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rethinking retail

The Theory of Constraints Approach to Improvement How Does It Fit with Lean and Six Sigma?

By: Debra S. Renard

Numerous process improvement methodologies have been proposed. Three of the most prominent are Six Sigma, Lean, and Theory of Constraints (TOC). How can you determine which methodology is the right one for your organization? While the ultimate goal of all three is to increase profit, their more immediate goals to accomplish this vary:

Six Sigma	consistently meet customer expectations
Lean	add value for the customer
TOC	increase throughput

What are some further characteristics, differences and similarities of these approaches?

Six Sigma is a data-driven approach that focuses on reducing variation in order to solve both process and business problems. It applies a very structured and rigid methodology to meet customer specifications and assumes that variations are the cause of defects that impact customers negatively. Six Sigma also assumes the entire process to which it is applied will be improved by implementing variation reductions for multiple elements. The methodology encompasses five steps:

1. Define – determine who are the customers, what are their problems, what are the process elements and output conditions
2. Measure – categorize key characteristics, verify measurement systems, collect data
3. Analyze – convert data into information, identify most important causes of problems
4. Improve – develop solutions to the problem, implement changes, evaluate results through measurements
5. Control – if performance is now as desired and predictable, put it under ongoing control to ensure consistency

It is also hoped that the focus on reduction in variation can produce other secondary effects, such as quality improvement, elimination of superfluous elements, and a decrease in errors.

Lean thinking, or lean manufacturing, as it is sometimes called, focuses on the removal of waste, defined as anything that is not necessary to the production of the good or service and does not add value to the final customer. There is an emphasis on the flow of processes. Some of the assumptions underlying the methodology include that waste is the main limitation on profitability and that many small, rapid improvements are more beneficial than analytical study. The approach consists of five steps:

1. Identify features that create value (either for the ultimate customer or a subsequent process)
2. Identify the value stream, i.e., the sequence of activities which contribute to the value for the customer; determine whether activities which do not contribute value are, nonetheless, necessary
3. Make the activities flow with minimal interruption; common flow inhibitors are queues, batch processing and transportation
4. Allow the customer to pull product or service through the process; provide it only when the customer needs it
5. Perfect the process; continually attempt to remove non-value activity, improve flow, and meet customer needs

As with Six Sigma, it is hoped that Lean's focus on eradicating waste and enhancing flow will have some secondary effects, including quality improvement, process acceleration, and reduction of constraints and obsolescence.

The Theory of Constraints (TOC) logic-driven approach focuses on system improvement. It views the system as a chain of interdependent links that work together toward the primary goal of transforming inputs into sold outputs, thereby increasing throughput (the rate at which the organization generates goal units – usually dollars). The performance of the entire system is limited by the weakest link, or the constraint. All improvement efforts should be aimed at this constraint through the use of five focusing steps:

1. Identify the constraint – can be a physical process or a policy
2. Exploit the constraint – decide how to do everything possible to utilize the constraint to its maximum capability
3. Subordinate to the above decision – all other activities should be adjusted to support and defer to the constraint, to insure it operates at peak effectiveness
4. Elevate the constraint – if system performance is still not satisfactory, consider investments to improve or eliminate the constraint
5. Repeat the cycle – once the previous constraint is broken, go back to step 1 and identify the new constraint; before starting again, be sure that old habits, policies and rules are re-evaluated considering the changed environment.

Assumptions include that the speed and volume at which products or services travel through the system are primary determinants of success, and, therefore, removing the constraint will improve profitability. Secondary effects include protective inventories, quality improvement, reduced variation, and a positive impact on flow and, therefore, throughput.

How can you determine which methodology is the right one for your organization? One of the main distinctions between TOC and the other two methodologies is TOC's extensive focus on the system's constraint, while the other two approaches are not targeted in this manner. While it may appear attractive on the surface to make improvements anywhere they can be made, economic reality is that resources are limited. Hence, TOC dictates that you want the most improvement possible for the least

investment. Efforts to improve all of your organizations individual processes at the same time could actually have a detrimental effect by hindering your ability to meet your customer's needs and provide your product or service when it's needed at the lowest cost. Another consideration is that TOC's focus on one specific constraint at a time requires only a relatively localized effort. Therefore, extensive data analysis and involvement of the entire work force is not critical to success as they are with Six Sigma and Lean. Significant results can be expected with TOC after just three months of effort.

If you are already utilizing one of these approaches, there are ways in which the methodologies can complement each other, especially with regard to exploiting a constraint identified through a TOC effort. Six Sigma can be a tool for getting more throughput out of a constraint, and Lean Thinking can help eliminate any waste associated with it. They might also be used to drive out disruptive variation or reduce waste associated with non-constraint processes that interfere with the constraint, as well as to make sure the constraint is never starved or fed inferior inputs.

Some precautions should be taken, though. First, take care not to drive out waste to such an extent that the protective capacity vital to buffering the constraint is also eliminated. Second, be aware of the differences among the methodologies with regard to balanced systems. While Lean and Six Sigma will tend toward balance throughout the system, TOC relies upon an imbalance in the form of focus upon the current constraint. Although the flow throughout the system should be balanced, the capacity should not – only the constraint will continually operate at maximum capacity.

In conclusion, be sure not to waste time and resources on strengthening system elements that are already strong. Focus your efforts where they will produce the best return. TOC can guide you through the process of identifying and breaking your organization's constraints, increasing your throughput, and realizing the dramatic benefit to your bottom line.

IDEA'S WAY OF THINKING

- *Neither an accurate forecast nor changing vendors is required for success*
- *There is a way to both increase sales and reduce inventory*
- *Supply chains sell less when clogged with inventory*
- *In the long term, unless the supply chain sells more no link can sell more*
- *We must help clients gain buy-in internally and with supply chain partners*
- *The majority of our fees are based on improved return on inventory*

IDEA'S METHOD

- *Verify the existence of inventory imbalances and the benefits of moving from a "Push" to a "Pull" system*
- *Gain top management buy-in to the assessment and support of the approach*
- *Build knowledge and understanding across the supply chain, at all levels*
- *Utilize systems that deliver actionable information, integrated with existing software*
- *Work with you until expected results are achieved*
- *Share the tools and know-how to continually improve results*

IDEA, LLC Contact: Tom Demuth, President TomDemuth@ideallc.com