



## Effective Operation of Manufacture in Inventory model

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### ABSTRACT-

Materials inventories require a large investment. This investment may represent a large proportion of working capital. In consequence, the problem of inventories is one of the most important problems of management, frequently as much as one third of a firm's total investment is in inventories in the form of work-in-process, finished goods and stores. Stores inventory includes raw materials, parts and factory supplies etc.

Management is continually seeking new and better control technique to cope with the complexities, masses of data and tight deadlines that are characteristic of the highly competitive business environment of today.

**Key Words:** Investment, Dissimilar, Inventory, working capital.

### Introduction-

The complexity and size of modern business operations, even in many so-called small organizations have reached such proportions in our high technology, management science age, that it is no longer advisable to make inventory decisions unaided by quantitative evaluation of the factors involved. Business organizations which make use of modern tools of management in various phases of their operations often find that the areas where these tools are most readily applicable and often the most profitable are those concerned with the control and optimization of inventories.

In recent years there has been an increased interest in the use of mathematical aids to assist the management in making better decisions. The most basic methods of mathematical analysis are used by investigators when the conditions which are to be satisfied and the complexity of interaction among variables can be quantitatively described. Quantification of input data relating to business problems has helped specialists in the formulation and manipulation of symbolic and numerical models for the solution of inventory problems.

Inventories have been studied from various points of view by means of operations research and a vast amount of literature exists in these areas.

This is largely justified by the considerable importance of the problem of reducing costs in managing inventories.

Even though a sizable number of models might be related to several cases of inventory problems, it is reasonable to say that not one of the existing models could be applied to a specific problem without modifying it to suit the specific requirements of the problem. If a model is used as such in a particular situation, it would be fortuitous coincidence if it were found appropriate for the situation.

The important feature in the use of models is that any analyst selects a model which he finds most appropriate for any particular problem.

It is practically impossible to describe all the situations out of which an inventory problem can arise, but it is possible to indicate some characteristic features of a common inventory situation or a typical case.

A number of surveys of organizations for inventory control have been made in recent years. Their findings are interesting, but should not necessarily be adopted as it is to a particular firm. Depending upon the nature of the sample used in the survey, and the treatment of the data secured, the survey findings may or may not be useful in a particular situation.

The general class of problems to be considered involves decisions concerning inventory levels. These decisions can be classified as follows:

1. The time at which orders for goods are to be placed is fixed and the quantity to be ordered must be determined.
2. Both order quantity and order time must be determined.

The research problem is to find ways of optimizing such decisions. An optimum decision, in this discussion, is one which minimises the sum of costs associated with inventory. These costs are of three types:

1. Cost of obtained goods, through purchasing or manufacturing (the set up cost). This is a fixed cost per lot and, hence, a variable cost per unit.
2. Cost of holding a unit in inventory-This involves such contributory costs as the cost of money spent in producing the part, storage, handling, obsolescence, damage, insurance and taxes.
3. Cost of shortage-This is the cost associated with either a delay in meeting demand or the inability to meet it at all.

These costs may remain constant or may vary as a function of time, (for example, the cost associated with a delivery delay during one season may be greater than the cost associated with a delay during some other season), and/or they may vary as a function of the number of units involved (for instance, storage cost per unit may vary with the number of units stored)

#### **ASSUMPTIONS-**

At the same time, a great deal of effort was spent on developing a universal formula that would take any special circumstance into account. The formula included factors for investment charges on work in process, for space occupied by an article in storage and for rate of production.

Savings through the procurement of economical quantities is just one of the consideration in inventory control. To determine EOQ, it is necessary to forecast demand since future demand is seldom known with certainty. Variability in demand also requires an additional amount of inventory to ensure proper level of service to customers.

Some people consider inventory systems as systems of keeping records of the amounts of commodities in stock. An inventory problem, for these people, is the problem of determining what details should be recorded, who should make the entries in the records, where and when entries should be made etc. Others look at inventory systems from a general overall point of view. For them, the inventory system usually involves not specific commodities but rather the totality of the commodities and the investments in all the stocks in inventory. Their problems are inventory turnover, financing investments tied up in stocks etc. They are the people who are often concerned with the problem of reducing inventories which are too high.

Other groups consider inventory systems from still another point of view. Their problems are what items to stock, when to stock them, how much to stock etc. Usually, they are also concerned with problem of labour stability, utilization of equipment and facilities, customer relations etc.

Because of the wide ranging points of view, it is necessary to devote sometime to the definitions of the inventory terms.

#### **OBJECTIVE-**

1. Cost of obtained goods, through purchasing or manufacturing (the set up cost). This is a fixed cost per lot and, hence, a variable cost per unit.
2. Cost of holding a unit in inventory-This involves such contributory costs as the cost of money spent in producing the part, storage, handling, obsolescence, damage, insurance and taxes.
3. Cost of shortage-This is the cost associated with either a delay in meeting demand or the inability to meet it at all.

#### **RESEARCH METHODOLOGY-**

Though inventory of materials is an idle resource (as they are not used immediately and stocked for future use), almost every business must maintain it for efficient and smooth running of its operations. If an enterprise has no inventory of material at all, on receiving a manufacturing order, it will have to place order for purchase of raw material, wait for arrival and receive of material and then start production. The customer will have to wait for a long period for the delivery of his product and may get frustrated and turn to another manufacturer. Maintaining of inventory becomes necessary for the following reasons:

(i) It helps in smooth and efficient running of the production system and the enterprise. It decouples the production from the customers and vendors and simplifies the otherwise complex organization for manufacture and reduces the co-ordination effort.

(ii) It provides services to the customers at a short notice. Timely deliveries may increase the goodwill of the company.

(iii) In the absence of inventory, the enterprise may have to pay very high prices because of piecemeal purchasing. Maintaining inventory may earn price discounts on bulk purchases. It also takes advantage of favourable market.

(iv) It reduces the product cost, since there is an added advantage of batch production and mass production runs.

(v) It acts as a buffer stock when raw materials are received late and shop rejects are too many

(vi) Process and movement inventories (also known as pipeline inventories) are quite necessary in big enterprises where significant amounts of time are required to transship items from one location to another.

(vii) Bulk purchases reduce the number of orders and hence less clerical work.

(viii) As many of customers and vendors are away from the organization, it is better to have stock of inventory to continue production during the lead period.

(ix) It helps in maintaining economy by absorbing some of the fluctuations when the demand for an item fluctuates or is seasonal.

## **RESULTS & FINDINGS-**

However, too often inventories are wrongly used as a substitute for management. For example, if there are large finished goods inventories, inaccurate sales forecasting by marketing department, may never be apparent. Similarly, a production Forman who has large in process inventories may be able to hide his poor planning since there is always something to manufacture. Furthermore, inventory means unproductive and tied up capital of the enterprise. The capital could be usefully utilized in other venture as well. With large inventories there is always likelihood of obsolescence too. Also maintenance of inventory costs additional money to be spent on personnel, equipment, insurance etc. Thus, excess inventories are not desirable. This necessitates controlling the inventories in the most useful way.

The basic function of management is to employ capital efficiently so as to yield the maximum results. This can be done in two ways or by both: (1) By maximizing the margin profit or (2) by maximizing the productivity. i.e., maximizing the production with a given amount of capital that is management has to utilize its capital optimally. However, this all too is often forgotten and much time and ingenuity is devoted to make only labour work harder. In the process, the capital turnover and hence the productivity of capital are often totally neglected. Material management has become, most attractive. Material management is a body of knowledge which helps the manager to improve the productivity of capital by reducing material costs preventing

large amounts of capital being locked up for long periods and improving the capital turnover ratio.

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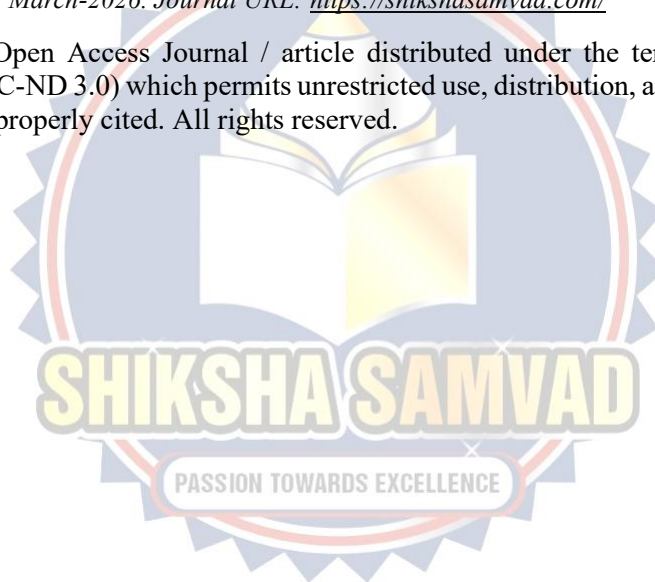
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