The New Frontier Of Lean

By adapting lean techniques nearly 10 hours per week, per employee, of value-added time is recovered.

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Increasing global competition requires that manufacturing companies improve their production efficiencies or face extinction. And indeed, by adopting Toyota's Lean Production System, companies have achieved tremendous gains in productivity and profits by removing the waste, or *muda*, from their production processes. Many firms have realized the same improvements by applying lean principles to their critical business processes.

However, creating a lean business process is only half the battle against *muda*. The knowledge workers involved in these processes must also develop lean work habits. A firm that only creates a lean process without creating lean work habits is like a sprinter with a track spike on one foot and an army boot on the other – and that's a sure way to lose the race to satisfy the customer.

Our work with a major manufacturing firm illustrates the difference between a lean process and lean work habits. The labs at the company were immaculate – a model of 5S implementation – but the lab manager's office was a mess: inventory was disorganized and critical information was difficult to retrieve.

Our company has taught lean work habits to a variety of manufacturing firms, including Toyota, over the past several years. These firms have realized increased employee efficiency, improved worker response time, and increased customer satisfaction. Most significantly, by reducing the *muda* endemic in most knowledge workers' behavior, employees have gained nearly 10 hours per week for work that creates customer value.

Lean work habits are critical for knowledge workers, because the multiple value streams flowing through them create a constant tension. Without lean habits to guide their work, the critical flow of information in the value stream clogs up. Think of the information bottlenecks in the form of backlogs on their desks, or the hundreds of unanswered email in their inboxes. Think of the enforced waiting throughout a department when decision-makers read but don't act upon a request. Think of the unnecessary motion of managers searching for documents amidst the masses of paper piled on their desks. Each of these wastes undermines the gains made by any improvements in the design of a company's business processes.

And these wastes can be catastrophic: in 1999, NASA's Mars Climate Orbiter burned up in orbit due to a miscommunication regarding English and metric units. A task force found that a simple, unanswered email about the correct measurement units led to the disaster. The total loss to NASA: $327 million.

In response to these problems, we have developed the following principles that create lean knowledge workers and improve the flow of the value stream:

Principle #1: Screening *Muda*
Knowledge workers are inundated with information each day. Yet most studies show that 50% of this information has little or no value to the worker.

By contrast, production line employees don't have to deal with this problem. They have limited and clearly defined materials that come down the assembly line to their workstation. They know what to process and how to do it. Imagine the chaos if useless raw materials arrived at the loading docks or irrelevant parts suddenly came down the line: they wouldn't be able to do their jobs efficiently.

Therefore, we've taught knowledge workers at ImagePoint, Ernst & Young, Pfizer, and other companies how to screen the information that enters their system in order to identify and reduce the *muda*. They have removed themselves from unnecessary mailing lists, and have proactively told co-workers what types of information they need to see and what types are irrelevant to them. They have learned to discard low- or no-value information immediately, rather than let it clutter their inboxes. They have created rules in their email software to direct mail to appropriate folders so that it doesn't sit in their inboxes. Employing this lean work habit, they have reduced the amount of time spent handling email by 22%.

Although it's impossible for them to eradicate the scourge of unnecessary email, memos, and magazines, learning to screen the information eases the burden and saves time. Even more importantly, reducing the amount of low-value information entering the system improves the "signal to noise ratio," which enables workers to identify and act on the high-value information more quickly and easily.

Principle #2: Managing The Flow
Receiving, processing, storing, distributing, and tracking the information and tasks that comprise a knowledge worker's work is a formidable job. Unfortunately, without lean work habits, these tasks pile up until they're overwhelming. As a result, project deadlines slip; coworkers wait idly for information; and business processes grind to a halt. *Muda* floods the system.

Production line workers, of course, don't have the option of leaving tasks undone. The process of manufacturing makes the work flow tangible; they can see the work-in-process inventory building up behind them, and they can see their coworkers farther down the line standing idle. Their *muda* is visible. They must handle the work as it comes to them, or the line stops.

Knowledge workers have learned to keep value flowing through the business process by applying the "4 Ds" to their work. When something enters their system – an email, a phone call, a memo, a project, etc. – they must take one of four courses of action: they can <u>Do</u> it, if it can be completed in less than two minutes; they can <u>Delegate</u> it to someone better suited to handle it; they can <u>Designate</u> time for it in their calendars, if it's a more complicated task; or they can <u>Dump</u> it, if it's irrelevant or insignificant. These are the only options open to them.

When workers rigorously apply the 4Ds, nothing returns to the inbox; value always moves forward. And indeed, employees who practice the 4 Ds consistently have reduced the amount of time spent working on backlog – which is nothing more than a form of waste in a lean system – by 45%.

Principle #3: Moving Value Forward
The variety of sources of information (email, Blackberries, voice mail, paper, casual conversations, etc.) does increase the speed, volume, and access to information. However, it also creates serious problems for knowledge workers. They lead to the continual interruptions that fracture the focus needed for efficient, high-quality work.

Mary Czerwinski of Microsoft Research Labs points out that once someone is interrupted, it takes 25 minutes to cycle back to the original task. And 40% of the time, workers wander off in a new direction when an interruption ends. In a five-year study, IBT-USA found that executives lose 4.5 hours per week to interruptions. Basex, a technology consulting firm, estimates the loss even higher, at nearly 11 hours per week – which amounts to a staggering $588 billion cost to the U.S. economy.

Production line workers, of course, don't face this problem. While the line is running, they have to focus on the task at hand – they don't have the problem of distractions while working with an arc welder or a

circular saw. And when they do handle process improvements or machinery maintenance, they don't do it while the line is running. They address those issues when they're off the line and can concentrate. But with the variety of inputs and types of work that knowledge workers address, it's easy for *muda* to overtake the business process.

One way that lean knowledge workers reduce the number of interruptions and increase their efficiency is by grouping similar tasks together. They turn off their email alerts and only handle email and phone calls at specified times. More importantly, they designate undisturbed time to concentrate on complex tasks like word processing, spreadsheet analysis, or handling customer service issues. Lean workers report that this increased focus yields higher quality work and has reduced time lost to interruptions by 20%.

Lean methodology, whether applied to a manufacturing or a business process, is a vital tool for improving performance. But changing the process without changing workers' underlying behavior severely compromises the potential benefits. *Muda* will never be completely eradicated from any value stream, of course, but it is possible to reduce it with lean work habits. As with lean production, it's a process of continuous improvement that yields immediate results.

Dan Markovitz is president of TimeBack Management, a consulting company specializing in the application Lean manufacturing methods to business processes. You can reach him at dan@timebackmanagement.com.