

LEAN *and* TECHNOLOGY

WORKING HAND IN HAND
TO ENABLE AND ENERGIZE
YOUR GLOBAL SUPPLY CHAIN



PAUL A. MYERSON

Professor of Practice in Supply Chain Management, Lehigh University

LEAN AND TECHNOLOGY

Lean and Technology: Working Hand in Hand to Enable and Energize Your Global Supply Chain

Table of Contents

Cover

Title Page

Copyright Page

About the Author

Contents

Part I: Introduction and Overview

Chapter 1 Lean Supply Chain and Technology: A Perfect Combination

Its a Small World After All

How Big an Opportunity Is It?

The Extended and Often Global Supply Chain and Technology

Information Systems (IS) Versus Information Technology (IT)

Risks and Rewards

Linking Competitive Strategy to the Value Chain

Competitive Strategy, Business Processes, and IT Structure Aligned

Using the SCOR Model to Help Enable Lean Opportunities with Technology

Chapter 2 The Growing Importance of the Supply Chain and Technology to Business and Society

Supply Chain Defined

History of Supply Chain and Logistics Management

The Role of Information Technology in the Supply Chain

Supply Chain Information

Table of Contents

- Interactive View of Information
- Importance of Integration for Sharing Information
- Viewpoints of Supply Chain Information Systems
- Supply Chain Macro Processes
- Supply Chain Information Technologies

Supply Chain Technology Trends

Chapter 3 Lean Concepts and Their Applications in the Supply Chain

- Lean Background
- Value-Added Versus Non-Value-Added Activities
- Waste
- Lean Culture and Teamwork
- Elements of a Lean Supply Chain Strategy
 - Basic Tools
 - Advanced Tools
 - Tools for Identifying and Solving Problems

Lean, Supply Chain, and Technology

Chapter 4 Software and Hardware Sourcing Process and Applications of Supply Chain and Logistics Management Technology

- The Procurement Process
 - Identify and Review Requirements
 - Establish Specifications
 - Identify and Select Suppliers
 - Determine the Right Price
 - Issue Purchase Orders
 - Follow Up to Assure Correct Delivery
 - Receive and Accept Goods
 - Approve Invoice for Payment

Software and Hardware Selection

- Phase 1 Planning and Budgeting

Table of Contents

Phase 2 Requirements Analysis

Phase 3 Vendor Research

Phase 4 Demonstrations

Phase 5 Final Decision

Phase 6 Contract Negotiation

Implementation Partner/VAR Selection

Make or Buy

SCM System Costs and Options

Best-in-Class Versus Single Integrated Solution

Consultants

Project Management

Supply Chain Software Market

Supply Chain Planning (SCP)

Supply Chain Execution (SCE)

Other Supply Chain Technologies

Current and Future Trends in Supply Chain Software

Short-Term Supply Chain Technology Trends

Emerging Supply Chain Technology Trends

Part II: Plan

Chapter 5 Supply Chain Network Optimization

Strategic Planning Level

Tactical Planning Level

Operational Planning Level

Importance of the Supply Chain Network

The Location Decision and Its Impact on Value

How and Why Network Optimization Technology Can Help Enable a Lean
Supply Chain

Network Optimization Technology

Technology Options

Supply Chain Network Optimization Technology Case Studies

Case 1: North American Industrial Manufacturer Optimizes Its Distribution Network

Table of Contents

Case 2: Semiconductor Manufacturer Re-Designs Its Global Supply Chain Network

Chapter 6 Demand Forecasting Systems

A Lean Approach to Forecasting

Typical Forecasting Process

Lean Forecasting Process

Forecasting Technology Options and Requirements

Lean Forecasting Technology Case Studies

Case 1: Caribou Coffee Automates Forecasting Process with Logility Software

Case 2: Butterball Uses JDA Software to Improve Its Forecasting Process

Case 3: Kimberly-Clark Integrates Point of Sale (POS) Information to Improve Its
Resupply Process with Retailers

Chapter 7 Master Production Scheduling

Master Production Schedule (MPS) Defined

Lean Scheduling

MPS/Production Planning Technology Options and Requirements

Lean and ERP for Production Planning: A Fine Balancing Act

Lean Production Planning and Technology Case Studies

Case 1: Energy Bar Company Upgrades Production Planning Technology

Case 2: Global Raw Materials Supplier Integrates MPS Process to Minimize Waste

Case 3: Nestlé Innovates Its Milk Production Planning

Case 4: Durabuilt Windows and Doors Balances Lean and ERP for Production Planning

Chapter 8 Sales and Operations Planning (S&OP)

Sales and Operations Planning (S&OP) Defined

S&OP and Lean

Working Together

S&OP/Aggregate Planning Technology

Lean S&OP/Aggregate Planning and Technology Case Studies

Case 1: Infineon Technologies AG Takes Planning to the Next Level with JDA S&OP

Case 2: Accelerated S&OP Collaboration at Lance

Case 3: Continental Mills Increases Productivity with S&OP Process

Case 4: Radisys Improves S&OP Process, Supporting Tools Rapidly After Outsourcing

Table of Contents

Strategy Leads to Real Challenges

Part III: Source

Chapter 9 Material Requirements Planning (MRP)

Procurement and Purchasing Defined

The Purchasing Process

Types of Business Purchasing

Material Requirements Planning Described

Lean and Material Requirements Planning

Material Requirements Planning Technology

Lean MRP and Technology Case Studies

Case 1: Gables Engineering Moves to a Real MRP System

Case 2: Transport Data SystemsA Picture-Perfect MRP Implementation Helps Traffic
Enforcement Camera Maker to Profitability

Case 3: Raytheon Streamlines and Automates Its Material Requirement Planning
Processes with Exostars Supply Chain Platform

Chapter 10 Procurement (and e-Procurement) Systems

The Procurement Process

Automation of Procurement Documents and Processes

Lean and Procurement

Procurement Technology

Lean Procurement and Technology Case Studies

Case 1: Enabling Online Supplier Collaboration at Toshiba Semiconductor Company

Case 2: ClariantIncreasing Interenterprise Productivity and Extending Its SAP
Software Investment Value

Case 3: New Purchase-to-Pay System Allows Smarter Processes at Atea

Part IV: Make

Chapter 11 Enterprise Resource Planning (ERP) Systems

Lean Supply Chain and ERP Systems

ERP Technology

Lean Supply Chain and ERP Systems Case Studies

Case 1: Radio Flyer Teamed with Ultra Consultants on ERP Selection, Business

Table of Contents

Process Improvement, and Implementation Management

Case 2: Flexpipe Systems Inc. Works with IFS Applications for More Flexibility

Case 3: Automotive Supplier Nissen Chemitec America Accelerates Lean Operations with IQMS ERP

Chapter 12 Manufacturing Execution Systems (MES)

The Role of MES in Today's Competitive Environment

Manufacturing Execution Systems and Lean

MES, Lean, and Visual Management Systems

Lean Supply Chain and Manufacturing Execution Systems Case Studies

Case 1: Full Sail Brewing Taps Manufacturing Intelligence to Enhance Brewing Process

Case 2: Merck Sharp & Dohme (MSD) Pharmaceutical Asian Factory Implements MES

Case 3: EZ-MES Automates Production Tracking System at a High-Power Laser Company

Chapter 13 Short-Term Scheduling

Short-Term Scheduling Process

Continuous Versus Discrete Industry Scheduling

Scheduling in Service Industries

Lean Short-Term Scheduling

Advanced Planning and Scheduling (APS) Systems

Advanced Planning and Scheduling Systems Technology

Advanced Planning and Scheduling Systems Technology Case Studies

Case 1: Auto Parts Manufacturer Chooses Asprova for Its Good User Interface Reduces Labor of Adjusting the Schedule

Case 2: Mueller Stoves Reduces the Assembly Line Stops after Preactor Deployment

Part V: Deliver

Chapter 14 Distribution Requirements Planning (DRP)

Lean and DRP

DRP Software

DRP Case Studies

Case 1: Ford Auto Logistics: Revving Up Service Parts Logistics Operations

Case 2: Everlast Builds a Championship Company with New Product Lines

Case 3: Canadian Tire Keeps Stores Rolling with Replenishment Program

Table of Contents

Chapter 15 Transportation Management Systems (TMS)

Lean and TMS

Types of Savings and Improvements Resulting from the Use of a TMS

Transportation Management System Technology

TMS Case Studies

Case #1: Papa Johns Pizza Orders Optimization Supreme with Manhattans Supply Chain Process Platform

Case #2: A Leading Dairy Trims 18% from Transportation Costs Using Optimizer Software

Case #3: Miller Brands UK Uses Transwide TMS to Manage Growing Transport Volumes

Chapter 16 Order-Fulfillment Systems

Warehouse Management System (WMS)

Order Management Systems (OMS)

Customer Relationship Management (CRM) Systems

Lean and Order Fulfillment

Order Placement

Order Processing

Order Preparation and Loading

Order Delivery

Faster Fulfillment

Order Fulfillment Case Studies

Case 1: Regional Pharmaceutical Distributor Requires Next Day Delivery

Case 2: Whirlpool Spins Optimized Supply Chain with Help from Manhattan Associates

Case 3: TAGG Logistics Combines Cadence WMS and ADSI Ship-IT for Real-Time Supply Chain Execution System

Part VI: Return

Chapter 17 Reverse Logistics Systems

Lean Reverse Logistics

Elements Key to a Lean Reverse Logistics Process

Lean and Reverse Logistics Technology Cases

Case 1: RTL[sup(TM)] Adds Up to Many Happy Returns for Philips Consumer Lifestyle

Table of Contents

Case 2: Nokia Deployment of Global Service Strategy

Case 3: Return Central Reconstructed Network Yields Big Efficiencies, Faster
Processes for National Home Improvement Retailer

Part VII: Enable

Chapter 18 Measurements, Metrics, and Analytics

Measurement and Analysis Process

What and Where to Measure

Using the SCOR Model to Measure and Control

Supply Chain Analytics

Supply Chain Decision Support and Analytics Technology

Lean and Supply Chain Analytics Technology Case Studies

Case 1: Business Intelligence in the Supply Chain Better Decisions Through Data for
Annas Linens

Case 2: Steel Manufacturer Improves Performance, Profitability

Case 3: H.D. Smith: Why Analytics Is Eating the Supply Chain New Tools Are Helping
Companies Achieve the Supply Chains Holy Grails

Part VIII: Where Do We Go from Here?

Chapter 19 Collaborative Supply Chain Systems

The 80/20 Rule

Collaboration for a Lean Supply Chain

Integrated and Collaborative Technology for a Leaner Supply Chain

Lean and Collaboration Technology Case Studies

Case 1: Agilent Technologies Comprehensive Supply Chain Visibility Across a
Multi-Enterprise Supply Chain

Case 2: Arrow Electronics Automates Replenishment Program with One Networks
Real-Time Value Network

Chapter 20 Emerging Technologies and Their Potential Impacts on the Lean Supply Chain

General Supply Chain Trends

Supply Chain Software and Connectivity Technology Trends

Supply Chain Software Best Practices

Table of Contents

Supply Chain Hardware Technology Trends

Hardware Technologies for a Competitive Advantage in the Next Decade

Future Supply Chain Technology Spending

Looking Ahead

References

Index