



SupplyVelocity®

What's New in Lean

It's called Supply Chain Management

Mitch Millstein, Ph.D.
Supply Velocity, Inc.
mitch@supplyvelocity.com
(314) 406-4962

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The Toyota Production System was created almost 70 years ago by Taiichi Ohno. (There is no exact date but it happened sometime between the end of WW2 and the mid 1950's.) And 70 years later it is still a very active operations management practice. We teach it at the University and people are using Lean tools and adhering to the Lean philosophy across the globe. (Note this happened as many other operations management method burned out including Six Sigma, Quality Circles, Reengineering and others.)

There are many definitions of Lean. After 21 years as a Lean Consultant and 10 as an Operations Management Professor, my definition is, "the identification and elimination of non-value added steps in a process." The non-value added steps are often called the 8 wastes. Lean is implemented by the use of process improvement tools such as 5S, process flow mapping, value stream analysis, time studies, spaghetti maps and quickchangeover.

So after 70 years, what is new? How can Lean evolve? I propose that the extension of Lean to the Supply Chain is the answer. We have a name for this... it is called Supply Chain Management; which is the flow of information, material and financial resources (money) from suppliers (and their suppliers), through your company to your customers (and their customers) for the purpose of serving the end-consumer in the most effective way possible to balance costs and service.

Here is how you can extend the concept of identifying and eliminating non-value added steps to your supply chain.

Supplier and Customer Collaboration

The foundation of supply chain management is collaborating with your supply chain partners. Examples of collaboration can include:

- Collaborative forecasting, planning and replenishment (CFPR)
- Joint product development
- Vendor managed inventory
- Business process outsourcing

Collaborative forecasting and planning is the process of supply chain partners agreeing on the demand forecast of the consumer or other key point in the supply chain and jointly creating their purchasing and production plans. By agreeing on one forecast supply chain partners all have the right inventory to meet this forecast and, perhaps more importantly, don't blame each other when the forecast is wrong... as all forecasts are, to some extent. CFPR is an effective way to fight The Bullwhip Effect.

Joint product development is the classic way that suppliers and customers collaborate. Instead of a company developing all aspects of its new product, it works with suppliers



to get ideas on what they do best and integrates their designs into its product to either increase functionality, reduce cost or enable faster-delivery strategies, such as modular design.

Vendor managed inventory (VMI) is a system where suppliers handle the replenishment of their parts at a customer's facility. The big advantage for the supplier is the visibility they receive into real demand at their customer. This allows them to create better forecasts because they are using demand not shipments.

Business Process Outsourcing: The ultimate in collaboration is to allow a service supplier to take over one of your processes, where they are specialists and can apply economies of scale and technical expertise. This was very common in the information-technology industry, where IT outsourcing firms took over large portions of their clients' computers systems. It has also been implemented in supply chain functions such as sourcing and transportation. A very popular way to outsource transportation is by using third party logistics providers (3PLs) that will arrange your freight shipments, consolidating shipments from multiple customers to fill up trucks.

When Does Collaboration Not Make Sense?

Collaboration seems like a great win-win for supply chain partners but it often fails. Here are ways suppliers and customers can make it work:

- 80/20 suppliers or customers
- Strong information technology organization
- A long and trusting relationship

Working with suppliers on forecasting may seem great but in reality you will be dealing with many different data-streams coming into your company. In today's business environment, even with open data availability, it is unrealistic to expect that you can pull in forecasts from all customers or send this information to all suppliers. Instead, you should focus your efforts on the very few vital customers or suppliers that control a large volume of your sales or spend.

Supply chain management is driven by technology. If your supply chain partner does not have a great information technology organization, it is unlikely you will be able to effectively share data.

The last requirement of effective supply chain collaboration is trust. When you work with a company in a close, collaborative relationship, you must be willing to share sensitive data. This includes sales forecasts, product development plans and perhaps most importantly, your weaknesses and vulnerabilities, or your gaps, which your supply chain partners should be filling in. Therefore, working closely with suppliers or customers who work with your competitors, is risky and probably not sustainable.



Quantitative Supply Chain Decisions

There are quantitative supply chain decisions that work very well within a Lean framework because they are based on optimization models that seek to maximize sales/profit or minimize cost. These are:

- Inventory
- Facility location
- Vehicle routing

In the Toyota Production System, inventory is one of the 8 wastes. Yet there is inventory throughout all supply chains. Large appliance and vehicle manufacturers have minimized the inventory in their factories, but largely by pushing inventory carrying requirements upstream to suppliers or downstream to dealers / wholesalers / retail stores. So, if you have to carry inventory, you should optimize it, which is the balance of having inventory in-stock for your customers so you don't lose sales, but not so much that the cost of carrying is greater than the profit you will earn from that last additional sale. This is the familiar diminishing return curve.

If you have multiple factories or warehouses, you should ask yourself if they are in the right location. Warehouses, in particular, should be located to minimize the total cost of owning/renting/operating the facility, the inventory held in the facility and the distance travelled from suppliers and to customers. In supply chain speak, we call this "network optimization." By optimizing your network you can be close to customers while minimizing your supply chain costs.

One of the 8 wastes in the Toyota Production System is "transportation." In Lean Operations this is focused on transportation within the factory. However, much greater costs exist outside of the factory. In fact, about half of the total cost of a product sold to an end-customer is the cost of transportation. Therefore, it would be wise to make sure your transportation network is optimized. This can be done with "rules of thumb" such as the teardrop route design or transportation management software (TMS) that creates optimal routes.

In summary, supply chain management has created multiple methods to reduce waste in your supply chain. Therefore, even if you have been working on being Lean for decades, you have a lot of improvement opportunities still ahead. The journey continues!