

## Step to reduce the Inventory

### Keywords

Hits

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### Number 1: Pareto your inventory

Gather sales and inventory in dollars by item. Construct two Pareto charts. For the first chart, classify your items into A, B, C, and D (80%, 15%, 5%, 0%) based on sales. Then calculate your inventory for each group. Do your A items represent 50% of your inventory? If not, you may not have enough inventory for these items. A significant amount of inventory on low demand items may indicate problems with product run-outs, transitions, engineering change management, and managing obsolete inventory.

For the second chart, classify your items based on inventory. Then calculate the sales for each group. Again, do your A inventory items represent at least 50% of your sales? If not, inventory may be out of balance. These charts are an excellent way to begin looking at your inventory. After gathering this information, you have the makings of a supply chain data warehouse for further analysis.

### Number 2: Reduce replenishment lead times

This can be important for raw material lead time or lead times between your internal tiers of distribution. Break this lead time into three components: the review period, manufacturing time and transportation time. The review period is the time from when the need is identified to when the order is sent upstream. The manufacturing time is the time from when the order is sent until product is available to ship. The transportation time is the time it takes from availability to ship until the material is received and available for use at the next location. Find out how long, and how variable, these three components are.

Are there any ways to reduce the review period? Must you wait until the end of the month to place an order? Long review periods may be driven by system limitations; can these limitations be overcome? Can weekly cycles be reduced to daily? Frequently, a supplier will have minimum order requirements that forces batching of many products with replenishment needs. Can this minimum be reduced so the order can be sent sooner?

The manufacturing time includes a review period for your supplier on top the actual manufacturing time. Generally, the review time is longer than the manufacturing time. Can you work with your suppliers to help them reduce their

lead times? Understand their constraints. Possible solutions include: advance notice of upcoming needs, a longer-range forecast, and fixed cycle replenishment. For transportation time: use faster modes of transport or relieve bottlenecks at shipping/receiving. Shorter and less variable lead times require less inventory. If you carry safety stock, the reduction will be the square root of reduced time. A 25% lead time reduction equals a 13% safety stock reduction. Any transportation reduction also creates an additional direct reduction of transit stock. A day less in transport equals a day less inventory in your pipeline.

### **Number 3: Revise order cycles/quantities**

Smaller and more frequent order quantities translate into less inventory. Is there sufficient capacity to increase changeovers required by more frequent cycles? Can capacity loss be offset by running low demand parts less frequently? Will there be any loss of transportation efficiencies by moving to smaller batches? What does this mean to the labor workload at the distribution centers? Determining order frequencies is one of the key variables of your supply chain. It can affect nearly every aspect of your supply chain. You must have a thorough understanding of your supply chain costs and capabilities before embarking on this strategy.

Options include: reducing setup time and costs, re-evaluating the cost of holding inventory, understanding warehouse storage procedures, and understanding labor, transportation, and inventory cost trade-offs. While the goal is reducing inventory, you may discover that the opposite is true; increasing order quantities on some items may yield substantial overall savings.

### **Number 4: Improve your forecasting**

Many people don't like the "F" word. But let's face facts – every make-to-stock or purchase-to-stock company forecasts, admittedly with differing degrees of formality. Even if your production rules are "make what we sold yesterday" or "replenish up to x," a forward-looking view of demand is implicit in determining how much to buy and keep on hand. While everyone knows the forecast will always be wrong, it is possible to become less wrong. Often, improvement efforts start with the mathematical forecasting method, e.g., – exponential smoothing vs. regression vs. Winters. That should actually be the last step. As the saying goes, "I'd rather be approximately correct than precisely incorrect." Think of forecast improvement in three segments:

1. Are the input data the relevant drivers of demand? If marketing or sales are influencing demand through pricing and promotion activity and you don't take this into account, the forecasting formula doesn't matter. You must understand and collect the inputs that drive demand.
2. The data must be accurate. If you forecast from shipments, but shipments don't reflect true customer order quantity and dates (based on

unavailability and backorders), the shipment data are tainted – garbage in, garbage out. Get as close as possible to true demand.

3. Review the forecasting method. If you have the right inputs and the data is clean, basic forecasting methods will produce good results. If you have limited resources, spend the effort on the first two steps to achieve the best results.

## **Number 5: Eliminate obsolete stock**

How much obsolete stock is kept on hand in your facilities? Is it being kept because no one wants to own up to it? Or is it because the company can't "afford" an expense hit this quarter to write-off the obsolete stock? Ridding your warehouses of obsolete inventory is a good policy, and good operating policies will result in good long-term financial results. Here, accounting rules can drive poor operating rules. If you don't address obsolete stock now, it will just continue to grow. So, own up to obsolete stock, get it off the books, and use that warehouse space for productive inventory.

## **Number 6: Centralize your inventory**

In total, distributed warehouses require more inventory than centralized facilities. The key driver of the increased inventory is safety stock. The rule of thumb is: As the number of facilities increase, the amount of safety stock increases by the square root of the facility increase. Increasing facilities by a factor of four will increase safety stock by a factor of two.

If centralization is possible, a reduction in order quantities may be possible. By ordering to only one location, you may be able to increase your order frequency, thus lowering your overall order quantity.

While you may have the ability to centralize some items, large-scale centralization may just not be possible. The centralized vs. distributed analysis is a major supply chain decision and requires extensive analysis from customers' requirements to suppliers' capabilities. However, you may be able to take advantage of centralization on a piecemeal basis. Can you hold most safety stock centrally and allow daily replenishments to distributed facilities? Can spare parts be held centrally and expedited in emergency situations? Will customers accept different lead times on some items, thus allowing centralization?

## **Number 7: Lower your service level**

Heresy, you say. Probably, so let me re-phrase this one: Understand your customers. What kind of service, in terms of lead time and availability, do your customers require? For example, do your customers need their entire order at once? Could you lower inventory by being able to ship half the order immediately,

half later this week? Do customers request short lead times just because they can, not because they require it? The best way to meet your customers' needs is to understand their needs. How do they use your product? When do they know that they need your product? Understanding their needs will help you meet them. However, in today's competitive environment, you just might find that you have to shorten lead times and increase availability just to keep up with competitors. Whatever the case, understanding your customers' needs is critical to your success.

## **Number 8: Reduce SKU counts**

Do you have customer-specific SKU's? Are identical products packaged and stored differently? Postponement is the act of pushing customization until the latest possible moment. If you can store the base item and only customize it when you have the order, you can significantly reduce inventory. This may require packaging or assembly operations at the distribution center, but the savings may well be worth it. You may even be able to respond more quickly to customer orders.

Is there substantial part/SKU proliferation? Do you stock the 2-count, 4-count, 6-count and 8-count packs? Working with sales and marketing, you may be able gain agreement that eliminating one of the packs will not affect sales at all. Any part reduction will help to free up space in warehouse, ease production planning, and reduce inventory.

## **Number 9: Reduce variability of demand and supply**

A tough task, you say. Let's look at some ways to reduce demand variability. Is it possible to reduce or eliminate large end-of-period buys (that were only to meet quotas)? Breaking this end-of-period addiction is very painful. It will require a quarter of two of decreased sales and profits as customers use up their excess inventories. Also, managing the resultant slack in the supply chain is costly. This is an extremely difficult habit to break and requires support all the way to the top of your organization.

Are there any other ways to smooth customer orders? Study the largest spikes in your historical demand. What caused them? If you can alter these patterns in the future, your volatility will be much less. Or, can you plan them separately if they are driven by discrete events?

On the supply side, do you have suppliers that can commit to tight timelines? A longer average lead time with less variability may be better than a short average lead time with a lot of variability. Generally, you will have to plan for the long end of the spectrum, anyway.

Variability is highly correlated with lead time; shorter lead times generally have

less variability. Identifying the volatility and discovering the cause will reduce the variability in the supply chain and lower inventories.

## **Number 10: Align your metrics**

This is a critical (and difficult) step. Does your organization have departmental metrics that are at odds with each other? You might not think so. Even “good” metrics can produce sub-optimization by department. For example, the plant manager gets his bonus based on efficiency. The lower the unit cost, the better, right? The plant manager likes long stable runs so he can get his equipment humming. The inventory planning manager gets his bonus based on finished goods inventory. He likes low inventory in the warehouses. Good for the organization right? And the sales manager wants everything in the warehouse so when he sells that huge new order, everything is available, because his bonus is his commission. Increased sales, good for the organization right?

What happens at our hypothetical organization? The plant manager disregards short production cycles and produces excess stock to get his utilization up. The inventory manager won't accept the goods at the warehouse because he doesn't want finished goods inventory going up, so it gets stored at the plant or in trailers. The sales manager inks a deal but the stock is not available at the warehouse, so it gets expedited from the plant. The bottom line: everyone gets his or her bonus but the supply chain is anything but efficient. Beware the metrics - what people get paid to do, they will do.

In conclusion, inventory is the measuring stick of your entire supply chain. It reflects the agility of your supply chain. The only sustainable way to reduce inventory is to improve your supply chain processes. To do this, your organization needs an end-to-end view of the entire chain. You will need to begin breaking down the “silos” across your extended supply chain with communication and understanding. Start internally and then progress upstream and downstream. Finally, remember that supply chain management is a process; there is no finish line.

Good luck!

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