

The CPO's Guide to Lean & Six Sigma - Part 1 (Lean)

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Why is Lean & Six Sigma Relevant to Procurement?

“Lean” is defined as a systematic method for the elimination of waste within a manufacturing process. The idea behind Lean is to increase value by taking everything out of the process that does not add value to the “customer.” A customer can be internal, external or both, but value is increased as you move further downstream to the external customer and even customer’s customer.

Why is Lean relevant to procurement? At some point, the cost cutting ends, if it even begins. If costs are rising across the board, and even if the organization overspent last year, then there will be no savings to be found from auctions or negotiations alone. The only opportunities for cost reduction will be from design or process improvements to take out production, storage, transportation or locked-in raw material costs, in a physical supply chain example.

This is where Lean comes in. Lean makes a value-adding process like manufacturing more efficient (via elimination of waste), thereby taking cost out of the supply chain – and also increases effectiveness by ensuring activities are focused on true customer requirements.

Lean hit manufacturing in the 1990s as an evolution of the Toyota Production System (TPS) that was developed between 1948 and 1995 by Taiichi Ohno and Eiji Toyoda as an early "Just in Time" (JIT) production system that eliminated the 7 wastes (muda) in the manufacturing process.

In particular, the TPS addressed the following wastes that are commonly found in the manufacturing process:

- over production
- waiting
- unnecessary transportation (of product)
- unnecessary processing
- unused stock
- unnecessary movement (during production)
- defective products

And it did so through the underlying principles of:

- continuous improvement
- respect (for people)
- long-term philosophy
- right process (produces right results)
- people (and partner) development
- root problem identification and solution to drive organizational learning

John Krafcik extracted these principles in his 1988 article "Triumph of the Lean Production System," which was based on his Master's thesis and the continuing research taking place at the MIT [International Motor Vehicle Program](#). Krafcik coined the term "Lean" because of how lean the Toyota supply chain was relative to Western counterparts. It was this study that formed the basis of the blockbuster book ["The Machine that Changed the World"](#) that really brought the concepts to many mainstream businesses.

One main difference between Lean and TPS is that Lean tends to feature a tools-based approach (with "tools" defined broadly to include techniques and even software tools) to improving the value chain. TPS, on the other hand, was built on more of a process-based continuous improvement approach (i.e., applying the Western scientific method approach to the supply chain). That's why many subscribers to the Lean methodology see Lean as the successive application of a set of "tools" that identify and eliminate waste. These tools might include SMED, Value Stream Mapping, Five S, Kanban and TPM, among others. These particular tools are used as follows:

- **Single-Minute Exchange of Die (SMED)** or One-Touch Exchange of Die (OTED) - to rapidly and efficiently convert a manufacturing process from running one product to another product by reducing the amount of time to changeover from one tool to another through better tool and process design (which could often take up to 8 hours using traditional manufacturing machines that required heavy [multi-ton] stamps, etc.)
- **Value Stream Mapping** - to analyze the current process state for waste and design for a future state that eliminates, or at least minimizes, that waste which is identified
- **5S** (Seiri, Seiton, Seiso, Seiketsu, Shitsuke) - to organize a workspace for efficiency and effectiveness
- **Kanban** - to signal upstream value-adding operations based on a Just-in-Time (JIT) "pull system" that manufactures on a scheduled responsive to actual customer demand rather than to a forecast-driven production schedule
- **Total Productive Maintenance (TPM)** - to maintain and improve the integrity of production systems using the machines, equipment, processes and employees to their full capacity to increase the overall equipment effectiveness

Still, many of these "Lean" techniques (e.g., Kanban, pull-systems, etc.) tie back to the JIT-related work pioneered by Toyota, but "Lean" became a nice packaging of these concepts that could then be applied to other firms. Others did, in fact, do so and extended the body of knowledge (sometimes under a different banner such as JIT) to also include line balancing, cellular manufacturing, Theory of Constraints (and constraint-based planning), flexible manufacturing systems (of which SMED is a key technique), one-piece flow and so on. This body of knowledge was also extended by consultants and thought leaders such as Schoenberger, Goldratt, Costanza, etc.

Lean in its various forms didn't just create a bigger toolbox of manufacturing techniques though. It also brought a stronger customer focus into the picture that should be obvious if you consider where the supply chain truly starts. So, it aligns the supply chain to customer requirements and also provides a continuous improvement approach to empower the entire workforce to "lean out" the supply chain and build better quality (i.e., that which meets/exceeds customer requirements) into the processes that create value.

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This continuous quality improvement focus is foundational to Lean, but it's equally foundational to (Total) Quality Management principles and practices that are not just part of Lean, but also other Continuous Improvement (CI) frameworks. In other words, Lean is only one methodology that a CPO might use as part of a broader tool chest in an effort to reduce cost (by reducing waste) and improve efficiency (by streamlining processes).

In the next installment of this 2-part series, we'll focus on Lean's "twin sister": Six Sigma.