

In praise of inventory

Managing inventory correctly includes the right use of forecasting demand, cross-functional planning and supplier management.

by Art Raymond
araymond@raymondnet.com

Inventory has a bad name. Pick up any book on lean manufacturing, and you will find inventory condemned in terms that make the bubonic plague look like the common cold.

But inventory has many benefits. For one, it enables instant gratification for consumers in search of products ranging from toothpaste to TVs. Second, inventory allows manufacturers around the world to operate efficiently when making something to customers' orders is not practical. In spite of a 20-year focus on JIT and lean production, the economy still requires inventory to function smoothly.

Make no mistake, inventory has huge costs. Each year the U.S. economy spends over \$300 billion to hold about \$1.5 trillion of inventory. These costs consist of three key elements: \$25 billion of interest; \$195 billion for taxes, obsolescence, depreciation and insurance; and \$80 billion for physical warehousing. Across the economy carrying cost is running about 20 percent of inventory value. (Ask yourself: What do you think your inventory carrying cost is?)

In reality, inventory is like oil. It provides the lubrication that minimizes the friction between the links in a value chain. Think of inventory as a buffer that allows the participants in a chain to balance supply and demand fluctuations.

So the real culprit is excess

inventory. Your objective as a manager is not to eliminate inventory but rather to optimize it for the benefit of you and your customers.

Obviously the best method for optimizing inventory is not to create it. Achieving that goal means making only what you can sell from materials that you buy when needed. This process is the much-heralded *pull system* where the final consumer's purchase signals all upstream suppliers to produce in so-called one-piece flow.

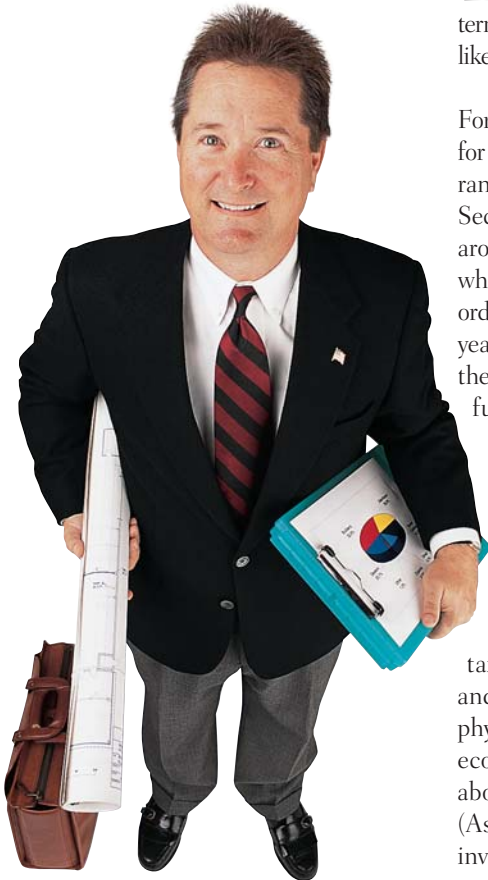
Many operations have achieved the *pull system* in varying degrees, none approaching 100 percent. Leading-edge cabinetmakers don't machine a part until receipt of a customer order. Some of their suppliers follow suit. But inventory is still required through the value chain to ensure acceptable delivery of most materials and finished products.

As a manufacturer you should, of course, work to achieve a fast response, make-to-order process. But what then? In today's world you cannot optimize your process or inventory without the cooperation of your suppliers and customers.

To get started you must focus on developing three critical capabilities aimed at balancing demand with supply:

Forecasting demand

Until you achieve one-piece flow through the entire value chain, you



Art Raymond is a manufacturing consultant specializing in furniture, cabinets, millwork, fixtures, and other secondary wood products. His firm, A. G. Raymond & Co., has developed management and technical solutions for manufacturers around the world. Contact him at 919/831-0070, by email at araymond@raymondnet.com, or on the Web at www.raymondnet.com.



It's better to have a right-sized inventory than none at all.

must forecast demand for materials and end products. Many senior managers claim that forecasting their business is impossible. Such an opinion leads to lots of right-brained guesswork by an isolated middle manager or, worse, a clerk. Like it or not, an order to purchase materials or manufacture products requires that a quantity be specified. When that quantity is set, somebody is forecasting demand.

This sloppy practice continues in spite of knowing that the cost of bad forecasting is high. A material shortage disrupts production, lowers throughput and increases overhead. Stock-outs of finished goods cause dissatisfied customers and cancelled orders. Overestimating demand leads to obsolete stocks that must be liquidated well below value.

Powerful tools

Decades of research and development have created powerful tools for predicting demand. These tools enable the user to manipulate all key demand inputs. For mature products a sound forecast requires only two or three years of historical demand data. Many companies like furniture makers, however, operate in volatile markets or have products

with short lifecycles. In these cases accurately identifying demand requires the tool to consider early sales data, the histories of similar products and customer signals on sales events like promotions. When customers' predictions are part of this process, the software can monitor actual performance vs. the estimate and

adjust future forecasts accordingly. Best results are often achieved by employing multiple forecasting models. This technique, often called focus forecasting, selects the formula for the current period that most accurately predicted the previous period.

Forecasts will always be wrong.

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A key to obtaining the best possible demand prediction is tracking forecast error. An effective forecasting tool will learn from its mistakes and adjust accordingly.

This level of forecast preparation obviously requires more than a

spreadsheet. Many companies cannot afford the most sophisticated software. For them the goal must still be a formal process of looking at demand, albeit with a less-expensive, yet powerful tool.

An accurate demand forecast is a

necessary ingredient in operating a world-class value chain and rightsizing inventory. Period.

Cross-functional planning

In most companies sales accuses production of not making products that customers want. On the other hand, manufacturing criticizes sales for not selling the products that can be made. In place of good coordination, this fingerpointing is a formula for disaster.

Leading-edge companies all combat this situation with a Sales & Operations Planning process. The emphasis is on the word *process*. S&OP is not just a series of meetings. Rather it is a regular, formal sequence of activities aimed at reconciling demand with supply.

Manufacturing and sales must do more than coexist.

S&OP enables management across the company to build a consensus on what demand looks like and how the company will respond. New demand forecasts are examined and questioned. Past forecasts are compared to actual order flow to determine errors. The past performance of manufacturing and suppliers in meeting previous orders is reviewed to determine what went right and wrong. Inventory levels are scrutinized in view of target customer service vs. actual performance.

As mentioned above, forecast error is inevitable even with sophisticated software. Rather than leave the job of adjusting production or purchasing to someone somewhere down the org chart, S&OP involves all relevant managers in the process of deciding what to make and buy, how much to

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make and buy, and when to do so.

In short, manufacturing and sales must do more than coexist. They must communicate and develop consensus on action. Remember, business is like sports. You need a solid team pulling together to win. Ultimate responsibility rests with top management. Without a champion in the corner office to force the intra-company participation, S&OP will never happen. Most experts say that setting up a functioning S&OP process takes nine months. You should get going.

Supplier management

Whether you are buying raw materials from a local mill or purchasing finished goods from an overseas source, you must manage those suppliers. Purchasing is not just a matter of lowest cost but also the assurance of acceptable quality and on-time delivery.

In today's economy all three of these factors – low cost, quality, and

speed – are becoming the cost of entry into most product categories. Dropping the ball on just one can be a mortal blow to a company.

Ideal supply chain

The ideal supply chain includes these key collaborative elements:

Joint design and development, especially for more complicated supplies or products. This cooperation aims to reduce time-to-market for finished products or time-to-use for materials.

Sharing of sales and usage information. Visibility of these data up and down the value chain enables synchronization of orders to production to improve on-time order fulfillment and minimize inventory.

Communication of performance exceptions such

as production delays. Candid, continuous contact between suppliers and users improves the opportunity for critical, timely mid-course corrections.

Such coordination cannot be achieved through the traditional, antagonistic buyer-seller. Price will always be an issue in any transaction. But you will never reach the ideal supply chain through a price-only focus. Inventory optimization throughout a value chain requires common goals to be shared among its players. It's not simply a matter of shoving inventory back on your suppliers.

Bottom line: Inventory is not all bad. The intelligent use of inventory to balance demand and supply can be a key ingredient of success. Eliminating inventory often requires a complete, lengthy and expensive restructuring of your operations. It's better to aim at *right-sizing your inventory* to the benefit of you and your customer. ▲