

The ABC's of SCM Fundamentals of Supply Chain Management – *Lean*

Not Kids' Stuff

Consider the children's rhyme, "Jack Sprat could eat no fat; his wife could eat no lean." In Jasper Fforde's update on the classics, *The Big Over Easy*, the trim Mr. Sprat has a new wife. The previous one, who could not tolerate lean, didn't make the cut.

Introduction

We've made passing reference to "lean" in discussing the integration of manufacturing into supply chain operations. Further, we've taken the position that there's not much new in lean, with its foundation elements dating back to the principles outlined by Henry Ford in 1926's *Today and Tomorrow*.

More recently, lean has entered supply chain and logistics terminology. Craig Hall's LeanLogistics Inc., concentrates on improved transportation efficiency and asset utilization. Lean warehousing has now been extensively written up, notably in *Lean Warehousing* (2006, Kenneth B. Ackerman).

We are convinced that the principles of lean can – and should – be applied throughout the supply chain. Implemented with focus and purpose, they have the potential to elevate – to transform – performance in sustainable ways.

Tried inconsistently, or without a sense of direction or objective, lean in the supply chain could prove to be disappointing – or worse. A comprehensive program, organized and prioritized, with high levels of communications and buy-in, and with the *imprimatur* of management commitment – now, that's the ticket.

But, what is lean? And how can its impact be felt throughout the supply chain? We'll skip manufacturing, which has been exhaustively documented. (And manufacturing integration has been discussed elsewhere in this series.)

Without digging through each element of the supply chain, let's begin by recognizing that Customer Service, the reason we are all working can create and meet customer expectations for performance with a lean approach (discussed in Customer Service). The rest of the pieces should fall into place after that.

The Lean Foundation

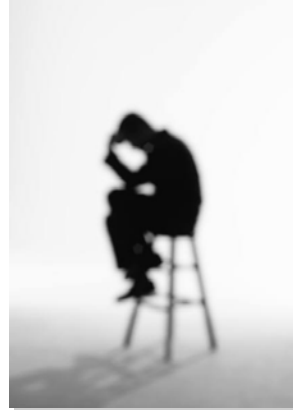
Lean begins with the creation of a lean-thinking organization, and a refusal to deal with functionally focused lean programs. It is to some extent a catalyst for making everyone in supply chain planning and operations recognize that they are part of one entity, with common goals and a unifying approach to meeting them – lean.

Lean, like *kaizen*, homes in on waste, which in Japanese is called *muda*. Such an ugly word, *muda*, making clear that waste is so filthy and vile that it deserves all-out effort toward its eradication. Would that we had a comparable word in English that is suitable for publication.



The eight wastes identified by Taiichi Ohno (Toyota), summarized, are:

- Overproduction
- Waiting
- Unnecessary movement of products
- Overprocessing
- Ineffective inventory control
- Unnecessary movement of people
- Defective parts
- Unused creativity



Context For the Eight Wastes

Initially developed from a manufacturing perspective, some of the eight are universal; others have clear counterparts in a number of supply chain modules. **Unused creativity**, failing to capitalize on the ingenuity of both workers and managers is a near-criminal waste in any function, from sourcing/procurement through physical distribution.

Defective parts translates to errors of all kinds throughout the chain, from picking errors to ordering incorrect quantities, and including shipping with the wrong carriers, or in the wrong mode. Errors consume resources – time, people, materials – to no useful end. Then, additional resources are usually needed to correct or overcome the original error.

Waiting relates to time. In the factory (or in the warehouse), resources (people, machines, forklifts, trucks) might be idle while waiting for tools, products, or materials – either to arrive, or to be taken away. In other arenas, time cycles, e.g., replenishment, order fulfillment, might be longer than optimal, requiring unnecessary inventory to compensate, or additional effort to expedite. In transportation, waiting (dwell time) for long-haul trucks and drivers can approach the magnitude of a “normal” work week all by itself – an abuse of people, time, and physical assets.



Overproduction has counterparts in over-ordering at both macro- and micro-levels in supply chain operations. Either way, having too much product, often simultaneously at different points in the supply chain, is a horrible waste. Think about the simple example provided by The Beer Game, in which retailers, wholesalers, distributors and manufacturers generate “just in case” inventories to guard against unplanned (and unknown) demands. Money, physical assets, time, people, and material have all been consumed for something that is not – or should not be – needed. Then, the excess continues to consume space and money, and is vulnerable to becoming damaged or obsolete. Meanwhile, the resources consumed might have been diverted from ordering, making, storing, or moving genuinely needed items - requiring even more resources to make or acquire the right stuff – or resulting in stockouts or lost sales (or both). It’s a slippery slope, indeed.

Overprocessing can take place in any process. Quality inspections, redundant approvals, order reviews at the conclusion of pick/pack. It negates the value contribution of the original activity by

adding unnecessary time and effort to the process. It is a costly way to overcome a lack of sound training and/or a failure to design quality and accuracy into processes – any processes.

Come to think of it, the failure to rationalize the supply base, and concentrate on a few top-tier suppliers is a form of overprocessing. As is the failure to rationalize and align the carrier base, with both resulting in an inefficient duplication of resources, decisions, and communications.

Unnecessary movement of products can take place at both macro- and micro-levels – within a warehouse, within a factory, or with too many steps and too many stops through a supply chain's distribution network. Movement from suppliers, through master DC's to regional DC's for further deployment to customers (or into customers' physical distribution networks) can be deadly from the standpoints of cost and time – and the consumption of critical resources. Too much labor in handling, too much cost-inefficient transport, too much space occupied, too many opportunities for error, too many chances for damage – and shrink.

Unnecessary movement of people certainly applies to both manufacturing and physical distribution. In warehousing an enormous percentage of peoples' time is devoted to movement – in picking, in putaway, in replenishment. If a facility is not well laid out with easy access and short pick paths for "A" items, the unnecessary movement (and associated time) can be a staggering excess, sucking up human and material handling resources. If the expected goods are not where they're supposed to be, the movement to get them has been wasted. And even more time and effort will be spent in finding them. If the designated putaway location is already full, more waste has occurred (and will continue to occur). And so on, and so on.

Ineffective inventory control is a waste, and creates more waste at several levels. Based on bad inventory data, too much may be manufactured – or purchased - generating inventory waste, and diverting precious capital funds into the creation and maintenance of waste. Or, too little may be purchased or manufactured, resulting in stockouts or lost orders. Having too much material on hand results in the assignment of valuable space to hold unnecessary stock. Having too little means time spent in trying to find them, and frequently generates expedited purchasing and transportation – more waste – which often does not solve the problem.



Forms of these wastes are all over the supply chain. Misplaced sourcing, a fragmented supply base, inefficient ordering processes, tolerance for less-than-optimum incoming products and materials, failure to match storage modes to product order/movement profiles, unbalanced distribution network structures, cost/quality/service-deficient carriers or transportation modes, empty backhauls, inefficient load creation, inaccurate forecasting, siloed planning, misapplied technology, ineffective and/or uncoordinated information systems – the list goes on.

Muda - all of it *muda*.

The Role Of The Five S's

Part of a lean program – key to getting at the wasted time, cost, capital, space, asset, and intellectual potential – is to establish a culture of lean thinking. This relies on serious, and full, attention to the five S's. They are:

- **Sortation** – separating needed tools and materials from the unneeded, and removing the unneeded
- **Straightening** – arranging items in easiest-to-use order
- **Shining** – cleanup; good housekeeping
- **Standardization** – systems and procedures to accomplish and monitor the first three S's
- **Sustaining** – maintaining and continuously improving the operation

It is admittedly easier to think about these in the contexts of manufacturing and warehousing. But, when you extend the idea of sortation and straightening to include the development of good processes and procedures for functions throughout the supply chain – planning as well as execution, from procurement through delivery – their universal application becomes more clear.

And good housekeeping applies across the board – to facilities, to rolling stock, to offices. Also to systems, to files, to data bases – every aspect of physical and information infrastructure.

Standardization then refers to the institutionalization of the processes and policies developed for lean operations – domestically and (when feasible) globally. Sustaining, following, means that the lean workplace never quits getting leaner. Lean, to last, must become the organization's way of life – throughout. Making lean simply the latest in a long line of programs is a sure way to limit its impact and, ultimately, to set it up for failure. And making lean anything less than an organization-wide effort will have similar consequences.

With those definitions and notions in hand, we must note that lean is not an exclusionary program – the one and only true path to excellence. It tolerates - welcomes, really - tools and techniques from other sources to enhance analysis, problem solving, and implementation – Six Sigma, SPC, and the like.

The End Game

The ultimate objective? Perfection. No waste. No errors. Absolutely accurate records. Perfect orders, all the time. Seamless unit flow through the chain, not just through one function. "Pull" flow based on real end-user demand, in the smallest feasible quantities from manufacturing and movement. Total visibility. Continuous flow, and the integration of information and financial flows with physical movement. Minimal moves, minimal touches, minimal interruption, minimal cycle times – and minimal inventory.

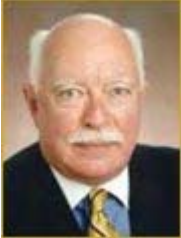
Is perfection achievable? Not exactly. But lean can bring an organization significantly closer to it. And keep on moving nearer and nearer, year after year. One day, not all that far off, a lean organization might awaken to discover that its performance looks like perfection to those who did not set off on the lean journey.

In Conclusion

Persuaded yet? Remember the former Mrs. Sprat.

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This article is summarized in DC Velocity's Monthly Basic Training Series.



Art is a Partner with The Progress Group, and Chairman of The Supply Chain Group, a global consortium of supply chain consultancies, of which Art was a founding member. With more than 35 years of consulting experience, working with over 150 companies in more than 15 industries, Art has a broad-based track record in the areas of supply chain logistics, productivity, and information systems.

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