Creating Your Company's Supply Chain

By Jon Schreibfeder

The goal of effective inventory management is to "meet or exceed customers' expectations of product availability with the amount of each item that will maximize profitability". In order to achieve this goal, a distributor must do the following:

- Determine what products are going to be stocked in each branch, warehouse or store
- Decide whether each item will be purchased from a vendor or transferred from another company location

You have to ensure that you have a reliable, steady supply of the products you've committed to have on hand. The participants in the replenishment process, along with the activities they perform, are often referred to as a "supply chain". In this whitepaper we will examine how to address these topics to maximize the performance of your "intra-company" supply chain - how to best replenish the stock of each item in each warehouse throughout your distribution organization.

Decide What to Stock in Each Location

When you stock a product you are making a commitment - a commitment to have reasonable quantities of that product available for immediate delivery. The first step in developing your company's supply chain is to develop an approved stock list for each of your branches or warehouses. Most warehouses are filled with two types of material:

- **Stock:** Material necessary to meet your customers' expectations or product availability
- **Stuff:** Everything else

It's obvious that you don't need the stuff. But how do you separate it from your good stock material? A good place to start is to look at those products in each branch that don't sell very often. Typically these are products that sold in three or fewer of the past 12 months. Sort these products in descending order based on the value of the current on-hand quantity. We sort the products in this way to ensure that we first look at those products that present the biggest challenge to our profitability. Examine each item on this list and ask:

- Do customers realistically expect the item to be available for immediate delivery? Could you stock it at a central warehouse or distribution center and deliver it in a day or two?
- Is the product a critical item that must always be available in case of emergency?
- Does this product's profit margin offset the cost of carrying the item in inventory for a prolonged period of time?
- Will customers accept a similar item that has a greater sales volume?

Once you have finalized each warehouse's approved stock list, begin to liquidate the "stuff". Options for getting rid of "stuff" include:

- Transferring the material to another warehouse that has the product on its approved stock list
- Reducing the sales price
- Offering salespeople an incentive to sell the product
- Advertising the availability of this material to other suppliers (search the Internet with the phrase “surplus inventory” followed by the vendor or product line)
- Substitute the product for a less expensive item
- Return the material to the vendor
- Donate it to a non-profit organization

Remember that once you buy inventory it is a “sunk expense”. It is not worth what you paid for it, but rather what someone is willing to pay you for it.

Decide on a Replenishment Source for Each Item

The next step is to specify a normal or primary replenishment source for every item on each branch’s approved stock list. Do you want to buy it from a vendor, transfer it from a distribution center or other warehouse, or assemble it in the stocking location? It is imperative that your buyers or inventory planners understand the four methods of replenishment:

- **Assembly** – The item is assembled, fabricated, or customized in the stocking warehouse.
- **Distributive –** An outside supplier delivers replenishment shipments directly to this store, branch, or warehouse.
- **Central Warehousing –** One company location serves as the normal source of supply of the product to this location.
- **Central Purchasing –** Several of your locations “share” or “split” a replenishment shipment from an outside supplier. The initial receiving location serves as a freight forwarding station of part of the vendor’s shipment, as opposed to a source of supply for the receiving branch.

Deciding whether or not to assemble a product is usually a straightforward decision. Does it cost more to make the item than to buy it? How do you decide whether to replenish an item with a stock transfer or a shipment from a vendor? For each product stocked in a branch warehouse you must compare the cost of “double handling” material (associated with stock transfers) to the cost of carrying additional inventory in multiple locations (associated with shipments received directly from a vendor).

Double handling material includes:

- The cost of filling and shipping the transfer order at the supplying warehouse
- Any additional freight expense for shipping the transfer order to the receiving warehouse

The additional inventory associated with vendor shipments is due to:

- Each location most likely has to purchase the vendor package quantity (i.e. carton quantity). A distribution center or central warehouse can usually “split” a vendor package and send the receiving location the specific quantity it actually needs.

- The vendor may have a target order requirement for each purchase. This is the size order that provides you with the terms or discounts that allows you to competitively sell the vendor's products. For example, the vendor may require you to place an order with $10,000 worth of material or a full tractor trailer load.

If the cost of double handling material exceeds the cost of maintaining the additional inventory, it is better to supply the product(s) with a vendor purchase order. If the opposite is true (the cost of carrying the additional inventory exceeds the cost of double handling material), you are probably better off replenishing stock with a stock transfer from another warehouse or distribution center. In order to perform this analysis, you must calculate your cost of carrying inventory (also known as the "K" Cost), as well as your cost of filling an order. Questionnaires to calculate these values are available from Absolute Value.

Distributive purchasing, where products are replenished on a purchase order from a supplier, is usually appropriate for:

- High volume products – These are your "A" ranked products based on orders or quantities sold.
- Products with small vendor package quantities – You don't have to buy a lot of the item if you purchase it from the vendor.
- Vendors with very low target order requirements
- Situations where there is a significant distance between branch locations. The greater the distance between warehouses, the higher the freight costs. A common practice of distributors that cover a wide geographic region is to maintain several regional distribution centers.
- Heavy or bulky products. Associated freight costs may prohibit transferring these products.

Transferring products from a central warehouse or distribution center usually makes sense when:

- Products are slow moving or experience sporadic sales activity.
- The supplier will only sell the items to you in large package or case quantities.
- The vendor has a considerable target order requirement.
- The products are light, small, and can be easily shipped.

Quick Replenishment Source Test

Performing this analysis for hundreds or thousands of products can be a daunting task. As an alternative you might consider performing the following "quick replenishment source test". It is designed to help you quickly decide if an item stocked in a branch location should be purchased from a vendor or replenished with a stock transfer from a distribution center:

1) Determine your "target inventory turnover" for your company. For example, you may be trying to turn over your average inventory investment five or six times a year. This should be your goal, not necessarily your current annual inventory turnover.

2) Calculate the total annual usage quantity for each item stocked in the branch location. This could be the total sales for the previous 12 months, or the sum of the forecast demand quantities for the upcoming 12 months.

3) Divide the total annual usage quantity (from step #2 above) by the “vendor package quantity” for each item to determine the projected number of vendor packages of this item that will be sold in this branch each year. The vendor package quantity is the quantity of the product that must be purchased from the vendor. For example, if the vendor will sell you a product only in a case of 48 pieces, and your annual usage is 960 pieces, you have the potential to sell 20 vendor packages in this branch (960 ÷ 48 = 20 cases).

4) If the number of vendor packages determined in step #3 is greater than or equal to one-half of the target inventory turnover, the item will be assigned to group “A”. If the number of vendor packages from step #3 is less than half of the target inventory turnover, the item will be assigned to group “B”.

5) In most cases we are able to transfer less than a vendor package quantity from a central warehouse or distribution center to a branch warehouse. For this reason, the lower turnover group “B” items should normally be replenished with a transfer of inventory from a central warehouse or distribution center. This will help you avoid surplus stock of these items accumulating in the branch locations, and it will allow you to maximize your overall inventory turnover of these products.

6) Group “A” items should be replenished with a purchase order from a supplier if the branch location can meet the vendor’s requirement for a target order on a regular basis (e.g., at least once a month) on its own. The target order is the vendor’s requirement that allows you to buy the vendor’s product and receive the discounts or terms that allow you to competitively sell the vendor’s products.

7) If the demand of group “A” items is not adequate to meet the vendor’s requirement for a target order on regular basis, group “A” items along with group “B” products should be replenished with a transfer from a central warehouse or distribution center.

While this set of rules will not work in all circumstances, it may provide you with some guidance in effectively determining the replenishment source for each product stocked in a branch location.

Central Warehousing vs. Central Purchasing

Under the central warehousing transfer replenishment method, the supplying warehouse maintains enough inventory to supply the receiving warehouse. When the stock level of a product in the receiving warehouse drops down to the minimum quantity, a replenishment order is generated in the supplying warehouse.

In a central purchasing environment, two or more warehouses pool their replenishment needs to meet the vendor’s target order requirement. When the vendor’s shipment arrives at the first warehouse, the stock receipt is divided between what was ordered by each warehouse. The material destined for other warehouses is immediately staged to be transferred to those warehouses. Only material ordered by the first warehouse is actually received into that warehouse and put away.

Central purchasing works well when:

- Several warehouses have a considerable number of “A” ranked items (based on activity), but individual branches cannot generate enough need on their own to meet the vendor’s target order requirement within a reasonable amount of time (usually at least once a month).
- Vendor package quantities are too large for a single branch to meet your company’s turnover goals.

There is less material handling in central purchasing than in central warehousing. However, central warehousing can better serve your company’s needs if most if not all of a vendor’s products in the receiving warehouse are slow moving or have sporadic usage.

A Central Replenishment Authority

Whether your company utilizes distributive purchasing, central purchasing, central warehousing, or a combination of all three, best practice is to establish a central replenishment authority. Under a central replenishment authority individual buyers are designated to replenish the inventory of specific product lines throughout all of your branches or warehouses. These buyers have both customer service (i.e. product availability) and inventory turnover goals that they are expected to meet or exceed. In order to accomplish these goals, buyers:

- Ensure that replenishment orders are issued as soon as the net available quantity of a product falls below its order point or minimum quantity
- Decide when to split replenishment orders between branches (i.e. implement central purchasing) or centrally warehouse slower moving items
- Identify and analyze possible unusual usage. The buyer assigned to a particular line interviews salespeople and/or customers to determine if an unexpected increase or decrease in usage is the result of sales activity that will probably not reoccur, or perhaps a new sales trend. The buyer then modifies future forecasts to reflect the collected information.
- Maintain adequate “safety stock” or reserve inventory of each product in each location to meet your company’s customer service goals
- Work with vendors to ensure lead time consistency
- Approve all inter-branch transfers. After all, they are responsible for maximizing both customer service (i.e., minimizing stockouts) and inventory turnover. For example, it may be advantageous to move the surplus stock of a popular product from a branch that is a considerable distance from a location that needs the material, rather than than a smaller quantity from a closer branch, if it will maximize overall corporate profitability.

Conclusion

The goal of effective inventory management is to meet or exceed customers’ expectations of product availability with the amount of each item that will maximize a distributor’s profitability.

Carefully and methodically establishing your company's internal supply chain will help ensure that you achieve this goal.

About the Author, Jon Schreibfeder

Jon Schreibfeder is president of Effective Inventory Management, Inc., a firm dedicated to helping manufacturers, distributors, and large retailers get the most out of their investment in stock inventory.

For over 20 years, Jon has served as an inventory management consultant to over two thousand firms to improve their productivity and profitability. Jon has designed several inventory management computer systems and has also served as a distribution industry "troubleshooter" for two major computer companies.

A featured speaker at seminars and conventions throughout North America, Latin America, Europe, Asia, and the Pacific Rim, Jon has been awarded the title "Subject Matter Expert" in inventory management by the American Productivity and Quality Center. He is an advisor and guest lecturer in the Industrial Distribution Program at Purdue University.

About Absolute Value

Absolute Value supports middle market distributors with software solutions for forecasting and replenishment. Our best fit formula-based forecasting and multi-site replenishment solution allows you to lower your inventory investment while increasing customer service levels.

Absolute Value helps distributors by providing a complete forecasting and replenishment solution with ERP independence. The software can plug into an existing distribution system or legacy system without the pain, complexity, and cost of purchasing a new ERP system.

Blending end-user and software vendor experience with knowledge of state-of-the-art technology, the Absolute Value team has helped meet the needs of 300+ distributors.

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