



Effective Operation of Manufacture in Business Model

Aaglawne Khalid Dilawar¹, Dr. Harshvardhan²

¹Research Scholar, Shri Venkateshwara University, Gajraula, Amroha, (U.P.)

²Research Supervisor, Shri Venkateshwara University, Gajraula, Amroha, (U.P.)

ABSTRACT-

Inventories are typically not ends in themselves. The fundamental reason for carrying inventories is that it is physically impossible or unsound to have goods arrive precisely when demands for them occur. Customers cannot be expected to wait till the goods ordered are received or manufactured. Inventories serve to decouple successive operations in the process of making a product and getting it to customers. For example, inventories make it possible to make a product at a distance from customers or from raw material supplier or to do the two operations at distant places. Inventories free one stage in the production-distribution process from the other, permitting each to operate more economically.

Key Words: Vibrations, Dissimilar, Inventory, exponentially.

INTRODUCTION-

The control and maintenance of inventories of physical goods is a problem common to all business enterprises. Manufacturing firms, engaged in modifying material to create an end product, have continuing procurement, storage, and stock replenishment problems. A number of items, ranging from scores to millions, are bought in large or small quantities at various prices at differing intervals. Many of these items are bought, stocked, and held, not for immediate but for future use.

Inventory is a group term which need not imply any homogeneity within the group. The realization that inventories are made up of thousands of individual items and are not merely a rupee figure on the balance sheet is the first step in understanding a company's inventory control problems. The nature and use of each item will determine the amount and type of control which it requires. All this may seem very simple and obvious but it is often overlooked. A system of control which treats dissimilar units as if they were the same can only lead to operating difficulties.



Effective operation of any manufacturing plant requires inventory control. Many business failures are the direct consequence of excessive investment in inventories. Too much material ties up funds and creates problems of storage and obsolescence as well as of marketing. On the other hand, if materials are not adequate to meet the needs of the operating and distribution segments of the enterprise, efficiency suffers and costs go up. Manufacturing delays become frequent and broken delivery promises inevitable. Inventory management then, is a continual struggle between too much and too little, too soon or too late. However, for a given item there will be some level of inventory which will yield a total cost which will be lower than the total cost generated by any other level. What the firm must do is to determine what this most economical level is for each purchased and manufactured item and maintain the inventory at this level. This is what we call inventory control or in other words, controlling the cost of inventories.

In some companies, material costs represent a large part of the sales rupee, affording the management an opportunity for substantial savings if it can squeeze out water from material costs. Materials, the supply and demands of which occasionally get out of balance and those subject to periodically rising and falling prices are subjected to constant review and scrutiny to take into account, the fluctuating market situation. Never ending search is conducted for better and cheaper material substitutes. Careful controls are placed on the size of inventories so that the enterprise can be made responsive to changes in products and processes.

OBJECTIVE-

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

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.

Subsequent developments in inventory control have included techniques for forecasting demand, for establish-safety stocks to ensure customer service and for creating the optimum size inventory to obtain other benefits such as smoothing production rates.

It was not until after world war II, when the management science and operations research emerged, that detailed attention was focused on the stochastic nature of inventory problems.

Prior to that, the systems had been treated as if they were deterministic, except for a few isolated cases, such as the work of Wilson, where some attempt was made to include probabilistic considerations. During the war, a useful stochastic model named as the Christmas tree model was developed.



RESEARCH METHODOLOGY-

This analysis relates to the demand for the materials and stock-moving pattern. Fast moving materials are to be stocked nearer to the store keeper and slow moving materials are stocked at a considerable distance and the non-moving materials are stocked in a place without causing inconvenience to day-to-day movement of men and materials. Similarly, Fast moving materials must be kept in a place easily reached by the storekeeper. Non- moving materials are kept in a remote place, as they are required seldom for use. This analysis will help for optimal utilization of space available and materials handling time of the storekeeper.

In addition to the above analysis, we can also use some of the characteristics of materials for classification. For example, perishable or obsolescence. These characteristics are particularly helpful for chemicals and drugs, which have low shelf life. Here, classification is made on the basis of shelf life as long shelf life, medium shelf life and short life. This classification is known as PQR classification. Sometimes the bulk versus weight of the materials is of importance in terms of providing space for the materials in the stores and, therefore, another classification, i.e., XYZ, classification is used. Here, the classification is bulky, medium bulky and not bulky materials.

Inventory may be classified as

(i) Raw material inventory: Which is used in manufacturing. When the demand arises, they are drawn from stores and processed or use value is added during the process and finally finished product comes out.

(ii) Semi-Finished Goods: When the material being processed, it may have to wait between two processes, such materials are known as semi-finished goods or semi-finished material or work in process inventory.

(iii) Components: The parts used in an assembly of products are known as components. When these components are purchased from outside, it is known as bought out components or bought out material.

(iv) Spare Parts Inventory: When a manufacturing or servicing facility breakdown, it is to be repaired. In such a case, the defective or worn- out parts of the machine are to be replaced by new ones. These new parts of the machine are known as spares or spare parts.

(v) Obsolete inventory: When any facility becomes unserviceable, and it is to be replaced by a new one, after replacing the old machine/ facility is to be disposed. Such machines, which have become useless. are termed as obsolete inventory.

(vi) Waste, Scrap and Rejects: This type of inventory occurs in manufacturing firms or in service organizations. While processing material, chips are produced and it is of no use for the organization and it is to be disposed. Similarly, defective components, which cannot be reprocessed (rejects) and materials which cannot be used in any way in the organization (waste), all these are to be disposed. They may not be having any use value for the organization, but they may be reprocessed by some other organizations to produce a useful product.



RESULTS & FINDINGS-

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.

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 favorable 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

In this chapter we have developed an inventory model with stock-dependent and shortages under the condition of permissible delay in payments and also we have assumed both demand, deterioration are non-linear functions of stock. Further, we assume that the backlogging rate is a decreasing function of the waiting time for the next replenishment. This assumption is more practical in real life. Replacing $T = 7$, and $\beta = 0$, the model becomes similar to the model by Goyal [1985] although he did not consider the interest earned for the rest of the period in the cycle when the credit period is less than cycle length and the deterioration is taken as a linear function of the stock.

References-

1. **Abad P.L.**, "Determine optimal selling price and lot size when the supplier offer all- unit quantity discounts," *Decision Science*, Vol. 19, pp. 622-634, 1988.
2. **Abad P.L.**, "Joint price and lot size determination when supplier offers incremental," *Journal of the Operational Research Society*, Vol. 39, pp. 603-607, 1988.
3. **Abad P.L. and C.K. Jaggi**, "A joint approach for setting unit price and the length of the credit period for a seller when end demand is price sensitive," *International Journal of Production Economics*, Vol. 83, pp. 115-122, 2003.
4. **Aggarwal S.C.**, "Purchase inventory decision models for inflationary condition," *Interfaces*, Vol. 11, pp. 18-23, 1981
5. **Aggarwal S.P.**, "A note on an order level inventory model for a system with constant rate of deterioration." *Opsearch*, Vol. 15. pp. 184-187, 1978.



6. **Aggarwal S.P. and C.K. Jaggi**, "Ordering policies of deteriorating items under permissible delay in payments" *Journal of the Operational Research Society*. Vol. 46, pp. 658-662, 1995.
7. **Aggarwal V. and H. Bahari-Kashani**, "Synchronized production policies for deteriorating item in a declining market," *AIIE Transactions*, Vol. 23, pp.185-169, 1991.
8. **Arcelus F.J. and G. Srinivasan**, "Delay of payment for extra-ordinary purchases," *Journal of the Operational Research Society*, Vol. 44, pp. 785-795, 1993.
9. **Arcelus, F.J. and G. Srinivasan**, "Discount strategies for one-time only sales," *AIIE Transactions*, Vol. 27, pp. 618-624, 1995.
10. **Arcelus F.J., N.H., Shah and G. Srinivasan**, "Retailers pricing, credit and inventory policies for deteriorating item in response to temporary prices/credit incentives," *International Journal of Production Economics*, Vol. 81-82, pp. 153-162, 2003.
11. **Arcelus, F.J. and G. Srinivasan**, "Retailers response to special sales, price discount vs trade credit, " *OMEGA*, Vol. 29, pp. 417-428, 2001.
12. **Arcelus F.J. and G. Srinivasan**, "Alternate financial incentives to regular credit/price, discounts for extra-ordinary purchases," *International Transactions of Operations Research*, Vol. 8, pp. 739-751, 2001
13. **Backer R.C. and L.A. Urban**, "Deterministic inventory system with an inventory level dependent demand rate." *Journal of the Operational Research Society*, Vol. 39, pp. 823-831, 1988.
14. **Bahri-Kashani H.**, "Replenishment schedule for deteriorating item with time proportional demand," *Journal of the Operational Research Society*, Vol. 40, pp. 75-81, 1989.
15. **Berkherouf L.** "A determinist order level inventory model for deteriorating items with two storage facilities." *International Journal of Production Economics*, Vol. 48, pp. 167-175, 1997.
16. **Bhunja A.K. and M. Maiti**, "A two warehouse inventory model for deteriorating items with a linear trend in demand and shortages." *Journal of the Operational Research Society*, Vol. 49, pp. 187-292, 1998.
17. Bierman H. and J. Thomas, "Inventory decisions under inflationary condition, " *Decision science*, Vol. 8, pp. 151-155, 1977
18. **Bose S., A. Goswami and K.S. Chaudhari**, "An EOQ model for deteriorating items with linear time dependent demand rate and shortages under inflations and time discounting." *Journal of the Operational Research Society*, Vol. 46, pp. 771-782, 1995.
19. **Brahmbhatt A.C.**, "Economic order quantity under vanable rate of inflation and mark-up prices," *Productivity*, **Vol. 23, pp. 127-130, 1982.**
20. **Bregman R.L.**, "Effect of extended payment terms on purchasing decisions," *Computers in Inventory*, **Vol. 22, pp. 311-318, 1993**



Cite this Article:

Aaglawne Khalid Dilawar¹ , Dr. Harshvardhan², “Effective Operation of Manufacture in Business Model” The Research Dialogue, Open Access Peer-reviewed & Refereed Journal, Pp-219–224, Volume-05, Issue-01, April-2026, <https://theresearchdialogue.com/>



This is an Open ccess Journal / article distributed under the terms of the Creative Commons Attribution License CC BY-NC-ND 3.0) which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. All rights reserved.





CERTIFICATE

of Publication

This Certificate is proudly presented to

Aaglawne Khalid Dilawar¹, Dr. Harshvardhan²

For publication of Research Paper title

**Effective Operation of Manufacture in
Business Model**

Published in 'The Research Dialogue' Peer-Reviewed / Refereed Research Journal
and E-ISSN: 2583-438X, Volume-05, Issue-01, Month April, Year-2026, Impact
Factor (RPRI-4.73)

Dr. Lohans Kumar Kalyani
Editor- In-chief



Dr. Neeraj Yadav
Executive-In-Chief- Editor

Note: This E-Certificate is valid with published paper and the paper
must be available online at: <https://theresearchdialogue.com/>
DOI : <https://doi.org/10.64880/theresearchdialogue.v5i1.25>