ELEMENTS OF SUCCESSFUL DEMAND AND SUPPLY PLANNING DEVELOPMENT

Arup Chatterjee, Inspirage
Luc Girouard, Inspirage
Lausanne, April 19th, 2018
S&OP PROCESS: QUICK RECAP
S&OP : BUSINESS PRACTICE SINCE 80’S

- Created in Mid 80’s
- Got Established by early 90’s
- Realize term Pre S&OP is understated
- New Role of a Business leader emerged
  - Like a Conductor in a symphony ensuring everyone is playing in same speed and Same Volume.
  - S&OP is about coordinating the Volume
- Data has always been a challenge
  - Always been Fragmented, Incomplete, dated
  - Limited by tools and Computing power
ORIGINAL S&OP PROCESS

• All about Demand and Supply
• An attempt to achieve one number
• Operations led
• Pushing it up to Senior Management
• Lacking technology and tools
• Planning Horizon too short
S&OP: WHAT HAS CHANGED?
AS S&OP MATURERED: TODAY’S BUSINESS MODEL

- All areas of company involved
  - Marketing, Sales, Product Development, Finance, Operations
- Cross functional collaboration in a common business language
- Senior Management led
- Planning Horizon 12 to 18 months
- Implementing your Business strategy
WHAT NEEDS RECONCILING?

• New directives from senior management
• New Opportunities in the market place
• New Product timing
• Deviation from the business plan
• Supply problems
• Any issues emerging through the monthly process
WHO MAKES UP THIS TEAM?

• You need a leader or process owner of the integrated reconciliation process

• Leaders from Finance, new product development, sales, marketing and supply chain

• Members from each area of the company who is needed to reach a consensus, make decisions and recommendations for the path forward
WHAT IS THE WORK OF THE INTEGRATED RECONCILIATION TEAM?

- **Review** global performance outlook and differences between business strategy, budget and forecast
- **Reconcile** gaps between new activities, demand, supply and financial targets
- **Highlight Impact** of changes (units and financials), gaps, opportunities and major integration issues over a 2 year horizon
- **Develop Scenarios** considering trade-offs, cost benefits etc
- **Redirect** issues that should have been resolved elsewhere in line with organization responsibilities
- **Make recommendations** and/or decisions for alternatives with business impacts for each
- **Elevate** to senior management major open issues and seek attention at an aggregate level
FOCUS ON CHANGE

• It is important that the S&OP process focus on what is changing and facilitate the change

• The questions are:
  • What has changed?
  • Do we agree with the changes?
  • Do we understand the internal and external factors that is causing the change?
  • Do we understand the impact of the changes?
  • Are there any alternatives?
  • What decisions need to be made?

Welcome Change
## Executive Summary

### On going planning assumptions

- June Baseline
- June Capacity

### Major Changes in this cycle

- Shipment History
- Operating Plan
- Sales Forecast

### Emerging issues

- Difference % Operating Plan and Budget

### Decisions made last week

- Risks and Opportunities

### Decisions to be made this week

- Scenario Planning
SCENARIOS DRIVEN RAPID PLANS

• This is testing business strategies against a number of alternative futures

• We need a new set of tools in order to accomplish scenario planning.
  • Tools that can quickly respond to the changes all the way from strategic changes to tactical changes
  • Excel is status quo: Latin for we are in mess and can’t do much.

• Tools that can sense demand faster and provide insights to the S&OP blind spots which are not visible

• We need to understand that we do have multiple plans for different scenarios and different purpose
FUTURE PORTFOLIO MODEL
WHICH ONE LOOKS LIKE YOUR FUTURE PORTFOLIO?
UNCERTAINTY BY PORTFOLIO MODEL
OTHER UNCERTAINTIES AND ITS IMPACTS

- **Philips chip plant fire**: Ericsson impact ~$2.3bn - 2000
- **Ford Tire recall**: 13m tires, ~$3bn - 2001
- **9/11**: Airlines lost ~$55bn over a decade - 2001
- **Toyota recall**: 9m vehicles, ~$2bn cost - 2009
- **BP Gulf Coast Oil Spill**: ~$40bn - 2010
- **Japan Tsunami**: 20% of world’s semiconductors
- **WD, Seagate et. al. Thailand Floods**: 4-7% global output
- **Pharma recalls**: GSK recalls 600,000 Ventolin inhalers - 2017
- **Lactalis**: baby milk recalls ~12 millions boxes - 2018

Source: SCM World 2015
THE COST OF TECHNOLOGY DECREASES

Source: Harvard Business Review 2015 and 2017

- **3D Printing**
  - $40,000 (2007) to $100 (2014)
  - 400x in 7 years

- **Internet of Things**
  - $500,000 (2009) to $10,000 (2016)
  - 50x in 7 years
PRACTICES TO IMPROVE YOUR S&OP
INSPIRAGE S&OP MATURITY

Maturity Levels based on Gartner’s recommendations

Stage 1: Reacting
- Business plan drive forecast
- Short-term forecast
- Aggregate S&OP Data
- Off-line Demand / Supply tactical balancing
- Volume focused
- Tribal knowledge dependency
- Manual Tools
- Silo focused

Stage 2: Anticipating
- Consensus Forecasting (volume and value)
- Capacity Constraints
- Demand, supply and inventory plans at aggregate level.
- Scenario planning using simulated plans
- New Product Plans
- Foundational dashboards
- Multiple sources of truth
- Conflicting metrics across functions

Stage 3: Capable S&OP
- Demand/supply tactical balancing on-line
- Financial projections – price, cost, inventory and margin projections
- IBP management dashboards & KPI suite
- Flexible Budgeting
- Supply Chain Segmentation
- Robust Long-Term Planning Processes

Stage 4: Optimized Planning
- Business simulation capability for demand shaping, financial reconciliation and cost to serve
- Demand Driven
- Product & Innovation Reviews
- Inventory Optimization
- Centers of Excellence
- Master Data Governance
- Digitization – IoT etc.
- Business wide focused
- Integrated suite of tools

Stage 5: Integrated Business Planning
- Plan drives the business, enabled and linked to strategy
- Market Driven
- Extended Integrations:
  - New Product Introduction
  - Extended / Integrated Analytics (Control Tower)
- Network Optimization
- Extended Enterprise focused
- IBP management reviews not an “event”
- Business Simulation capability for demand shaping, financial reconciliation and cost to serve
- Demand/Supply tactical balancing on-line
- Financial projections – price, cost, inventory and margin projections
- IBP management dashboards & KPI suite
- Flexible Budgeting
- Supply Chain Segmentation
- Robust Long-Term Planning Processes
- Centers of Excellence
- Master Data Governance
- Digitization – IoT etc.
- Business wide focused
- Integrated suite of tools

Incremental Value
Efficiency
Effectiveness
Optimization
ANALYTICS MATURITY MODEL
WHAT OTHERS ARE DOING?

- **Descriptive Analytics**: What happened?
- **Diagnostic Analytics**: Why did it happen?
- **Predictive Analytics**: What will happen?
- **Prescriptive Analytics**: What should I do?

**Value**
- Transactional Reports
- Hindsight
  - Information
  - Growing Demand
- Insight
  - Few but growing
  - Tell me what is happening right now and why
- Foresight
  - Tell me what is likely to happen, and why
- Industry Leaders
  - Tell me what my options are
  - Tell me what should I do
- Optimization

**Use of Analytics**
- Most
- Growing
- Demand
5 STEP IBP PROCESS

1. Innovation & Product Review
2. Demand Review
3. Supply Review
4. Plan Reconciliation
5. Executive Management Review
5 STEP IBP PROCESS

- Master Data Management
- Life Cycle Management
- NPI Planning / EOL
- Project Portfolio Mgt.
- Product “What Ifs”

Innovation & Product Review

Demand Review

Executive Management Review

Plan Reconciliation

Supply Review
PRODUCT REVIEW PRACTICES

- Forecast new products
  - Chaining
  - Shape Modelling
- Prioritize Projects
- Product succession and life cycle management
  - Phase In / Out
  - Cannibalization
- Long-Term Planning
  - Statistical
  - Opportunity
  - Capex / Financial
- Attach rate review & adjustments
  - Calculate dependent demand
5 STEP S&OP / IBP PROCESS

1. Innovation & Product Review
   - Master Data Management
   - Life Cycle Management
   - NPI Planning / EOL
   - Project Portfolio Mgt.
   - Product “What Ifs”

2. Demand Review
   - Demand Plan Performance
   - Statistical Forecast
   - Consensus Demand
   - Demand Management
   - Demand “What-Ifs”

3. Supply Review

4. Plan Reconciliation

5. Executive Management Review
DEMAND MANAGEMENT LEADING PRACTICES

- **Demand Sensing**
  - Statistical Forecast Optimization
  - Get closer to consumption

- **Demand Planning**
  - Demand segmentation
  - Eliminate Bias
  - Forecast Value Add
  - Assumptions Measured & Tracked
  - Improve Collaboration

- **Demand Control**
  - Ad-hoc / Abnormal Demand
  - Demand shaping

Multi-Channel Planning with Sell-In and Sell-Through Allocation

- Shipment
- Sell-in
- Sell-out
- Sell-through

Link between Sell-through and Production

Calculated Plan  Plan Entry

© 2016 Inspirage
5 STEP S&OP / IBP PROCESS

- Master Data Management
- Life Cycle Management
- NPI Planning / EOL
- Project Portfolio Mgt.
- Product “What Ifs”

Innovation & Product Review

- Demand Plan Performance
- Statistical Forecast
- Consensus Demand
- Demand Management
- Demand “What-Ifs”

Demand Review

- Capacity Planning
- Constraint Management
- Optimized inventory
- Balance Supply and Demand and Develop Production Plan
- Profit-optimized plans
- Supply “What Ifs”

Executive Management Review

Plan Reconciliation

Supply Review
SUPPLY MANAGEMENT PRACTICES

Answering the tough questions:
• How do I manage my supply chain risk more effectively?
• What impact do changing costs have on my inventory, production and/or sourcing strategy?
• Can I meet demand profitably?
• Where should I hold how much inventory, when?
• Should I close down a facility?
• How could I react to a disruption in supply due to unforeseen events?
• What are my most profitable products to produce?
• What is the impact of mergers and acquisitions on my supply network and capital asset budget?

- Supply Planning
  • Supply segmentation
  • Mixed planning models
  • Parameter and data management
  • Alternates
  • Scenarios

- Supplier
  • Collaboration
  • Strategic Sourcing

- Optimization
  • Inventory
  • Network Optimization
  • IoT
## IoT USE CASES

<table>
<thead>
<tr>
<th>Traceability in Shop-floor</th>
<th>Shop-floor Exception Management</th>
<th>Cold Chain Management</th>
<th>Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automated Material Movement with In-Plant Traceability</td>
<td>Quality Management</td>
<td>Maintaining Pallet Temperature in warehouse [asset monitoring]</td>
<td>Ship To Shore Container Crane &amp; Roll Trailer Maintenance</td>
</tr>
<tr>
<td>Smart Production using Automated Material Transfer</td>
<td>Maintenance Automation</td>
<td>Maintaining Pallet Temperature in transit [fleet monitoring]</td>
<td></td>
</tr>
<tr>
<td>Smart Production Augmented with Fingerprint-Of-Things</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In-Plant Traceability Enabled by Fingerprint-Of-Things</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Analytics, Automation, Exception Monitoring)

<table>
<thead>
<tr>
<th>Cost of Manufacturing</th>
<th>Cost of Quality</th>
<th>Quality Assurance</th>
<th>Cost of Service</th>
</tr>
</thead>
</table>

(Analytics, Automation, Exception Monitoring)
5 STEP S&OP / IBP PROCESS

Executive Management Review
- Master Data Management
- Life Cycle Management
- NPI Planning / EOL
- Project Portfolio Mgt.
- Product “What Ifs”

Innovation & Product Review
- Demand Review
- Performance
- Statistical Forecast
- Consensus Demand
- Demand Management
- Demand “What-Ifs”

Plan Reconciliation
- Capacity Planning
- Constraint Management
- Optimized inventory
- Balance Supply and Demand and Develop Production Plan
- Profit-optimized plans
- Supply “What Ifs”

Supply Review
- Demand Plan Performance
- Statistical Forecast
- Consensus Demand
- Demand Management
- Demand “What-Ifs”

- Integrated and collaborative platform
- Scenario Planning & Trade-Off Analysis
- Risk Management
- Financial Review
Recurring Monthly Process

**Week 1**
Innovation & Demand Review

**Week 2**
Supply Review and Balance Supply and Demand

**Week 3**
What-if Scenarios and Trade-Off Analysis

**Week 4**
Executive Review and Monthly Cycle Output

Collaborative Systems for Cross Functional Discussions

PLAN RECONCILIATION CHALLENGES

Traditional ERP

Operational Systems for Functional Silos
Supported Applications*

Legacy Planning Solutions
- Production Scheduling
- Demantra
- ASCP
- APCC
- SPP...

Agile/PLM Solutions
- Product Collaboration
- Product Quality Management
- Product Portfolio Management
- Product Cost Management
- Product Governance & Compliance

Logistics Solutions
- Oracle Transportation Management
- Oracle Global Trade Management
- Carrier Connectivity Solutions
- Trade Compliance Solutions

ERP Solutions
- Oracle EBS
- Oracle PeopleSoft
- Oracle NetSuite
- JD Edwards
- SAP
- WorkDay

Oracle ERP Cloud
- Supply Chain Planning Cloud
- Inventory Management
- Manufacturing
- Maintenance
- Order Management
- WMS Cloud
- Financials & Procurement
- Quality & PLM Cloud
- Collaboration & Visibility
- Product Hub...

Other
- Analytics
- Data Warehouse
- IoT
- CRM
- Social Apps...

*Please note this list is not exhaustive and only includes some of the most common applications.
5 STEP S&OP / IBP PROCESS

1. Innovation & Product Review
   - Master Data Management
   - Life Cycle Management
   - NPI Planning / EOL
   - Project Portfolio Mgt.
   - Product “What Ifs”

2. Demand Review
   - Demand Plan Performance
   - Statistical Forecast
   - Consensus Demand
   - Demand Management
   - Demand “What-Ifs”

3. Plan Reconciliation
   - Capacity Planning
   - Constraint Management
   - Optimized inventory
   - Balance Supply and Demand and Develop Production Plan
   - Profit-optimized plans
   - Supply “What Ifs”

4. Executive Management Review
   - Unified reporting for past, present & future
   - Executive Decisions on Outstanding Issues
   - Gap Closing Actions
   - Identify Risk Mitigation Approaches

5. Supply Review
   - Integrated and collaborative platform
   - Scenario Planning & Trade-Off Analysis
   - Risk Management
   - Financial Review

© Copyright 2007-2016 Inspirage. All rights reserved.
EXECUTIVE REVIEW LEADING PRACTICES

How CEO sees the business
- Latest Business Plan
  - What has changed? One Pagers
  - What are the assumptions?
  - What is the impact of the change?
  - 24 month - P&L, Balance Sheet, Cash
  - What is the gap to plan?
  - What are the Risks and Opportunities?

How Supply Chain sees the business
- Decision Support
  - What are the gap closing opportunities?
  - Which options to evaluate?
  - Financial modelling of alternatives
  - Decisions required - now and in the future
  - Recommendations
S&OP / IBP OPTIMIZES ENTERPRISE BY RESOLVING COMPETING OBJECTIVES

Manufacturing: “Maximize output”

Finance: “Minimize costs”

R&D: “Increase speed to market”

Marketing/Sales: “Increase Sales”

Distribution: “Maximize on-time delivery”