

Lesson Five:

5S and Lean Business Leadership

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A. Key Learning Points

1. Lean businesses are clean, tidy and well-organized for quality, safety and productivity.
2. Successful lean business leaders challenge and develop people and teams to work smart and work together in pursuit of the highest standards for quality and value.
3. Lean business is not to be confused with aggressive cost-cutting, sub-optimization of individual functions and departments or continuous improvement.

B. Real World Examples and Considerations for Practitioners

1. Lean businesses are clean, tidy and well-organized for quality, safety and productivity.

When Toyota leaders first visited US automakers in the 1940s and early 1950s, they observed enormous amounts of waste and inefficiency in design and use of the factory floor. The physical space between work stations was surprisingly large to accommodate the large batches of parts and materials that are hallmarks of mass production. There was also significant space around each work station for abandoned parts or parts that required rework prior to assembly. At the end of the line, there was a huge space where vehicles that did not pass final inspection were parked awaiting corrective repair or reassembly.

The Japanese have always been unusually mindful of the design, use and maintenance of physical space and it is not surprising that Toyota began to focus on smart, sensible design and maintenance of their manufacturing facilities. From the outset, Toyota factories were more compact and well-organized which reflected and exemplified their commitment to conducting waste-free business based on lean principles of one-piece, pull-driven, continuous flow.

In time, the Japanese developed a system for effective design, use and maintenance of physical space that came to be known as “5S”. This system has now been adopted by many successful businesses worldwide. The 5’S are:

Seiri – Sort: This step focuses on determining the tools, materials and information that you truly need to do each job in your workplace. In some businesses, red tags are placed on items that are not or may not be needed. Once tagged, these items are moved to a central holding area where they can be retrieved on demand if needed. If these red tag items are rarely or never retrieved, they then can either be eliminated altogether or moved to an even more permanent storage area.

Seiton – Set in Order: Once you have sorted the items you truly needed, the next step is to determine how and where you use each item. This step asks you: What do you need to do your job? Who else in your business needs and uses these items? Where should you locate these items? How many of these items do you need? At Toyota, order and organization is maintained and assured through: painting on the floors; outlines of specific work areas; maps, whiteboards and shadow-boards posted on walls; and, modular shelving and cabinets for trash cans, brooms, mops, buckets and cleaning materials.

Seiso – Shine: Sorting and setting your business in order is no guarantee of real-time organization and cleanliness. Seiso –Shine is a step that challenges, motivates and assures that your employees clean and maintain a safe, clutter-free workplace that includes regular examination and preventive maintenance of

tools and equipment. Seiso –Shine is a never-ending process that requires your entire workforce to take pride and ownership in your business’s workplace, tools and equipment without exception each and every day.

Seiketsu – Standardize: This step assures that the first three steps are standardized and consistently integrated into your business’s daily operations and best practices. Without standardization, employees sometimes struggle to maintain consistency in their 5s efforts and activities. Lack of standardization also increases likelihood of wasteful or undesirable variation in business practice within a facility and/or across multiple facilities. How likely would you be to eat at McDonalds or purchase Starbucks coffee if their business practices were not standardized?

Shitsuke – Sustain: This step assures that your business maintains now and forever constant vigilance and daily accountability for a safe, clutter-free, clean, sensibly-organized workplace. Businesses that do not have the daily discipline to sustain a 5s effort tend to experience cyclical periods of cleanliness and messiness. These businesses are like a household that undertakes a radical once-a-year housecleaning but otherwise continues to accumulate marginally useful possessions while concurrently avoiding or neglecting regular cleaning and maintenance of their property.

2. Successful lean business leaders challenge and develop people and teams to work smart and work together in pursuit of the highest standards for quality and value.

Successful deployment of lean management methods and tools requires skillful leadership of people and teams. Focusing solely on technical design, engineering, management and control of waste-free processes is not enough if you do not concurrently teach, encourage, reward and, as needed, discipline your workforce to work smart, work safe and work together.

Although many automakers and businesses in other industries are copying Toyota’s lean engineering, manufacturing and sales techniques, few of these businesses have been able to match Toyota’s overall business performance. This is because Toyota’s lean business systems may be easy to copy, but its principles, methods and practices for developing leaders, teams and individual workers who take pride in their company, in their products, and in each other is nearly impossible to replicate.

Too many lean management efforts focus exclusively on technical redesign, reengineering and optimization of businesses processes; too few initiatives recognize how much leadership, teamwork and individual employee skill and motivation is required to sustain and leverage these efforts to their fullest. These subjects are explored in great detail in my other courses, BA 2153 (Teams), BA 2154 (Reengineering) and BA 2155 (Leadership).

3. Lean business is not to be confused with aggressive cost-cutting, sub-optimization of individual functions and departments or continuous improvement.

While most business leaders have been quick to recognize the need and potential for implementation of “Lean Management,” many businesses are misunderstanding or misapplying some of the fundamental methods and tools introduced in this course. Here are the three most frequent intentional or unintentional errors we observe among businesses who say they are adopting “Lean Management.”

One-time aggressive cost-cutting: The quickest, surest way to achieve a significant one-time improvement in short-term income is to slash and cut your current business by reducing headcount, consolidating workspace, outsourcing selected activities or functions to the lowest bidder, postponing or neglecting preventive maintenance, and cutting or eliminating budgets for workforce development. Each of these activities will result in an immediate reduction in current expenses which will, in turn, contribute to an immediate improvement in current income or profit. Such cuts, however, in most cases, do not create a more efficient platform for sustained business performance. In fact, such aggressive short-term cost-cutting increases the likelihood of longer term safety and quality problems that will likewise erode a business’s

potential for long-term business success. While many US businesses have a 90 day focus on meeting or beating Wall Street's short-term expectations, Toyota is a business that was designed and managed for enduring success. Not surprisingly, Toyota has a 100 year business plan. And Toyota's lean business practices represent a systematic way of thinking about, planning and conducting businesses that seek out and eliminate inefficiency and waste in its core business processes while concurrently improving overall quality and value.

Suboptimization of Independent Functions: It is not unusual for part of a business to adopt total quality, six sigma or lean management tools and methods that increase performance within its functional area of control or responsibility. But optimization of each function may create unexpected undesirable consequences and inefficiencies for the entire business. For example, if a school district focuses extraordinary resources and effort on perfecting its elementary schools, it may produce the brightest most motivated sixth graders in the world . . . but what happens to these sixth graders when they are promoted to seventh grade if the school district's middle schools are mediocre or below national standards? Organizations that truly understand total quality, six sigma, and lean management focus first on understanding, mapping and assessing the strengths, challenges and improvement priorities of the overall system.

Continuous Improvement: As discussed in BA 2154 – Reengineering, continuous improvement alone does not assure success or survival in an age of innovation and disruptive change. In the 1980s and 1990s American automakers were successful in learning the fundamentals of quality management and continuous improvement that were pioneered by the Japanese. This led to small yet significant improvements and breakthroughs in the quality of design and manufacture of US automobiles. Such quality improvements helped Ford, for example, produce the Taurus which, for almost 10 years rivaled the Toyota Camry as America's best-selling sedan. But unlike Japanese automakers, US automakers were reluctant or resistant to radical innovation. When Toyota, Honda and Nissan boldly created the Lexus, Acura and Infiniti brands to strengthen and deepen relationships with their most demanding and most profitable customers, US automakers were left in the dust. Stated even more simply, continuous improvement of carburetors is irrelevant in an age of fuel injection. Or as Toyota might say, "kaizen – continuous improvement – is not enough in an age of kaikaku – radical innovation."

C. Basic Lean Concepts, Definitions and Measures

Customer Demand (Takt) Rate: the amount of product or service required by customers over a continuous period of time.

Processes should be timed to produce at the takt rate.

If production is greater than demand, you will be producing excess inventory and adding cost.

If production is less than demand, you will be failing customers and losing revenues.

Example: The takt rate for pizza is 300 pizza per day.

Process Lead Time (Process Cycle Time/Total Cycle Time): the time from when a work item (product, order etc) enters into a process until it exits.

Example: The process lead time for a pizza-making process can be measured as the elapsed time from when a customer orders in-person or by phone to when the pizza is served in the restaurant or boxed for pick-up and take-away by the customer.

Work in Progress (WIP): any item that has entered the process and has not yet exited.

Example: There are 20 pizzas in process at 6:00 pm on Friday nite.

Throughput or Average Completion Rate: The output of a process over a defined period of time.

Example: The average throughput of the pizza-making process = 25 pizzas baked per hour

Capacity: The maximum amount of a product or service (output) a process can deliver over a continuous period of time.

Example: The capacity of our pizza-making process = 30 pizzas baked per hour

Constraint: An activity in the process that has a limited capacity which in turn limits the overall maximum capacity or throughput of the overall system.

Example: The process constraint in our pizza-making business is the oven. The capacity of the oven is 30 pizzas per hour.

Process Cycle Efficiency (PCE): An important measure of overall process efficiency that shows the percentage of total cycle time (Process Lead Time) that actually creates/adds value.

Process Cycle Efficiency = Value-add Time/Process Lead Time

The only way you can improve PCE is to eliminate non-value-add work and costs.

D. Recommended Reading Assignment & Highlights – All selections are from Jeffrey K. Liker and David Meier, *The Toyota Way Fieldbook*. Chapter 8, pp. 171-197

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“We are frequently asked, ‘What is it about the way Toyota does things that makes their quality consistently better than other car companies?’ While there is no one simple answer to this question, it can be said that a large part is due to the principle of building in quality and the decision to stop and fix problems as they occur rather than pushing them down the line to be resolved later. On the surface, this idea seems logical. If you have a problem, it’s better to stop and take care of it. Correct it, prevent its recurrence, and make things better in the long run. In reality, when people are faced with the demand to ‘make the numbers,’ the primary focus becomes short-term results – hitting the production target every day at any cost. The focus in mass manufacturing is in getting the mass. In lean the focus is on eliminating waste.” P. 171

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“You don’t just announce to people, ‘Starting today, things will be different! and suddenly the culture is changed. How do you change the supervisor who for the past 30 years has learned to survive within the old system? How do you change the mind-set about how people’s performance is measured? If people are measured on output, how will they respond? There is more to this than just deciding from now on, we will stop to fix problems.” P. 276

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“The following list includes many things you will need to do in order to be able to effectively create a “stop the line” culture and system

1. Understand your current culture and why it developed.
2. Create a clear vision for change.
3. Pay attention to the respect and dignity of the people.
4. Establish a reasonable degree of stability in processes.
5. Have a method to stop the line.
6. The process must provide an audible and visual indication of the exact point of the problem.
7. Have people designate to respond when the line stops.
8. Define roles and procedure for response to problems.
9. Change the measurement process from just quantity to built-in quality.
10. Teach people to solve problems.
11. Increase the urgency, and make it necessary to fix problems.” P. 176-177

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“Every operator has three responsibilities regarding quality:

1. Check the incoming work to ensure that it is free of defects.
2. Verify that his or her work is free of defects.
3. Never knowingly pass defective product to the following operations. P. 184

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