

Strategies To Run a Lean Supply Chain

How principles of lean manufacturing transfer benefits to Operations

White Paper

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Responding to Change

In the last several years, the manufacturing sector has moved from vertically organized structures to horizontal organizations; that is, a single company no longer controls its product from, let's say, the mine to the store shelf. Instead, today's companies control only pieces of the supply chain, and the companies and divisions controlling those various components may be located just about anywhere in the world.

This model enables companies to concentrate on what they do best, but as a result the supply chain has become longer and more complex. Today's supply chain includes the entire flow of product, starting with raw materials and ending at the retail outlet; it is the largest business process a company has to manage. In addition to its length, the chain has become enmeshed with production processes to the point where the line dividing manufacturing from supply chain logistics has blurred.

Both of those consequences have caused companies to try to make their supply chains more efficient. Fortunately, the blurring of the line between manufacturing and supply chain logistics brings with it the opportunity to move the management concepts that produce efficient manufacturing to supply chain management. One efficient manufacturing concept stands out as most successful: the concept of "lean."

The Concept of "Lean"

But what exactly is lean? And how can it be applied to supply chain management?

Most people in manufacturing are familiar with the idea. Its foundations are in the Toyota Production System (TPS), created by Toyota founder Sakichi Toyoda, his son and an engineer named Taiichi Ohno, several decades ago. Its success in turning Toyota into an industrial and automotive giant is unquestioned, and many manufacturing companies worldwide have imitated TPS. Lean production techniques have pared the cost of manufactured goods and speeded up their delivery wherever they have been used.

In its simplest form, lean manufacturing means producing goods with less; it applies fewer resources without affecting the quantity or quality of the goods produced. Toyota's purpose in developing the system was the elimination of waste, and TPS is focused on seven sources of it: over-production caused by emphasis on supply rather than demand; wasted motion due to poor processes; waiting time generated by tuning the production system to the fastest rather than the slowest process; conveyance waste caused by poorly designed supply systems that delay the transit of goods; processing waste from badly designed systems; raw

material waste from inefficient design or ineffective supply strategies; and correction waste caused by reworking badly made products.

The results of TPS have included enormous advances in robotic manufacturing systems and factory design, just-in-time inventory management, the “kanban” system of visual inventory replacement cues, demand-pull management of manufacturing planning and others. But lean manufacturing also has evolved into a business philosophy based on a unique set of practices, and the resulting business culture demonstrates how to use these to create a lean approach to other aspects of business; one area ripe for this lesson is supply chain management.

Principles of a Lean Supply Chain

The supply chain permeates every facet of the enterprise, and if a lean approach to managing it is to succeed, the entire organization has to focus on removing waste and adding value. Part of that change requires everyone involved to look beyond the boundaries of the company to relationships with customers and suppliers at all levels. The change in focus is essential, but implementing it can be difficult in today’s international supply chain environment. Nevertheless, the principles of lean business are straightforward and can form the foundation for an organization’s new approach to its supply chain.

First, product value has to be defined from the customer’s point of view, not the company’s. This seemingly simple principle is the key to eliminating waste caused by such things as making the wrong product (one that nobody wants), making the product at an unsuitable quality level, making too much or too little of it, or delivering it too slowly or through the wrong channel.

A second principle is that the supply chain should flow continuously, and so should the information that supports it. Delays and discontinuities in the supply chain process often are caused by starting and stopping processes or information streams that could smooth things out if they were operated continuously.

Product should be pulled by the customer, not pushed by the company. That is, no part of any supply chain process should be started without a complete understanding of the demand destination of the final product that will complete the cycle.

Finally, the entire organization needs to continue to manage toward perfection, concentrating on the elimination of waste and the addition of value in all of its supply chain processes. This is a continuous process that starts with the launch of a lean supply chain management strategy, and it never ends.

It is important for those involved to remember that whatever else is done, the overriding objective of lean supply chain management is to eliminate waste in materials, manpower and processes, and to create value for the customer.

Necessary Attributes

Ventana Research defines a lean supply chain as a set of organizations and processes that are linked in a continuous flow of products and services, finances and information, and that interact collaboratively to reduce cost and waste. A lean supply chain includes several important features, noted below.

Demand Management

An unyielding focus on demand for product is perhaps the guiding attribute of a lean supply chain management strategy. If a product for which there is no demand enters the supply chain, it is immediately a source of wasted material, wasted process and wasted manpower.

Implementation requires that all suppliers and processors everywhere in the supply chain process receive demand signals that come from the customer, not from within the company, and turn those signals into components of the final saleable product for which they are responsible. While the impact on profits of waste from unsuitable product is obvious and its magnitude may outstrip all other sources of waste, there is also a fringe benefit in that a demand signal trigger for supply chain activity eliminates the need for forecasting.

Process Standardization

The goal of standardizing processes is to provide the continuous flow that lean supply chain management requires. There are two reasons for this. First, a process that is standardized across many of a company's products may be used to produce whatever product is currently in demand. Second, when an industry-standard process is used, the company can readily shift production from one supply partner to another. The same benefits accrue for use of standardized information and financial processes that support the supply chain.

Product Standardization

Product standardization is critical to continuous supply chain flow because it keeps the company from being locked in to one vendor of a component, and the company can use the same component in many products it manufactures. Component standardization reduces required inventory levels because of the common use of components in many products and also because standardization can enhance the ability of the company to develop postponement initiatives. These are obvious benefits for manufacturing, but they also apply to software products used for accounting processes and general information purposes.

Industry Standardization

Standardization can and should extend beyond the company's own supply chain to components and processes used throughout the industry. This helps reduce waste in the company's supply chain management by reducing the complexity and development costs of products and product variation through interchangeability, and it reduces the complexity of required supporting information. Industry standard information systems also benefit the company by reducing the cost of acquiring and processing information. Many of these benefits accrue to customers for the product at every level, including final demand.

Collaboration

Collaboration both within the company and with suppliers and customers is critical to lean supply chain management. Without it, the smooth flow of information and product required for a lean supply chain cannot be enabled. For example, customer collaboration enables demand signals to be transmitted efficiently up the supply chain; without it those signals may be transmitted late, incorrectly or not at all. At the other end of the chain, supplier collaboration promotes the efficient flow of components and products into the supply chain and minimizes inventory levels and costs. And within the company, collaborative management of information and product flows is essential for managing the supply chain in a lean manner.

Cultural Change

Lean supply chain management usually requires cultural changes. Every participant in the process must concentrate on reduction of waste; it should become a way of life, not just a goal to be achieved one time as part of a new company initiative. The cultural changes required can begin to be made at the start of the process, but they cannot be reversed. Waste reduction must be the goal of every task undertaken by every management participant in supply chain management. Only in this way can the goal of lean supply chain management be achieved.

Creating a Lean Supply Chain

In moving to adopt a lean supply chain, it is important to start by identifying your team and getting it focused on reducing waste. If they do not embrace this critical value change, your effort will not succeed. Use waste reduction as the foundation for every goal you set in the transformation process. The team has to include both enterprise and partner members from all points in the supply chain in order to be effective.

Demand management is easily the most critical component of the lean supply chain because inappropriate production of goods is the source of much waste and expense. To create an environment in which demand management can be efficiently carried out, start by defining customer

value. Customer value comes in the form of the physical product itself, as well as its location and the timing of its delivery. Once those three things are clearly determined, you can begin to set up a signaling system that will inform your supply chain as to the state of product demand, and you can begin to pull your product through the supply chain, rather than push it through.

Also define your value stream and map the supply chain processes your product goes through as you manage it from creation to consumption. You need to understand the resource and information requirements at each processing or transition point to determine where waste can exist, does exist and can be eliminated. You can use the outline of waste sources from the Toyota Production System as a starting point, but yours will be at least somewhat different. Depending on your particular production process, this can range from a relatively simple to a massive mapping process, but in either case it is critical.

Understanding how to create and manage a lean supply chain will lead your team to the tools and technologies that will enable you to efficiently move forward. Whether the tools you need include a basic kanban system or an entire refreshment of your enterprise resource planning (ERP) technology, this phase is a key part of developing a lean supply chain management process. It may be useful to evaluate your current IT and other supply chain systems as you do the evaluation.

One tool that can help your development is an ERP system based on a service-oriented architecture (SOA), which facilitates a modular approach to supply chain support technology. It will help your team understand how to apply ERP to your newly lean supply chain and help you see how to use the ERP system to make the supply chain's function more lean. Each step in the supply chain process can be assigned its module from a standard set, and your IT group can work with you to tune the process. You might even think of an SOA approach to your ERP system as a source of process standardization in the supply chain. When your analysis is complete, the SOA approach will have you and your team ready to complete the ERP implementation in conjunction with implementing your new supply chain processes.

Creating a lean supply chain is a challenge not to be undertaken lightly. It requires changes in people's behavior, business processes and technology. But companies willing to commit effort and resources to it can position themselves to jump ahead – and stay ahead – of the competition.

About Ventana Research

Ventana Research is the leading Performance Management research and advisory services firm. By providing expert insight and detailed guidance, Ventana Research helps clients operate their companies more efficiently and effectively. We deliver these business improvements through a top-

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