Are You A Lean Six Sigma Money Belt?

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www.qimacros.com/Moneybelt/lean-six-sigma-money-belt.html

Are You A Lean Six Sigma Money Belt?

What?	A Money Belt is someone who can find ways to reduce or eliminate delay, defects and deviation to save time and money and boost the bottom line.
Why?	Go beyond business survival to ensure that the business thrives.
How?	Use the essential tools (not the long tail of Lean Six Sigma tools) to make the business better, faster, cheaper and more profitable.
Where Else?	Services, manufacturing, backroom operations.

What is Lean?

What?	Lean sprang from the Toyota Production System. It's a way to simplify and streamline any business process or production process.
Why?	**Reduce the Speed Bumps of Lean** Reduce Unnecessary (DOWNTIME): o Delay - Waiting o Overproduction (inventory is evil) o Waste & Rework (defects) o Non-value added processing o Transportation (unnecessary) o Inventory (excess) o Motion of employees (unnecessary) o Employee creativity not used
How?	**Value Stream Mapping - Process** **Spaghetti Diagramming - Physical**
Where Else?	Office operations, IT Systems, manufacturing and service delivery.

The Benefits of Lean

What?	Henry Ford used Economies of Scale. Toyota uses *Economies of Speed*. **3-57 Rule** – Employees are only working on the product or service for 3 minutes out of every hour. *Watch the product and you'll see this is true.* **15-2-20 Rule** - Every 15 minute per hour reduction in delay *doubles productivity and increase profits by 20%.* **3X2 Rule** – Reducing delay will grow the business 3 times faster than your competition and double profit margins.
Why?	**To maximize productivity and profits by eliminating delay.**
How?	Focus on reducing the 57 minutes of delay
Where Else?	Any sluggish business process that leaves internal or external customers waiting.

5S to Simplify the Work Area

What?	Use 5S to establish a clean, orderly workplace.
Why?	**Eliminate confusion caused by unused equipment and material.** **Prepare for process redesign**
How?	Sort necessary from unnecessary. Straighten to create visual clarity and order Shine to clean the workarea Standardize the 5S process Sustain a clean and orderly workarea
Where Else?	Offices, production lines or any workspace.

Seven Speed Bumps of Lean

What?	The common speed bumps to eliminate using Lean: ▪ **D**elay ▪ **O**verproduction ▪ **W**aste and Rework ▪ **N**on-value added processing ▪ **T**ransportation ▪ **I**nventory ▪ **M**otion ▪ **E**mployee knowledge
Why?	**Accelerate speed and quality**
How?	**Streamline** operations using Value Stream Mapping, Spaghetti Diagramming and other insights
Where Else?	Any sluggish, error-prone process. Not just in manufacturing, but any service or administrative process.

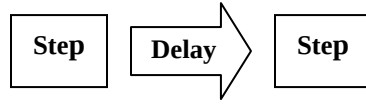
Reduce Unnecessary Overproduction

What?	Stop making products or delivering services the customer hasn't requested.
Why?	**Reduce inventory, warehousing, and associated costs**
How?	**Just-In-Time,** "pull" systems using "one-piece flow" to achieve economies of speed.
Where Else?	Anywhere batch sizes are large to seemingly gain "economies of scale."

Reduce or Eliminate Unnecessary Delays

What?	Eliminate delays between processing steps or work positions to speed up product or service delivery. 3-57 rule: Employees are only working on the product or service for 3 minutes out of every hour. The other 57 minutes are delay.
Why?	**Reduce customer "wait" time.** **Delight customers with speed.**
How?	**Simplify** using 5S **Streamline** using Value Stream Mapping and Spaghetti Diagramming
Where Else?	Office operations, IT Systems, manufacturing and service delivery.

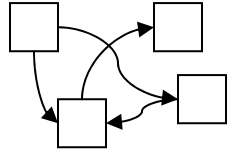
Value Stream Mapping – To Streamline Flow

What?	Visual method of mapping the high-level flow of any process. 
Why?	**To find and eliminate unnecessary delays, waste and rework in a process.**
How?	Use a flipchart and square Post-It™ Notes to show process steps and *delays* between steps.
Where Else?	This method is similar to flowcharting and spaghetti diagramming. Use flowcharting for more detailed process mapping. Use Spaghetti Diagrams for physical spaces.

Reduce Unnecessary Movement of People or Products

What?	Rule: Walking is waste. Unnecessary movement is waste.
Why?	**Maximize productivity and minimize opportunities for mistakes caused by movement.**
How?	**Spaghetti Diagramming** Diagram the physical workspace using Post-it notes to show flow of people and materials. Use pedometers to measure employee movement. Aim for 50% reduction in movement.
Where Else?	Any work area that hasn't been examined in the last few years.

Spaghetti Diagramming - Streamlining

What?	Visual method of diagramming a physical workspace. 
Why?	**To find and eliminate unnecessary movement of people and materials.**
How?	Use a flipchart and square Post-It™ Notes to show processing locations. Become the product or service and trace its movement though the space.
Where Else?	This method is similar to flowcharting and value stream mapping.

Reduce Unnecessary Processing

What?	Eliminate preprocessing and post processing of goods or services Eliminate unnecessary inspection.
Why?	**Reduce turnaround time and associated costs**
How?	**Flow chart the process** to identify unnecessary processing or rework loops. **Redesign the process** to eliminate unnecessary processing or rework.
Where Else?	Anywhere there are unused interim work products.

Reduce Unnecessary Inventory

What?	When you stop making products or delivering services the customer hasn't requested, you won't need as much inventory of raw or finished goods.
Why?	**Reduce inventory, warehousing, and associated costs**
How?	**Just-In-Time,** "pull" systems using "one-piece flow" to achieve economies of speed. **Kanban (i.e., card) system** to track and order all inventory.
Where Else?	Anywhere batch sizes are large to seemingly gain "economies of scale."

Just-in-Time (JIT) – One Piece Flow

What?	Reducing batch sizes to ideally one-piece at a time.
Why?	**Optimize production and minimize inventory.**
How?	Create "work cells" that produce products or services in small quantities.
Where Else?	Anywhere batch sizes are large to seemingly gain "economies of scale."

What is Six Sigma?

What?	Motorola's redesign of Total Quality Management (TQM).
Why?	**Reduce defects and deviation** and resulting costs of waste and rework that devour a third or more of business profits.
How?	**DMAIC** **D**efine the process **M**easure the process **A**nalyze the process **I**mprove the process **C**ontrol the resulting process **FISH:** Focus, Improve, Sustain, Honor
Where Else?	Any business process that is error-prone or has variability that causes customer dissatisfaction.

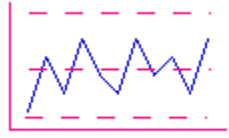
Fix-It Factory

What?	Every company has a Fix-It Factory that devours a third or more of total expenses. The Fix-It Factory extends into the customer's domain when they have to inspect, fix or return the product or service.
Why?	Every process or system produces defects. Most companies are at a 3-Sigma (6% error rate) across all business processes from ordering to invoicing, purchasing or payments.
How?	We eliminate defects and deviation, not by making people better, but by *mistake-proofing* process so that people can't make mistakes.
Where Else?	Any business, large or small has a Fix-It Factory.

Reduce Defects

What?	Measure and reduce defect rates in error-prone business processes and systems.
Why?	Minimize waste, rework, scrap and lost profit due to defects.
How?	Control Chart to measure defect rate over time (CTQ). Pareto Chart to analyze main contributors or Histogram to analyze deviation. Ishikawa Diagram to analyze root causes using 5 Whys. Implement Countermeasures Analyze results to ensure success. Implement a control system so sustain the improvement.
Where Else?	Any error-prone process or system.

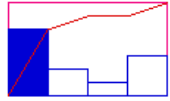
Control Chart to Analyze Variation

What?	Visual method of displaying process performance *over time*.  Control Chart
Why?	To evaluate process stability and predictability, and to show common and special causes of variation
How?	1. Enter data into Excel 2. Draw control chart 3. Analyze stability 4. Eliminate special causes
Where Else?	Control Charts can monitor: - Variable (measured) data - Attribute (counted) data

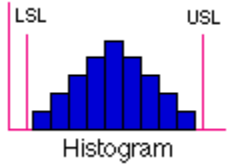
Stability Analysis

What?	Analyzing a control chart for any "out of control" (special cause) conditions using various "rules".
Why?	To make improvements, it's important to bring a process into statistical process control. It's difficult to reduce common causes until the special causes have been eliminated.
How?	1. Draw a control chart with the QI Macros **2.** QI Macros will identify out-of-control conditions in red. **3.** Do a root cause analysis on any special causes and remedy them first.
Where Else?	To conduct a capability analysis, the process must first be in statistical process control (i.e., stable).

Pareto Charts to Focus the Improvement

What?	Visual method of identifying the 4% of a process causing over 50% of the mistakes, errors, defects, waste or rework.  Pareto Chart **4-50 Rule**
Why?	"Big bars" of the pareto become the head of fishbone diagrams for root cause analysis.
How?	1. Enter data into Excel 2. Draw pareto chart using QI Macros 3. Write problem statement for each Big Bar.
Where Else?	Use with counted or measured data to show pareto patterns.

Histograms To Analyze Deviation

What?	Visual way of showing spread of measured data.  Histogram
Why?	Determine if process meets customer's requirements.
How?	1. Select the measured data **2.** Create Histogram using QI Macros **3.** Analyze shape and spread of data **4.** Analyze root causes of variation **5.** Adjust process to reduce variation.
Where Else?	Use with turnaround times as well as part specifications.

Capability Analysis

What?	Analyze where the process will consistently produce the product or service within the customers specifications (upper and lower specification limits).
Why?	Customers expect consistent products or services that meet their specifications. Otherwise they change suppliers.
How?	1. Run a histogram using the QI Macros and the customer's specification limits. **2.** Analyze Cp and Cpk, the capability metrics. **3.** If Cp and Cpk are greater than 1.33 (4 sigma) it will meet most customer requirements. 1.66 = 5 sigma; 2.0 = 6 sigma.
Where Else?	This can also be used for turnaround times or other applications where there may only be an upper specification limit.

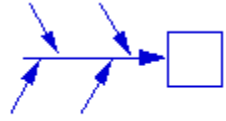
Root Cause Analysis

What?	**Determine the *root* cause of defects and deviation** in processes and systems.
Why?	**Minimize total costs** to company and consumer for repairs, rework, scrap, and waste in the "Fix-It" Factory.
How?	**5 Whys** **Ishikawa or Fishbone Diagram** **Cause-Effect Matrix**
Where Else?	Root cause analysis can be used for: **Common cause variation** **Special cause variation**

Five (5) Whys?

What?	A method for rapidly narrowing focus to the root cause of a given type of error.
Why?	Avoids patching or fixing *symptoms* (i.e., defects).
How?	Develop a problem statement/ **Ask:** Why does (e.g., process) cause the problem? **Take the answer and check your logic:** Does *answer1* cause the process to cause the problem? **Then ask:** Why does *answer1* cause the process to cause the problem? **Use the answer to check your logic:** Does *answer2 cause answer1?* **Repeat up to five times.**
Where Else?	Special or common causes

Ishikawa (Fishbone) Diagram

What?	A visual method of displaying the results of the 5 Whys  Cause-Effect Diagram
Why?	Creates a common way of displaying root causes.
How?	**Draw a fishbone on a flipchart.** Problem statement is the head **Use Post-it Notes to capture the 5 Whys** on flipchart. **Use QI Macros to capture the Ishikawa/Fishbone.**
Where Else?	Can be used to display a desired outcome and work backward to discover process, machines, materials, etc. to achieve it.

Dirty 30 Process

What?	A simple yet effective method for conducting root cause analysis on 30 of the worst examples of a defect.
Why?	Quickly reveals root causes and verifies them.
How?	Get at least 30 examples of the defect. **Analyze each of the defects to determine the root cause for each one.** Build a checksheet of causes. By 30, the root cause will pop out. Identify countermeasures and implement as required.
Where Else?	Especially good for diagnosing IT system problems.

www.qimacros.com/pdf/dirty30.pdf

Mistake-Proofing to Prevent Errors

What?	Any method that makes it *impossible* to make a type of mistake. Think electrical plugs that only go in one way, on-off switches for heavy machinery that require both hands to turn them on (to prevent injuries), but only one kill switch to turn them off.
Why?	**Prevent errors, mistakes, injuries, etc.**
How?	Redesign the process, machine, or materials so that it is impossible for people to make a mistake. (This is the creative part of Six Sigma.) How to design a mistake proofing solution: • Solution should be simple, focused, and inexpensive. • Gives immediate feedback (error detection) • Provides for immediate action (prevention)
Where Else?	Home, office, wherever!

Reduce Deviation

What?	Reducing variation in the size, shape, location, etc. of a product characteristic.
Why?	**Variation can mean that parts don't fit together causing rework or waste.**
How?	Measure variation and display using a control charts and histograms. Identify root causes of variation using 5 whys or fishbone diagram. Implement countermeasures to reduce variation: spread and centering. Implement a control system to sustain the improvement.
Where Else?	Can also be used to reduce turnaround times for products or services.

Sustaining Improvement (Control)

What?	Method of monitoring and taking action to correct shifts in performance.
Why?	Processes, machines, and materials can all shift causing defects and deviation that is undetectable to the human eyes or ears. Sustaining the improvement prevents backsliding
How?	Use control charts to track performance. Create a control plan that describes what will be measured and monitored and how it will be corrected if a problem is detected.
Where Else?	This can be used to monitor turnaround times as well as product or service characteristics.