

A Study on Analysis and Control of Inventory Levels in Business Sector

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Abstract:

Financial management is a service activity which is concerned with providing quantitative information which is of financial nature which may be needed for making Economic decisions regarding the choice among alternative course of actions. The financial management is a process of identification accumulation, analysis preparation interpretation and communication of financial information to plan evaluate and control a business firm.

Financial management is that specialized function of general management which is related to the procurement of finance and its effective utilization for the achievement of the goals of an organization. Finance may be defined as the provision of money at the time where, it is required. Finance refers to the management flows of money through an organization.

It concerns with the application of skills in the manipulation, use and control of money. Different authorities have interpreted the term “finance” differently. However there are three main approaches to finance.

- *The first approach views finance as to providing of funds needed by a business on most suitable terms this approach confines fiancés to the raising of funds and to the study of financial institutions & instruments from where funds can be procured.*
- *The second approach relates fiancé to cash.*
- *The third approach views fiancé is being concerned with raising funds & their effective utilization.*

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Introduction:

Inventory can be referred to as sum of the value of raw materials fuels and lubricants, spare parts, maintenance consumables, semi processed materials and finished goods, stock at any given point of time. In large companies inventory place a most significant part of the current assets. The business has about 15 to 30% of inventories in total assets. Inventory is composed of assets that will be sold in feature in the normal course of business operations. The assets which firms stores as inventory is anticipation of need are raw materials, work in progress and finished goods. Inventory management consists of maintaining for a given financial investment an adequate of something in order to meet and accepted pattern of demand. Inventory considers control over costs of inventory on one hand an handle the size of inventory on other hand. Controlling investments in inventories constitute crucial part in current assets. The main purpose of inventory management is to ensure

Required quantity of availability of raw materials
Minimize the investments in inventories
Maintain reasonable stock levels not excess or not

under stocks.

Inventory control is the system devised an adopted for controlling investments in inventory. It involves inventory planning and decision making with regard to the quantity and time of purchase, fixation of stock levels, maintenance of stock records and continuous stock – taking. Inventory control includes not only of the physical stocks but also of the funds invested on it.

That twin objectives of inventory control are,
To maintain a balanced inventory.

To keep the amount invested in inventory as low as possible without hampering either flow of the production or deliveries of finished goods.

To avoid both under stocking and over stocking of inventory.

To eliminate duplication in ordering or replenishing stocks. This is possible with the help of centralized purchasing.

To ensure continues supply of materials, spares and finished goods so that production should not suffer and any time and customers demand should also be met.

To design proper structure for inventory management. A clear cut accountability should be fixed at various levels of the organizations. To ensure right quality goods at reasonable prices. Suitable quality standards will ensure proper quality of stocks. In this competitive business world each and every business organization need inventory management system for determining what to order, when to order, where and how much to order so that purchasing and storing costs are the lowest possible without affecting production and sales. Thus, inventory management control incorporates the determination of the optimum size of the inventory-how much to be order and when after taking into consideration the minimum inventory cost. The overall inventory management includes design and inventory control organization with proper accountability establishing procedure for inventory handling disposal of scrap, simplification, standardization and codification of inventories, determining the size of inventory holdings, maintaining record points and safety stocks, economic order quantity, ABC analysis and VALUE analysis and finally framing an INVENTORY MANUAL. By stating production in 1994 the story of Indian cement is a stage of continuous growth. Cement is derived from the Latin word "cementum". Egyptians and Romans found the process of manufacturing cement. In England during the first century the hydraulic cement has become more versatile building material. Later on, Portland cement was invented and the invention was usually attributed to Joseph Aspdin of England. India is the world's 4th largest cement produced after China, Japan and U.S.A. the south industries have produced cement for the first time in 1904. The company was setup in Chennai with the installed capacity of 30 tones per day. Since then the cement industry has progressing leaps and bounds and evolved into the most basic and progressive leaps and 1950-51. The capacity of production was only 3.3 million tones. So far annual production and demand have been growing a pace at roughly 78 million tones with an installed capacity of 87 millions tones.

In the remaining two year of 8th plan an additional capacity of 23 million tones will actually come up. India is will endowed with cement grade limestone (90 billion tones) and coal (190 billion tones). During the nineties it had a particularly impressive expansion with growth rate of 10 percent. The strength and vitality of Indian cement industry can be gauged by the interest shown and supports give by World Bank. Considering the excellent performance of the industry in utilizing the loans and achieving the objectives and targets. The World Bank examining the feasibility of providing a third line of credit for

further upgrading the industry in varying areas, which will make it global. With liberalization policies of Indian government. The industry is posed for a high growth rates in nineties and the installed capacity is expected to cross 100 million tones and production 90 million tones by 2003 AD. The natural cement is obtained by burning and crushing the stones containing clayey, carbonate of lime and some amount of carbonate of magnesia. The natural cement is brown in color and its best variety is known as "ROMAN CEMENT". It sets very quickly after addition of water. It was in the eighteenth century that the most important advances in the development of cement were which finally led to the invention of Portland cement in 1756. John Smeaton showed that hydraulic lime which can resist the action of water can be obtained not only from hard like stone but from a limestone which contain substantial proportion of clayey. In 1796, Joseph parker found that module of argillaceous limestone made excellent hydraulic cement when burned in the usual manner. After burning the product was reduced to a powder. This started the natural cement industry. The common variety of artificial cement is known as normal setting cement or ordinary cement. A mason Joseph Aspdin of Leeds of England invented this cement in 1824. he look out a patent for this cement called it "Portland cement" because it had resemblance in its color after setting to a variety of sandstone, which is found a abundance in Portland England. The manufacturing of Portland cement was started in England around 1825. Belgium and Germany started the same 1855. America started the same in 1872 and India started in 1904. The first cement factory installed in Tamilnadu in 1904 by south India limited and then onwards a number of factories manufacturing cement were started. At present there are more than 150 factories different types of cement. The ordinary cement contains two basic ingredients, namely, argillaceous and calcareous. In argillaceous materials the clayey predominates and in calcareous materials the calcium carbonate predominates. A good chemical analysis of ordinary cement's along with the desired range of ingredients. With a capacity of 115 million tones of large cement plant, Indian cement industry is the fourth largest in the world. However per capita consumption in our country is still at only 100 Kgs against 300 Kgs of developed countries and offers significant potential for growth of cement consumption as well as addition to cement capacity. The recent economic policy announcement by the government in respect of housing roads, power etc., will increase cement consumption. In view of low per capita consumption in India, there is a considerable

scope for growth in cement consumption and creation of new capacities in coming years. The cement industry does not appear to have adequately exploited cement consumption in rural segment where damaged growth possible. Landed cost of cement (with import duty) continuous to be higher than home market prices but with reduced import duty, increasing imports, may pose a serious threat to the domestic cement industry.

The recent change in the budget 2001-02, relating to fiscal incentives for individual housing and reduction in borrowing cost for this purpose and with the Government reaffirmation to accelerate the reform process. Infrastructure development should logically get priority leading to increase in demand of cement in coming years. The addition capacity of cement in the pipeline is limited and therefore the demand and supply situation is expected to be more favorable and cement prices are likely to firm up.

RISK AND CONCERNS:

Slow down of Indian economy or drop in growth rate of agriculture may adversely affect the consumption. The recent increase in railway freight coupled with diesel / petrol price like will increase the cost of production and distribution, as being bulky, cement is freight intensive increase in Limestone royalty also adds to the cost of production, which is considerably higher than corresponding costs of many other developing countries. In our country there is a need to under take a massive programmed of house construction activity into the rural and urban areas? It is impossible to construct a house without cement and steel, in other words, cement is one of the basic construction materials and therefore it is one of the vital elements for the economic development of the nation. India in spite of being the 4th biggest producer of cement in the world has still a very low per capital consumption of cement. Management Award of the Government of Andhra Pradesh, Kesoram is also conscious of its social responsibilities. Its rural and community development programmes include adoption of two nearby villages, running an Agricultural Demonstration Farm, a Model Dairy Farm etc., impressed by these activities, FAPCCI chose Kesoram to confer the Award for “Best efforts of an industrial unit in the state to develop rural economy” twice, in the year 1994 as well as in 1998. Kesoram also has to its credit the National Award (Shri S.R. Rangta Award for Social Awareness) for the year 1995-96, for the Best Rural Development Efforts made by the company. In the same year Kesoram also got the APCCI Award for “Best Workers Welfare” Kesoram got the first Prize for Mine

Environment and Pollution Control for year 1999 too, for the 3rd year in succession in July, 2001 Kesoram annexed the “Vana Mithra” Award from the Government of Andhra Pradesh.

A proper inventory control not only helps in solving the acute problem of liquidity but also increases profit and causes substantial reduction in the working capital of the concern.

The following are the important tools and techniques of inventory management and control.

1) Determination Of Stock Levels:

Carrying of too much and too little of inventory is detrimental to the firm. If the inventory level is too little, the firm will face frequent stock outs involving heavy ordering cost and if the inventory level is too high it will be unnecessary; tie up of capital.

An efficient inventory management requires that a firm should maintain an optimum level of inventory where inventory costs are the minimum and at the same time there is no stock out which may result in loss or storage of production.

a) Minimum stock level: It represents the quantity below its stock of any item should not be allowed to fall.

Lead Time: a purchasing firm requires sometime to process the order and time is also required by the supplying firm to execute the order.

The time in processing the order and then executing it is know as lead time.

Rate of consumption: it is the average consumption of materials in; the factory. The rate of consumption will be decided on the basis of past experience and production plans.

Nature of materials: the mature of materials also affects the minimum level. If a material is required only against the special orders of the customer then minimum stock will not be required for such material.

Minimum stock level can be calculated with the help of following formula.

Minimum stock level – Re – Ordering Level
(Normal consumption *Normal re – order period)

b) Re – Ordering Level:

When the quantity to materials reaches at a certain figure the fresh order is sent to get materials again: the order is sent before the materials reach minimum; stock level.

Re-ordering level is fixed between minimum level maximum levels.

c) Maximum Level:

It is the quantity of materials beyond which a firm should not exceeds its stocks.

If the quantity exceeds maximum level limit then it will be over-stocking.

Overstocking will mean blocking of more working capital, more space for storing the materials, more wastage of materials and more chances of losses from obsolescence.

**Maximum Stock Level – Reordering Level + Reorder Quantity
(Maximum Consumption * Minimum Reorder Period)**

d) Danger stock level: It is fixed below minimum stock level. The danger stock level indicates emergencies of stock position and urgency of obtaining fresh supply at any cost.

Danger stock level = average rate of consumption * emergency delivery time

e) Average stock level:

This stock level indicates the average held by the concern.

2) Determination of safety stocks:

Safety stock is a buffer to meet some unanticipated in usage. The demand for materials may fluctuate and delivery of inventory may also be delayed and in such a situation the firm can be face a problem of stock out.

In order to protect against the stock out arising out of usage fluctuations, firms usually maintain some margin of safety stocks.

Two costs are involved in the determination of this stock that is opportunity cost of stock outs and the carrying costs.

3) Economics Order Quantity (EOQ):

The quantity of materials to be ordered at one time is known as economic ordering quantity. This quantity is fixed in such a manner as to minimize the cost of ordering and carrying costs.

Total Cost Material = Acquisition Cost + Cost + Carrying Costs + Ordering Cost

Carrying costs:

It is the cost of holding the materials in; the store.

Ordering cost:

It is the cost of placing orders for the purchase of materials.

EOQ can be calculated with the help of the following formula.

$$EOQ = 2 CO/I$$

Where C = consumption of the material in units during the year.

O = ordering cost

I = carrying cost or interest payment on the capital.

4) A-B-C Analysis: (Always Better Control Analysis):

Under A-B- C analysis the materials are divided into 3 categories viz., A, B and C.

Almost 10% of the items contribute to 70% of value of consumption and this category is called 'A' category.

About 20% of the items contribute about 20% of value of category 'C' covers about 70% of items of materials which contribute only 10% of value of consumption.

5) VED Analysis: (Vital Essential Desire)

The VED analysis is used generally for spare parts. Spare parts classified as Vital (V), Essential (E), and Desire (D).

The vital spares are a must for running the concern smoothly and these must be stored adequately. The 'E' types of spares are also necessary but their stocks may be kept at low figures. The stocking of 'D' type spares may be avoided at times. If the lead time of these spares is less, then stocking of these spares can be avoided.

6) Inventory Turnover Ratio:

Inventory turnover ratios are calculated to indicate whether inventories have been used efficient or not.

The inventory turnover ration also known as stock velocity is normally calculated as sales / average inventory of cost of goods sold / average inventory.

Inventory conversion period may also be calculated to find the average time taken for clearing the stocks. Symbolically,

$$\frac{\text{Cost of goods sold}}{\text{Average inventory at cost}} = \text{Inventory turnover ratio}$$

OR

$$\frac{\text{Net sales}}{\text{Average inventory}} = \text{Inventory Turnover Ratio}$$

$$\text{And, inventory conversion period} = \frac{\text{Days in a year}}{\text{Inventory Turnover Ratio}}$$

Inventory Turnover Ratio

7) Classification of Inventories:

The inventories should first be classified can then code numbers should be assigned for their identification. The identification of short names is useful for inventory management not only for large concerns also for small concerns. Lack of proper classification may also lead to reduction in production.

Generally, materials are classified accordingly to their nature such as construction materials, consumable stocks, spares; lubricants etc. after classification the material are given code numbers. The coding may be done alphabetically or numerically. The later method is generally used for coding.

The class of materials is assigned two digits and then two or three digits are assigned to the categories of items divided into 15 groups. Two numbers will be category of materials in that class.

The third distinction is needed for the quality of goods and decimals are used to note this factor.

8) Valuation of inventories-method of valuations:

- FIFO method
- LIFO method
- Base stock method
- Weighted average price method

CRITERIA FOR JUDGING THE INVENTORY SYSTEM:

While the overall objectives of the inventory system is to minimize the cost to then firm at the risk level acceptable to management, the more proximate criteria for judging the inventory system are:

- Comprehensibility
- Adaptability
- Timeliness

AREA OF IMPROVEMENT:

Inventory management in India can be improved in various ways. Improvements could affect through.

Effective computerization: computers should not be used merely for accounting purpose but also for improving decision making.

Review of classification: ABC and FSN classification must be periodically reviewed.

Development of long term relationship:

Companies should develop long term relationship with vendors. This would help in improving quality and delivery.

Disposal of obsolete / surplus inventories:

Procedures for disposing obsolete / surplus inventories must be simplified. Adoption of challenging norms:

Companies should set benchmarks with global competitors and use ideals like JIT to improve inventory management.

INVENTORY VALUATION AND COST FLOWS:

What is the cost of inventory?

One can readily visualize the determination of inventory quantities by physical count or by use of perpetual inventory records. When this quantity is determined, it must be multiplied by a unity cost in order to determine the inventory value that is used on financial statement.

Trade and quantity discount are to be exclude from unit cost since these discount exist for the purpose of defining the true invoice cost of merchandise. Cash discounts, on the other hand, have

been considered as a reward for early payment and as a penalty for late payment. The “reward” has often been interpreted as a loss rather than as a part of unit cost. Thus it would not be difficult to find difference of opinion as to whether invoice cost includes or excludes cash discount.

When the “current replacement cost” of material on hand at the close of a year is less than the actual cost, the inventory value is reduced to replacement cost (current market price). Thus the acceptable basis inventory valuation is the “lower of cost or market” or more properly the “lower of actual cost or replacement cost”.

The determination of inventory values is very important from the point of view of the balance sheet and the income statement since costs not included in the inventory (the balance sheet) are considered to be expensive and are thus included in the income statement.

Valuation of inventories – method of determination

Although the prime consideration in the valuation of inventories is cost, there are a number of generally accepted methods of determining the cost of inventories at the close of an accounting period. The most commonly used methods are first in first out (FIFO) average, and last in first out (LIFO). The selection of the method for determining cost for inventories valuation is important for it has a direct bearing on the cost of goods sold and consequently on profit. When a method is selected, it must be used consistently and cannot be changed from year to year in order to secure the most favorable profit for each year.

THE FIFO METHOD (FIRST -IN FIRST -OUT METHOD)

Under this method it is assumed that the materials or goods first received are the first to be issued or sold. Thus, according to this method, the inventory on particular date is presumed to be composed of the items which were acquired most recently.

The value inventory would remain the same even if the “perpetual inventory system” is followed.

Advantages: - The FIFO method has the following advantages.

1. It values stock nearer to current market prices since stock is presumed to be consisting of the most recent purchases.

2. It is based on cost and, therefore, no unrealized profit enters in the financial accounts of the company.
3. The method is realistic since it takes into account the normal procedure of utilizing or selling those materials or goods which have been longer in stock.

Disadvantages: - the method suffers from the following disadvantages.

1. It involves complicated calculations and hence increases the possibility of clerical errors.
2. Comparison between different jobs, using the same type of material becomes sometimes difficult. A job commenced a few minutes after another job may have to bear an entirely different charge for materials because the first job completely exhausted the supply of materials of the particular lot.

The FIFO method of valuation of inventories is particularly suitable in the following circumstance.

- I. The materials of goods are of a perishable nature.
- II. The frequency of purchase is not large.
- III. There are only moderate fluctuations in the prices of materials or goods purchased.
- IV. Materials are easily identifiable as belonging to a particular purchase lot.

THE LIFO METHOD (LAST -IN FIRST -OUT METHOD):

This method is based on the assumption that last item of material or goods purchased are the first to be issued or sold. Thus, according to this method, inventory consists of items purchased at the earliest cost.

Advantages: this method has the following advantages.

1. It takes not account the current market conditions while valuing materials issued to different jobs or calculating the cost of goods sold.
2. The method is based on cost and, therefore, no unrealized profit or loss is made on account of use of this method.

The method is most suitable for materials which are of bulky and non-perishable type.

BASE STOCK METHOD:

This method is based on the contention that each enterprise maintains at all times a minimum quantity of materials or finished goods in its stock. This quantity is termed as base stock. The base stock is always valued at this price and is carried forward as a fixed asset. Any quantity over and above the base stock is valued in accordance with any other appropriate method. As this method aims at matching current costs to current sales, the LIFO method will be most suitable for valuing stock of materials of finished goods other than the base stock. The base stock method has advantage of charging out material / goods at actual cost. Its other merits or demerits will depend on the method which is used for valuing materials other than the base stock.

WEIGHTED AVERAGE PRICE METHOD:

This method is based on the presumption that once the materials are put into a common bin, they; loose their identify. Hence, the inventory; consists of no specific batch of goods. The inventory is thus priced on the basis of average priced on the quantity purchased at each price.

Weighted average price method is very popular on account of its being based on the total quantity and value of materials purchased besides reducing number of calculations. As a matter of fact the new average rice is to be calculated only when a fresh purchase of materials is made in place of calculating it every now then as is the case with FIFO, LIFO method. However, in case of this method different prices of materials are charged from production particularly when the frequency of purchase and issues /sales is quite large and the concern is following perpetual inventory system.

VALUATION OF INVENTORIES – IMPACT ON THE FLOW OF COSTS:

As should be quite evident, the different methods of calculating inventory values will all have their impact on the flow of costs through the balance sheet into the income statement. The dollars that are aid to acquire inventory are always divided between the balance sheet (inventories) and the income statement (costs of goods sold), there is not other place to put them. Thus if the different methods of calculating inventory produce differing inventory values, they; will also produce differing cost of goods sold figures, and the differing cost of goods sold will naturally produce differing profit figures.

In order show the impact of inventory valuation on cost flows, the preceding exhibits are summarized. Each method produces a different figure for the transfer of raw materials to work in process.

The differences appear small, but the only reason for this is that the dollar amounts have been kept small to make the illustration workable.

With the transfer of materials to work in process, the cost flow or transfer with have its impact on the work in process inventory and the transfer of completed merchandise to finished goods. Ultimately when goods are sold the varying methods of valuing inventories will have their impact on cost of goods sold and there profits. The effects of the cost flows on cost of goods sold and profits can be accentuated further it the differing methods of valuing inventories are applies to work in process and finished foods.

Evaluation of methods – what causes the differences?

The differences in inventory values and flows for each of this method illustrated result from only one factor, that it, changing purchases prices or unit costs. It purchase prices had remained stable or unchanged; each method would have produced the same inventory value and cost flow Costs flows and inventory are exactly the some under stable prices. With a falling price level, the LIFO method produces the highest cost flow and the lowest inventory. With a falling price level, the LIFO method produces the lowest cost flow and highest inventory. The cost flow under LIFO follows the price level, LIFO produces larger cost flows when prices are rising and smaller cost flows when prices are falling. A final item to consider is that the average method produces results which fall between the extremes of LIFO and FIFO.

Evaluation of methods – can we justify the differences?

The best method of inventory valuation might be “specific identification”, that is, the units in inventory should be identified with the specific invoices and thus specific unit costs to which they apply.

Fortunately, the FIFO method constitutes a very useful approximation to the specific identification method if one can reasonably assume that the actual flow of materials is first-in first-out. This assumption is not unreasonable and thus we have stated the main argument for the

FIFO inventory scheme, that is, the physical flow of materials would match the flow of costs under the first-in first- out method.

When the units in inventory are identical, interchangeable and do not follow any specific

pattern of physical flow, the average cost system would seem to be appropriate.

The primary difference between the FIFO and average methods is centered on the physical flow since both methods could involve identical and interchangeable units. The FIFO methods fit a first-in first-out physical flow. The average method fits a system which has no specific pattern of physical flow. Finding a situation where there is no specific pattern of physical flow should be quite difficult because of the fact that most inventory items are subject to deterioration by instituting a person would attempt to reduce such deterioration and any reasonable person would attempt to reduce such deterioration by instituting a physical flow approximating first-in first-out. The major reason for the use of the average method is something other than the lack of specific physical flow.

Ordinarily the LIFO method cannot be justified on the basis of the physical flow of material. Under conditions of changing prices, the advocate of LIFO says that the only method which matches costs and revenues is the LIFO method. The LIFO method assumes that the latest item is the first item out, and thus the current costs of materials are matched with the other hand, assumes that the first item in is the first item out, and thus the argument for the LIFO method.

As can be seen by the above comments, there is no one best method of valuing inventories. The method chosen should fit the situation. A physical flow pattern comparable to FIFO would

force one to consider the FIFO method. The lack of discernible physical flow pattern would force one to consider the average method. Concentration on cost flows, as distinct from physical flows, would force one to consider the LIFO method especially where there appears to be a discernible trend towards rising inventories valued at standard cost:

very useful method of valuing inventories is at a standard cost. With a standard cost system is not needed for spending a great deal of time and money

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