

Why Aren't We Leaner in the United States?

By Dr. Malcolm Keif

Lean Manufacturing has certainly been a hot topic lately for flexo printers and converters. It is rare to attend a conference or look through a trade magazine without seeing the subject as a central focus. Lean seems mysterious, almost Zen-like, partly because we use Japanese terms like *muda*, *kanban*, and *kaizen* instead of just using English translations. For many, we are just getting familiar with the concepts of Lean. Waste identification and reduction are certainly primary themes. *Just-in-Time*, *5S*, *Small-lot Production*, and *Setup Reduction* are all recognizable Lean components. Some have seen improvements in their costs and efficiency, but others have been frustrated with their ability to sustain improvements.

So, it begs the questions: Is Lean just another fad? If not, why don't we see the big improvements sustained over long periods as promised? Is this something that only works in Japan? Just how Lean are we in the United States?

So . . . what is Lean?

Lean Manufacturing is not a *program*. It is not a set of operational tools. It isn't even a philosophy, although there are certainly some philosophical premises that form its basis.

So what exactly is Lean Manufacturing? Quite simply, Lean is one company's answer to some common business problems. That company is the Toyota Motor Corp.

So where is the connection between an automobile company and flexo printing? I'm not sure there is one . . . but I do know that studying best-in-class companies, whether inside or outside the flexo industry, is a constructive practice. After all, every business college in America uses case studies as a foundation for learning key operational principles. There is a connection among all manufacturers—how to make valuable products using the minimum resources.

Today, when we think of Toyota, we think of a world leader in automotive excellence. Toyota is on track to be the world's largest automotive manufacturer by 2007. So, it may seem far-fetched to compare a small label printer or independent corrugated converter to a giant company like Toyota. But while Toyota has many large manufacturing facilities, the company is largely supported by hundreds of small suppliers who use Lean and are both successful and profitable.

If you look at Toyota's history, it has had some rough times and experienced many of the same business challenges you

face. How many of these problems sound familiar to you: competing as a small company in a large industry, market-lagging sales, global competition, cash-flow problems, quality problems, high debt, salary cuts, labor disputes, poor-quality equipment, and family politics? Do any of these problems sound similar to your problems? Well, the giant we know as Toyota experienced all of these challenges on its quest to becoming the world's most respected automobile manufacturer. Let's take a look at some of these business challenges and Toyota's solution to overcome them.

Toyota's Solution to Becoming a Learning Organization

Do you ever feel like you lack specific knowledge to solve a print quality issue? How about ways to improve makeready times? We read trade journals (like this one), attend conferences, and on occasion attend workshops or seminars. Being a learning organization is a prerequisite to success in today's changing business landscape. Toyota is a learning organization.

When Toyota's Sakichi Toyoda (the company name was changed from Toyoda to Toyota in 1936) wanted to learn about building automobiles, both he and his son Kiichiro took independent study trips to the United States to observe Ford, Chrysler, and General Motors. Ah yes, we call that "benchmarking." Toyota calls it "*genchi gembutsu*," which includes benchmarking, but is a broader goal of "gathering facts" and better understanding a situation. They knew that they needed to learn from the best-in-class of the day, and Detroit was the place to learn it. In 1950, Toyota's Taiichi Ohno also observed aspects about mass production from Ford and GM, but uncovered a seemingly unrelated business secret during his trips to the United States: the *American Supermarket*.

Ohno, who was later known as the father of the Toyota Production System, observed the common supermarket practice of replacing depleted stock "just in time" for the next consumer. It was on this trip that he first got the vision of "just-in-time" inventory replacement for manufacturing and conceptualized a system to signal replenishment: the *kanban*. Today, *kanbans* are a visual (or electronic) queue to replenish stock in an effort to pull inventory at the point of need. We see analogous systems used today to summon roll stock to the press and initiate plate production. The *kanban* is an instrument for achieving lean concepts like *flow*, *pull*, and *JIT*.

Toyota's concept of a learning organization is rooted in Shewart's *Plan, Do, Check, Act* model (PDCA). Learning involves aggressively uncovering waste (*muda*) and finding problems, even before they surface, and then solving those problems and eliminating waste through continuous improvement (*kaizen*). A standard is created and passed to everyone who can use or benefit from it. This is how individual assets become company assets and the organization learns and grows.

Are you a voracious learner? Do you look for ways to apply knowledge from unrelated industries to your business, like Ohno did with the American supermarket? More importantly, do you have a means to convert individual assets to company assets? Being a learning organization is a prerequisite to implementing Lean concepts.

Focusing on value streams requires us to change how we view our business. It forces us to have a much longer view of corporate profits.

Toyota's Solution to Lack of Capacity and Modern Technology

Let's now look at a second Toyota solution to a common business problem: lack of the best technology. Shortly after World War II, Toyota found itself in the position of having limited capacity and aging, even damaged, production lines. In Detroit, car manufacturers had dedicated lines for each model. Economies of scale were the convention, with companies focusing on large batch processing. The production lines were configured and then changed infrequently. Toyota, on the other hand, was forced to make multiple car models on the same production line. Cash was short and buying a new production line wasn't feasible. Sound familiar?

Changing a production line from one car model to another took several hours. Dies had to be changed and reconfigured, which could take up to eight hours. Detroit focused on scale and standardizing lines. With Toyota's equipment limitations, they took a less conventional approach. Contracting with Dr. Shigeo Shingo, Toyota embarked on a method to reduce production line changeover time—by a bunch. Focusing on a structured process of delineating *external setup* (those steps that could be worked on prior to completing the previous job) and *internal setup* (those that had to be completed with the production line stopped), Toyota trimmed the process down to 90 minutes and then eventually to 3 minutes. This technique became known as "*Single Minute Exchange of Dies*" or simply "*SMED*."

The most interesting thing about this story is that a 90-minute changeover wasn't good enough for Toyota. If you cut your press makeready time by 63 percent, wouldn't you be ecstatic? The Toyota culture involves relentless pursuit of a goal. The objective was to reduce the changeover from eight hours

to less than 10 minutes—a seemingly daunting, unattainable task. It took much time and effort, and most of us would have given up, or not even started. It took cooperation with (and sometimes pressure on) suppliers, as well as some reengineering work. SMED works, but only in the context of a management team committed to employee training, empowerment, unconventional thinking, and seemingly unattainable goals. Lean is a holistic approach to manufacturing excellence. We are frustrated when we apply Lean tools without the underpinning culture in which it thrives.

Toyota's Solution to Understanding Customer Value

A third example of some unconventional thinking is how Toyota views its production processes. When asked, most printers describe their business by the type of equipment they have or the type of products they produce. When asked what our customers want, we usually respond with something about good-quality products at reasonable prices in a timely manner. But, do you know what your customers really *value*? Do you know what your press operators *value* from your plating department? Do your suppliers know what you *value*?

Toyota takes a structured approach to describing customer value (whether internal or external customer) and planning production around value. They map it. *Value Stream Mapping* is an exercise where all production processes are diagrammed on paper with both *value-add* (those specific operations that customers are happy to pay for) and *non-value-add* clearly identified.

Toyota is not afraid to label non-value-add as *waste* (*muda*). Most of us feel uncomfortable calling cost estimating or digital prepress "waste." But in reality, most customers are not happy about paying for estimates or prepress work. What sets Toyota apart from most manufacturers, is that they are willing to call all non-value add processes "waste." Why? Because it heightens awareness in the whole organization as to where the value streams are. Toyota knows that some non-value added processes are necessary (at least for now), but labeling these processes helps to put focus on minimizing the time required to complete the operations. I assume you would agree it is a good thing to reduce the time to complete an estimate or prep a file.

Focusing on value streams requires us to change how we view our business. It forces us to have a much longer view of corporate profits. Toyota is known for making tough decisions that may sacrifice profits in the short run, but improve customer or stakeholder value in the long run. This requires a huge executive commitment. Are you willing to go there?

Underlying Principles

There are many Lean tools and techniques. You don't have to look hard to find an individual or group willing to provide Lean training. Even my own university offers Lean Manufacturing workshops for printers. But applying Lean tools without a serious commitment from corporate executives and a foundation of empowerment and relentless improvement will yield only minimal benefits and likely degrade over time.

Rather than looking to replicate Toyota's specific produc-

tion system, we would do better to understand the philosophies, culture, and unconventional thinking Toyota uses to illicit process ownership and teamwork among its employees. We need to think about how we incent our employees to be Lean, rather than simply dump a handful of Lean tools on our workforce. The key to Toyota's success is not the individual tools like 5S. The key is the corporate culture they have developed over time, which leads to successful tools like 5S. The problem with U.S. businesses today is that we look for the quick fix to enhance our production without instilling the underlying culture necessary to sustain progress.

Toyota took 60 years perfecting their system (and is still working to improve it). Much of that time was spent studying social systems, building a culture of process ownership, pursuing the relentless quest for improvement, focusing on personal responsibility, and demonstrating that management is truly committed to doing the right thing, even when it is costly. We need to build a culture to stop production and fix things, to get quality right the first time, rather than only stop when absolutely required to keep from a job getting rejected.

So why haven't we seen the significant benefits from Lean promised by those who promote it? Could it be that we have put too much focus on the tools, instead of critically looking at organizational commitment? To be successful at Lean, you need to seriously decide if you are committed to these underlying principles:

- The relentless pursuit of customer value,
- A sincere belief that your employees are your strategic advantage,
- Empowerment and teamwork are the only way to develop quality processes,
- A deliberate, focused plan to build a culture of excellence and innovation, and
- A willingness to look at unconventional solutions.

Back to the question

So . . . *is Lean a fad?* Well it depends on your approach. Clearly, if you simply implement a few tools, you will have a difficult time achieving big benefits and

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sustaining those benefits over an extended period. For the few companies who see Lean as way to build a culture of improvement, rather than just squeeze a few more cents out of the bottom line, the benefits are big. To succeed, a deliberate, sustained commitment is required. If employees see management in action, not just talking, Lean manufacturing has a big future with Flexo printers and converters in the United States. ■

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EDITOR'S NOTE: FLEXO® Magazine has been following the adoption of Lean Manufacturing in the printing/converting community on a regular basis. Recent articles appeared earlier in the year, including:

- July 2006, pg. 50, "Translating 'Lean.'"
- August 2006, pg. 26, "World Class Converting."

Both can be accessed online via e-FLEXO by visiting www.flexomag.com.

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