White Paper Series:

Lean Guiding Principles for the Supply Chain
Principle 3: Standardization





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The Lean Advantage

The key to delivering long-term customer value and outstanding business performance, quarter after quarter, year after year, is to implement a lean culture. Lean practices improve quality and productivity by taking cost and waste out of all facets of an operation, from the procurement of raw materials to the shipment of finished goods. In a lean culture, every step in every process must add value for the customer. If it doesn't add value, you strive to eliminate it.

The roots of lean thinking go back to the manufacturing innovations of Henry Ford in the early 20th century. But lean manufacturing really got its start after World War II at Toyota Motor Company, which developed the Toyota Production System (TPS). (1) Much of the TPS is aimed at eliminating *muda*, or waste, which reduces quality and limits profitability. The Toyota team identified seven kinds of waste:

1. **Overproduction** – manufacturing items before they are required
2. **Waiting** – leaving goods in stasis before they are ready for the next process
3. **Transporting** – excessive movement and handling to get goods from one process to the next
4. **Inappropriate processing** – using equipment that is more sophisticated and expensive than needed
5. **Unnecessary inventory** – holding goods that are not flowing through any process
6. **Unnecessary or excess motion** – allowing bending, stretching, walking, etc. that is not strictly needed to do the job and can jeopardize workers' health and safety
7. **Defects** – allowing quality deficiencies that result in rework or scrap (2)

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Business that cultivate a lean culture report significant improvements in their operations.

Although lean thinking started in manufacturing plants, today companies use lean in their finance departments, customer service centers, supply chain operations, research and development organizations and many other areas. Lean thinking also has made an impact on the public and not-for-profit sectors.

Businesses that cultivate a lean culture report significant improvements in their operations. For example, by implementing lean principles at a manufacturing plant in Matamoros, Mexico, Kemet Corporation cut logistics costs by 20 percent, reduced crib inventory by 11 percent and reduced customer complaints from .49 parts per million in FY2005 to .32 parts per million in FY2007. It also increased productivity from 1.1 million pieces per person in FY2005 to 3.4 Million pieces per person in FY2007. (3)

ORGANIZATION	MEASURABLE RESULTS
Kemet Corporation	• Cut logistics costs by 20% • Reduced crib inventory by 11% • Increased productivity from 1.1 to 3.4 million pieces per person
Goodyear Tire	• OSHA incident rate 33% lower than national average • Perfect score on Process & Product Quality Audit • $5 million savings in direct ship warehouse • Zero landfill waste since 2008
Xerox Corporation	• Lean/Six Sigma since 2002 • 300% ROI

In the supply chain arena, a lean culture offers tremendous rewards, but pursuing a lean strategy also requires a significant commitment. Luckily, becoming lean doesn't mean you have to

re-engineer your operation. You can work with a logistics partner to make continuous, incremental gains in quality and efficiency. The right 3PL can jumpstart a company's transformation into a lean organization.

By working with a supply chain partner that has woven lean principles into its very fabric, you gain the benefits of lean culture without incurring the associated up-front costs. Your partner already has made the investments, hired the necessary talent and climbed the learning curve.

At Ryder Supply Chain Solutions, a division of Ryder System Inc., five lean guiding principles govern every activity the company conducts in its own and its customers' warehouses. They are:

1. **People Involvement:** Engaging every employee to root out waste, eliminate problems and make improvements
2. **Built-in Quality:** Striving to prevent mistakes before they happen, and engineering processes to make them "mistake proof"
3. **Standardization:** Documenting best practices and making sure that they are followed
4. **Short Lead Time:** Filling customer orders as promptly as possible
5. **Continuous Improvement:** Understanding that no matter how well a process works today, there is room to make it even better



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This white paper speaks to Standardization. It is part of a series on the five lean guiding principles, written to provide insight on what it takes to develop a lean culture in a supply chain operation.

Standardization: The Best Way is the Only Way

In a lean facility, everyone is trained and expected to follow the documented best practice. The company documents these tasks and trains the employees who perform them to follow best practices. No matter who executes a process, the steps they follow should be the same.

When work is standardized, every employee is your best and fastest. Estimating what it takes to meet any requirement becomes a matter of simple computation.

Standardization offers several advantages. First, it allows you to easily calculate how much time and how many resources you need to complete your work. If a customer places a special rush order, you won't have to pull your best workers off other jobs to meet the demand. When work is standardized, every employee is your best and fastest. Estimating what it takes to meet any requirement becomes a matter of simple computation.

Also, standardization provides the foundation for continuous improvement. Consider an employee named John who suggests a better way to stack cartons inside a trailer. The new technique speeds the loading process by eight minutes per truckload. If each person on the dock uses his or her own techniques to load a trailer, John's suggestion will improve only John's work. But if everyone follows a standard procedure, the company will save eight minutes every time any employee loads a trailer. Standardization multiplies improvements and also makes them easier to sustain.

Standardization in a distribution center involves five elements:

- Visual management
- Layered audits
- Management by customer demand
- Standard work
- Workplace organization

Visual Management

Signs, symbols, color codes and other visual tools make a facility "talk" to the people who work there. They keep people informed about how to do their work, how work is progressing, where tools are located and other conditions important to the task at hand. Good visual management ensures that anyone who needs information will receive it in a glance; there's no need to pull reports from a computer or hunt down experts to answer questions.

A facility can use visual management in two ways:

1) To *display* information to employees in an area
2) To provide some kind of *control* or instruction (4)

EXAMPLES OF VISUAL DISPLAYS & CONTROLS

- LCD screen that tracks how well several employees are progressing in their picking assignment
- Green cone atop a stack of pallets to signal that they are ready to be loaded on a truck
- Yellow cone to signal that the pallets still need to be checked for quality
- Colored line on the floor to show the correct route to the receiving dock
- Peg board with outlines showing exactly where to hang a broom, mop, bucket and dust pan

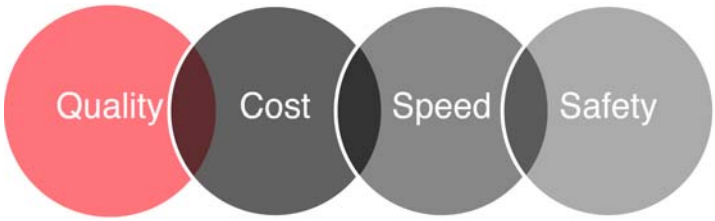
Layered Audit

A layered audit ensures that employees perform their work according to the established standard. The key to a layered audit is to perform it while the work is in progress, not after the work is complete, to allow for immediate corrections. Layered audits occur on a regular schedule, using standard work documents.

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The audit is “layered” because people on several levels of the organization collaborate to make sure the work meets the criteria for quality, cost, speed and safety. On the warehouse floor, for instance, a team leader periodically checks that an employee is putting product away correctly. A supervisor checks the audit to make sure the team leader has done it right. Then a manager checks to make sure that the supervisor has correctly audited the team leader’s work.

Figure 1: Criteria for Tracking Standardization



When you tailor your planning to the demand signals that your customers send, you assign exactly as many people and tools to a job as it requires, and you set the appropriate pace.

Management by Customer Demand

A lean facility doesn’t grow more productive by pushing people to work harder and harder. Instead, it tailors its resources and sets a steady pace to produce exactly what customers need each day.

Consider a customer who needs you to ship 12,000 pieces on Monday, but only 4,000 pieces on Tuesday. If you assign the same number of pickers to the job on both days, and tell them to work at the same pace, you will create waste. The team might have to work so fast to meet the goal on Monday that the workers make numerous mistakes. The team might finish early on Tuesday and spend the last two hours of the shift with no work.

A lean facility operates differently. When you tailor your planning to the demand signals that your customers send, you assign exactly as many people and tools to a job as it requires, and you set the appropriate pace. To pick the 12,000 pieces that your customer needs on Monday, you bring in extra help from other parts of the distribution center. On Tuesday, when the customer needs only 4,000 pieces, you use a smaller crew and assign the

excess workers to jobs in other parts of the facility. Since the employees are cross-trained, it is easy to assign them each day to the areas where they are needed most. By working smarter, the company can deliver exactly what customers require while getting maximum value from its resources.

Standard Work

Standard work is a written description of the only acceptable way to perform a particular task. Although the company expects to make continual improvements on this method, the procedure in the document is the safest, best and most efficient way currently known to do the task. The description includes the time it should take to perform the task. When you document a standard for each job in a facility, the workers who do those jobs are more likely to produce consistent results. (5)

Along with describing in writing exactly how to perform every process in a facility, a lean workplace offers employees an intuitive how-to guide for performing the tasks in each work cell. These guides combine simple written instructions with photographs of every step in the process, so there is never any doubt about the right way to perform the task. Often, the signage indicates how long it should take to perform each step, making it possible to measure how effectively team members are working.

Along with standard work documents for employees on the floor of a distribution center, a lean operation will also create standard work instructions for team leaders, supervisors and managers. Those documents describe how to supervise and manage on a daily basis, keeping the lean operation running properly.

It's important to note that standard work doesn't simply mean writing down a set of standard operating procedures and telling people to follow them. The procedures must be designed to meet your customer's demand. For example, the process you document for packing and sealing an order of socks into cartons will be

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different from the process for packing and sealing an order of wine glasses.

Workplace organization

Just as there is one acceptable method for performing a task, there should be one standard method for organizing the materials and tools in a work space. The goal is not simply to achieve neatness, although that is a desirable side benefit. The real goal is to create flow—to ensure that work proceeds as efficiently as possible.

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When a workplace doesn't have a proper spot for every item, and when employees don't put things back where they belong, quality and efficiency decrease. Instead of getting their work done, people waste time searching for a calculator, a pen, or a mop. They misplace bar code scanners. They leave pallets in places where they pose a safety hazard.

Several kinds of techniques promote good workplace organization. One is to use color-coding standards—perhaps red to mark anything to do with fire or security, green for safety and blue for information. Clear signage, designed according to company-wide standards, also helps employees quickly find the tools, materials and information they need. Designing a work area to eliminate obstacles allows employees to move product throughout a facility quickly and efficiently.

Figure 2: Examples of Color-Coded Signage



It's also important to get all employees involved in organizing and maintaining their work spaces. Employees should always be on

the lookout for anything that impedes the flow of work, and be ready to suggest improvements.

Conclusion

The principle of standardization maintains that in a lean facility, all work follows established, well-tested procedures. Management provides unambiguous instructions for performing every task. It creates schedules and physical facilities that help work flow smoothly. Finally, it creates mechanisms to track whether work is proceeding according to plan. All these strategies help to ensure that employees have the instructions and tools they need to meet customer expectations.

MANAGEMENT TIPS:
ACHIEVING STANDARDIZATION

- Use visual cues to quickly indicate how work should be performed and how it is progressing
- Use visual displays to know where important tools belong
- Use layered audits as work is in progress
- Tailor your planning to the demand signals of your customers
- Use standard work documents so that all employees know the acceptable way to perform a task
- Organize materials and tools in the workplace to create flow

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Appendix

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