The Goal of the Lean Supply Chain

Seven steps to building a lean supply chain

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By

A lean supply chain defines how a well-designed supply chain should operate, delivering products quickly to the end customer, with minimum waste. A lean supply chain is a great enabler for any organization that strives to become more lean and efficient. Organizations within a lean supply chain are able to leverage their own lean journey more easily, delivering better customer value by responding more efficiently, quickly, and predictably to customer needs. That, in turn, facilitates the operation of the lean supply chain, creating a virtuous cycle that ultimately translates to superior financial performance for these organizations.

Thus organizations striving to become lean would benefit from a systematic approach towards building and managing their supply chain. A recent study that analyzed the link between supply chain and financial performance revealed that virtually all winning business strategies have, at their core, supply chain strategies that provide a competitive advantage.

Seven Steps for Building Lean Supply Chains
The book, *Streamlined*, presents seven steps to help organizations develop lean supply chains, even as they proceed on their own lean journey.

These steps are :
1) Develop Systems Thinking
2)Understand Customer Value
3)Value Stream Mapping
4) Benchmark Best Practices
5)Design to Manage Demand Volatility
6)Create Flow
7)Performance Metrics

These seven steps have been recently applied by several organizations in their lean journey, to increase their competitive advantage and profitability, while at the same time enabling their supply chain partners become more efficient and productive. At the end of this article I present some results obtained by a Fortune 1000 organization that has applied these steps to gain significant improvements in its financial performance. Before

I present these results I will briefly discuss some of these concepts/steps, referring the reader to the book for more details.

Develop a Systems Perspective
A vital first step is to develop a systems perspective. The systems perspective recognizes that if each element in the supply chain tries to optimize its own operations in isolation, everyone suffers in the long run. For instance, supply chain management requires long-term partnerships with key suppliers. Suppose management institutes a measurement system that rewards the Purchase department for obtaining products from its suppliers at low cost. No doubt, reduced material costs directly affect the profitability of the organization, but such a measurement system drives the Purchase department into an adversarial position with its suppliers, encouraging Purchase to play off potential suppliers against each other in an attempt to drive them to lower their prices. The lack of a systems perspective has now made it very difficult to establish long-term partnerships with the organization's suppliers. The Theory of Constraints (TOC) avoids the pitfalls of such local thinking by adopting a global perspective, with the objective of maximizing the organization's profit. Application of TOC principles provides a number of levers for systems thinking and supply chain coordination.

Map the Value Stream
The value stream map illustrates the structure of the physical flow of goods and information flow, and highlights areas in the value stream (supply chain) that require more attention1. A comprehensive map highlights weak links in the value stream, identifying opportunities for removing *muda*, *mura*, or *muri*, three Japanese words that respectively mean wastefulness, unevenness and overburdening. *Muda* exists in the form of unnecessary, non-value added. *Mura* exists in a variety of forms -- unevenness in quality, unevenness in sales and production, or unevenness in supplier delivery performance. *Muri* can be the result of, for instance, unevenness in the demand, that could overburden some of the resources, albeit temporarily. It could also exist due to the presence of either physical constraints or some policies that create artificial constraints.

Design Products and Processes to Manage Demand Volatility
An oft-cited barrier to an organization's quest to become lean is that the customer demand is unpredictable, and therefore the organization is forced to carry some finished goods inventory, resulting in a supply chain that is no longer lean. However, better understanding on why customer demand is volatile can pay huge dividends, because typically the end-customer demand is flat, or has very little variation, and much of the demand volatility experienced by organizations in the supply chain is due to the well-known bullwhip effect. And having more inventory at each intermediate stage in the supply chain to buffer against uncertainty is usually not the right answer because it actually makes the supply chain more sluggish in responding to changes in end-customer demand. If the end-customer sees a long delay in response to orders, he/she is likely to pad his/her real demand by a safety factor, to hedge against uncertain lead times, leading to more inventory and more uncertainty in the system. We thus observe that quite often, demand volatility can be self-induced! On the flip side, if you respond quickly to demands, customers will have more faith in your ability to deliver and are therefore less likely to pad their actual requirements or their desired due dates.

Another example of self-induced volatility is due to batching. While the end-user demand for a product may be fairly level, organizations often deliver products in large lots to achieve scale economies, again resulting in a

bullwhip effect. The obvious solution is to produce in small lots, to the extent possible.

A very useful approach to manage demand volatility, especially when designing supply chains that deal with high product variety and demand volatility, is to "maximize external variety with minimal internal variety." This principle can be accomplished by structuring product offerings so that commitment of material and resources is postponed for as long as possible. In other words, the idea is to work with a relatively small number of standard products ("modules") in semi-finished or finished form to configure a large variety of end products.

Develop Metrics Using a Systems Perspective
The performance of a supply chain is the result of policies and procedures that drive various critical segments of the supply chain. The question is, "How can we design metrics to manage organizations recognizing that these organizations are components of complex and highly interconnected systems?" This question is rapidly gaining importance as supply chain managers face increased pressures on customer service and asset performance. Sony, for instance, is acutely aware of the fact that any inventory of its products at Best Buy and Circuit City ultimately affects its profitability if it remains on the shelf for more than a few days. Sony has changed its delivery metric from "sell-in" to "sell-through." The difference is that the former metric allowed its Sales department to chalk up a sale when the product was shipped to the customer (Best Buy, Circuit City, etc.) whereas the latter metric chalks up a sale only when the product is sold and paid for. To give another example, Procter & Gamble uses its VMI process to routinely measure both its own inventory and the downstream inventory of its products.

As a useful guideline, when developing metrics, it is worth asking whether a metric under consideration: a) helps sell more products, profitably, b) helps reduce investments in resources or, c) helps reduce payments or expenses over the long term. If the answer to all these questions is no, then that metric must be questioned.

Case Study
A leading Fortune 1000 organization, with more than 100 different business units in North America, Europe, and the Asia-Pacific region, has applied the seven step-process, to greatly enhance its financial performance. This organization has a very diverse number of products that it manufactures and distributes worldwide. It began to apply these steps early 2006 and has realized an increase in its profits (reduction in operating expense) of more than $20 million within twelve months; it is now on track to achieve results of the same magnitude over the next twelve months. The organization has now extended these concepts across its supply chain, conducting week-long training events for its key suppliers, at least twice each month. It has estimated that each such event generates an increase in profits and/or a reduction in operating expense, ranging from $500,000 to $1 million per annum. These events are also generating a reduction in inventory of a similar magnitude.

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