Operations Management and Lean Six Sigma

Presented by:
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Manager, CI and CSAT
Staples Advantage Canada
Who is this guy standing up in front of you?
- Manager, Continuous Improvement and CSAT for SA Canada
- Been in manufacturing field for 10+ years
- Been in distribution field for 7.5 years
- Current chair of ASQ Vancouver Section – www.asq.bc.ca
- Pisces and enjoy long walks in Stanley Park

What’s the deal with “Staples Advantage” – isn't that the same as Staples, the retail store?
- Part of the Staples global family
- The largest office products company in the world, also sell contract furniture
- Almost 100,000 employees world wide
- We are the business to business unit of Staples – not affiliated with the stores
- Most customers order off of our E-way platform (electronic order website)
Why Process Excellence/Improvement?

- Companies need to be dedicated to continuous improvement.
- They need to manage expenses and improve sales.
- This will enable them to stay ahead of their competition.
- It ties to our overall goals and objectives.
  - Make it EASIER for our Customers
  - Maximize Sales
  - Improve Operating Profits

“This is not about working harder...it’s truly about working smarter.”
Origin of Lean

- **Lean History:**
  - Pioneered by Ford in the early 1900’s
  - Perfected by Toyota post WWII

- **Known by many names:**
  - Toyota Production System
  - Just-In-Time
  - Continuous Flow

- Outwardly focused on being flexible to meet customer demand, inwardly focused on reducing or eliminating the waste and the cost in all processes

- Employee engagement – “go to the floor”
Look for the “waste” in the area (TIMWOOD)!

Waste comes in many forms! Here are the most common:

Transportation (movement of product or service)

Inventory (product or service waiting)

Movement (movement of associates)

Waiting (associates waiting)

Over Production (more than customer demands)

Over Processing (more than customer requirements)

Defects (quality issues)
Transportation (movement of product or service)
Inventory (product or service waiting)
Movement (movement of associates)
Waiting (associates waiting)

THE RIGHT MOMENT
While you're waiting for it, it often gets too late.
Over Production (more than customer demands)
Over Processing (more than customer requirements)
The Bitterness of "Poor Quality"
Is Remembered Long After The
Sweetness of Low Price Is Forgotten.
Origin of Six Sigma

• **Six Sigma 1.0 – Improving Process Performance (Motorola)**
  – Six Sigma defined as a method to eliminate variation to customer requirements
    ➢ Voice of Customer defines quality
    ➢ Supported by a suite of quality and statistical analysis tools

• **Six Sigma 2.0 – Management System (GE/Allied Signal)**
  – Six Sigma defined as a management system to execute business strategy
    ➢ CEO and P&L owners trained and actively engaged in the process
    ➢ Defined organization and set of roles (Black Belts, Champions, Sponsors, Green Belts, etc.) creates accountability
<table>
<thead>
<tr>
<th>$\sigma$</th>
<th>Yield</th>
<th>Defects per Million Opportunities (DPMO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>69.2%</td>
<td>308,537</td>
</tr>
<tr>
<td>3</td>
<td>93.32%</td>
<td>66,807</td>
</tr>
<tr>
<td>4</td>
<td>99.379%</td>
<td>6,210</td>
</tr>
<tr>
<td>5</td>
<td>99.977%</td>
<td>233</td>
</tr>
<tr>
<td>6</td>
<td>99.99997%</td>
<td>3.4</td>
</tr>
</tbody>
</table>
Maximizing Business Results

Requires both Lean and Six Sigma together

**Lean**
Increase Process Speed
Reduce Waste

Done through Kaizen events, Value Stream Mapping, Waste reduction

**Six Sigma**
Decrease Defects on Critical Customer Requirements

Done by understanding and reducing process variability

Lean Speed Enables Six Sigma Quality (Faster Cycles of Experimentation/Learning)

Six Sigma Quality Enables Lean Speed (Fewer Defects Means Less Rework)
DMAIC Methodology

Define the opportunity from both business and customer perspectives.

Understand the process and its performance – Understand the “Y”

Search for the key factors that have the biggest impact on process performance and determine the root causes – Find the Critical “X’s”

Develop, pilot, and implement solutions for the Critical “X’s”

Develop standardized work and visual tools for project transition – Control the “X’s”
DMIC Overview

**DEFINE**
- Project Charter
- Voice of Customer
- SIPOC

**MEASURE**
- Capability Study
- Statistical Sampling
- Value Stream Mapping
- Constraint Identification

**ANALYZE**
- Regression
- Analysis of Variance
- “Value Add” Analysis
- Cause & Effect Matrix

**IMPROVE**
- Process Balancing
- Optimization / DOE
- Layout / Flow
- Risk Assessment (FMEA)

**CONTROL**
- Control Plans

All Possible Variables (X’s)
- Critical Variables
  - 100+
  - 25 - 30
  - 8 - 10
  - 3 - 6
  - 1 - 3
## Process Excellence Roles

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
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<tbody>
<tr>
<td>Black Belt</td>
<td>Black Belts are full time project leaders trained on Process Excellence tools</td>
</tr>
<tr>
<td></td>
<td>and methodologies. Black Belts work with process experts within projects to</td>
</tr>
<tr>
<td></td>
<td>lead teams towards results.</td>
</tr>
<tr>
<td>Green Belt</td>
<td>Green Belts are part time project leaders trained on Process Excellence tools</td>
</tr>
<tr>
<td></td>
<td>and methodologies. Green Belts also lead teams towards results.</td>
</tr>
<tr>
<td>Master Black Belt</td>
<td>Master Black Belts have gone through additional training in Lean Six Sigma</td>
</tr>
<tr>
<td></td>
<td>methodologies. They train and coach Black Belts and Green Belts in the</td>
</tr>
<tr>
<td></td>
<td>program.</td>
</tr>
<tr>
<td>Team Member</td>
<td>Process experts who drive the improvements within projects.</td>
</tr>
<tr>
<td>Sponsor</td>
<td>The Sponsor owns the process to be improved, writes the project charter &amp; is</td>
</tr>
<tr>
<td></td>
<td>responsible for sustaining project gains.</td>
</tr>
<tr>
<td>Business Champion</td>
<td>The Business Champion is the Senior Business Leader accountable for the area</td>
</tr>
<tr>
<td></td>
<td>that the project is targeting.</td>
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<tr>
<td>Deployment Leader</td>
<td>Deployment leaders identify project opportunities within business units and</td>
</tr>
<tr>
<td></td>
<td>manage the deployment of projects and resources.</td>
</tr>
<tr>
<td>Finance Rep.</td>
<td>Financial Reps are responsible for ensuring the project’s financial</td>
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<tr>
<td></td>
<td>benefits are accurate.</td>
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</tbody>
</table>


Principles of 5S
5S Explained

5S is a process and method for creating and maintaining an organized, clean, and high performance workplace through associate involvement.

5S enables anyone to distinguish between normal and abnormal conditions at a glance.

A neat, clean work environment:
- Has higher productivity
- Produces fewer defects and lost information
- Meets deadlines better
- Is an easier place in which to work
The 5S Process

1. **SORT**
   Identify necessary items and remove unnecessary ones.

2. **STRAIGHTENING**
   Locate items where they are needed and limit amount stored.

3. **SHINE**
   Eliminate dirt and dust. Make workplace shine.

4. **STANDARDIZE**
   Create work standards to support the first three pillars.

5. **SUSTAIN**
   Monitor progress and fix problems as they appear.

Don’t Skip A Step!
Definition of Sort

Definition:
• Sort means removing all items that are not needed for current tasks
• It does not mean arranging things in a neater fashion
• Only leave the bare essentials....“When in doubt, throw it out!”

Implementing
• Identify unneeded items
  o If required, place tags on items not needed for proper disposition
  o Sell, relocate, donate, throw away
• Identify items needed
  o If needed, is it needed in this quantity?
  o Does it need to be located here?
Straightening

**Definition:**

- Logically arranging items and creating a way to easily identify items and where they should be kept
- Key is to enable anyone to *easily* find them or put them away

**Implementing:**

- Determine best location for items based on frequency of use
  - Store items used together close and in sequence
  - Store infrequently used items away from the point of use
  - Build in flex space if business demand requires
- Make a place for everything using:
  - Borders: tape works well for this!
  - Home Addresses – Tells what item belongs in that space
  - Labels – Label each item
Shine

Definition:
• Shine emphasizes removing the dirt and dust from the area
• This is a program of keeping the work area clean of debris

Implementing
• Determine the shine targets – what are we going to clean?
• Set a schedule and assign ownership of tasks to individuals
• Create procedures for continued daily shine processes
• Set periodic equipment inspection and maintenance targets
Standardize

Definition:

• Standardize creates documentation and visuals to maintain the first 3 S’s (Sort, Straightening, Shine)

• This allows anyone to come in and replicate the first 3S’s, creating consistency and ensuring proper execution

Implementing

• Document guidelines for Sort, Straightening and Shine
  o Make documentation easy
  o Use visual controls whenever possible

• Include in the documentation:
  o Minimum item and re-order quantity guidelines
  o What to do if a new item is introduced
  o What to do if an item is found that does not belong
  o Review schedule
Sustain

Definition:
• Sustain means that the 5S program has a discipline that ensures its continued success and is mentality is ingrained in everyday work life and procedures
• Do not let it become another “flavor of the day”

Implementing
• Use the Audit checklist provided on CENet
• Audits must be done every month
• If you have a large department, do a random check of the area
• Celebrate improvement and schedule time to fix any gaps

<table>
<thead>
<tr>
<th>Item</th>
<th>5S Aspect</th>
<th>Evaluation criteria</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Sort</td>
<td>Are there unnecessary items on shelves/file cabinets?</td>
<td>1-3</td>
</tr>
<tr>
<td>B</td>
<td>Sort</td>
<td>Are there loose files that should be archived/put away?</td>
<td>1-3</td>
</tr>
<tr>
<td>C</td>
<td>Sort</td>
<td>Are there computer cables/extension cords cluttering the area / creating a safety hazard?</td>
<td>1-3</td>
</tr>
<tr>
<td>D</td>
<td>Sort</td>
<td>Are walls, machines, notice boards covered with unnecessary / outdated postings?</td>
<td>1-3</td>
</tr>
<tr>
<td>E</td>
<td>Set</td>
<td>Are shelves/filing cabinets properly identified with labels, as required?</td>
<td>1-3</td>
</tr>
<tr>
<td>F</td>
<td>Set</td>
<td>Are binders properly identified with labels, as required?</td>
<td>1-3</td>
</tr>
<tr>
<td>G</td>
<td>Set</td>
<td>Are documents, catalogs, supplies in place and easy to reach/return to locations?</td>
<td>1-3</td>
</tr>
<tr>
<td>H</td>
<td>Set</td>
<td>Do all offices/cubicles have name cards, as required?</td>
<td>1-3</td>
</tr>
<tr>
<td>I</td>
<td>Shine</td>
<td>Are floors, walls and general areas clean and free of clutter?</td>
<td>1-3</td>
</tr>
<tr>
<td>J</td>
<td>Shine</td>
<td>Is the huddle board neat, tidy and “tour ready”?</td>
<td>1-3</td>
</tr>
<tr>
<td>K</td>
<td>Shine</td>
<td>Are there enough wastebaskets in the area?</td>
<td>1-3</td>
</tr>
<tr>
<td>L</td>
<td>Shine</td>
<td>Are there enough “appropriate recycle bins in the area”</td>
<td>1-3</td>
</tr>
<tr>
<td>M</td>
<td>Shine</td>
<td>Are individual offices/cubicles kept neat and tidy?</td>
<td>1-3</td>
</tr>
<tr>
<td>N</td>
<td>Standardize</td>
<td>Is the huddle board up-to-date?</td>
<td>1-3</td>
</tr>
<tr>
<td>O</td>
<td>Standardize</td>
<td>Are there any controlled ISO documents printed out?</td>
<td>1-3</td>
</tr>
<tr>
<td>P</td>
<td>Standardize</td>
<td>Are there any documents with confidential/customer info printed out?</td>
<td>1-3</td>
</tr>
<tr>
<td>Q</td>
<td>Sustain</td>
<td>Is there evidence of previous 5S audits?</td>
<td>1-3</td>
</tr>
</tbody>
</table>

Total points: 50
Score: 0%

Final evaluation for score: <50% Revisit 5S, 50%-75% Review/fix weak items, >75% maintain/fix weak items

Comments: Auditor: 

Note: Please forward completed form to your local Continuous Improvement Business Process Analyst
Why is Sustain so important?

Monday at 10 am
5S Key Takeaways

- 5s is a Lean tool that increases efficiencies in the workplace through organization and standardization
- Implementing a solid standardize and sustain is critical to the success of any 5S...4S just doesn’t work!
- Associate involvement is a key to sustained results
Common Challenges with Lean Six Sigma

- Poor Rollout
- Sustainability of gains
- Replication across business
- Slow economy
- Paralysis by analysis
- Managing to the averages
- Need for Speed

I feel the need... ...the need for Fast!!

D’OH!
Wrap up!

- Lean and Six Sigma compliment each other and combined they drive tremendous change.
- Knowing the “voice of the process” is not enough, you also need to know “voice of the customer.”
- Involvement and engagement from all levels is key.
- Team work, standard processes and continuous improvement make a difference to business.
Thank you!

Questions?