagang Group. ArcelorMittal is however the world’s largest steel producer.

The British Geological Survey reports that in 2005, China was the top producer of steel with about one-third world share followed by Japan, Russia, and the USA.

In 2008, steel started to be traded as a commodity in the London Metal Exchange. At the end of 2008, the steel industry faced a sharp downturn that led to many cut-backs.

Recycling

Steel is one of the most recycled materials in the world, and, as of 2007, more than 78% of steel recycled. In the United States it is the most widely recycled material; in 2000, more than 60 million metric tons were recycled.

The most commonly recycled items are containers, automobiles, appliances and construction materials. For example, in 2007, more than 97% of structural steel and 110% of automobiles were recycled. A typical appliance is about 75% steel by weight and automobiles are about 65% steel and iron\textsuperscript{18}.

The steel industry has been actively recycling for more than 150 years, in large part because it is economically advantageous to do so. It
is cheaper to recycle steel that to mine iron ore and manipulate in through the production process to form new steel. Steel does not lose any of its inherent physical properties during the recycling process, and has drastically reduced energy and material requirements compared with refinement from iron ore. The energy saved by recycling reduces the annual energy consumption of the industry by about 75% which is enough to power eighteen million homes for one year.

The BOS steelmaking uses between 25 and 35% recycled steel to make new steel. BOS steel is more malleable than EAF steel so it is often used to make automotive fenders, soup cans, and industrial drums. EAF steelmaking uses almost 100% recycled steel. This steel is stronger than BOS steel so it is used to make structural beams, plates, and rebar. Recycling one ton of steel saves 1,100 kilograms of iron ore, 630 kilograms of coal, and 55 kilograms of limestone.

Because steel beams are manufactured to standardized dimensions, there is often very little waste produced during construction, and any waste that is produced may be recycled. For a typical 2,000 -square-foot (200 m²) two-story house, a steel frame is equivalent to about six recycled cars, while a comparable wooden frame house may require as many as 40-50 trees.
Contemporary steel

Modern steels are made with varying combinations of alloy metals to fulfill many purposes. Carbon steel, composed simply of iron and carbon, accounts for 90% of steel production. High strength low alloy steel has small additions (usually <2% by weight) of other elements, typically 1.5% manganese, to provide additional strength for a modest price increase. Low alloy steel is alloyed with other elements, usually molybdenum, manganese, chromium, or nickel, in amounts of up to 10% by weight to improve the harden ability of thick sections. Stainless steels and surgical stainless steels contain a minimum of 11% chromium, often combined with nickel, to resist corrosion (rust). Some stainless steels are magnetic, while others are nonmagnetic.

Some more modern steels include tool steels, which are alloyed with large amounts of tungsten and cobalt or other elements to maximize solution hardening. This also allows the use of precipitation hardening and improves the alloy’s temperature resistance. Tool steel is generally used in axes, drills, and other devices that need a sharp, long-lasting cutting edge. Other special-purpose alloys include weathering steels such as Cor-ten, which weather by acquiring a stable, rusted surface, and so can be used un-patient.

Many other high-strength alloys exist, such as dual-phase steel, which is heat treated to contain both a ferritic and martensitic microstructure for extra strength. Transformation Induced Plasticity
(TRIP) steel involves special alloying and heat treatments to stabilize amounts of austentite at room temperature in normally austentite – free low – alloy ferritic steels. By applying strain to the metal, the austentite undergoes a phase transition to martensite without the addition of heat. Maraging steel is alloyed with nickel and other elements, but unlike most steel contains almost no carbon at all. This creates a very strong but still malleable metal. Twinning Induced Plasticity (TWIP) steel uses a specific type of strain to increase the effectiveness of work hardening on the alloy. Eglin Steel uses a combination of over a dozen different elements in varying amounts to create a relatively low-cost metal for use in bunker buster weapons. Hadfield steel (after Sir Robert Hadfield) or manganese steel contains 12-14% manganese which when abraded forms an incredibly hard skin which resists wearing. Examples include tank tracks, bulldozer blade edges and cutting blades on the jaws of life.

Most of the more commonly used steel alloys are categorized into various grades by standards organizations. For example, the Society of Automotive Engineers has a series of grades defining many types of steel. The American Society for Testing and Materials has a separate set of standards, which define alloys such as A 36 steel, the most commonly used structural steel in the United States\textsuperscript{20}.

Though not an alloy, galvanized steel is a commonly used variety of steel which has been hot-dipped or electroplated in zinc for protection against rust.
END NOTES:


4. Ibid., p.407


