Technical Guide On

"Inventory Management"

Small and Medium Enterprises Development Authority
Ministry of Industries & Production
Government of Pakistan
www.smeda.org.pk

February 2021

Table of Contents

1.Disclaimer

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1.1 Introduction to SMEDA

The Small and Medium Enterprises Development Authority (SMEDA) was established in October 1998 with an objective to provide fresh impetus to the economy through development of Small and Medium Enterprises (SMEs).

With a mission "to assist in Employment Generation and Value Addition to the national income, through development of SME sectors, by helping increase the number, scale and competitiveness of SMEs", SMEDA has carried out 'sectoral research' to identify Policy, Access to Finance, Business Development Services, strategic initiatives and institutional collaboration & networking initiatives.

Preparation and dissemination of prefeasibility studies in key areas of investment has been a successful hallmark of SME facilitation by SMEDA.

Concurrent to the prefeasibility studies, a broad spectrum of Business Development Services is also offered to the SMEs by SMEDA. These services include identification of experts and consultants and delivery of need-based capacity building programs of different types in addition to business guidance through help desk services.

For more information on services offered by SMEDA, please contact our website: www.smeda.org

1.2 Industry Support Program

In order to enhance competitiveness of SMEs and achieve operational excellence, SMEDA established an Industry Support Cell (ISC) for provision of foreign technical support and knowledge transfer in collaboration with International Development Organizations. SMEDA's Industry Support Program (ISP) initially launched with Japan International Cooperation Agency (JICA) and actively engaged in reducing energy inefficiencies and improving production and quality of products with the support of Japanese Experts. Later on, similar activities with other international partner organizations like German Corporation for International Cooperation (GIZ), Training and Development Centers of the Bavarian Employers' Association (bfz), Germany, and United Nations Industrial Development Organization (UNIDO) were also successfully implemented.

2. What is Inventory Management?

Inventory management is the efficient approach for procuring, storing and using the inventory that includes the raw material, in process and finished goods.

The effect of inventory on product cost often overlooked by the businesses and hence it is considered as a hidden cost that need to be lowered down to achieve the cost effectiveness.

2.1 Types of Inventory

Following are the types of inventory:

a- Raw Material: These are the items which are used to manufacture components and finished goods.

b- Work in Progress: Unfinished items moving the production but not yet ready or finished.

c- Maintenance, Repair and Operations (MRO) Goods: Those items which support in production of the finished products are considered as MRO inventory.

d- Finished Goods: the final product which is ready to be sold.

2.2 Factors Contributed To Inventory Cost

Following are the factors which are affecting the inventory cost:

i- Warehouse Rent: It is calculated by dividing the annual rent with the value of average inventory value. If the warehouse is part of facility, the opportunity cost of capital spent to construct the ware house may be considered as a substitute for rent.

ii- Warehouse Maintenance and Utilities Cost

iii- Warehouse Equipment Cost: This cost includes depreciation, operation and maintenance of equipment like trolley, fork lifters & cranes.

iv- Insurance: The amount paid for insurance to cover the loss due to fire or from any hazard

v- Employees Cost: Salaries of the staff deputed in the warehouse / storage area

vi- Pilferage Cost: The value of inventory shortfall is pilferage cost. The discrepancy in inventory may be due to theft, counting, measuring or weighing error which is revealed during verification.

vii- Spoilage and Obsolescence Cost: This is the cost associated with that inventory holding cost which become scrapped due to the physical or chemical degradation and become unfit for use.

viii- Capital Cost: This cost is the largest component of carrying cost incurred by businesses. It includes the cost of money invested in the inventory, interest paid on a purchase, as well as the opportunity cost of purchasing inventory. Capital cost is always expressed as a percentage of the total value of the inventory being held.

Carrying cost are typically 20-30 % of your inventory value.

3. Inventory Management Techniques

The use of right management technique is very critical as business grows, it will become more difficult to manage the inventory.

Following are the most common techniques that are used:

3.1 ABC Classification

In this technique, inventory is grouped into three groups. Although there is no hard and fast rule, this technique focuses on annual consumption units, inventory value, and cost significance.

Products are split into three groups:

A: Items of high value (70%) and small in number (10%)
B: Items of moderate value (20%) and moderate in number (20%)
C: Items of small value (10%) and large in number (70%)
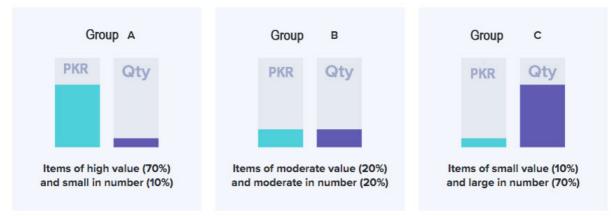

Figure 1: ABC Classification

The most important is to handle each group separately.

Group A items require strict inventory control, more frequent reviews of forecasting, demand requirements and safety stocks.

Group B items require moderate level of inventory control and less frequent reviews of requirements and stocks.

Group C items require least inventory control and focus is given when there is a shortage of any item from this group.

The advantages of this technique is inventory accuracy, assist in strategic pricing and support in demand forecasting by analyzing a product's popularity over time.

Downside of this technique includes time and human resource requirement, conflicts with other techniques and there is a possibility that those products might ignored which gained momentum.

3.2 Bulk Shipments

This is the most common use technique which is based on the thought that it is cheaper to purchase and ship in bulk. Bulk shipping is applied for goods with high consumer demand.

There is a chance of high rate of profitability due to less purchase and low shipping cost but have the high holding cost of storage. This technique fits well for those products whose demand are predictable and if demand fluctuates then it is difficult to adjust quickly while using this technique.

3.3 Backordering

This technique involves to accept and take order along with payments for out of stock products. Customers are being informed about the product arrival as well. This technique generates sale but when if there are too many backordering on multiple of products then problems being to mount and you have to jiggle a lot to meet the orders.

This kind of technique has longer time of order fulfilment this means businesses must have a good customer service to keep the customers update about their status order.

3.4 Just In Time

Companies use this inventory strategy to increase efficiency and decrease waste by receiving goods only as they need them for the production process subsequently forwarded to customers, which reduces inventory costs.

It is also known as Toyota Production System, as Toyota was the first company who adopted this technique.

The success of the JIT production process relies on steady production, high-quality workmanship, no machine breakdowns, and reliable suppliers.

3.5 Drop-shipping

This technique eliminates the holding cost as do not hold any inventory. When order arrives you pass on the full information regarding order and customer to your supplier / wholesaler who then arrange the shipment and send the product.

This technique is mostly used by e-commerce businesses.

4. Key Performance Indicators for Inventory Management

Key performance Indicators (KPIs) are the quantifiable measure to evaluate the company's performance against the set targets.

Inventory Turnover is the frequent KPI used by industry.

4.1 Inventory Turnover

It is the rate at which a business sold its inventory. It also depicts the company's ability to convert inventory into cash.

Inventory Turnover = Cost of Good Sold / Average Inventory

For example, Saleem is a retailer who sells general household items. At the end of year, he calculated that cost of sold items is PKR 1,000,000/- and the value of the inventory at the beginning of the year was PKR 2,500,000/- and at the end of the year inventory is of PKR 1,500,000/-.

Therefore, average inventory is

(2,500,000 + 1,500,000)/2 = 2,000,000

Inventory Turnover = 1,000,000 / 2,000,000 = 0.5

This means that Saleem managed to sell half of the total inventory in a year. This means that it will take Saleem 2 years to sell his entire current inventory.

This is not good value; it depicts that either he is overstocked or weak efforts have been made regarding the marketing.

The best value varies from industry to industry however, 3-5 is considered a good value.

Let's take another example, a large retailer reported end year inventory of PKR 4,000,000, year start inventory PKR 3,000,000 and cost of goods sold annual is PKR 12,000,000.

Average inventory = (4,000,000 + 3,000,000) /2 = PKR 3,500,000
Inventory Turnover = 12,000,000 / 3,500,000 = 3.43

This indicates that the global retailer manages to sell whole inventory 3.43 times in a year. In other words, retailer manages to sell whole inventory within 106.7 days (365 / 8.6=106.4 days).

4.2 Average Days to Sell Inventory (DSI)

This KPI is a measure of how long it takes your company to turn its inventory into sales.

$$DSI = (Avg. \text{ Inventory} / \text{Cost of Goods Sold}) \times 365$$

Let's take the above example of the global retailer,

Avg. Inventory = PKR 3,500,000 PKR
Cost of Goods Sold = PKR 12,000,000

$$DSI = (3,500,000 / 12,000,000) \times 365 = 106.4 \text{ days}$$

This means company manages to sell the inventory within 106.4 days.

Small values of DSI indicates that a company is more efficiently and frequently selling off its inventory, which means rapid turnover leading to the potential for higher profits.

4.3 Order Cycle Time

Order cycle time measures the time from when a customer places an order to when they receive their purchased product. This performance indicator shows how well the the operations are managed in the business that includes inventory, supply chain and production.

4.4 Holding Cost

This KPI measures the costs related to storing unsold inventory. This includes the cost of damaged and spoiled goods, cost of storage space, labour and insurance.

To minimize the holding cost, reset the reorder point. Reorder point is the level of the inventory at which company replenish particular stock.

5. Conclusion

An effective inventory management leads towards the efficient and productive firm. A good strategy related to inventory assists the business in lowering the financial losses associated with the stocks.