

A Study on Inventory Management and Its Impact on Profitability in Foundry Industry at Belagavi, Karnataka

Prof. Prayag P. Gokhale¹, Megha B Kaloji²

¹*Asst. Professor, Department of MBA, KLE DR. M S Sheshgiri College of Engineering and Technology, Belgaum, Karnataka India.*

²*Research Student, Department of MBA, KLE DR. M S Sheshgiri College of Engineering and Technology, Belgaum, Karnataka India.*

Abstract- In day-to-day management of the firm, it is essential to manage the inventory so as to maintain proper supply of goods at proper time. Inventory represents an important decision variable at all stages of product manufacturing, distribution and sales, in addition to being a major portion of current assets of many organizations. Too much and too low inventories bring down the level of profitability of an organization. Therefore, whether it is a manufacturing or merchandized organization, the goal should always be the same that is, to ensure the inventory is ready and at the same time inventory is at a low level. Inventory management is functional field of finance and production that covers the efficient and effective use of raw materials and spares which are consumed in producing the finished goods in manufacturing concern. A firm ignoring the management of inventories will be jeopardizing its long run profitability and may fail finally. The reduction in 'excessive' inventories carries a favourable impact on a company's profitability. This paper consists of different parts where the inventory management concepts are discussed, and different inventory control techniques are discussed. This paper also introduces the various costs incurred due to the storage inventory, economic order quantities, stock levels, shortage costs, inventory methods.

Keywords: Economic Order Quantities, Inventory, Inventory Management, Stock levels, Trial & error approach.

I. INTRODUCTION

Inventory is a crucial asset for numerous companies, as it is often a huge asset on the company's financial statements and it represents a source of revenue in the near forthcoming through sales of the goods. In other words, "Inventory refers to the stockpile of the products, a firm would sell in future in the normal course of business operations and the components that make up the product". It is the crucial part of every organisation, whether big/small has to keep inventory in the system. In accounting language inventory means stock of finished goods only. In manufacturing concern, it may include raw materials, work in progress, and stores etc. An efficient management of inventory is required because a substantial share of a firm's funds is invested in them. Every company must ensure that inventory is maintained at desired levels. Too

much and too low inventories bring down the level of profitability of an organization.

Inventory management is a business process which is held responsible for developing and managing the inventory levels, whether the inventory is raw materials, semi-finished materials or finished goods, so that adequate supplies must always be available and the firm must make sure that the cost of over or under stocks are always low.

Inventory management techniques

1. Economic Order Quantity (EOQ) :

The economic order quantity is the quantity at which, the ordering & carrying cost is low. This is the quantity of a material that can be purchased at least costs.

It involves 2 types of costs:

- **Ordering Costs:** It is the cost related to the bringing the inventory to the production system. It includes all costs which are directly or indirectly involved in bringing the inventory to the production system. Costs included in ordering costs are tendering cost, quality inspection cost, transportation cost etc.
- **Carrying Costs:** It is the cost which is associated with costs which are spent to the storage of the inventory items in the store. It depends upon the quantity and period of time till when the inventory is to be stored. It includes storage cost, damage cost, depreciation, handling cost, insurance cost etc.

2. Stock Level Analysis:

Stock level is important for the control of materials. The following techniques are used to have good and proper control materials;

1. Minimum Stock Level
2. Reorder Level
3. Maximum Stock Level

3. Trial Error Approach

According to this approach, the carrying and acquisition costs for different sizes of orders to purchase inventories are computed and the size with the lowest total cost (ordering plus carrying) of inventory is the economic order quantity.

II. LITERATURE REVIEW

Dr. Rakesh Kumar (2016) said that Inventors are assets of the firm and that they describe an investment. Such investment needs a commitment of funds, thus a firm has to keep inventories at the accurate level. If the stocks are too large, the firm loses the chance to employ the funds more efficiently. Likewise, if they become too small, the firm might lose sales. Thus, there is an optimal level of inventories. The economic ordering quantity is used to compute the optimum quantity that can be procured to reduce the carrying and ordering costs.

Serhii Z (2015) according to this paper Inventories involves raw materials, work-in-progress and entirely completed goods that are in to be included in the firm’s assets that are in position or would be in position for sale.

Sachin Agarwal (2014) according to author Inventory constitutes the furthest essential part of industries. It is very important to manage inventories efficiently so as to evade the expenses of fluctuating production rates, excessive cost of sales and back order consequences during periods of peak and vigorous demand. The model provides the optimal solution in closed form which aids to know about the performance of the inventory system. The closed-form solution is also easy to calculate. The objective is to find the economic order quantities for warehouse which reduce the total cost.

III. OBJECTIVES

- To calculate the EOQ of raw materials.
- To calculate the EOQ using trial and error approach to find out the least ordering and carrying cost combination.
- To calculate the stock levels of raw materials.

IV. METHODOLOGY

- The study is undertaken on the basis of secondary data.
- Statistical tool – MS Excel.

V. RESULTS

Table 5.1 Calculation of EOQ of Pig Iron at Foundry Industry

Particulars	2014-2015	2015-2016	2016-2017	2017-2018
Annual Requirement (A) Qty. (Mt)	401.89	453.59	642.95	563.15
Ordering Cost Per Order (O)	Rs.75	75	75	75

Annual Holding Cost %	5%	5%	5%	5%
Purchase Price Per Ton	Rs.30950	28323	23940	30120
Carrying Cost Per Ton (C)	Rs.1548	1416	1197	1506
Economic Order Quantity (In Tons)	6.24	6.93	8.98	7.49

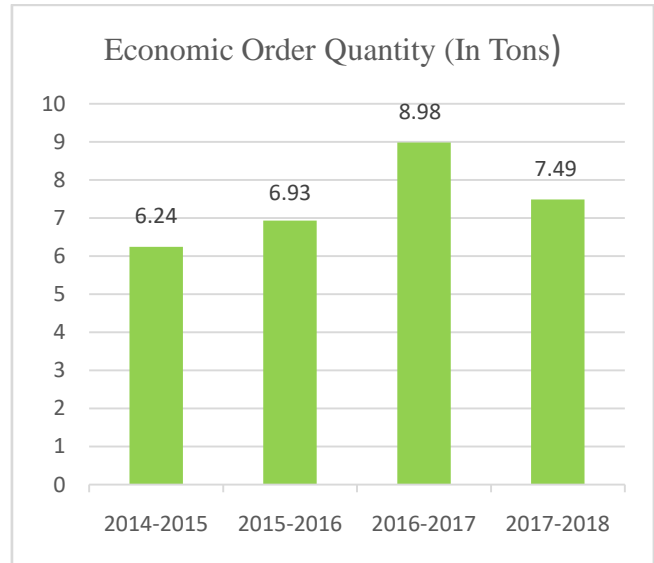


Figure 5.1 Shows EOQ of pig iron

Interpretation: Figure 5.1 shows that the EOQ of Pig Iron, in 2014-15 was 6.24 tons and it increased to 6.93 in the year 2015-16. It further increased to 8.98 tons due to decrease in carrying cost in 2016-17 and in 2017-18 it decreased to 7.49 tons. The company could save a significant amount of money by simply utilizing the EOQ method efficiently for purchasing pig iron.

The following table’s shows calculation of different stock levels of Pig iron

Table 5.2 Calculation of reorder level

Particulars	2014-15	2015-16	2016-17	2017-18
Maximum Consumption	2.63	3.95	5	6
Maximum Delivery Period	5	5	5	5
Reorder Level	13	20	25	25

Table 5.3 Calculation of minimum stock level

Particulars	2014-15	2015-16	2016-17	2017-18
Reorder Level	13	20	25	25
Normal Consumption	1.84	2.46	3.30	3.20
Normal Delivery Period	4.5	4.5	4.5	4.5
Minimum Stock Level	5	9	10	11

Table 5.4 Calculation showing maximum stock level of pig iron

Particulars	2014-15	2015-16	2016-17	2017-18
Reorder Level	13	20	25	25
Reorder Quantity	6.24	6.93	8.98	7.49
Minimum Consumption	1.04	0.96	1.60	1.40
Minimum Delivery Period	4	4	4	4
Maximum Stock Level	15	23	28	27

Interpretation: Table shows that there is an increase in stock levels every year, the company is suggesting to maintain maximum stock level, stock exceeding this level will lead to blocking capital and unnecessary increase in stock holding cost.

Table 5.5 Calculation of EOQ of pig iron using trial and error approach

Ordering Quantity / Lot Size	6	7.5	9.5	12
Annual Requirement (A)	401.89	453.59	642.95	563.95
Ordering Cost				
No of Orders	67	60	68	47
Cost Per Order	75	75	75	75
Total Ordering Cost (A)	5025	4500	5100	3525
Carrying Cost				
Average Inventory	3.00	3.75	4.75	6.00
Carrying Cost Per Ton	1548	1416	1197	1506
Total carrying Cost (B)	4644	5310	5686	9036
Cost of Purchase				
Quantity	401.89	453.59	642.95	563.95
Price Per Ton	30950	30950	30950	30950
Cost of Purchase	12438496	14038611	19899303	17454253
Discount		2%	5%	5%

Less : Discount	0	280772	994965	872713
Total Cost of Purchase (C)	12438496	13757838	18904337	16581540
Total Cost (A+B+C)	12448165	13767648	18915123	16594101

Interpretation: Assuming quantity discount at 0% the EOQ comes to 6 tons which will incur least cost of 12448165 as compared to other quantities.

VI. CONCLUSION

The overall study gives a view that how the inventory management plays a significant role not only in the financial statement but also in the operational activities of the organization. So, for smooth functioning business there should be optimum inventory maintained, but the organization should neither have over stock nor under stock.

Through the study it is found that, the company can opt the 'Economic Order Quantity' for optimum procurement and it can maintain different stock level for its mechanisms/components in order to avoid inventory-out conditions and helps in different flows of production. This would decrease the cost and maximize the profit. If they could properly implement and monitor the norms and methods of inventory management, they can maximize the profit with minimum cost.

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