Optimize Supply Chain Planning & Execution

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Agenda

Supply Chain: Key objectives and Business Challenges

Approach to Maximize Supply Chain Opportunities

Leveraging IBM Solutions

Why Now – Greater ROI!
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Why Now – Greater ROI!
Smarter Commerce is about an integrated portfolio of capabilities . . .
... that is geared to what your customers want, and how you should respond

- **Customer Experience:** Items always in stock
  - **Supply Chain Response:** Lean, distribution-centric
  - **Typical Industries where found:** CPG, Apparel

- **Customer Experience:** Innovative products and services
  - **Supply Chain Response:** Agile, responsive
  - **Typical Industries where found:** Consumer Electronics

- **Customer Experience:** Solutions to complex problems
  - **Supply Chain Response:** Flexible
  - **Typical Industries where found:** Industrial Machinery
Supply Chain: Key Objectives and Challenges

**Key objectives**

- **Growth (Revenue/Volume)**
  - Improve customer Orientation (service levels, deliver to promise, customer retention etc)
  - Leadership through new products & promotions

- **Improve Net Realization (EBIDTA)**
  - Reduction in Inventory
  - Optimize Total Landed Cost
  - Optimization of freight costs

- **Improve Asset utilization**
  - Improved asset utilization for plants and logistics
  - Reduced order fulfillment cycle time
  - Integrate supply chain to increase velocity
Our point of view on the progression of supply chain management of the future

Clients typically find themselves at various points on this journey based on division/business unit, product and/or customer
Supply Chain Optimization drives dramatic results

- **Motorola**
  - Procurement Management
  - $100M+/yr savings

- **Brewing Company**
  - Mfg Sourcing + Distribution
  - $150M/yr transportation savings

- **South African Defense Force/Equipment Planning**
  - $1.1BN / year savings

- **Consensus Planning**
  - Demand, Supply, Sales, Production, Finance

- **US Water Products Mfg**
  - Inventory Optimization
  - $6.2M working capital reduction

- **Continental Airlines**
  - Crew Rescheduling
  - $40M/yr savings

- **Motorola**
  - Procurement Management
  - $100M+/yr savings

- **South African Defense Force/Equipment Planning**
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**Supply Management**
- Global Sourcing
- Procurement Transformation
- Supplier Management
- Spend Management

**Demand Management**
- Demand Forecasting
- Continuous Replenishment
- VMI
- Order Management/POS

**Supply Management**
- Consensus Planning
  - Demand, Supply, Sales, Production, Finance

**Logistics & Warehousing**
- Shipment Tracking
- Asset Management
- Event Visibility
- Import/Export Management

**Manufacturing Excellence**
- Production Scheduling
- Manufacturing
- Work-in-Progress
- Assembly
Planning and Execution Synergy

- **Strategic (Long-term) planning** focused on customer, revenue and profits
- **Operations planning** to drive operational efficiencies, reduce waste and improve KPIs
- **Supply Chain Execution** aligned with overall strategy & operations
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Why Now – Greater ROI!

Rahul Jadhav, Business Manager – Commerce Solutions, IBM SWG
Maximize SCM Opportunities: Strategic Planning

Three pronged approach:

1. Redesign Supply Chain Network
2. Redefine Inventory Strategy
3. Redefine Transportation Strategy
Maximize SCM Opportunities: Strategic Planning

Network + Inventory + Transportation Optimization = Significant ROI

1. Network Optimization
   Goal: Optimize Cost & Service Delivery
   • Optimum # of facilities
   • Optimum Demand-Supply Linkages
   • Sourcing, Capacity mix & Product Mix

2. Inventory Optimization
   Goal: Optimize service levels & cost
   • Optimize Inventory positioning
   • Inventory Norms
   • Service levels – cost trade-off

3. Transportation Optimization
   Goal - Optimize Cost & Route Planning
   • Evaluate Transportation Strategies
   • Multi-modal fleet, Tariff Simulations
   • Inbound & Outbound planning

Continuous Improvement
Faster Scenario Analysis & Comparison
Smarter Decisions
Maximize SCM Opportunities: Strategic Planning

1. Network Optimization

**Strategic Network Design Decisions**

- Optimize locations, capacities of suppliers, plants, DCs, etc.
- The best way to assign customers and products to DCs
- Optimum demand-supply linkages
- What-if scenario analysis for
  - Costs and service levels
  - Inbound, outbound freight, duties
  - Transportation & warehousing costs

**Manufacturing / Sourcing Decisions**

- Product Mix and Capacity Mix
- Single sourcing vs. dual sourcing
- Inventory pre-build decisions to address demand seasonality
- Impact of changes to production location / capability on overall supply chain costs
- Timing of changes in supply chain
Maximize SCM Opportunities: Strategic Planning

2. Inventory Optimization

Business Challenges

- Complex network, proliferation of SKUs, shorter product lifecycles
- Service expectations despite volatile demand, promotions & seasonality
- Frequent stock-outs despite excess inventory
- Long supply lead times while customer expecting frequent/shorter delivery times

Supply Risk

- Lead Time
- Supply Chain network
- Unplanned Shutdowns
- Component lifecycle
- Constraints

Demand Risk

- Demand Forecast
- Forecast Variability
- Target Service Levels
- Product lifecycle
- Promotions
Maximize SCM Opportunities: Strategic Planning

3. Transportation Optimization and Route Planning

Transportation Decisions

- Logistics Budget Planning and Strategy decisions
- Targeted **fleet size** and composition
- Dedicated fleet v/s Market Carriers
- Impact of **backhauls – Inbound:Outbound synergy**
- **Hub Strategies** – Consolidation / Deconsolidation
- Fixed Routes v/s Dynamic Routes
- Opportunities for **continuous moves** with multi-pick / drop
- Load consolidation: LTL to FTL
- Optimize for pickup/delivery windows, service times
- Analyze **carbon footprint** of the transportation
Maximize SCM Opportunities: Operations Planning

Sales & Operations Planning

- Demand Planners
- Sales
- Marketing
- Product Management
- Forecast Demand
- Fulfilment & Distribution Planning
- Supply Plan
- Supply Chain Operations Engineering Logistics

Consensus

EXECUTIVE REVIEW
- Resolve Issues
- Set Direction
- Determine Strategic Impact

Demand

Source Systems

Supply

Scorecards
- Reports & Analysis
- Event Notification

IBM Software Universe 2011
The Next Big Wave
Maximize SCM Opportunities: Operations Planning
Production Planning & Scheduling

The Structure of Optimization Models

**INPUTS**
- Demand to be met
- Resources available
- Costs, Yields & Recipes
- Operational Constraints & Customer Preferences
- Business Goals

**OPTIMIZATION ENGINE(S)**
Using one or many

**MATHEMATICAL MODEL(S)**

**SCHEDULE OR PLAN**
- Minimized Costs
- Maximized Yields
- Specific Resource Assignments
- Best Possible Timing of Activities
- Operational & Financial Metrics

IBMSoftwareUniverse2011
The Next Big Wave
Maximize SCM Opportunities: Execution
Multi-channel Selling & Fulfillment
Multi-channel Selling & Fulfillment
Order Capture - Promising - Allocation

Customer Channels

- Call Center
- Kiosk
- eCommerce
- Mobile
- Store

Enterprise Applications

Cross Channel Inventory and Order Hub

- Promising (ATP)
- Order Orchestration
- Supply Chain Visibility

Fulfillment Network

Distribution Centers
Drop Shippers
3PL’s
Store Network

IBM Software Universe 2011
The Next Big Wave
Multi-channel Selling & Fulfillment
Order Fulfillment

**Inbound Processing**
- Receipts, QA
- Returns
- Put away

**Inventory Control**
- Locator/Slot/Bin Level
- Serial & Lot Control
- Cycle Counting

**Other Capabilities**
- Yard Management
- MHE Integration
- FSL Replenishment

✓ Global
✓ Multi-Tennant
✓ Networked Design
✓ Process Centric

**Outbound Processing**
- Wave Planning
- Pick/Pack/Stage
- Shipment Planning

**Operational Visibility**
- Labor & Task Management
- Productivity Manager
- Event Monitoring

**Value Added Services (VAS)**
- Work Order Management
- Assembly, Testing, Kitting, Packaging, Special Processing
Multi-channel Selling & Fulfillment
Supply Chain Visibility and Analytics: Strategic Control Tower

**The Solution**
- Integrated Business Analytics
- Predict, identify and manage supply chain constraints and performance issues

**Key Benefits**
- Smarter value chains for on-time-ship performance
- Prevent issues, solve constraints & disruptions faster

Linked executive through operational reporting

Global performance optimization cockpit
Agenda

- Supply Chain: Key objectives and Business Challenges
- Approach to Maximize Supply Chain Opportunities
- Leveraging IBM Solutions
- Why Now – Greater ROI!
Leveraging IBM Solutions to Optimize Supply Chain

ILOG Supply Chain Solutions

- Strategic Network Optimization
- Inventory Optimization
- Transportation Optimization
- Sales & Operations Planning
- Production Planning & Scheduling
- ILOG CPLEX solver

Sterling Commerce Solutions

- Sterling Multi-channel Selling & Fulfillment solutions
- Warehouse Management Solution
- Global Supply Chain Visibility
- B2B solutions

IBM Consulting Experience and Expertise

- IBM solutions being used by thousands of leading companies worldwide
- IBM consultants have unmatched expertise in supply chain planning & optimization
Customers leveraging ILOG and Sterling Solutions
Agenda

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ROI from Supply Chain Optimization
Forward thinking companies across industries have been realizing significant ROI with Supply Chain Optimization

<table>
<thead>
<tr>
<th>Customer Name</th>
<th>Optimization Area</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Chilean Forestry firms*</td>
<td>Timber Harvesting</td>
<td>$20M/yr + 30% fewer trucks</td>
</tr>
<tr>
<td>UPS*</td>
<td>Air Network Design</td>
<td>$40M/yr + 10% fewer planes</td>
</tr>
<tr>
<td>South African Defense*</td>
<td>Force/Equip Planning</td>
<td>$1.1B/yr</td>
</tr>
<tr>
<td>Motorola*</td>
<td>Procurement Mgmt</td>
<td>$100M-150M/yr</td>
</tr>
<tr>
<td>Samsung Electronics*</td>
<td>Semiconductor Mfg</td>
<td>50% reduction in cycle times</td>
</tr>
<tr>
<td>SNCF (French RR)*</td>
<td>Scheduling &amp; Pricing</td>
<td>$16M/yr rev + 2% lower op ex</td>
</tr>
<tr>
<td>Continental Airlines*</td>
<td>Crew Re-scheduling</td>
<td>$40M/yr</td>
</tr>
<tr>
<td>AT&amp;T*</td>
<td>Network Recovery</td>
<td>35% reduction spare capacity</td>
</tr>
<tr>
<td>Grant Mayo van Otterloo*</td>
<td>Portfolio Optimization</td>
<td>$4M/yr</td>
</tr>
<tr>
<td>Pepsi Bottling Group</td>
<td>Production Sourcing</td>
<td>$6M inv reduction + 2% fewer miles</td>
</tr>
<tr>
<td>Fonterra</td>
<td>Dairy Distribution</td>
<td>$15M annual savings</td>
</tr>
<tr>
<td>NA Brewing Company</td>
<td>Mfg, Sourcing, Distribution</td>
<td>$150M/yr transportation savings</td>
</tr>
<tr>
<td>US Water Products Mfg</td>
<td>Inventory Optimization</td>
<td>$6.2M working capital reduction</td>
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Supply Chain Optimization: Great Opportunity, Greater ROI!

**Potential Quantifiable Benefits**

- Increase Sales/Revenue
- Increase customer service levels 1% to 5%
- Reduce operating costs (Freight Cost, Handling, Storage, Manufacturing, procurement) 5% to 10%
- Reduce fixed assets (consolidate production lines, plants, warehouses) by 5% to 10%
- Reduce total inventory (RM, WIP, FG) by 10% to 15%

\[
\text{ROA} = \frac{\text{revenues} - \text{expenses}}{\text{Total assets}}
\]
Drive significant impact with IBM Supply Chain Optimization Solutions:

Potential impact through IBM solutions:

- **Strategic planning**: 10% to 15% improvement
- **Operations planning**: 5% to 10% improvement
- **Execution**: <5% improvement

**Strategic**
- ILOG Network Optimization
- ILOG Inventory Optimization
- ILOG Transportation Optimization

**Operations**
- ILOG-Cognos S&OP
- ILOG Production Planning & Scheduling

**Execution**
- Sterling Order Fulfillment
- Sterling Warehouse Management
Thank you! Next steps:

Visit the IBM Smarter Commerce Booth or contact us to learn more about how IBM can optimize your supply chain rahuljad@in.ibm.com | +91 9880001431

Learn how other IBM clients are benefiting from IBM Supply Chain Solutions
http://www.sterlingcommerce.com/customers/by-product/

Learn more about IBM ILOG and Sterling Commerce Solutions for Supply Chain Management
http://www.sterlingcommerce.com/products/multi-channel-fulfillment/supply-chain-visibility/
http://www.sterlingcommerce.com/products/multi-channel-fulfillment/transportation-management/
http://www.sterlingcommerce.com/products/multi-channel-fulfillment/warehouse-management/
Appendix
Case Study – Network Redesign

Areas:
• Supply Chain Network Design
• Inventory Optimization
• Plant Location Analysis

Objectives:
• Identify network to support GST Implementation
• Recommend Distribution and Inventory Strategy

Solution Summary
- Consulting & Implementation of IBM ILOG tools for strategic network design
- Analysis on working capital impact of network configuration changes

Total Savings Summary & Implementation Roadmap

<table>
<thead>
<tr>
<th></th>
<th>2010 Implementation Time</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>3 mos</td>
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<tr>
<td>DC Consolidation</td>
<td>1.0</td>
</tr>
<tr>
<td>Inv. Charges</td>
<td>0.2</td>
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<tr>
<td>Rail</td>
<td>0.6</td>
</tr>
<tr>
<td>On-Going Total Log. Savings</td>
<td>1.9</td>
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<tr>
<td>One-Time WC Impact</td>
<td>2.3</td>
</tr>
<tr>
<td>TOTAL SAVINGS</td>
<td>4.2</td>
</tr>
<tr>
<td>Rupee/SSU Log. Savings</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Candidate Facilities and Final Network

Business Results
- Possible reduction in number of DCs from 32 to 21 with GST implementation
- Possible reduction in logistics cost by 10%
- Possible Working capital reduction by 14%
Case Study – Inventory Optimization

- **Objective** - Improve forecast accuracy and optimize inventory level across aftermarket spare parts supply chain, while meeting targeted service levels
- **Inventory issues**
  - Use of sub-optimal inventory buffers leading to excess inventory / poor service levels
  - Absence of “what-if” analysis & limited visibility in inventory performance measures
- **Forecasting issues**
  - Basic extrapolation technique of moving average causing forecast to lag actual demand
  - High deviation between tentative and firm plan given to suppliers & measurement process

<table>
<thead>
<tr>
<th>Benefit Area</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved Forecast Accuracy</td>
<td>Significant improvement in forecast accuracy across different category of parts</td>
</tr>
<tr>
<td>Optimized Inventory Levels</td>
<td>Reduction in inventory levels for Spare Parts SKUs for targeted service level. through optimal setting of inventory parameters</td>
</tr>
<tr>
<td>Consistent Service Levels</td>
<td>Solution has helped in achieving consistent service levels</td>
</tr>
<tr>
<td>Supply Chain Flexibility</td>
<td>Solution provides flexibility in evaluating various “what-if” scenarios and comprehensive results analysis</td>
</tr>
</tbody>
</table>
Case Study – Transportation Route Planning

- **Objective:** To perform tactical level planning to estimate fleet requirements and operation planning to derive optimal route planning

- **Challenges:**
  - Around 650 dealers spread across 500 towns across India. Planning to expand the dealer network to various towns. Hence route planning need was highlighted
  - Tactical planning to estimate transportation needs and optimal route planning
  - Evaluation of various scenarios (direct delivery, DC to DC deliveries, multi-stop routing etc)

<table>
<thead>
<tr>
<th>Benefit Area</th>
<th>Description</th>
</tr>
</thead>
</table>
| Improved Tactical planning / estimation | Evaluate and design optimum routes  
                                        | Estimate fleet requirement (number & type of vehicles) by time               |
| Optimal Route Planning            | Daily planning & dispatches to derive optimal multi-stop routing             |
| Reduced Transportation cost       | Helps in optimizing fleet as well as reduction in transportation variable cost due to route optimization |
| Supply Chain Flexibility          | Solution provides flexibility in regularly evaluating various “what-if” scenarios and selecting the better parameters |