Value Stream Improvement – Activities and Results

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Several companies are running Lean management programs. Lean management is a long term (3-5 years) cultural and system change program. Lean aims at continuous improvement across the entire value-stream of operations by encouraging and empowering the entire workforce to identify and eliminate waste in their sphere of activity. It is an on-going activity involving all levels of employees to improve their processes and operations.
Lean implementation requires behavior change in every level of the organization. The success of such change programs very much depends on people involvement and daily management.
Continuous Improvement (Kaizen) activities can be carried out on any area, and level of the organization, but they can deliver the best results, if the entire value stream is improved.
Value Stream Improvement activities start by mapping and understanding the current value stream from the point of the customer and values added. All the steps are mapped and observed (measured) from the point the customer gives us an order, to the point the customer receives the product or service. The non value adding activities (waste) are identified, and are either eliminated or reduced through problem solving (Kaizen) activities.
Value Stream improvement is a process oriented, systematic improvement activity, where all the interested stakeholders are involved in the problem solving activity. Value stream improvement requires such a TQM culture and thinking where all the relevant parties are cooperating to increase value added, improve customer satisfaction, by reducing lead time, and waste.
This paper will show practical case studies and examples of Value Stream Improvement activites and highlight the critical success factors of implementation.

Toyota was and still is achieving outstanding results (in terms of Quality, Cost, Delivery, Productivity, Profit, Economic Value Added) in several areas compared to competitors and other manufacturing companies. Several researchers wanted to understand the secrets of Toyota. More then 20 years ago, two researchers Daniel Jones and James Womack, have defined the basic principles the lie behind Toyota success. The 5 “Lean” principles can be applied in any industry to improve processes and business results.

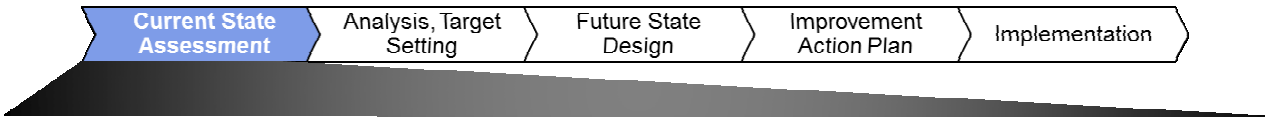
1. Specify value from the standpoint of the end customer by product family.
2. Identify all the steps in the value stream for each product family, eliminating whenever possible those steps that do not create value.
3. Make the value-creating steps occur in tight sequence so the product will flow smoothly toward the customer.
4. As flow is introduced, let customers pull value from the next upstream activity.
5. As value is specified, value streams are identified, wasted steps are removed, and flow and pull are introduced, begin the process again and continue it until a state of perfection is reached in which perfect value is created with no waste.

(Daniel Jones, James Womack, Harper Perennial, November 1991)

In the last 15 years, I have been leading and supporting several Lean – Value Stream Improvement projects in several different industries and organizations. Based upon my experiences the success of these activities very much depends on the focus of the projects, alignment of the Lean tools used with the maturity of the organizational culture. Most of the Value Stream Improvement Projects consist of 4 phases:

1. Current State Assessment
2. Analysis and target setting
3. Concept Development – Future State Design
4. Implementation

Current State Assessment



1. Kick off meeting, set up data collection team
2. Process Walk through
3. Conduct **alignment meeting** with key participants before workshop
4. Compile **measurement plan** and identify data need both on overall and process step level
   - *Demand, Calculate Takt time*
   - *Process Steps, product –process matrix*
   - *Time*: cycle time, change over time, waiting times, lead time, working time
   - *Inventories (FG, WIP, RM)*
   - *Quality / error metrics*, scrap, first pass yield
   - Machine down times, availability
5. Draw **Value stream map** of the "As-is" process in presentable format, prepare brown paper
6. Conduct Lean Assessment interviews and do a process walk through (Gemba Walk)

If we want to improve the value stream, the first two steps are to specify value and draw the Value Stream Map. Value Stream Mapping is done at the Shopfloor (Gemba) by observing and measuring the real processes.

Analysis, target setting

1. **Alignment of the VSM[1] process steps**, assign identified issues to process steps, gather additional issues and separate value-adding and non-value adding activities
2. **Create the Current State Map**
   - *Yellow Post It notes on White Board.*
   - *Identify Value Adding, MU1, MU2 activities*
   - *Identify Risks and Failure opportunities*
   - *Create final version of Current State Map with Total Lead Time, Value Add Time, Value Add %*
3. **Analyze Current Value Stream**
   - *Material and Information Flow*
   - *Identify Muri & Mura,*
   - *Operator and Line Balancing, Analyze capacity and bottlenecks*
4. **Brainstorming : Wastes and improvement ideas**
   - *Waste identification and categorization*
   - *Waste quantification and prioritization*
   - Identify and prioritize *improvement ideas*
5. **Target setting and wrap-up**

If we have mapped the Current Value Stream with the involvement of the key stakeholders, we can identify improvement opportunities (Muri - unreasonableness, Mura – unevenness, and Muda – waste). The next step is to Analyze the value stream from the point of failure opportunities and material and information flow. If the waste and problems are identified and

quantified, we can set improvement targets (KPI-s), understand problems and collect improvement suggestions to eliminate or reduce problems them.

Future State Design

1. Recap of the last session and discuss new findings
2. **Identify opportunities for Improvement** (Kaizen opportunities)
3. **Generate improvement ideas**
   - *5W2H method*
   - *4 Kaizen principles*
   - *Lean principles*
4. **Create project list.** Estimate potential savings.
5. Identify **Quick Wins**. Prioritise.
6. Create Road Map. **Develop and document Kaizen action packages**
7. Create target **Future State Map** and calculate new Total Lead Time, Value Add Time and new Value Add %.
8. **Create Story Board** on Shop Floor for Report Out.

Future State Value Stream should depict the information describing the desired processes and infrastructure, that can achieve the performance improvement targets. Future state design is carried out by them involvement of the key stakeholders in order to assure acceptance of the changes.
The value stream improvement suggestions are of three different types:

- Quick Wins (Short term decision and actions that can bring instant results)
- Kaizen actions (that can be implemented in less, then 2 months)
- Improvement projects (that require more time and resources)

Improvement Action Plan

1. **Recap of the last session and discuss new findings**
2. **Brainstorming: Solution finding**
   - *Work down the prioritized Improvement Idea list to come to solutions*
3. **Evaluate Solutions**
   - *Estimate resource and time requirement of the improvement actions*
   - *Stakeholder analysis for key improvements*
4. **Develop Improvement plan**
   - *Kaizen workshops and Actions (2 months)*
   - *Mid-term improvement projects (2<12 months)*
   - *Long term Improvement projects (>12 months)*
4. **Identify KPI-s to** track and monitor Lean progress
5. **Create final presentation**
   - *Quick-wins, short- and mid-term results*
   - *Cost – Benefit analysis of improvement actions*
   - *Large Scale Project Plan and Communication plan*

Improvement action plan describes the necessary actions, and resources to achieve the Future State and the time line of implementation. Value Stream Improvement Action plans are evaluated from the point of stakeholders acceptance and involvement, and a cost benefit analysis is prepared.

Most of the organizations, get to the point in Value Stream Improvement, that a Future Value Stream and an improvement Action Plan is prepared, several Quick Wins are also implemented (e.g. Number of signatures and documents are reduced in an account opening process in a Bank), but the Midterm and long term projects are struggling.
We are usually very successful in Point Kaizen with our clients, but when we get to a point where significant resources need to be dedicated to the project and serious decisions need to be made the project slows down. However the Flow and System Kaizen activities can bring the more convincing results.

Top Management always wants tangible, measurable results. People also need to be convinced about the advantages of Lean implementation. The best way to assure commitment is to prove evidence of the benefits of Lean implementation.
Value-stream improvement projects enable companies to identify the critical process areas needing change and begin the process of continuous improvement.
The process improvement activities can be either Kaizen (continuous improvement) or Kaikaku (BPR – radical change). The success of these activities very much depends on the selection of the right processes, finding the right problems and involving all relevant parties in improvement of the process, and providing the necessary resources to make changes happen.
As I mentioned earlier, improvement activities can be Point – Flow or System Kaizen. Point Kaizen activites can bring instant results for the participants, but real business results are melted away somewhere else in the value stream (and real financial benefits are not realized)
Value Stream Improvement is Flow or System Kaizen, where the entire value stream is analyzed and improved.

Eliminating waste along the entire value stream, instead of at isolated points, requires coordination and cooperation of different functional departments with different objectives and incentives.
Value Stream Improvement should be aligned with the strategy of the company if we want to ensure Management support and suitability. Hoshin Kanri (policy deployment) is a good method to assure acceptance, commit necessary resources and to align lean activities with strategic objectives. Those companies that have used Hoshin Kanri, were more successful in Lean implementation and achieved better results in inventory turnover, lead time, customer PPM, and Revenue/person.

Point-Flow-System Kaizen

Based upon our experiences and research results, there are tools that can be applied separately and bring results in Point Kaizen actions, and there are tools and methods, that only bring results if the entire Value Stream or Organization has been changed and involved in the transformation. We can categorize the Lean methods into 3 categories:
Point Kaizen, Flow Kaizen and System Kaizen tools.

Point Kaizen	Flow Kaizen	System Kaizen
SMED	VSM	TPM
5S	Heijunka	JIDOKA
Standard work	Line Balancing	KANBAN
Visual Management	One Piece Flow	Zero defects Quality Control
Poka Yoke	Andon	Hoshin Kanri
A3 Problem solving	Synchronized Production	
5 Why?	Cellular Production	
5W2H	Mixed Model Production	
	Supermarket	

We have to be aware of the applicability and preconditions of the different tools if we want to achieve tangible results. Point Kaizen tools can be applied separately from others on a selected area, Flow Kaizen tools should focus on the whole value stream and are only successful if the necessary

preconditions are met along the entire value stream, system Kaizen tools require alignment of the different Management Systems within the organization. Value Stream Mapping can help to align lean activities along the Value Stream to be able to successfully apply Flow Kaizen tools. Hoshin Kanri can help align Management Systems and organizational resources to be able to successfully apply the System Kaizen tools to meet organizational (business) objectives.
Based upon the Lean Maturity, more complex tools can be applied and better results can be achieved. At the beginning we have to build the foundation of Basic Stability in order to apply the more difficult Flow or System Kaizen methods. Point Kaizen brings tangible results on a selected area, increases confidence, but not necessarily brings business results.
Based upon our experiences we can distinguish 4 levels of Lean maturity among our clients:

1. Beginners, with instable processes and organization
2. Stable, performance oriented companies with standardized processes and measurement system
3. Good Problem Solvers, with Continuous improvement culture
4. Strategic System builders, with learning organization

Based upon the Lean Maturity more advance Lean methods can be applied. Beginner can start with the Point Kaizen tools, Stable companies are more likely to be successful with the flow Kaizen tools and Good Problem Solvers can start the System Kaizen tools to become Strategic System Builders.