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Integrating Lean Manufacturing and the Theory of Constraints

Mandyam M. Srinivasan

Ball Corporation Distinguished Professor of Business,
University of Tennessee

October 5, 2006

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Streamlined: 14 Principles for Building and Managing the Lean Supply Chain



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
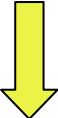

Why Should You Embark on a Lean Journey?

The right reasons for doing Lean

- **To grow your business: Lean is a Growth Strategy**
- **To reduce Inventory – Increase Inventory Turns**
- **To do the same with existing resources: Capital Avoidance**
- **To reduce Product Cost**

Why Should You Embark on a Lean Journey?

The right reasons for doing Lean The TOC Philosophy

- To grow your business: Lean is a Growth Strategy T: Throughput 
- To reduce Inventory – Increase Inventory Turns I: "Inventory" 
- To do the same with existing resources: Capital Avoidance
- To reduce Product Cost OE: Operating Expense 

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Lean Supply Chain Principle 11

Decisions should promote a growth strategy. While enterprises should attempt to simultaneously increase throughput, decrease inventory, and decrease operating expenses, the focus should be on improving the throughput of the supply chain.

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Translating Principle 11 to Practice

For any decision you take, ask yourself the following questions. Will the decision:

- a) **Help you sell more products profitably?**
- b) **Reduce investments in resources?**
- c) **Reduce payments or other expenses?**

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The Business Case for Lean

“**Lean**” is:

- A set of concepts, tools, and management prescriptions aimed at strengthening competitive advantages through effective process execution.

Key words:

- Prescriptive
- Competitive Advantage
- Effective Process Execution

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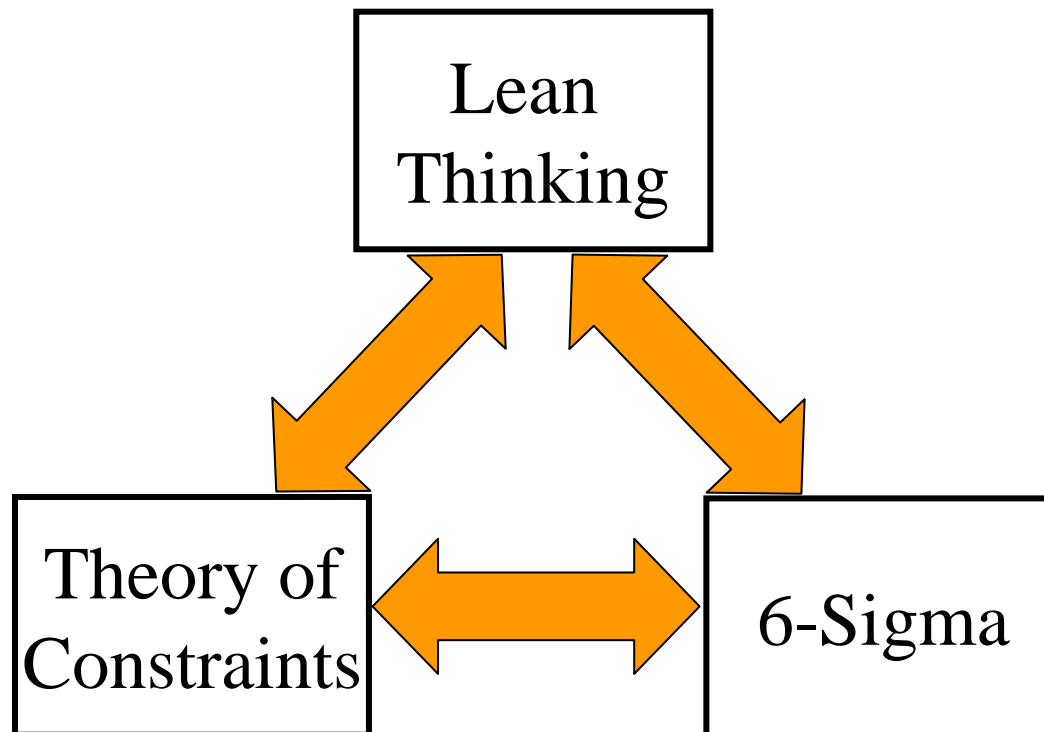
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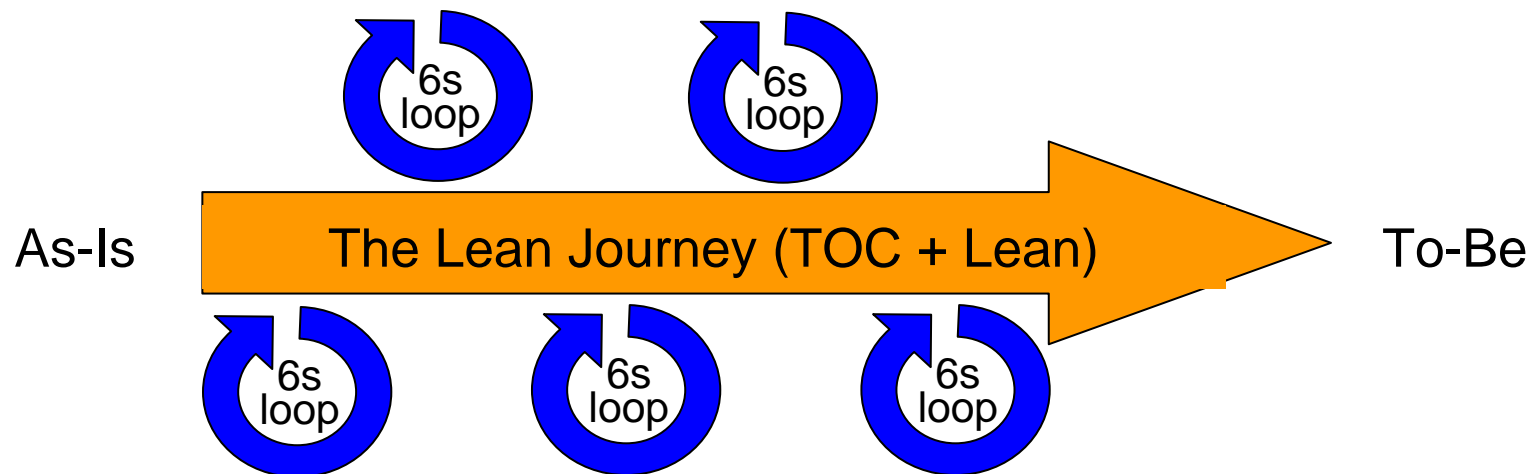
The Toolkit for Superior Process Execution



Lean Thinking, TOC and 6-Sigma

TOC and Lean are prescriptive: they set the direction towards a defined “To-Be” future state.

Six Sigma supports and complements these efforts: It is an all-purpose approach to problem solving and decision making based on analysis of data



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Building the Lean Supply Chain:

Two Key Aspects

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Are you using the right supply chain design?

Coping with the move towards personalization:

The **“RAP”** Principle – keep the in-process inventory as “raw as possible.”

The **RAP** principle can be accomplished by structuring product offerings to postpone material and resource commitments.

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Lean Supply Chain Principle 4

Maximize external variety while minimizing internal variety. Maintain inventories in an undifferentiated form for as long as it is economically feasible to do so.

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Are you leveraging collaboration effectively?

- Are you optimizing supply chain costs or “optimizing” your own internal costs?
- Are your suppliers involved in product design/re-design efforts?
- Are you sharing the spoils?
- Are you providing visibility to your suppliers on your production schedules?

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Lean Supply Chain Principle 7

Build partnerships and alliances with members of the supply chain strategically, with the goal of reducing the total cost of providing goods and services.

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Managing the Lean Supply Chain

Creating Flow and
Providing Visibility

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Promoting a Growth Strategy

- How are you achieving throughput velocity?
- Have you synchronized the flow in your supply chain?
- Is every member in the supply chain “rowing the boat” at the same pace?

If not, why not?

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Lean Supply Chain Principle 13

*Do not focus on balancing capacities.
Focus on synchronizing the flow.*

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Lean Supply Chain Principle 12

Focus on bottleneck resources because they control the flow. Synchronize flow by first scheduling the bottleneck resources on the most productive products; then schedule non-bottleneck resources to support the bottleneck resources.

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The Role of Information Technology

Information Technology as an enabler of the
Supply Chain

The 'productivity paradox'

*Resist the urge to simply automate
existing practices*

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The Role of Information Technology

The true power of IT:

- Allows a “Large Company Body” to have a “Small Company Soul”
- Provide supply chain visibility
- Enhance collaboration between supply chain partners

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Moving Beyond the Production of Goods and Services

Project Management

- Critical Chain Project Management
- Synergies between Lean and TOC in project management

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Questions

