

Economic order quantity

Economic order quantity (EOQ) refers to that number (quantity) ordered in a single purchase so that the accumulated costs of ordering and carrying costs are at the minimum level.

In other words, the quantity that is ordered at one time should be so, which will minimize the total of (i) Cost of placing orders and receiving the goods, and (ii) cost of storing the goods as well as interest on the capital invested.

The economic order quantity can be determined by the following simple formula:

$$EOQ = \sqrt{\frac{2xRUxOC}{UCxCC\%}}$$

Where;

EOQ = Economic Order Quantity.

RU = Annually Required Units.

OC = Ordering Costs for one order.

UC = Inventory Unit Cost.

CC = Carrying Cost as %age of Unit Cost.

This formula is based on three assumptions:

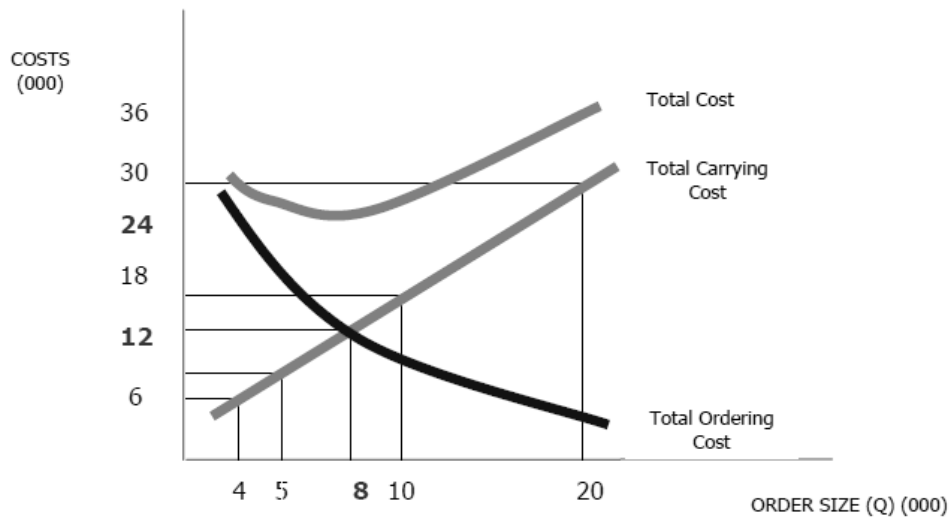
1. Price will remain constant throughout the year and quantity discount is not involved.
2. Pattern of consumption, variable ordering costs per order and variable inventory carrying charge per unit per annum will remain the same throughout, and
3. EOQ will be delivered each time the stock balance is just reduced to nil.

Carrying cost of inventory consists of (i) the costs of physical storage such as cost of space, handling and upkeep expenses, insurance, cost of obsolescence, etc., and (ii) interest on capital invested (the opportunity cost of the capital blocked up). All these costs are expressed in %age of the cost per unit.

EOQ Graph

Economic order quantity can also be determined through a graph. Here the above information is plotted in a graph for total ordering cost, total carrying cost and total cost at different ordering quantities.

The point at which the line of total ordering cost intersects with the total carrying cost is the EOQ. At this point the line of total cost will give a bend that shows the minimum cost.



In the above graph line of total carrying cost intersects line of total ordering cost at 8,000 order quantities, where both of the costs are Rs. 12,000. At this order quantity the total cost is Rs. 24,000 which is the minimum most.

If the order quantity is increased or decreased the total cost will be more than the cost at EOQ. This is also evident from the above graph.