A Lean Manager’s Toolbox

Effective Process Management
Lean: A Framework for Culture Change

Support Structure
Strategic Alignment
Communication
Change Management

Lean Foundation

Workplace Organization

Kaizen Events

Projects

Strategic Projects, Value Stream Transformation

Standardized Method: A3 Reports
Kaizen (Rapid Improvement Events)

5S/6S (Sort, Set in Order...)
Visual Workplace

Strategic Projects, Value Stream Transformation

Pursue Perfection
Push to Pull
Improve Flow
Identify Value Streams
Define Value Streams
Eliminate Waste &

Define Value Streams
Transforming Value Streams
What is the Role of a Manager?
Attributes of Great Processes

- Efficient: being effective without wasting time or effort or expense
- Effective: producing the desired results and meeting customer expectation
- Adaptable: able to adapt to changing customer demands and business demand and requirements
- Standardized: minimized complexity, well-documented and well understood
- Visible & Measured: visible process, waste is obvious; visual measurement and feedback

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Effective Process Management

- Gemba Walks performed
- Capability Study (current)
- Control Charts/Control Plan
- FMEA (current, accurate)
- Compliant
- Standard Work (accurate and
- Process Map (current, accurate)

Manager’s Checklist
1. Map Your Processes
2. Implement Standard Work
What is Standard Work?

A written description of the most efficient (and safe) way to perform a given task to achieve the highest quality and best outcome.

Consensus and uniformity.

Considered to be the "only" acceptable way to perform a given task.

Widely reviewed for the purpose of continuous improvement.

What was best today may be even better tomorrow.

Helps to reduce process variation and, as a result, increase consistency in the output.

Includes the amount of time required for each task.
Standard Work Describes:

- Customer demand
- The most efficient steps (work routine)
- The cycle times required to complete a task.
- The amount of work in process required including materials and supplies.
- All of the quality checks required to identify as well as minimize errors and defects.
when correctly applied, standard work will not only sustain kaizen improvements, but also expose and eliminate previously unseen waste.

- Discipline, cultural change and continuous re-enforcement to be sustainable – measure and audit.
- Simple documents or work instructions, including images/pictures where appropriate, that is located near the work being performed or easily accessible from where work is performed.
- Simple documents or work instructions, including procedure that reflects the best practices of everyone, making consensus between staff members on adoption of a standard.

**Standard Work Requires**
DO

- Keep it as simple as possible.
- Make it accessible and keep all of the info on one, easy to read document.
- Prepare one standard work document for each task/element of a process (not just “selective” standard work.”)

DON’T

- Forget to update standard work when processes change.
- Make it difficult to get standard work changed when needed.
- Forget to audit and test for compliance if you want to sustain your standard work culture.
- Review and update/improve the standard work regularly.

Do/Don’t of Standard Work
Manufacturing Example

Image source: https://www.nwfpa.org
## Standard Work - Washing Clothes in a Washing Machine & Using a Dryer

### Steps

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sort clothes into washing machine.</td>
<td>Follow instructions on appliance's digital interface.</td>
</tr>
<tr>
<td>2</td>
<td>Load the washing machine.</td>
<td>Ensure clothes are evenly distributed.</td>
</tr>
<tr>
<td>3</td>
<td>Set the right cycle (e.g., cotton, delicate).</td>
<td>Consult the appliance's manual for specific settings.</td>
</tr>
<tr>
<td>4</td>
<td>Set the right water temperature.</td>
<td>Generally, use warm water for cotton and cold water for delicate items.</td>
</tr>
<tr>
<td>5</td>
<td>Set the right amount of detergent.</td>
<td>Use a detergent suitable for the load size and fabric type.</td>
</tr>
<tr>
<td>6</td>
<td>Start the washing machine.</td>
<td>Monitor washing progress in the digital interface.</td>
</tr>
<tr>
<td>7</td>
<td>Remove the dryer.</td>
<td>Ensure clothes are not overloaded.</td>
</tr>
<tr>
<td>8</td>
<td>Set the right cycle (e.g., tumble dry, air dry).</td>
<td>Refer to the dryer's manual for cycle options.</td>
</tr>
<tr>
<td>9</td>
<td>Remove clothes from dryer.</td>
<td>Check for complete dryness and flatness.</td>
</tr>
<tr>
<td>10</td>
<td>Sort clothes into dryer.</td>
<td>Align clothes with the dryer's internal components.</td>
</tr>
</tbody>
</table>

### Designing Standard Work

- **Time:**
  - Load the washing machine: 2-3 min
  - Start the washing machine: 2-3 sec
  - Sort clothes into dryer: 1-2 min

- **Equipment:**
  - Washing machine
  - Dryer
  - Detergent

- **Material:**
  - Laundry soap

- **Preparation:**
  - Sort clothes by color and fabric type.

- **Cleanliness:**
  - Ensure washing machine and dryer are clean before use.

- **Safety:**
  - Use detergent safely and follow manufacturer's instructions.

- **Efficiency:**
  - Optimize cycles for energy and time efficiency.
### 3. Failure Mode & Effects Analysis (FMEA)

<table>
<thead>
<tr>
<th>RPN</th>
<th>(5,0)</th>
<th>18</th>
<th>Training to requirements</th>
<th>2</th>
<th>Inadequate communication</th>
<th>0</th>
<th>Effect of failure</th>
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<td></td>
<td></td>
<td></td>
<td>3</td>
<td>Request not specific</td>
<td>2</td>
<td>Minor delay and Reework</td>
<td>0</td>
<td>Process step / input</td>
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<td></td>
<td></td>
<td>3</td>
<td>Low Demand</td>
<td>9</td>
<td>Minor delay, Resourcing</td>
<td>6</td>
<td>Moderate delay</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td>Look for alternative</td>
<td>3</td>
<td>Product shortage</td>
<td>8</td>
<td>Vendor Position, Weather or Holiday</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>Adjust AV to accommodate</td>
<td>3</td>
<td>Vendor Position, Weather or Holiday</td>
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<td>Adjust AV to accommodate</td>
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<td>4</td>
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<td>3</td>
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<td>168</td>
<td>8</td>
<td>Poor packaging and handling</td>
<td>8</td>
<td>Report to Vendor</td>
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<td></td>
<td></td>
<td>6</td>
<td>16</td>
<td>7</td>
<td>Poor packaging and handling</td>
<td>7</td>
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<tr>
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<td></td>
<td></td>
<td>1</td>
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<td>6</td>
<td>Incorrect Inventory / Location</td>
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<td>Location Error</td>
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<td>72</td>
<td>3</td>
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<tr>
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<td></td>
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<td>Lack of attention, Human error</td>
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<td>8</td>
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<td>Cant find stock, use wrong</td>
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<tr>
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<td>10</td>
<td>10</td>
<td>2</td>
<td>Package, Shop Floor</td>
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<td>Package, Shop Floor</td>
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<tr>
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<td></td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>Invoice, Inventory</td>
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<td>Invoice, Inventory</td>
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</table>

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common in service environments

Helps to identify the "hidden factory" that is so prevent failure from occurring

A "living document" used to anticipate and failure occurring

methods to eliminate or reduce the chance of a
effects or consequences of product or process

A systematic tool for identifying:

Failure Mode & Effect Analysis
What we “think” the process looks like and how it really works!

The “Hidden Factory”
**Origins & Purpose of FMEA**

**Origins**
- Wide use in aerospace since 1960’s
- Required by major automotive companies
- Wide use in aerospace since 1960’s
- Expanded use in 1970’s & 80’s

**Purpose**
- Recommended tool for health care risk management
- Adopted by service organizations (when adopting Lean and Six Sigma)
- Nuclear power, chemical, food industry...

- Used for improving existing as well as designing new processes
- Identify actions to minimize risk
- Weigh impact of potential failure
- Evaluate potential failure
- Recognize potential failure

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FMEA Roadmap

A. Identify potential failure mode
B. Identify potential effects of failure mode
C. Identify potential causes of failure mode
D. Evaluate current controls in place
E. Calculate Risk Priority Number (RPN)
   - B1. Assessment of severity
   - C1. Determine (frequency of) occurrence
   - D1. Assess ability to detect failure
   - E1. Calculating Risk Priority Number (RPN)
   - F1. Taking actions to mitigate or eliminate risk

Update FMEA (living document) and repeat as necessary
How much of the process is reliant on "heroics"?

What behaviour do we acknowledge and reward?

4. Control Charts and Control Plans
Control Charts

Common charts: Individuals (I), X-bar, Proportion (P, NP), Count (U, C)

- Limits, and the points do not display any non-random patterns. A process is in control when points fall within the bounds of the control limits.
- Common causes - not special causes - affect the process output. Examples include differences in supplier, shift, or day of the week.
- Special causes result in variation that can be detected and controlled.
- Special causes result in variation that can be detected and controlled.
- Common cause variation, on the other hand, is inherent in the process. A process is in control when only common causes affect the process output.

You can use control charts to track process statistics over time and to
Run Charts

- Plot individual observations in run order (chronological, time-ordered)
- Performs specific tests
  - Trends
  - Oscillation
  - Mixtures
  - Clustering (special causes or non-random behaviors)
- Also used to identify common cause and special cause variation
- Performs specific tests

Run Charts
Statistical Process Control

- Every process has 2 types of variation
  - Inherent process variation (common cause)
  - Variation due to an assignable reason (special cause)

SPC highlights common cause & special cause variation

Monitors long term process performance - shows boundaries of acceptable performance

Used for continuous and discrete data
Control Plan & Reaction Plan

- Each process charted should have a defined reaction plan to guide the actions to those using the chart in the event of an out of control or out of specification condition.

Control Plan & Reaction Plan
"Linking the Process to the "Plan"
5. Process Capability (Voice of the Customer)
What is Process Capability?

- Refers to the range of KPIs (metrics) that assess the process's ability to meet the customer's requirements.

  - Caution: Never assume that internal specifications are an accurate description of the voice of the customer (VOC). Never assume that internal specifications are an accurate description of the voice of the customer (VOC).

Customer requirements can often be stated as quantifiable "specifications". Continuous capability studies require both process data and specifications and are used to:

  - Predict future capability of the process to produce product within specific specifications and are used to;
  - Identify process improvement opportunities.

Reverts to the range of KPIs (metrics) that assess the process's ability to meet the customer's requirements.
Measures of Capability

- Final Yield – % good “out the door” (complete, accurate, on-time…)
- Throughput Yield (TPY) – % good at a given process step
- Rolled Throughput Yield (RTY) – Probability (%) that a process with more than one step will produce a defect-free “unit”
- Probabilty (%) that a process with more than one step will produce a defect-free “unit”

Every process should have established performance targets or service levels… every process should be measured. If not… a process will simply do what a process does!
6. "Gemba" Walks
“Gemba” and “Gemba” Walk

“Gemba” and “Gemba” Walk

• Gemba: (Japanese) “The real place”

• Lean: “The place where value is added”

• Gemba (Japanese) “The real place”

• Gemba Walk: Describes personal observation of work – where the work is happening.

• Key Principles: In-person observation… see first hand a highly structured and planned activity… not just “walking around”

Not limiting discussion of a problem or issue to a boardroom or training room – interacting with the people in the spirit of understanding and continuous improvement.

“Farming looks mighty easy when your plow is a pencil and you’re a thousand miles from the corn field.” Dwight D. Eisenhower

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A Gemba Walk is Not…

- an opportunity to find fault in others while they are being observed
- a time to enforce policy adherence
- an opportunity to find fault in others while they are being observed
- the time to solve problems and make changes
- a time to encourage and make changes in the continuous improvement spirit that it is promoting
- a "policing" event as staff will quickly resent it and not engage
- ideas for improvements can still be encouraged
- Ideas for improvements can still be encouraged
- Asking the "five whys", for example, can result in a deeper understanding
- If ideas or complaints arise, make sure they are followed up on in a timely manner after the walk
- If issues have been identified
- Safety and significant violations of policies and protocols can and should be addressed
Who, How Often and How

• Lead with humility (respect for people)
• Focus on value streams
• Embrace scientific problem solving (PDCA)
• Observe problems first hand (go and see)

Remember...

• Value Stream Mapping (as required, project driven)
• Leadership team (1-2 per week)
• Supervisor/Manager (several times per day)
In Conclusion

- Managers manage... processes!
- Processes must be stable and predictable (in control)
- Processes must be capable of meeting the needs of the customer (internal and external)
- Effective process management tools and techniques can help you to achieve those goals
- Move away from a reactive (firefighting) state to that of a proactive organization
- Free up capacity that can be reinvested in the community of today and tomorrow!

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So, What is Your Score?