UNIT-5 Inventory Management

Learning Outcomes
By the end of this unit the learner will be able to:
✓ **Understand the functions and objectives of inventory management**

Unit 5
Inventory Management

What is Inventory?

Definitions

What is Inventory?

Definition: "A catalogue or schedule of property of a person, organization or estate; hence an account of goods and their worth." (From Webster's Dictionary)

Or: A regularly scheduled (typically annually) account of stock taken by an organization.

The 'inventory' of a business refers to the products and goods it holds, with the intention of selling or shipping them to the end customer. The stocks held by a business could be raw materials, finished goods or any other physical assets whatsoever. The key to successful inventory management lies in carefully balancing input with output - i.e. supply and demand. Efficiency can only be achieved when the business always has sufficient supply available to meet demand, but not to such an extent as to end up with significant quantities of excess stock that simply sit on the shelves of the warehouse.

What is Inventory Management?

Inventory management refers to the process of controlling the quantities of materials and products stocked to ensure customer demand is met quickly and consistently.

Why Is Inventory Management Important?

The importance of inventory management lies in its capacity to both reduce operational costs for the business and maximise customer satisfaction. It's essentially all about ensuring the right products are in the right place at the right time - all at a predetermined quality level and at an affordable price.

For most businesses, inventory represents one of the biggest and most continuous of all operational costs. Businesses that rely on inventories are required to purchase the goods from their suppliers, store them, insure them, protect them from theft/damage, supply them prior to becoming obsolete/outdated and make a profit while doing so. It's estimated that the cost of carrying inventory falls between 20% and 25% of the total value of the inventory itself.

For inventory management to be effective and efficient, all costs must be minimised at all times. The business must consider which products need to be kept in stock, in what kinds of quantities and whether they have a limited shelf life - aka expiration date.

Inventory management is a multi-departmental responsibility within most organisations. It's only

when inter-departmental communications are strong and consistent that efficiency can be achieved. Sales and marketing departments may create a surge in demand for a specific product, but the purchasing manager will need to be aware of this initiative as far in advance as possible. Any lapse in communication between departments can result in demand outstripping supply, or the accumulation of excess inventory and additional holding costs for the business.

Goals of Inventory Management

- To ensure internal and external customers are served effectively
- To minimise costs and maximize revenues for the business
- To effectively control and manage inventory
- To ensure the business carries appropriate stock levels
- To minimize the costs of carrying inventory where possible
- To prevent loss of business in the case of stock outages
- To control ordering costs
- To achieve and maintain stock accuracy

Glossary

Backorder
An incomplete order that is yet to be fulfilled, as the goods required have not yet been received from the supplier or are temporarily unavailable.

Cross-Docking
The processes of pre-defining inventory for shipment to customers (internal or external).

Distribution
The movement of materials and products between locations, which may be raw materials, finished goods, product components and so on.

FIFO
An inventory management system wherein the items received first are distributed first - First In, First Out.

Lead Time
The time it takes for the business to prepare and process requests in the normal way.

LIFO
The opposite of FIFO, this is an inventory management system where the *last* products or items received are distributed first - Last In, First Out.

Loading
The process of transferring goods and materials to outgoing forms of transportation.

Logistics
The term 'logistics' incorporates every process and activity that takes place to facilitate the flow of information and goods between locations.

Order
Any request received for items or materials to be sent to a specific location, which could be external or internal.

Packing
Process of preparation of picked goods for shipping.

Picking
The physical 'collection' of the goods requested in an order (taking from warehouse shelves, bins etc.) and their preparation for shipping.

Product Number
A unique identification number (or code including letters and numbers) assigned to products and items, to assist with inventory management, stock control and movement.

Put-Away
The process of moving inventory to the picking, manufacturing, or outbound staging areas.

Receiving
The receipt of goods from delivery vehicles, along with confirming the accuracy of the order received, examining the quality of the items delivered and formerly confirming their acceptance. A process that is predominantly computerised in most warehouses.

Re-Order Point
Refers to a pre-assigned inventory level where the respective item or items must be replenished. Again, reordering items when stocks fall below a certain level is typically automated in most modern business environments.

Returns
Any items or materials returned to the sender for any reason, which may include damage, dissatisfaction, the wrong items being sent in the first place and so on.

Safety Stock
Also known as buffer stock, safety stock refers to the additional inventory carried by a business to cope with fluctuations in demand and/or potential shortages on the part of the supplier.

Shipping
The processing and physical transportation of products and materials from one location to the next, using any means of transportations deemed appropriate.

Stock-Keeping Unit (SKU)
A unit of raw goods, a product, and/or merchandise of value that the warehouse or distribution

operation receives, stores, and or delivers to the customer or manufacturing department. In essence, the merchandise or product.

Warehouse
Any facility used to store products or items of any kind.

Types of stock

Most products, items and materials within a warehouse are classified as stocks. From complex electronic components to cans of soup to finished machinery, all stocks fall within three basic categories:

Raw materials: The components and materials needed by the buyer to make finished products, or to sell on to the end customer as they are.

Work in Progress: Items that are not yet compete and therefore not ready to sell to the customer. They are still in the production phase.

Finished goods: Completed products and items that are ready to be sold and shipped to the end customer.

Of course, these categories are somewhat open to interpretation. The reason being that one firm's finished products may represent raw materials for another. Hence, there is some overlap, in accordance with what exactly the organisation does. In any case, it's estimated that approximately 30% of stocks held in warehouses are finished goods, 40% fall within the 'work in progress' category and 30% are raw materials.

There are also items that are not categorised within any of these categories, which fall into one of two additional categories:

- **Spare parts** used in machinery, appliances, equipment, and soon
- **Consumables** like oil, chemicals, fuel, paper, and soon.

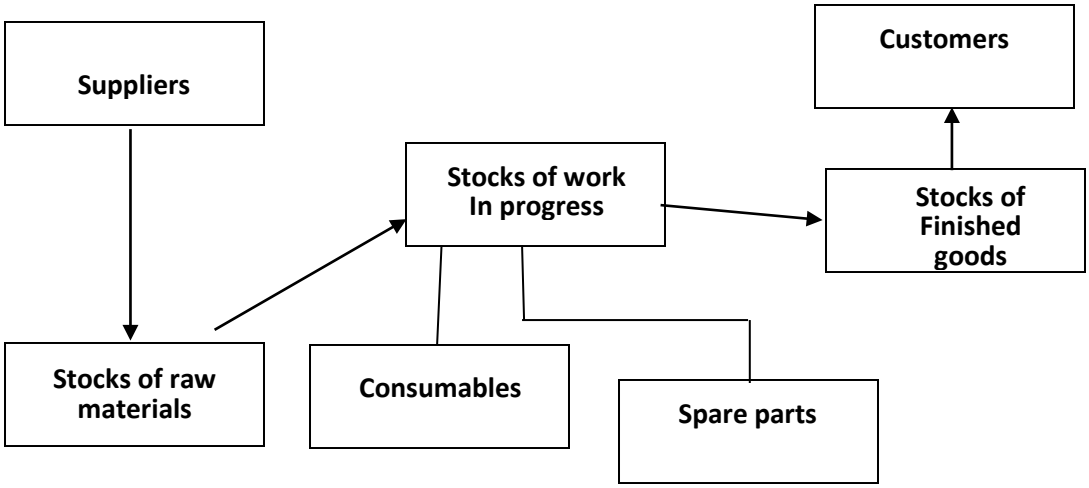

Fig. 5.1

Overall market demand refers to the combined demands of all individual customers. Achieving efficiency in inventory management means carefully balancing a variety of costs. Three important questions that must be considered are as follows:

1. *What items should we stock?* There are no instances where items should be stocked without carefully considering their benefits and costs. Being mindful of every item carried is important, irrespective of the nature and value of the item in question.
2. *When should we order for stock?* Every business must determine at what point new stock should be ordered. This means setting pre-determined re-order points and considering the extent to which safety stock is required.
3. *What's the right quantity to be ordered?* Ordering vast quantities of stock on an infrequent basis means carrying much more stock at any one time, but lower costs per individual item. By contrast, regular orders for smaller quantities of stocks means having to carry minimal inventory within the warehouse, but with elevated costs per unit purchased.

Costs of carrying stock

It's estimated that the average cost of carrying stock for a business is around 25% of the value of the stock. However, this doesn't mean it isn't possible to implement measures to bring these costs under control. It's commonly assumed that the most obvious and effective way of reducing costs is to reduce stocks. However, the closer the business comes to zero stock, the more difficult it becomes to satisfy the requirements of customers. All of which could ultimately prove even more costly for the business.

Lambert explains one approach which describes the costs of capital (for borrowing, opportunity, and so on), inventory service (insurance, taxes, and so on), storage (rent, heating, and so on) and risks associated with inventory (obsolescence, damage, and so on). It can, however, be useful to divide total stock costs into four separate cost components, as follows:

1. **Unit cost**: This refers to the price payable for each item - i.e. how much the business pays per unit. Unit cost considerations become tricky when evaluating offers from different suppliers, which may offer slightly different items for slightly different prices, or special deals and discounts on higher quantity orders.

2. **Reorder cost:** This incorporates the additional costs associated with preparing an order, communication, receiving, delivery, checking, testing, utilization of equipment and follow-up. It may also include transportation costs, quality control and additional allowances. One of the easiest ways of calculating an approximate reorder cost is to divide the annual cost of the purchasing department by the quantity of orders sent out.

3. **Holding cost**: This refers to how much it costs to hold an item for a specific period of time. When items are held unused for extensive periods of time, they represent cash that could have been used for more profitable activities. There are also additional holding costs to consider, which may include storage space, loss, handling, and special treatment - i.e. climate control and insurance for valuable items. There's also the risk of certain items becoming outdated or obsolete, if they are held for too long.

4. **Shortage cost:** Shortage costs occur when the item a business needs to purchase is either temporarily unavailable or permanently discontinued. This could immediately result in financial loss, by way of a lost sale of the item to the end customer. But the consequences of shortages run far deeper than simple lost sales alone. Stock shortages can result in reputational damage, loss of trust and loss of potential repeat business. In addition, shortage costs extend to the costs and general disruption associated with sourcing new suppliers for the items needed. It's also perfectly possible that the new supplier will not offer exactly the same item as the previous supplier, or will offer an equivalent item at a different price. All of which is why businesses work hard to avoid shortages, which can prove both expensive and damaging.

Further Reading:

- ✓ ***Inventory Control A Complete Guide – 2021 Edition, By The Art of Service – Inventory Control Publishing***
- ✓ ***Inventory management: Fourth Edition, (2021), By Steven M. Bragg***
- ✓ ***Inventory and Production Management in Supply Chains, (2021), By Edward A. Silver, David F. Pyke***

