Module 5
Section A: Understand Inventory Management Fundamentals

Term
Active tag

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Section A: Understand Inventory Management Fundamentals

Term
Anticipation inventories

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Term
Automatic identification and data capture (AIDC)

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Term
Automatic identification system (AIS)

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Term
Average inventory

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Section A: Understand Inventory Management Fundamentals

Term
Backorder

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Term
Batch processing

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Term
Carrying cost

Additional inventory above basic stocking levels to cover projected trends of increasing sales, planned sales promotion programs, seasonal fluctuations, plant shutdowns, and vacations.

A radio frequency identification (RFID) tag that broadcasts information and contains its own power source. See: radio frequency identification (RFID).

A system that can use various means, including barcode scanning and radio frequencies, to sense and load data in a computer.

Technologies that collect data about objects and then send the data to a computer without human intervention. Examples include radio frequency wireless devices and terminals, barcode scanners, and smart cards.

An unfilled customer order or commitment. A backorder is an immediate (or past-due) demand against an item whose inventory is insufficient to satisfy the demand. See: stockout.

One-half the average lot size plus the safety stock, when demand and lot sizes are expected to be relatively uniform over time. The average can be calculated as an average of several inventory observations taken over several historical time periods. For example, twelve-month ending inventories may be averaged. When demand and lot sizes are not uniform, the stock level versus time can be graphed to determine the average.

The cost of holding inventory, usually defined as a percentage of the dollar value of inventory per unit of time (generally one year). Carrying cost depends mainly on the cost of capital invested as well as costs of maintaining the inventory, such as taxes and insurance, obsolescence, spoilage, and space occupied. Such costs vary from 10 percent to 35 percent annually, depending on type of industry. Carrying cost is ultimately a policy variable reflecting the opportunity cost of alternative uses for funds invested in inventory. Syn.: holding cost. See: inventory cost.

1) A manufacturing technique in which parts are accumulated and processed together in a lot. 2) A computer technique in which transactions are accumulated and processed together or in a lot. Syn.: batch production.

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Term
Cycle stock

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Term
Decoupling

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Term
Decoupling points

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Term
Economies of scale

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Term
Electronic product code (EPC)

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Term
Excess inventory

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Term
Expedite

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Term
Handling cost

Creating independence between supply and use of material. The process commonly denotes allocating inventory between operations so that fluctuations in the production rate of the supplying operation do not constrain the production or use rates of the next operation.

The amount of inventory maintained to fulfill demand during an order cycle. The cycle stock depletes gradually as customer orders are fulfilled and is replenished cyclically when orders from suppliers are received. Syn.: cycle inventory. See: lot-size inventory.

The unit cost reduction that results from spreading fixed costs over higher production or activity volumes. Economies of scale are typically captured as firms expand their markets and operations. See: economies of scope. Ant.: diseconomies of scale.

The locations in the product structure or distribution network where inventory is placed to create independence between processes or entities. Selection of decoupling points is a strategic decision that determines customer lead times and inventory investment. See: control point.

Any inventory that exceeds the minimum amount necessary to achieve the desired throughput rate at the constraint or that exceeds the minimum amount necessary to achieve the desired due date performance. Total inventory = productive inventory + protective inventory + excess inventory.

A common format for encoding identifiers on radio frequency identification (RFID) tags. The EPC is a globally unique number that identifies a specific item in the supply chain, such as a container, pallet, case, or individual unit.

The cost associated with receiving, moving, and retrieving inventory within a facility. In some cases, the handling cost depends on the size of the inventory.

1) To rush or chase production or purchase orders that are needed in less than the normal lead time in order to move in the delivery date. 2) To take extraordinary action because of an increase in relative priority. Syn.: stockchase.

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Term
Hedge inventory

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Term
Inactive inventory

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Term
Inventory

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Term
Inventory cost

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Term
Inventory management

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Term
Inventory shrinkage

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Term
Lot size

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Term
Maintenance, repair, and operating (MRO) supplies

1) Stock designated as in excess of consumption within a defined period. 2) Stocks of items that have not been used for a defined period.

A form of inventory buildup to buffer against some event that may not happen. Hedge inventory planning involves speculation related to potential labor strikes, price increases, unsettled governments, and events that could severely impair a company's strategic initiatives. Risk and consequences are unusually high, and top management approval is often required.

The cost associated with ordering and holding inventory. See: carrying cost, ordering cost.

Items or stock used to support production (raw materials and work in process (WIP) items), supporting activities (maintenance, repair, and operating supplies), and customer service (finished goods and spare parts). Demand for inventory may be dependent or independent. Inventory functions are anticipation, hedge, cycle (lot size), fluctuation (safety, buffer, or reserve), transportation (pipeline), and service parts. Total inventory value is represented as a current asset on an organization's balance sheet.

Reductions of actual quantities of items in stock, in process, or in transit. The loss may be caused by scrap, theft, deterioration, evaporation, and so forth. Syn.: shrinkage.

The area of business management concerned with planning and controlling inventories, such as warehouse and material handling processes.

Items used in support of general operations and maintenance such as maintenance supplies, spare parts, and consumables used in the manufacturing process and supporting operations. See: nonproduction material.

The amount of a particular item that is ordered from a manufacturing facility or a supplier or is issued as a standard quantity to the production process. Syn.: order quantity.

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Term
On-time schedule performance

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Term
Ordering cost

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Term
Passive tag

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Term
Pipeline stock

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Term
Radio frequency identification (RFID)

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Term
Safety lead time

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Term
Safety stock

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Term
Semipassive tag

The costs an organization incurs each time it places an order. Ordering cost is used in determining order quantities and includes costs related to the administrative work of preparing, releasing, and monitoring orders and paying invoices; the physical handling of goods; receiving and inspection; and setups, as applicable. Syn: order cost. See: acquisition cost, inventory cost.

A measure (percentage) of meeting the customer's originally negotiated requested delivery date. Performance can be expressed as a percentage based on the number of orders, line items, or dollar value shipped on time.

Inventory in the transportation network and the distribution system, including the flow through intermediate stocking points. The flow time through the pipeline has a major effect on the amount of inventory required in the pipeline. Time factors involve order transmission, order processing, scheduling, shipping, transportation, receiving, stocking, review time, and so forth. Syn.: pipeline inventory. See: distribution system, transportation inventory.

A radio frequency identification (RFID) tag that does not actively transmit data and is not self-powered. See: radio frequency identification (RFID).

An element of time added to normal lead time to protect against fluctuations in lead time so that an order can be completed before its real need date. When used, the material requirements planning (MRP) system, in offsetting for lead time, will plan both order release and order completion for earlier dates than it would otherwise. Syns.: protection time, safety time.

A system used to store data about items through the use of electronic tags and electromagnetic transmitters. RFID systems can be used to locate items or track material as it moves and do not require close proximity or line-of-sight access.

A radio frequency identification (RFID) tag that sends out data, is self-powered, and widens its range by harnessing power from the reader. See: radio frequency identification (RFID).

Stock planned to be in inventory to protect against fluctuations in demand or supply, including uncertainty, forecast errors, long lead times, or supplier shortages. Syns.: buffer stock, reserve stock. See: hedge, inventory buffer.

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Term
Service level

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Term
Setup cost

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Term
Stockout

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Term
Stockout costs

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Term
Stockout percentage

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Term
Unit cost

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Term
Work in process (WIP)

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Term
ABC classification

A cost associated with preparing the resources to produce product. Syns.: changeover cost, turnaround cost.

A measure (usually expressed as a percentage) of satisfying demand through inventory or by the current production schedule in time to satisfy the customers' requested delivery dates and quantities. In a make-to-stock (MTS) environment, service level is sometimes calculated as the percentage of orders picked complete from stock upon receipt of the customer order, the percentage of line items picked complete, or the percentage of total dollar demand picked complete. In make-to-order (MTO) and design-to-order (DTO) environments, service level is the percentage of times the customer-requested or acknowledged date was met by shipping complete product quantities. Syns.: level of service, measure of service. See: cycle service level.

The costs associated with a stockout. Those costs may include lost sales, backorder costs, expediting, and additional manufacturing and purchasing costs.

A lack of materials, components, or finished goods that are needed to meet demand. See: backorder.

Total labor, material, and overhead cost for one unit of production (e.g., one part, one gallon or one pound).

A measure of the effectiveness with which a company responds to actual demand or requirements. The stockout percentage can be a comparison of total orders containing a stockout with total orders or of line items incurring stockouts with total line items ordered during a period. One formula is stockout percentage = (1 – customer service ratio) × 100 percent. Ant.: customer service ratio.

The classification of a group of items in decreasing order of annual dollar volume (price multiplied by projected volume) or other criteria. This array is then split into three classes, called A, B, and C. The A group usually represents 10 percent to 20 percent by number of items and 50 percent to 70 percent by projected dollar volume. The next grouping, B, usually represents about 20 percent of the items and about 20 percent of the dollar volume. The C class contains about 50 percent of the items and represents about 10 percent to 30 percent of the dollar volume. The ABC principle states that effort and money can be saved through applying looser controls to the low-dollar-volume class items than to the high-dollar-volume class items. The ABC principle is applicable to inventories, purchasing, and sales. Syns.: ABC analysis, distribution by value. See: 80-20 rule, classification, Pareto analysis, Pareto's law.

A good or goods in various stages of completion throughout the plant, including all material from raw material that has been released for initial processing up to completely processed material awaiting final inspection and acceptance as finished goods inventory. Many accounting systems also include the value of semi-finished stock and components in this category. Syn.: in-process inventory.

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Term

Consignment inventory

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Term

Cycle counting

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Term

Cycle service level

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Term

Economic order quantity (EOQ)

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Term

Fixed order period system

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Term

Inactive inventory

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Term

Inventory accuracy

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Term

Inventory control

An inventory accuracy audit technique in which inventory is counted on a cyclic schedule rather than once a year. A cycle count is usually taken on a regular, defined basis (often more frequently for high-value or fast-moving items and less frequently for low-value or slow-moving items) to identify errors in inventory records quickly and to trigger corrective action. Most effective cycle counting systems require the counting of a certain number of items every workday, with each item counted at a prescribed frequency. See: count frequency, inventory cycle counting.

Inventories that are in the possession of customers, dealers, agents, brokers, etc., but remain the property of the manufacturer by agreement with those in possession. The ownership transfer is usually triggered by the use of materials. Syns.: consigned stocks, vendor-owned inventory (VOI). See: consignment.

A type of fixed order quantity (FOQ) model that determines the amount of an item to be purchased or manufactured at one time. The intent is to minimize the combined costs of acquiring and carrying inventory. The basic formula is: quantity = $\sqrt{(2AS/iC)}$ where A = annual usage in units, S = ordering costs in dollars, i = annual inventory carrying cost rate as a decimal, and C = unit cost. Syns.: economic lot size, minimum cost order quantity. See: total cost curve.

The probability of not having a stockout in any one ordering cycle, which begins at the time an order is placed and ends when the goods are placed in stock. Syn.: measure of service. See: service level.

1) Stock designated as in excess of consumption within a defined period. 2) Stocks of items that have not been used for a defined period.

A method of inventory planning that measures actual inventory levels at regular intervals of time. A check of inventory levels is performed and an order placed if needed. Often the quantity ordered varies from period to period as inventory is restored to a predetermined level. See: fixed order quantity (FOQ), min-max system, period order quantity (POQ).

The activities and techniques of maintaining the desired levels of items, whether raw materials, work in process (WIP), or finished products and storing them properly to enable effective tracking and ensure their usable condition. Syn.: material control.

A metric that compares the actual on-hand quantity with the recorded balance in the system. This metric usually is measured as the percent of items with inventory levels that fall within an allowable tolerance. Target values usually are 95 percent to 99 percent, depending on the value of the item. For logistics operations, it is sometimes measured as the number of storage locations with errors divided by the total number of storage locations.

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Term
Inventory planning

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Term
Inventory turnover

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Term
Joint replenishment

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Term
Kanban

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Term
Kitting

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Term
Lot-for-lot (L4L)

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Term
Mean absolute deviation (MAD)

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Term
Min-max system

The number of times that an inventory cycles, or turns over, during a time period, such as a year. A frequently used method to compute inventory turnover is to divide the annual cost of sales by the average inventory level. For example, an annual cost of sales of $21 million divided by an average inventory of $3 million means that inventory turned over seven times. Syns.: inventory turns, turnover. See: inventory velocity.

The activities and techniques of determining the desired levels of items, whether raw materials, work in process (WIP), or finished products (including order quantities and safety stock levels). Syn.: material planning.

A method of just-in-time (JIT) production that uses standard containers or lot sizes with a single card (or other signaling device) attached to each. It is a pull system in which work centers signal that they wish to withdraw parts from feeding operations or suppliers. The term is often used synonymously for the specific scheduling system developed and used by the Toyota Motor Corporation in Japan. See: move card, production card, synchronized production.

The coordination of the lot sizing and order release decisions for related items and treating them as a family of items. The objective is to achieve lower costs from ordering, setup, shipping, and quantity discount economies. This term applies equally to joint ordering and to composite part (group technology (GT)) fabrication scheduling. See: joint order, multiple-item lot-sizing model.

A lot-sizing technique that generates planned orders in quantities equal to the net requirements in each period. See: discrete order quantity.

The process of constructing and staging kits.

An order point replenishment system in which the minimum (min) is the order point, and the maximum (max) is the order up to inventory level. The order quantity is variable and is the difference between the max and the sum of available and on-order inventory. An order is recommended when the sum of the available and on-order inventory is at or below the min. See: fixed order interval inventory model, fixed order period system, fixed order quantity (FOQ).

The average of the absolute values of the deviations of observed values from some expected value. MAD can be calculated based on observations and the arithmetic mean of those observations. In forecasting, MAD is calculated as the arithmetic mean of the absolute forecast error values. See: absolute error, forecast error.

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Term
Order fill rate

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Term
Order point

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Term
Overstock

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Term
Point of sale (POS)

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Term
Safety lead time

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Term
Standard deviation

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Term
Two-bin inventory system

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Term
Visual review system

A set inventory level where, if the total stock on hand plus on order falls to or below that point, action is taken to replenish the stock. The order point is normally calculated as forecasted usage during the replenishment lead time plus safety stock. Syns.: reorder point (ROP), statistical order point, trigger level. See: fixed order quantity (FOQ) inventory model.

The percentage of customer orders that are fulfilled completely. See: fill rate.

The relief of inventory and computation of sales data at the time and place of sale, generally through the use of barcoding or magnetic media and equipment.

A supply or quantity of inventory in excess of demand or requirements.

A measurement of dispersion of data or of a variable. The standard deviation is computed by finding the differences between the average and actual observations, squaring each difference, adding the squared differences, dividing by n - 1 (for a sample), and taking the square root of the result. See: dispersion, estimate of error.

An element of time added to normal lead time to protect against fluctuations in lead time so that an order can be completed before its real need date. When used, the material requirements planning (MRP) system, in offsetting for lead time, will plan both order release and order completion for earlier dates than it would otherwise. Syns.: protection time, safety time.

A simple inventory control system in which the inventory reordering is based on actually looking at the amount of inventory on hand. This is usually used for low-value items, such as nuts and bolts. See: two-bin inventory system.

A type of fixed-order system in which inventory is carried in two bins. A replenishment quantity is ordered when the first bin (working) is empty. During the replenishment lead time, material is used from the second bin. When the material is received, the second bin (which contains a quantity to cover demand during lead time plus some safety stock) is refilled, and the excess is put into the working bin. At this time, stock is drawn from the first bin until it is again exhausted. This term also is used to loosely describe any fixed-order system even when physical bins do not exist. Syn.: bin reserve system. See: visual review system.