

Choosing a Vendor

By Jon Schreibfeder

The goal of effective inventory management is to meet or exceed customers' expectations of product availability while maximizing profitability. Are your current vendors "partners" in helping you achieve this goal? Do they deliver products on time and in good condition? Do they provide you with the lowest "total cost" that will help you maximize profitability? How should you evaluate your vendors' performance? When choosing a vendor you must consider factors such as:

- Quality of Material and Service
- The "Landed Cost" Per Unit
- The Quantities of Individual Products You Must Buy
- The Vendor's Target Order Requirement (what size order must you place to get the terms or conditions that will allow you to competitively sell the vendor's products)
- Intangible Factors

In this whitepaper we will explore these and other topics that will lead you to developing the best possible supplier network.

Quality of Material and Service

If the quality of a vendor's products is poor, you have problems. Customers continually return defective pieces. You incur the cost of processing the return of material (which includes receiving the product from your customer and possibly sending the part back to the vendor), as well as the cost of sending a replacement shipment to the customer. These replacement shipments increase demand for the item, forcing you to increase your inventory in order to maintain your desired level of customer service. Worst of all, your customers are dissatisfied. They expect the products they received in the initial delivery to work properly. Due to the additional transactions caused by material returns your operating costs are higher than they should be. You are forced to carry additional inventory. Your customers are dissatisfied. What is wrong with this picture?

Best practice distributors always insist on quality goods from their suppliers. Quality does not necessarily mean the best available. It means that the product meets or exceeds your customers' expectations or your promises of performance. For example, a distributor might carry disposable rain ponchos. Customers don't expect this product to be beautiful or last for years - but it had better keep them dry during a single heavy downpour of rain.

Consider the quality of packaging as well. Packaging must protect the item from damage; it must facilitate the storage of the item in your warehouse as well as assist you in filling orders as quickly as possible. You will incur a high cost of filling orders if a product delivered in bulk forces your order pickers to count out dozens or hundreds of pieces each time they have to fill an order. It might be worthwhile to pay a slightly higher unit cost to have the item packaged in quantities typically ordered by customers.

Vendor shipping mistakes also add to your costs. If a vendor ships the wrong quantity, the wrong item, does not include necessary documentation, or charges you the wrong amount, your receiving clerks and buyers have to take time to report the error and process additional receipts or other transactions.

The most common vendor service complaint concerns late shipments. Inconsistent vendor lead times force you to stock more inventory in order to maintain your desired level of customer service. As a result, your cost of doing business increases. Let's look at an example. A vendor states that the lead time for item #A100 is seven days. Your experience reveals that the actual lead time for the product ranges from seven to 35 days. In order to protect your desired level of customer service, you must maintain 28 days of additional inventory (i.e., as part of your safety stock). Let's calculate the cost of maintaining this additional stock in your warehouse:

Demand per Day of item #A100	= 25 pieces
Cost per Piece	= \$5.00
Annual Cost of Carrying Inventory	= 20% ¹
Additional Investment of 28 Days of Inventory	
25 pieces per day * \$5.00/pieces	= \$3,500
Additional Cost of Carrying Inventory	
\$3,500 * 20% KCost/Yr	= \$ 700

Due to the vendor's lead time inconsistency your initial investment in this item is \$3,500 greater than it should be, and you also have a recurring annual cost of \$700. Keep in mind that the problem is not *long* lead times, but *inconsistent* lead times. If we knew that the vendor would consistently deliver material in 35 days, we would always reorder when we had 35 days' worth of stock on hand. Our inventory would be just about depleted when the replenishment shipment arrived. The vendor's inconsistency forces us to overstock. A good part of the time this extra inventory we've invested in is sitting on the shelf in our warehouse gathering dust. If a vendor is inconsistent in the delivery of hundreds or thousands of products, this extra inventory adds up to a sizable investment.

There is an old saying that you cannot place a value on quality. We disagree. You can add up your total expense associated with these quality issues and subtract it from the annual gross profit dollars generated from the vendor's line. You might find that the vendor with the lowest unit costs is not the supplier who helps maximize your profits!

¹ The cost of carrying inventory (also known as the K Cost) represents your annual cost of maintaining a dollar's worth of inventory in your warehouse. A 20% K Cost means that it costs 20 cents to maintain a dollar's worth of inventory in your warehouse for an entire year. The cost elements of the K Cost include factors such as the cost of money and the risk of shrinkage and obsolescence. Contact Absolute Value to obtain a questionnaire that will allow you to calculate the K Cost for each of your facilities.

The “Landed Cost” per Unit

The vendor’s published cost per unit is not necessarily what you will pay for material. You may incur other charges such as freight or custom duties in the course of actually receiving the products. But how do you allocate these expenses so that you can compare one vendor’s costs to another?

Custom duties: There is usually a rate per piece of value. Apply this cost to the vendor’s cost per unit.

Freight charges: Calculate the average freight cost per piece for all shipments received in the past six months. Apply this cost to the vendor’s cost per unit. If you have never ordered material from a vendor, contact several freight companies for a quote on the freight cost per pound (for heavy material) or cube (for lighter goods). Calculate the total freight cost for several typical purchase orders and divide by the number of pieces ordered. If the products ordered from the vendor vary significantly in size or weight, calculate the total weight or cubic volume of typical shipment. Divide this value by the associated freight charge to determine the freight charge per pound or cube. Apply this amount to the weight or cubic volume of each piece.

The Quantities of Individual Products You Must Buy

How does the typical company define profit? Well, if you ask someone in a sales department, they’ll probably talk to you about his or her company’s gross margin. Gross margins are calculated with the formula:

$$\frac{\text{Annual Sales Dollars} - \text{Annual Cost of Goods Sold}}{\text{Annual Sales Dollars}}$$

Higher gross margins are better, right? Under most circumstances, salespeople would rather sell a product with a 24% margin than an item with a 20% margin. Why? Because many salespeople are paid or evaluated based on the gross margins they earn. But does the company get a better return on investment on the product with a 24% margin? Maybe, maybe not. It depends on the average value of inventory the company must maintain to generate sales of the item. The larger the quantity you must buy from a vendor (typically called the vendor package quantity), the greater the average value of inventory you must maintain for the item.

Let’s look at an example. Your monthly demand forecast for an item is 50 pieces. Vendor “A” will sell you the product in a package of 500 pieces at \$9.50 per piece. Vendor “B” will sell you the product for \$10 per piece in a vendor package of 50 pieces.

If you buy the item from vendor “A”, you must buy a 10 month supply (500 pieces ÷ 50 pieces per month = 10 month supply). During the time it takes you to sell the 500 pieces, your average inventory quantity will be 250 pieces or a 5 month supply. Half the time you will have more than a 5 month supply, and half the time you will have less than a 5 month supply. The value of this average inventory quantity is \$2,375 (250 pieces * \$9.50 per piece = \$2,375).

If you buy the product from vendor “B”, you only have to buy a one month supply (50 pieces ÷ 50 pieces per month = 1 month supply). The average inventory quantity will be 25 pieces, with an average inventory value of \$250 (25 pieces * \$10 per piece = \$250).

It is obvious that buying the product from vendor “A” results in a higher gross margin (26.1% versus 22.2%):

Vendor “A”:

Annual Sales (pieces)	600 pieces
Annual Sales	\$7,714
Annual Cost of Goods Sold	\$5,700
Gross Margin	$(\$7,714 - \$5,700) \div \$7,714 = 26.1\%$

Vendor “B”:

Annual Sales (pieces)	600 pieces
Annual Sales	\$7,714
Annual Cost of Goods Sold	\$6,000
Gross Margin	$(\$7,714 - \$6,000) \div \$7,714 = 22.2\%$

But if we subtract the yearly cost of maintaining this average inventory investment from the annual profit dollars (i.e. sales – cost), the result is a new measure of profitability, the adjusted margin:

$$\frac{\text{Annual Sales Dollars} - \text{Annual Cost of Goods Sold} - (\text{Average Inventory Value} * \text{Carrying Cost} \%)}{\text{Annual Sales Dollars}}$$

Let’s look at the adjusted margin of our two products:

Product “A”

Annual Sales	\$7,714
Annual Cost of Goods Sold	\$5,700
Average Inventory Value	\$2,375
Annual Inventory Carrying Cost	20%
Adjusted Margin	$= \frac{(\$7,714 - \$5,700) - (\$2,375 * .20)}{\$7,714} = 20.0\%$

Product “B”:

Annual Sales	\$7,714
Annual Cost of Goods Sold	\$6,000
Average Inventory Value	\$250
Annual Inventory Carrying Cost	20%

$$\text{Adjusted Margin} = \frac{(\$7,714 - \$6,000) - (\$250 * .20)}{\$7,714} = 21.6\%$$

Even though product “B” has a lower gross margin, its adjusted margin shows that it contributes more to the company’s profitability (21.6% versus 20.0%)! Be sure you consider the adjusted margin instead of gross margin when evaluating sourcing options for a product.

The Vendor’s Target Order Requirement

Many vendors have purchase requirements that provide you with the terms or conditions that allow you to competitively sell the vendor’s products. We refer to this as the “target order requirement”. The target order requirement can be expressed in a measurement such as:

- **A Quantity** - A total number of pieces needs to be ordered. For example, if you order 1,000 pieces of 10 different items, you have achieved a 10,000 piece order target.
- **A Number of Cartons, Cases or Pallets of the Vendor’s products.**
- **A Monetary Amount** - Many vendors will require an order target of “x” dollars (based on your replacement cost for the material purchased).
- **A Total Weight** - A target order weighing “x” pounds. The requirement is often expressed in weight if you are buying heavy products and must fill a truck or container.
- **Volume** - This refers to the “space” filled by the merchandise ordered. It is a common measurement if you are ordering relatively light products and must fill a trailer or shipping container.

The order cycle (also known as the review cycle) is the average amount of time, usually expressed in days, necessary to sell, transfer, or otherwise use enough of the products in a vendor line to achieve the target buy requirement. For example, say you sell \$1,000 worth of a vendor’s products each month and the vendor’s target order requirement is \$1,000. The result is a one month order cycle. If the vendor only had a \$500 target order requirement, the order cycle would be reduced to about 15 days. You could place two target orders with the vendor each month.

Why are the target order requirement and order cycle important? Well, if a vendor has an order cycle of 30 days, you must order a minimum of a one month supply of every product in the vendor line, regardless of the economic order quantity or the vendor package size. After all, ordering a two week supply of a product every month will not result in great customer service. As a result you must consider the quantity of a product you will sell during vendor’s order cycle when you determine the average inventory value in adjusted margin calculations. Perhaps you are better off working with a vendor who has a smaller target order requirement.

A vendor’s target order requirements may cover more than an individual purchase. Some suppliers offer rebates based on total annual purchases. For example, you might get a rebate of

2% of your purchases if you order \$250,000 worth of material in a 12 month period. How do you know whether or not to take advantage of the rebate offer? We suggest that you order as you normally would throughout the year. At the end of the year, calculate the additional purchase you must make to achieve the rebate requirement. For example if you've already purchased \$210,000 worth of material you must place a \$40,000 order to qualify for the rebate. Consider the 2% rebate as a discount for this final order. In our example, this would be a discount of \$5,000 ($\$250,000 * 2\% = \$5,000$).

Does this discount exceed the cost of carrying this additional inventory investment? You can calculate the cost of carrying the inventory investment with the following formula:

$$\text{Average Inventory Investment} * \text{Month's Supply} * K \text{ Cost per Month}$$

The average value of inventory you will have while you sell the \$40,000 worth of material is \$20,000. You sell \$17,500 worth of material each month (12 months * \$17,500 per month = \$210,000). Therefore, \$40,000 worth of material represents a 2.3 month supply ($\$40,000 \div \$17,500 = 2.3$ month's supply). An annual carrying cost of 20% translates to a monthly carrying cost of 1.7% ($20\% \div 12 \text{ months} = 1.7\%$). The cost of maintaining this additional purchase in your warehouse during the time it will take to sell the entire shipment is \$782:

$$\$20,000 \text{ Avg Invty} * 2.3 \text{ Months} * 1.7\% \text{ K Cost} = \$782$$

It will cost you \$782 to receive a \$5,000 discount. In this case, it makes sense to place an additional purchase order to take advantage of the vendor's rebate offer.

Intangible Factors

Up to this point we have discussed aspects of a vendor relationship that will affect your investment in stock inventory, but there are other factors that you should consider when selecting a vendor. These considerations include:

- **The attention and reactivity provided by the vendor** – Does the vendor consider your “crisis” to be their “crisis”?
- **Marketing assistance** – Will the vendor provide training to your salespeople? Are they available to make joint sales calls and provide technical assistance?
- **The vendor's reputation in the marketplace** – Are their products considered to be the standard against which similar products are measured?
- **Exclusive territories** – How many other distributors are selling this vendor's products in your market area? Will the vendor try to sell products directly to your larger customers?
- **Consigned inventories** – Is the vendor willing to send you material and only demand payment when you sell these goods to your customers? Consignment agreements significantly lower your cost of carrying inventory.
- **Vendor managed inventory (VMI) agreements** – Under VMI agreements, a supplier takes responsibility for replenishing inventory of specific products in your warehouses. While you pay for the material as you receive it, VMI agreements will substantially lower your cost of replenishing inventory.

Evaluating Your Vendors

The old saying that people do what you “inspect” rather than what you “expect” is true. Best practice distributors establish metrics to evaluate vendor performance. The best measurement is the “vendor service level”. This metric reports the percentage of line items ordered from the vendor that are shipped complete in one shipment and arrive by the date promised. To receive credit towards the customer service level you must receive:

- The correct item
- The complete quantity ordered
- Undamaged material in resalable condition
- All necessary documentation
- The correct terms and price for the material

Most distributors demand a minimum service level of 95% from their vendors. Keep in mind that every vendor mistake costs you time and money.

Conclusion

Distributors buy and sell material. The success of your business depends on you acquiring the right quantity of the right item in the right location at the right time. You cannot accomplish this task without reliable vendors that provide material at a competitive price. Carefully select each of your major vendors. Each one represents a critical element in achieving the goal of effective inventory management.

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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