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There has been plenty of discussion over the years about how to reduce inventory. Generally, the perspective is from the office of the material planning manager or supply chain manager, since inventory performance is usually thought of as a production metric.

However, there are many aspects of inventory management that are directly influenced by decisions made in the procure-
When demand sags, inventory can all too easily pile up, putting pressure on the financial performance of the organization. The procurement team can do much to relieve the situation—and in the process exert a powerful impact on overall business performance. The six action steps outlined here can help supply management executives make that difference.

ment department. Many of the variables that are tied to the reliability of the logistics network are directly related to the locations of the suppliers and to their delivery performance. In addition, contractual agreements that specify high minimum order quantities or long lead times—or both—can prevent the materials organization from making the necessary adjustments to raw material inputs when demand does not merit high volumes.

It may seem obvious to say that procurement managers must understand the impact of their decisions and strive to accommodate the goals of each operating unit in sourcing arrangements that are effective for all parties. The decisions made within the procurement department have lasting effects on the rest of the organization; they become part of legally binding contracts that govern the way a company conducts business with its supply base. Unfortunately, it is still common practice to optimize the effectiveness of one function, such as procurement, at the expense of the effectiveness of others.

This article presents six checklist actions to help procurement professionals play more integrated roles in the management of inventory. Managed well, these actions can help improve profitability. Collectively, they can have as great a financial impact on an organization as does a reduction in purchased cost.

1. Reduce Minimum Order Requirements

Many suppliers specify a minimum order quantity (MOQ)—that is, the minimum amount of material that can be ordered at any given time. Determination of the MOQ is a balancing act between allowing the supplier to make long production runs in order to realize economies of scale and ordering the minimum amount of material required to sustain production and maintain low inventory levels. When there’s a drop in demand, previous minimum order quantities that met material planning requirements no longer meet those objectives. In short, the MOQ is now excessive.

Here’s a quick example. Imagine an MOQ of 10,000 units for a product with a yearly volume of 120,000 units; that translates as one shipment per month. Now imagine that annual demand drops to 60,000 units. Under the current MOQ arrangement, there would then be six shipments a year, or one every two months. Then, since two months of material is shipped to the customer at a time, the amount of ongoing inventory is doubled, as seen in Exhibit 1.

Essentially, low MOQs allow an organization to make more flexible adjustments to component shipments; the result is that the material planning organization can more effectively match material flow to customer demand reductions. Prohibitive MOQs, such as the one described above, will result in increased inventory levels in any scenario—and especially in a declining market.

Contractual adjustments offer the most straightforward way of addressing excessive minimum order quantities. However, renegotiation of supplier contracts will almost always have cost implications; it’s common for purchasers to hear about price increases since the suppliers’ economies of scale will be affected by the cutbacks in demand.

A widely used method to avoid paying price increases is to authorize the supplier to make longer production runs. Part of that authorization must include an agreement to ship only what is immediately required by the customer. The purchasers require the supplier to hold the remaining inventory. In turn, that requirement usually triggers a request from the supplier for a guarantee that the excess

![Effect of High MOQs During Demand Reductions](chart.png)
material will be purchased. Naturally, the supplier also needs to maintain the lowest inventory levels possible in order to achieve an acceptable cash flow. The supplier may request that all material must be purchased within a specific period of time to ensure some level of inventory turnover in case of a significant drop in demand.

Another approach is to work with minimum order values (MOVs). This option is usually used by suppliers that sell standard components through a wide range of part numbers or stock keeping units (SKUs). The MOV is predicated upon the total value of all part numbers shipped to a single customer. In this scenario, production volumes are based on the demand of many customers, so production scheduling does not normally fluctuate to match the needs of one particular customer.

An alternative is to consolidate multiple SKUs with a few strategic suppliers in order to more easily achieve the minimum-order-value requirement. This approach allows for more flexible ordering; because the overall spend at each supplier is larger, lower volumes of each part number can be purchased while still achieving each supplier’s total order value minimum.

Here’s a quick example: Let’s say that Company A buys six SKUs from four suppliers, each of which has a $100 MOV requirement. That means Company A must buy $400 worth of product in total. Yet it needs only $50 worth of each part, so it should be spending only $300 for them. But Company B buys its six SKUs from two suppliers, each with the same $100 MOV. Like Company A, Company B needs $50 worth of each per part. But in B’s case the $300 total requirement translates into $150 to be spent at each supplier, easily meeting their MOV stipulations.

2. Improve the Reliability of the Supply Chain

In an ideal world, there is no need for safety stock because the buying organization is guaranteed that it will always receive the requested amount of material at the scheduled time. But this guarantee is almost impossible to make. The practical approach is to carry out a risk analysis to determine how much stock should be maintained to cover a potential interruption in supply. The less reliable the supply chain, the higher the risk and the more safety stock is required.

Let’s touch on the external and internal variables that contribute to the reliability of supply. External variables—those over which the supplier has little or no direct control—include customs delays, port strikes, lost shipments, damaged shipments, and so forth. The simplest way to reduce the number of external variables is to reduce the distance of each inbound shipment. Shipping product from across the Pacific certainly carries more risk of delay shipping from state to state or province to province. Safety stock levels can be drastically reduced when the logistics channel is cut from six weeks to six hours.

Internal variables, which deserve significant scrutiny from purchasing teams, include poor delivery performance, defective product, mislabeled boxes, incomplete customs forms, and so forth. The selection of a supplier that performs unacceptably on one or more of these variables will create big swings in supply chain performance and may precipitate the need for additional safety stock.

In such cases, companies can address the reliability of supply by using a disciplined set of supplier performance improvement activities. (See also the article in this issue of SCM R on “Creating the Ideal Supplier Scorecard.”)

One of the earliest activities is formal notification to the supplier that its performance is substandard and must be improved if it is to continue to do business with you. And one of the most important follow-on activities: tracking the supplier’s fixes and its subsequent performance in enough detail to be able to take action quickly and decisively if necessary. Ultimately, if the supplier’s performance does not improve, the procurement department must find a suitable replacement.

3. Increase Material Ordering Flexibility

A common material planning practice is to order material through a schedule of future requirements, sometimes known as a release. The release authorizes production for deliveries to occur in the coming weeks. The longer it takes to build and deliver product, the more material needs to be released for production. If end-user demand drops suddenly, the manufacturer can be left with excess inventory.

One approach is to negotiate for lead times that have some flexibility. This is not easy: Lead times are not generally an area of significant focus for the procurement organization, and the lead time accepted by the buyer is likely to be what the supplier requested. The approach begins with development of a standard lead time matrix. The matrix is segmented by commodity and indicates an acceptable lead time for each type of component—for example, 10 weeks for plastics, or six weeks for stamped steel parts. (See Exhibit 2.) It takes suppliers’ locations into consideration because delivery times will vary.

Once reasonable lead times have been decided, they should be communicated to the supply base with the intention that outlying lead times will be renegotiated. Also, future requests for quotes will specify acceptable lead
times, and those numbers will be built into negotiations.

Another means by which to address long lead components is to purchase product through a distributor. The distributor will maintain an inventory level that can handle fluctuations in customer demand, and will act as the buffer between supplier lead times and variability in the customer’s ordering patterns. As demand drops, the distributor is typically more agreeable to delaying shipments or can transfer that inventory to support another customer’s requirements. Conversely, the distributor can generally provide product quickly when demand ramps up.

Any supply contract should be designed to allow some flexibility in how and when the customer receives its material. However, the contract must also be fair to the supplier. A maximum period of shipment delay should be negotiated and included in the contract. Items to consider include the material’s shelf life, payment terms, warehouse space, and specificity of product—that is, whether it can be sold to other customers, and if so, how easily.

### 4. Make More Use of Local Warehousing and Local Production

As discussed earlier, one of the primary benefits of using suppliers that are physically closer to your receiving point is that supply chain risk is reduced. In addition, local sourcing arrangements typically involve more frequent shipments, further lowering inventories and supporting just-in-time (JIT) manufacturing.

Overseas production is fraught with inventory challenges, as supply chain managers have been learning to their disadvantage in recent years. Before foreign producers actually ship, they often stockpile product at consolidation facilities until a container can be filled. In some cases, suppliers are asked to ship larger volumes in order to spread shipping costs across more units. Not only do these actions increase the quantity of product in the supply chain, they also reduce the frequency of shipments. The result: an increase in the organization’s perpetual inventory.

The following example clearly shows the problem of perpetual inventory. (See Exhibit 3.) An organization receiving monthly shipments to meet weekly demand for 10,000 units will hold 17,500 more units in perpetual inventory because it is incurring additional safety stock levels and receiving higher per-shipment quantities. Its safety stock levels were increased to accommodate the fact that the monthly shipments were coming from an overseas supplier.

One proven localization practice is vendor managed inventory (VMI), also known as consignment. With

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**EXHIBIT 2**

**Example of a Commodity Lead Time Index**

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Asia</th>
<th>North America</th>
<th>Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastics</td>
<td>14</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Stampings</td>
<td>10</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Rolled Cloth</td>
<td>18</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Rubber Gaskets</td>
<td>10</td>
<td>6</td>
<td>8</td>
</tr>
</tbody>
</table>

**Shipped from:**

- Asia
- North America
- Europe

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**EXHIBIT 3**

**The Problem of Perpetual Inventory (As Seen in the Cost of Monthly Shipments)**

**Weekly Shipments**

- 10k Received Each Week
- 12,500 Average Inventory

**Monthly Shipments**

- 40k Received
- 30,000 Average Inventory

**Safety Stock**

<table>
<thead>
<tr>
<th>Week</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Stock</td>
<td>5000</td>
<td>5000</td>
<td>5000</td>
<td>5000</td>
<td>5000</td>
<td>5000</td>
<td>5000</td>
<td>5000</td>
</tr>
</tbody>
</table>

**Shipment Inventory**

<table>
<thead>
<tr>
<th>Week</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipment Inventory</td>
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<td>10000</td>
<td>10000</td>
<td>10000</td>
<td>10000</td>
<td>10000</td>
<td>10000</td>
</tr>
</tbody>
</table>
VMI, the supplier maintains its finished goods inventory on-site, at or near the customer's facility. The customer is responsible for the material only when it is pulled from the warehouse for production. Usually, the VMI supplier is allowed to ship into the warehouse in whatever quantities it wants to ship. As a result, the supplier bears the burden of analyzing the customer's production efficiencies in the context of its own inventory-carrying costs.

VMI also has the advantage of no out-of-pocket costs for warehousing or floor space and quick access to material in case of unforeseen shortages. Delivery times are minimal; the material is right there, ready to be pulled. And of course, customer-owned inventory is eliminated. VMI agreements are initiated and negotiated within the procurement group. The typical topics of conversation will be payment terms, insurance responsibility, maximum shelf time, and increases in piece price to support the additional service provided by the supplier.

VMI can produce some striking benefits. At one company, the procurement organization allowed a 4-percent increase in purchase price in exchange for placing 15 percent of a supplier's inventory in VMI. The supplier benefited from the immediate price hike; the customer was able to immediately reduce inventory value by $500,000.

5. Manage the Accretion of Value Using Postponement Strategies
The value added to materials at each stage of production also increases the cost of holding the evolving product in inventory. As the supplier continues to produce material that the customer does not require immediately, inventory exposure increases. Eventually, the supplier will pressure the customer to buy product that has not been procured as originally planned.

Therefore, it is imperative to communicate production requirements to the supplier using a partial release in order to minimize the amount of material in the supply chain. When components are ordered under an ongoing release schedule, the customer does not always order in finished goods quantities. A partial release will authorize the supplier to procure raw material in preparation for production, but it does not necessarily authorize it to add further value to the components. This arrangement allows the supplier to procure the material required to meet production timing, and reduces the amount of the customer’s exposure. (See example of exposure in partial vs. full authorization in Exhibit 4.)

A partial authorization can be managed in much the same way that overall lead times are negotiated, since a standard authorization by commodity can be developed. However, such levels of detail require the buyer to understand how much value is added to the component at each step.

When production is cut back, the cutbacks should be immediately communicated to suppliers so they too can halt additional processing of the product. A firm contract with a clear ordering schedule will prevent further processing of material when orders have diminished.

In situations where product is ordered from an internal supplier, such as another division in the same company, the postponement approach can also work well. When a drop in demand leaves a division with excess raw material and idle production lines, managers may be inclined to utilize the material to keep the equipment running. However, given that value is added to the product during each stage of its manufacture, the value of the finished goods becomes progressively greater than the original inventory cost of the raw goods. The determination should be whether the increase in assembled-product inventory cost is worth the benefit gained in making otherwise idle machinery productive.

6. Adjust Payment Terms
An increase in supplier payment terms can be considered a blanket approach to inventory cost reduction. While this approach does not directly reduce the amount of inventory on hand, it does delay the amount of cash tied
up in carrying inventory. Some questions to ask when discussing the subject with the supply base include: What should be offered in exchange for the extension? What effect will it have on a supplier’s financial stability? Will this send the wrong signal about your company’s financial stability? Will it damage supplier relationships so that the cash gain is offset by less cooperation from the supply base?

Extended supplier payment terms can also become a profit center for an organization. Imagine, for example, that Company A pays its suppliers 90 days after receipt of product, and is paid by its customers 60 days after delivery. If that product is processed quickly and shipped to the customer with minimal time spent in process or finished goods inventory, Company A will receive payment for its product before it makes payment to its suppliers. (See Exhibit 5.)

In this example, Company A holds its cash from the customer for 24 days before a portion is used to pay its supply base. The benefits of these 24 days are twofold: (1) overall cash flow is improved and (2) there is no need for an open credit account with a lender to bridge the gap between supplier payments and customer receipts. The improved profitability stems from the value of holding cash that otherwise would have not been available. The incremental profitability is generally computed as 1 percent of the cash held for a given month.

Of course, the reverse applies; even the most efficient supply chain cannot recover from unfavorable terms. A company that enjoys 60-day customer payment terms is forced to use its own cash or acquire loan capital if its suppliers must be paid within 30 days of when material is received.

During the recent recession, payment terms have certainly garnered plenty of scrutiny throughout the manufacturing sector. Prior to the downturn, one forward-thinking organization was able to re-negotiate its supplier payment terms for both production and maintenance and repair components. The company’s average days paid increased from 35 to 52 days. With a yearly spend of $70 million, this 17-day improvement yielded $3.2 million in additional cash flow.

**Procurement as Path to Success**

Because suppliers become more rigid in the concessions they are willing to give during downturns—agreements such as the extension of payment terms or participation in a vendor managed inventory program, for example—it is imperative to address each of these expectations at the outset of the relationship. In fact, they need to be written directly into the supply agreement in order to avoid difficult negotiations after production has commenced.

At the same time, it is essential to compare apples to apples. If one supplier is part of a VMI program and another is not, the VMI supplier’s prices will likely be higher. Thus, an analysis on price alone may disadvantage that supplier—and rob the customer of a valuable opportunity to reduce inventory.

However, proactive communication and strong contracts are only part of the solution because a chosen supplier can add peripheral costs that cannot be contained by a legal agreement. It has been shown that the peripheral costs associated with supplier selection can have a far greater financial impact on an organization than does the achievement of a purchased cost objective. The best practice is to use a total acquisition cost analysis. The ultimate goal of a total cost analysis is equal consideration for each variable that may add cost.

The creation of a world-class supply chain is heavily dependent upon the procurement organization’s understanding of the total cost associated with each supplier and its contracts. With the full support of the purchasing group, the material supply chain can become a source of profitability as well as a competitive advantage.
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