

Critical Tools of the Supply Chain

Mark K. Williams, CFPIM, CPSM, CSCP

Introduction

Over the past twenty years, a shift occurred in American business. In industry after industry, managers have realized that they could not efficiently manage all of the activities necessary to bring goods to customers. Among the tasks challenging suppliers were obtaining and processing raw materials at commodity prices; manufacturing several levels of components and combinations of final products; running a vast distribution system capable of responding to ever-changing demand patterns; and operating a retail environment capable of not only presenting products to customers for purchase, but delighting them with superior customer service.

As companies have chosen to focus on what they considered their “core competencies”, ancillary operations were often spun off or shut down. However, the need to perform these functions did not disappear, outsourcing became a popular, cost-effective option. Companies such as semiconductor manufacturer AMD deciding to focus on product design and distribution while sub-contracting the actual manufacturing processes. Wood-products manufacturer Georgia-Pacific provides another example of this shift. Georgia-Pacific spun off its Forest Products operations that plants and grows trees so that the company could focus its energy on the manufacturing and distribution processes.

As companies have evolved into specialists within ever-smaller niches, a problem arose: How does one efficiently bring one’s product to the marketplace? Some of the tried and true practices of previous decades began to look less like money-savers and more like money-losers. Unproductive practices had developed, such as treating suppliers in an adversarial manner with the same amount of fear and loathing normally reserved for the competition. Another unfortunate trend was the forecasting of customer demands and increasing inventory to make up for the unavoidable inaccurate forecasts. Perhaps the most detrimental practice was simply producing to orders when they arrived and handling the inevitable ups and downs of the business cycle by temporarily hiring, running overtime, and then laying off workers and the concurrent inefficiencies in capacity utilization. Companies began to realize that in order to be truly efficient and cost effective in this new environment, they needed to form alliances with other companies so that all of their niches, when combined could form the links of a solid supply chain. An alliance that could take advantage of the strengths of each participant in the chain while bringing value at a reasonable cost to the customer.

It is easy to say, “We are going to be a participant in a world-class supply chain.” It is quite another thing to actually pull it off. In order to do so, one needs to change the way one does business and employ tools of companies that have been successful, tools that are critical to supply chain success. There are many tools in use, but today the focus is on three of them; 1) schedule sharing, 2) consignment, and 3) Vendor Managed Inventory.

Schedule Sharing – Overcoming The Weaknesses of Forecasting

Why should one share the upcoming manufacturing schedule with one's suppliers? After all, is it not sufficient to send them orders and expect them to deliver one's product on time? What kind of inefficiency justifies this change in strategy?

Most manufacturing and distribution companies decide what to make and in what quantities by forecasting customer demand. A tremendous amount of corporate resources is devoted to developing, manipulating, tracking and assessing the accuracy of the forecast. Despite all of this effort, is the forecast 100 percent accurate? With the exception of the occasional "lucky strike", the answer is no. Why? Because a forecast is just "an estimate of future demand"¹. And most of us cannot predict the future. (If anyone disagrees with this statement, try going to one of the states that hold weekly lotteries and predicting the outcome of the next drawing. If done successfully, I will be wrong and you will be rich!) Unfortunately, one's customers want to buy real parts, not estimates. By sharing one's schedule with the supplier, the opportunity to work with real demand is provided, not a forecast. This also allows the supplier to reduce the amount of finished goods safety stock on hand, thereby reducing costs.

Tips on Sharing One's Schedule with Their Suppliers

First of all, one needs to meet with one's supplier so that they understand that the information that one will be sharing is highly confidential. One doesn't want one's schedule to end up in the possession of a competitor! Having one's supplier sign a confidentiality agreement reinforces this goal.

If one is on an MRP (Material Requirements Planning) or an ERP (Enterprise Resource Planning) system that generates requirements to one's Purchasing Department, one can generate requirements to one's supplier fairly easily.

- First, segregate the requirements by vendor. This will form the basis of the information that will be transmitted to the supplier.
- Determine how solid or fluid the quantities and items are within the company's time-fences. For example, if quantities are frozen within the first four weeks but subject to 25-50 percent swings from weeks four to eight, document this information so it can be discussed it with the supplier.
- Meet with the supplier to review how the information is structured. Keep in mind that MRP may be a foreign concept to some of the suppliers so in-depth training may be needed for them to understand how to use the information to help schedule their business.
- The most effective schedule sharing agreements include a guarantee from the customer that once an item is called for within the frozen time-fence, the supplier will purchase it. Suppliers will not be nearly as reluctant to produce – and possibly customize – inventory for a customer that guarantees it will be purchased.
- Review seasonal trends and abnormal events such as vacation shutdowns or special promotions with the supplier and obtain an agreement as to how these special events will be handled.
- Finally, determine how often and in what form the schedule will be transmitted. Should it be sent daily, weekly or monthly? Sent via mail, fax, EDI (electronic data interchange) or email?

Once these details are ironed out, one can begin sharing the schedule with the supplier. If the operation needs a periodic delivery (such as every Tuesday at 10:00 am), bring the transportation provider into the loop. By setting up regularly scheduled deliveries, one can ensure that all of the hard work with the supplier does not go to waste because the product is left sitting on their dock. In addition, one can make the most efficient use of the receiving employees by helping smooth out the peaks and valleys of incoming deliveries.

Consignment – Just a Financial Give-away To the Customers?

Turning again to the APICS Dictionary¹, we define consignment as “The process of a supplier placing goods at a customer location without receiving payment until after the goods are used or sold” (author’s emphasis). Why would a supplier want to give goods to the customer without receiving payment until after they are used? Isn’t this the same as giving money directly to the customer without receiving any benefit? In short, what is in it for the supplier?

In order to answer these questions, let us look at the cost of holding inventory. If a manufacturer is a distributor or a make-to-stock supplier, one is generally expected to keep safety stock in finished goods for the customers. Is this safety stock maintained without cost? Not according to Ross², who according to the table below indicates that most companies have an annual inventory carrying cost of 20 to 36 percent.

Cost of Capital	10 – 15%
Storage & Warehouse Space	2 – 5%
Obsolescence & Shrinkage	4 – 6%
Insurance	1 – 5%
Material Handling	1 – 2%
Taxes	2 – 3%
Total Annual Inventory Carrying Costs	20 – 36%

Larger companies tend to have a lower cost of capital because they can go directly to the debt and equity markets instead of relying on banks. As one looks at the carrying costs outlined above, the question presents itself: “would I as a supplier still be responsible for all of these carrying costs if I consigned my product to my customers?” I would argue that one would not, particularly if one developed a comprehensive consignment agreement, which included customer responsibility for insurance, obsolescence, and shrinkage, which will be discussed in the next section. By operating under such an agreement, one could reduce one’s annual inventory carrying costs by 40 to 50 percent:

Cost of Capital	10 – 15%
Storage & Warehouse Space	0%
Obsolescence & Shrinkage	0%
Insurance	0%
Material Handling	0%
Taxes	2 – 3%
Total Annual Inventory Carrying Costs	12 – 18%

Key Points in a Consignment Agreement

There are three critical elements to consider when developing a consignment agreement – level of consigned inventory, responsibility for slow-moving inventory and responsibility for damaged or lost inventory³.

- Level of consigned inventory. A customer would prefer to hold a large amount of consigned inventory, viewing it as a cheap way of buffering against demand uncertainty. The supplier, however, must determine the level at which it can provide consigned goods profitably. Negotiating a set number of weeks or months of supply based on the customers' sales/usage can meet the needs of both parties. If the customer sells/uses \$12 million dollars a year and the agreement calls for two months of supply, both parties know that \$2,000,000 is the consigned level. The supplier can now budget for the capital required and the potential taxes involved in supporting the inventory. Adjustments can also be made in its cash flow projections. This arrangement also provides the customer with an incentive for increasing sales of the suppliers' products because an increase in sales translates into an increase in consigned inventory.
- Responsibility for slow-moving inventory. Another key element in a successful consignment relationship is to keep the inventory moving. Developing inventory turn goals, by individual product or by product group, can uncover slow-moving items that are inappropriate for consignment. During negotiations, it is important to determine which party will monitor inventory turnover and how slow moving goods will be handled, whether they will be returned to the supplier or purchased by the customer and removed from the consigned inventory.
- Responsibility for damaged or lost inventory. Another critical factor to address during negotiations is the disposition of stolen or damaged inventory. It is customary for the customer to assume complete responsibility for all consigned inventories--lost, stolen, or damaged--on its premises. It is therefore important for both parties to fully understand and agree on such issues as receiving procedures and security. An ongoing cycle count program or periodic physical inventory needs to be established to account for all consigned inventories.

Vendor Managed Inventory – Foundation for a True Partnership

Under Vendor Managed Inventory – VMI – suppliers actually take on the responsibility of managing their inventory throughout their customers supply chain. This can take several forms, the simplest being going to the customers location at certain designated intervals (such as weekly) and re-supplying their inventory of one's product to an predetermined level. Or it can be as sophisticated as downloading information directly from their cash registers into one's computer system via an Electronic Data Interchange (EDI) for analysis and determination of the specific inventory items and quantity to be re-supplied.

In order to establish a VMI relationship, several key elements must be present between the two parties. The customer must be convinced that the supplier has a high degree of

competence when performing the materials management function. After all, would a customer likely agree to let a vendor with a 65 percent service level manage its inventory? A partnering mindset accompanied by an environment of openness between the two parties is crucial. Once a VMI program is established, customers certainly do not want to waste their time putting out competitive bids to make sure the supplier is honestly providing the product at a fair price.

The real key advantage of VMI is to replace the forecast--with all of its inherent inaccuracies--with hard data. In the article “Integrating Vendor-Managed Inventory into Supply Chain Decision Making,” Mary Lou Fox ⁴ points out several of these advantages of VMI:

1. Improved customer service. By receiving timely information directly from cash registers, suppliers can better respond to customers’ inventory needs in terms of both quantity and location.
2. Reduced demand uncertainty. By constantly monitoring customers’ inventory and demand stream, the number of large, unexpected customer orders will dwindle, or disappear altogether.
3. Reduced inventory requirements. By knowing exactly how much inventory the customer is carrying, a supplier’s own inventory requirements are reduced since the need for excess stock to buffer against uncertainty is reduced or eliminated.

Improved customer service, reduced inventory requirements and reduced demand uncertainty: how many suppliers would dislike that combination? However, reduced reliance on forecasting is only one benefit of VMI. A second, and potentially more powerful benefit is the binding of the customer to the supplier. Establishing a VMI relationship – particularly one that includes an EDI interface--takes a great deal of work. Just ensuring the validity of the information traveling between the two different companies is a daunting task. Once the relationship is established, however, most customers will be very reluctant to endure the amount of work needed to replace one supplier with another.

Conclusion

There should be many tools in the toolbox of managers who are leading their companies into profitable supply chain partnerships. These tools must take advantage of newly emerging technologies but be stable enough to outlast any one program or piece of hardware. Companies that are becoming increasingly specialized and interdependent must be able to develop meaningful partnerships. In a fast-paced economy that demands change and flexibility, the new methodologies must be durable enough to allow for change within the new paradigm. We have discussed three of these critical tools: schedule sharing, consignment and vendor managed inventory. As managers apply and master these tools, they will continue to transform the companies they lead into solid links in a strong supply chain.

References

1. APICS Dictionary, 9th Edition
2. Ross, David Frederick, *Distribution Planning and Control*, Chapman & Hall, 1996

3. Williams, Mark K., *Making Consignment and Vendor Managed Inventory Work for You*, CPIM Inventory Management Reprints – October, 1998 Revision
4. Fox, Mary Lou, *Integrating Vendor-Managed Inventory into Supply Chain Decision Making*, APICS 39th International Conference Proceedings, 1996

About the Author

Mark K. Williams, CFPIM, CPSM, CSCP, is President of the Williams Supply Chain Group, Inc., a consulting firm specializing in supply chain management and training.

Mark has over 20 years of industry experience in various roles including Director of Demand Planning, Senior Manager of Materials, Plant Manufacturing Manager, Distribution Center Manager, Corporate Internal Auditor and Production Control Manager.

He is an APICS Certified Fellow in Production and Inventory Management (CFPIM) and a Certified Supply Chain Professional (CSCP). He has also earned the Certified Professional in Supply Management from the Institute of Supply Management (ISM). He has many years of experience teaching APICS certification review courses and developing customized inventory and supply chain management courses for corporate clients. He has spoken at numerous APICS International Conferences in the United States, three European Supply Chain conferences, two Australian Logistics & Supply Chain Conferences, a South African Supply Chain Conference, as well as numerous local and regional supply chain meetings. In addition delivering seminars in 47 of the 50 United States, Mark has delivered seminars for clients in South Korea, Singapore, Malaysia, Indonesia, Bulgaria, France and Australia.

Mark is online at www.w-scg.com and he can be contacted at mwilliams@w-scg.com

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