E- Module 1

DETERMINATION OF WORKING CAPITAL

Operating Cycle Approach

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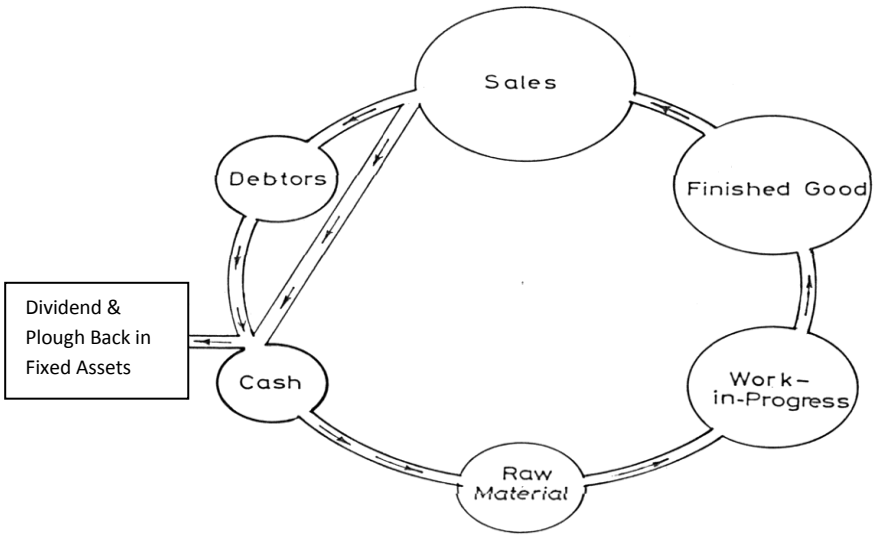
"The operating cycle can be said to be at the heart of the need for working capital[1]. Taking the time lag into account for determining the quantum of working capital, this method is, really, more scientific. "The continuing flow from cash to suppliers, to inventory, to accounts receivable and back into cash is what is called the operating cycle[2]." The operating cycle of a manufacturing company begins with the acquisition of raw materials and ends with the collection of receivables. This cycle may be divided into four phases.

I. Cash into raw materials and stores inventory.
II. Inventory of raw materials and stores into work-in-progress.
III. Work-in-progress into finished goods, and
IV. Finished goods through sales and receivables into cash.

The long period of operating cycle needs more working funds and a short one will require less. Further, an increase in the rate of working capital turnover is a sign of effective working capital management.. The above phases may be illustrated with the help of Fig.



Operating cycle

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1. Khan, M.Y. and jain, P.K., Financial management, Tata Mc Graw Hill Publishing Ltd., New Delhi, 1984, P. 624.
2. Joy, O.N. Introducting to Financial Management, Richard D. Irwin, 1977, p. 406
3. Source: Goyal, A.K., Management of working Capital (Ph.D. Thesis) 1986, p.42

E- Module 2

DETERMINATION OF WORKING CAPITAL

Balance Sheet Approach

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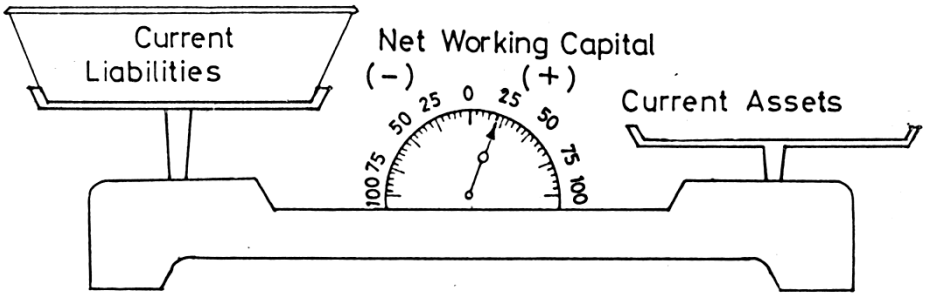
It is fairly easy and simple for determining the working capital. The investment in inventories, receivables and cash for daily transactions is the gross working capital needed, while the net working capital needed by a firm is the 'current assets minus current liabilities'.



Sum of :—

- Creditors and Acceptance.
- Unclaimed Dividend
- Interest Accrued but not Due.
- Advance from Customers.
- Other Current Liabilities.
- Provisions

Sum of :—

- Inventories:
  - Raw Materials
  - Work-in-Progress
  - Finished Goods
  - Stores & Spares
- Cash and Bank Balance.
- Receivables.
- Loans and Advances.
- Other Current Assets

Determination of Net Working Capital

Source: Goyal, A.K., Management of working Capital (Ph.D. Thesis) 1986, p.40

E- Module 3

Operating Cycle in Number of days and in Rs. Value

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The operating cycle can helps us to get numerical figure of net working capital and cycle in number of days. For this purpose, we can use the following two formulae.*

I. Operating Cycle in Number of Days

$$= \left[\frac{a}{b} + \frac{d}{e} + \frac{f}{g} + \frac{h}{i} - \frac{j}{k} \right] C$$

II. Operating Cycle in Rs. Value

$$= \left[\frac{a}{b} + \frac{d}{e} + \frac{f}{g} + \frac{h}{i} - \frac{j}{k} \right] L$$

Where:

a	=	Average inventory of raw materials and stores and spares.
b	=	Raw materials and stores and spares consumed during the year.
C	=	365 days (year)
d	=	Average work-in-progress.
e	=	Cost of Production (excluding depreciation) during the year.
f	=	Average inventory of finished goods.
g	=	Cost of goods sold during the year.
h	=	Average book debts.
i	=	Sale during the year.
j	=	Average trade creditors and acceptance.
k	=	Purchase during the year.
L	=	Operating expenses during the year.

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*Source: Goyal, A.K., Management of working Capital (Ph.D. Thesis) 1986, p.43

E- Module 4

Inflation Accounting Approach to study Trend Analysis

Special Reference Management of Working capital

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Trend analysis provides a good insight into the performance of analyzed component. Where the business was, is and will be- all these being clearly revealed through trend analysis. "As one of the management tools and techniques, the importance of looking to trends tendency of events or happenings between the financial statements prepared at different periods cannot be lost sight of"

Unfortunately, during the period of price-level changes, the size of working capital and its components, provide a misleading picture. An attempt should be made to use this technique of trend analysis, taking the inflation factor into account.

Need for Adjustment of Inflation

In fact, working capital management in an industry or in a unit involves, among other things, a comparative study of different ratios and the size of working capital during a certain spell of time- generally five to ten years. " During the period of prolonged inflation, Balance Sheet figures of different years, being based on different levels of prices, do not remain comparable in any real sense"[1]. Such comparative studies based on the assumption of stable rupee value become meaningless in an inflationary economy. Comparative inter-firm and intra firm studies of working capital and its components have been conducted and are being conducted by financial analysis and researchers, but to our dismay almost all such studies and researches have been conducted without taking the price-level changes into consideration. How can the figures of different years be compared while the purchasing power of money has not been stable over those years? We just cannot wish inflation away; it is very much here. So why turn a Nelson's eye to it. Be it cash Management, or inventory management or management of receivables if studied without making proper adjustment for inflation, would provide a misleading picture.

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1. Mishra, N., Accounting for price-level changes, Sultan Chand & Sons, New Delhi, p.3.

E- Module 5

Methods to Adjust Inflation Factor under Price Level Changes

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Several methods have been suggested to adjust inflation but still there is no agreement as to which proposal is the best[1]. In the on-going debate on inflation accounting two different methods for adjusting inflation have been suggested. One is to use current values instead of the historical cost; and the other is to adjust the historical cost data for changes in the purchasing power of the monetary unit. The current cost accounting (CCA) method involves regular revaluation of assets and deals with specific price changes of the individual items in the financial statements of a company and the second method, current purchasing power method (CPP), is a pure scale adjustment for changes in the purchasing power of money. Current cost accounting method requires detailed data on various individual items. Therefore, CPP has been preferred to the CCA as the details of day-to-day transaction in a company cannot be made available to research scholars. For application of CPP we have to select an appropriate series of indices. The following three types of price indices are available in India for conversion of historical figures:

i) Consumer price index numbers which are based on retail prices of selected commodities.

ii) Wholesale price index numbers constructed on the basis of whole-sale prices of selected commodities, and

iii) Index number of wholesale prices by group and sub-groups which are available industry wise (specific index numbers).

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1- Source: Goyal, A.K., Management of working Capital (Ph.D. Thesis) 1986, p.24

E- Module 6

Technique to convert Historical data into Current Purchasing Power

Special Reference Working Capital Management

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Historical figures relating to working capital should be expressed in terms of rupees of current purchasing power. Because, every element of working capital in every company and in every year has a different impact of price-level changes, it is essential to calculate the exact effect of price-level changes thereon. For this purpose, historical figures should be restated by multiplying them by conversion factors. Conversion factors for every component should be computed on the basis of following formulas[1]:

I. INVENTORIES

(i) Raw Materials and Components

$$\frac{\text{Price Index at the end of the last year of the study}}{\text{Average Price index over the respective period for which the raw materials inventory was held}}$$

To find out the period for which the raw materials inventory was held, the following calculations have to do:

$$\frac{\text{Closing balance of Raw materials X 12(months)}}{\text{Purchase of Raw material during the year}}$$

(ii) Work-in-progress

$$\frac{\text{Price Index at the end of the last year of the study}}{\text{Average Price index over the respective period for the process time}}$$

To calculate the period for the process time formula may be used-

$$\frac{\text{Closing balance of work-in-progress X 12(months)}}{\text{Cost of production}}$$

1- Source: Goyal, A.K., Management of working Capital (Ph.D. Thesis) 1986, p.25, 26, 27, 28

(iii) Finished goods inventory

$$\frac{\text{Price Index at the end of the last year of the study}}{\text{Average Price index over the respective period for which finished goods inventory was held}}$$

The period for which the finished goods inventory was held may be calculated as under:

$$\frac{\text{Year end finished goods inventory X 12(months)}}{\text{Sales during the year}}$$

(iv) Stores and spares inventory

$$\frac{\text{Price Index at the end of the last year of the study}}{\text{Average Price index over the respective period for which the stores and spares inventory was held}}$$

The period, for which the stores and spares inventory was held, will be as follows:

$$\frac{\text{Year end inventory of stores and spares X 12(months)}}{\text{Purchase of stores and spares during the year}}$$

II. CASH AND BANK BALANCES

$$\frac{\text{Price Index at the end of the last year of the study.}}{\text{Price Index at the end of the respective year}}$$

III. RECEIVABLES

(i) Outstanding over six months

$$\frac{\text{Price Index at the end of the last year of the study.}}{\text{Average price index for the first six months of the respective year.}}$$

(ii) Outstanding upto six months

$$\frac{\text{Price Index at the end of the last year of the study.}}{\text{Average price index for the last six months of the respective year.}}$$

IV. OTHER CURRENT ASSETS

$$\frac{\text{Price Index at the end of the last year of the study.}}{\text{Average price index for the respective year.}}$$

V. CURRENT LIABILITIES

(i) Creditors and Acceptance

$$\frac{\text{Price Index at the end of the last year of the study.}}{\text{Average price index over the respective payment period of the respective year}}$$

The payment period may be calculated by the following formula

$$\frac{\text{Year end balance of creditors} \times 12}{\text{Credit purchase during the year}}$$

(ii) Other Current liabilities

$$\frac{\text{Price Index at the end of the last year of the study}}{\text{Average price index for the respective year.}}$$

VI. PROVISIONS

$$\frac{\text{Price Index at the end of the last year of the study}}{\text{Price index at the end of the respective year.}}$$

VII. SALE

$$\frac{\text{Price Index at the end of the last year of the study}}{\text{Average price index for the respective year.*}}$$

- Sale took place evenly throughout the year. It has, therefore, been adjusted with the average price index for the period of twelve months.

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E- Module 7

Nature of Working Capital

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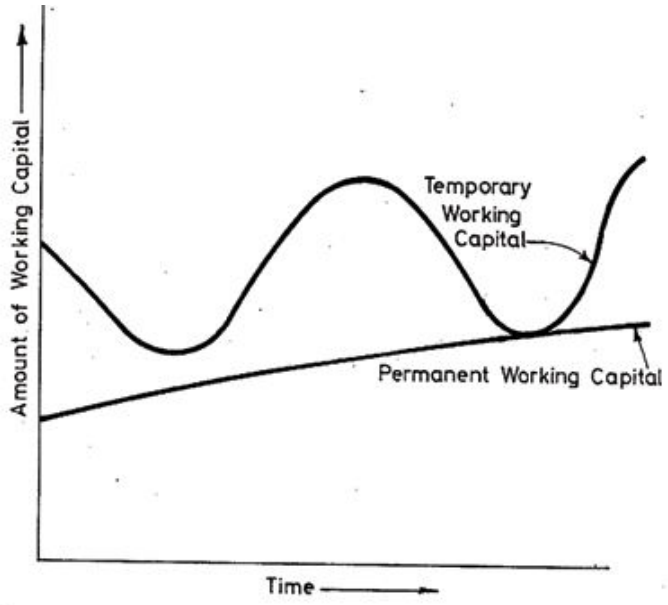
There is, generally, an impression that the requirement of working capital is temporary. But, in fact, there are two distinct elements of working capital.

(i) Permanent working capital and

(ii) Temporary working capital

(i) Permanent working Capital :- Working capital required, at a minimum level of activities of a concern, is called fixed or permanent working capital. Whenever, demand declines, it is not possible to retrench the labour and to wipe out the inventories suddenly, hence, the value which represents the permanent working capital stays with the business process all the time. In Walker's works " the fund, the value representing permanent working capital never leaves the business process."[1]



Permanent and Temporary Working Capital

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1. Walker, Ernest W., Essentials of Financial Management, rentice Hall of India Pvt. Ltd., New Delhi 1974, P.60
2. Source: Goyal, A.K., Management of working Capital (Ph.D. Thesis) 1986, p.46

(ii) Temporary working capital: The quantum of amount, which is directly associated with the level of the sale and production activities of the firm, is called temporary, variable or fluctuating working capital. It changes from on current asset to another; from cash to stock to debtors and from debtors back to cash. When it is not in use in any source, it must be obtained back to invest in any other source where it will generate some extra profit.

Indicates the permanent working capital is stable over time, and it is also clear that permanent working capital line need not run parallel to the time- line. As long as a firm experiences, growth and inflation the size of the permanent working capital will increase, while variable working capital fluctuates, because it varies directly with the level of activity achieved by a firm.

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E- Module 8

Financing of Working Capital

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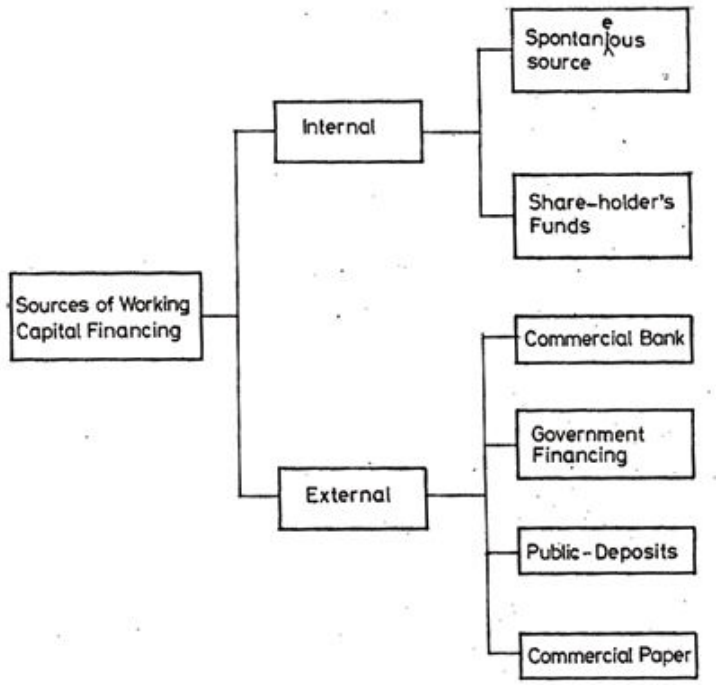
There are several internal and external sources of working capital financing, short-term (temporary) as well as long-term(Permanent). The sources to finance working funds of the business are mainly six, which are classified in Figure

Figure-



Source: Goyal, A.K. Management of working capital (PhD. Thesis) 1986, P.48

E- Module 9

Planning and Controlling of Working Capital

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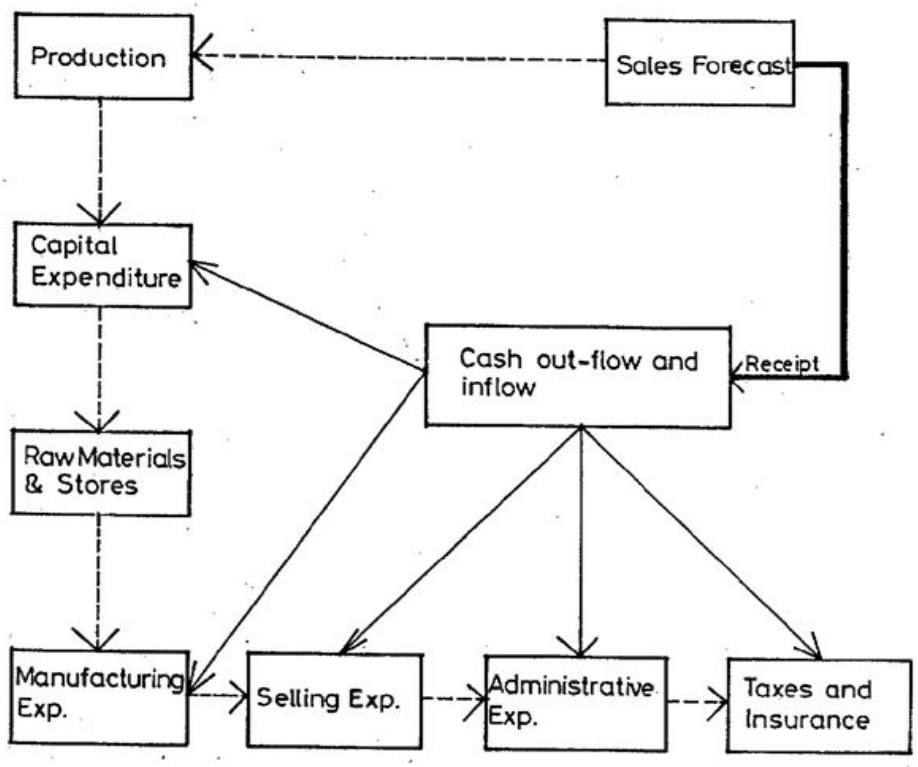
Working capital planning is a part of financial planning. Therefore, it is unreasonable to discuss the management of working capital without an understanding of how it relates with financial planning. Working capital planning is really at the heart of financial management. At the level of an individual business, effective planning provides a starting point for management to direct and guide the firm towards its purposes and goals. The fundamental basis for working capital planning is sales and cash outflow and inflow. As sales grow, the company requires to invest more funds, it is explained in Fig. indicates the these needs become very frequent and fast when sales grow continuously. The financial manager has to forecast such needs and finance them quickly.



Sales and Cash As Part of Overall Working Capital Planning

"Planning" says Smith "has to do with setting forth what the business firm is going to do, while …….controlling has to do with monitoring activities and programs towards ensuring that the expressed goals of the organization are accomplished." It may also be useful to distinguish between control of efficiency (input as related to output) and control of effectiveness (output as related to firm goals).

Undoubtedly, there are various methods and parameters for effective management of working capital. But, these are not applicable to all the firms due to differences in the status of the firms and the methods of arriving at many figures on the basis of which the ratios are computed. Such elements as the age of firm, valuation of inventories, depreciation methods, capitalization of current expenses and inflationary conditions etc., have also to be taken into consideration.

To infuse as efficient management of working capital, the proper financial set-up with appropriate authority and responsibility must be fixed. Co-ordination techniques should be used among the sales, production, purchases, receivables etc. Effective methods of financial planning and control should be applied for increasing profitability and adequate internal sources of financing. At last, financial manager should include the control of individual current assets, current liabilities, as well as important linkages between certain balance sheet accounts, so that the firm may achieve its purposes and goals

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1. Source: Goyal, A.K., Management of working capital (PhD. Thesis) 1986, P.58
2. Smith, K.V. Guide to working capital management, Mc Graw-Hill Book Company New York 1979, P.215

E- Module 10

Responsibility for Inventory Management

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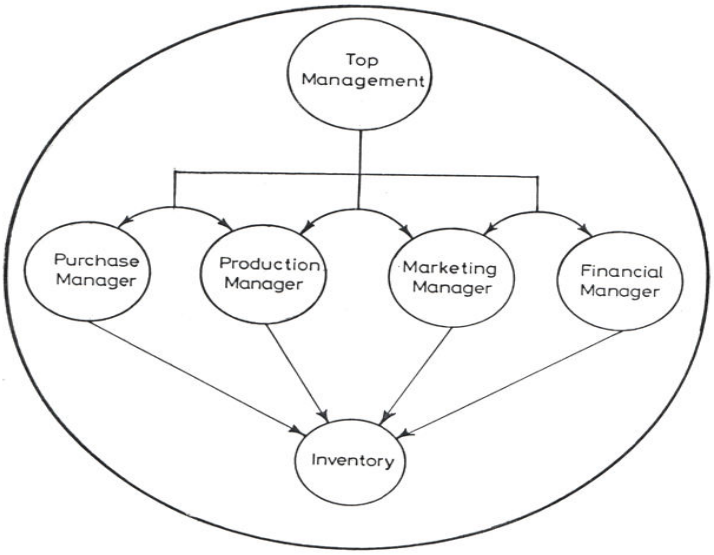
In a large scale manufacturing company, unlike cash and accounts receivable for which there is usually a singular responsibility, the inventory, typically, is a shared responsibility. The Purchase Manager is responsible for the materials and components which the firm acquires for use in the manufacturing process. The Production Manager is responsible for processing materials and parts, together with necessary labour and overhead, toward the planned output of the firm. The marketing Manager is responsible for seeing that the orders generated by the sales force are met. The financial manager is responsible for assessing the investment which is made in various types of inventory, and how inventory is related to other investments made by the firm. And top management is responsible for co-ordination among the four executives. To clear our view, the responsibility of inventory management is illustrated in Figure.

Figure



Responsiblity for Inventory Management

Source: Goyal, A.K. Management of working capital (PhD. Thesis) 1986, P.62s

E- Module 11

How you will Determine the Quantum of Investment in Inventory in your Manufacturing Unit

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The investment in inventory varies from company to company and year to year. The following are the several factors which affect the amount of funds that a firm has to invest in inventories at any time.

First, the span of time needed for inventories, travel through the various processes directly affects the amount of investment. Prof. Smith states, "If we lived in a world that had no delays, inventory would not be necessary. Upon receipt of an order from a customer, a firm would instantaneously acquire the necessary materials and parts, and the product would be manufactured instantaneously"[1]. However, the primary requirement for inventory is to allow for inevitable delays in acquiring necessary resources, manufacturing products and delivering them to customers. Because the extent of the delays differs from firm to firm, there is such a wide variation in inventory levels among business firms.

Second, the level of inventories is affected by Management's ability to predict the forces that may cause a disruption in the flow of inventories. Managers of different firms have different feelings. Some prefer to be more cautious and maintain higher levels of inventory, while other managers are more aggressive and maintain lower levels of inventory.

Third, the investment in inventories is also affected by inflation. During the periods of inflation when the prices of purchased items are rising rapidly, firms have to invest heavily in inventory. Firms have to pay more for the same volume of raw materials. Further-more, in these condition managements have an incentive for inventory speculation. If the management believes the price of an item will increase substantially, more of that item may be ordered and this requires extra investment in inventory.

Fourth, accounting methods also tend to influence the size of investment in inventory. For example; under inflationary conditions a method of costing on a LIFO basis will cause smaller investment in inventory than it would have caused if FIFO had been

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1. Smith, K.V. Guide to working capital Management, Mc Graw-Hill Book company, New York, 1978, P.141

used. Moreover, during a period of price rise, LIFO reduces federal taxes, hence, firms switched from FIFO to LIFO during the last few years when the prices increased steeply.

Finally, competitive conditions of the market also affect the inventory investment. If a firm has a 'seller market' production to order may be possible. In this position finished goods inventory will be almost nil whereas a 'buyer market' will compel the firm to adopt a policy of production to stock. In this situation, the volume of finished goods inventory will depend upon the number and size of orders received.

Other factors, such as seasonal demand, seasonal availability of raw materials, sophisticated plants, anticipated volume of usage and strike possibilities, also affect the size of investment tied up in inventory.

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E- Module 12

Determinants of Investment in Accounts Receivables

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The amount owed to a business by its customers is called Receivables or Accounts Receivables. Prof. Milling defines the accounts receivables " a claim against a debtor for merchandise sold or services rendered in the ordinary course of business; the debt appears on the books of the vendor as receivable and on the books of the purchaser as payable".[1]
The firm's investment in receivables are influenced by the following

- Increase in sale.
- Industry norms.
- Size of the cash discount
- Competitive condition of the markets.
- Operating efficiency of record keeping

Let us look briefly at each of these factors. Generally, increase in sale results in increase in receivables. A firm can sell only for cash on delivery in order to avoid tying up her funds in receivables and risking bad-debts. But doing this the firm may reduce its sales, if it does not have a sellers' market.

A company would be bound to grant credit, if other units of that industry are granting credit to their customers leniently. Thus, the industry norms towards credit policy also affect the size of investment in receivables.

Cash discounts directly influence a firm's receivable volume. Many firms offer customers a discount for early payments. Customers have the option of taking discounts and pay within fixed days or foregoing the discount and waiting for a certain period to pay.

Competitive conditions of the market is a major factor which largely determines the size of this component of working capital. If the firm has a sellers' market, it can sell on cash terms. On the other hand, if it has a buyers' market' it has to sell on credit to compete with other competitors. The length of credit is also affected by this factor.

Speedy procedures of recording, adjustment of cash on trade discounts, adjustments of returned items, rapid recording of payments received and deposits of the cheques, all can help to minimize the investment in receivables.

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1. Milling, B.E., handbook of accounts receivable financing: A dynamic approach to cash flow and profits, Institute for Business Planning, Inc., New Jesey, 1978. P.327

E- Module 13

Cost of Credit and Its Impact on Profitability Under Inflationary Conditions

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The cost of providing credit facilities can be most expensive and should always be taken into account, when considering the advantages to be gained from allowing them The cost of credit and its impact on profitability with and without adjusting inflation factor should be studied.

(a) Incremental length of credit cannot increase the sales in its proportion.

(b) Increasing sales will increase the investment in receivables.

(c) The firm has to bear the cost of receivables.

(d) Because, inflation is a world-wide phenomenon it should not be ignored at the time of preparing the financial accounts. Undoubtedly, the perfect solution of inflation accounting is uptil now debatable. Thus, it is not adjustable in the financial accounting in a real sense. But, at the time of taking financial decisions, available methods of inflation accounting must be considered. The loss of purchasing power during the length of credit further increases the cost of receivables. Because after a certain period the firm will get the contracted amount in rupees with lesser purchasing power. " Being a debtor during inflation is gainful, since the liability will be paid-off in rupees with lesser purchasing power, than originally contracted for"[1]. This loss is calculated on the basis of the following formulation based on Current Purchasing Power Method of inflation accounting

Loss of purchasing power on Receivables =

$$= \left(\begin{matrix}Historical\ amount\ of\ account \\ receivables \\ excluding\ Bad\ Debts.\end{matrix}\right) - \left(\begin{matrix}Restated\ Amount\ of\ Account\ Receivables \\ excluding\ bad\ Debts.\end{matrix}\right)$$

$$= \left(\begin{matrix}Account\ Receivable \\ less\ bad - dets\end{matrix}\right) - \left(\begin{matrix}Accouts\ Receivable \\ less\ bad\ debts\end{matrix} \times \frac{Index\ at\ the\ time\ of\ granting\ credit}{Index\ at\ the\ time\ of\ receiving\ payment}\right)$$

Source: Goyal, A.K., Management of working capital (PhD. Thesis) 1986, P.98