IIESE Webinar: Dashboards for Daily Factory Management & End-to-End Supply Chain Visibility
Stan Simpson

Sr. Project Manager leading a Manufacturing Flexibility initiative at a global Fortune 500 CPG company

Supports 30 plants across the Americas that make a wide variety of products for diverse brands offered in multiple retail channels and over 100 countries

Tom Knight

Founder & CEO, Invistics

Manufacturing & Supply Chain Career
Agenda

Introductions

• The Business Need for Improved Visibility
• Building Dashboards for Daily Factory Management and End-to-End Supply Chain Visibility
• Implementing these Dashboards, with Examples
• Results & Business Benefits
• Questions & Discussion
Provide visibility on the flow of inventory in a single site or an extended supply chain

- Optimize trade-offs between
  - customer service,
  - inventory, and
  - change-over costs

- Track metrics such as cycle time and customer service
- Implement electronic Pull solutions
Companies require increased visibility & manufacturing flexibility

- **Supply Chains are Larger and More Complex**
- Higher-Mix, making a wider variety of products with a longer tail of inventory.
- Longer lead times and multi-party computer systems:
  - Outsourcing to contract manufacturers (CMOs) and third-party logistics (3PLs)
  - Sourcing from/selling to emerging markets
Aberdeen's Survey of 150 Companies Finds that Supply Chain Visibility is Their Top Concern

**Figure 2: Top Pressures to Improve Supply Chain Visibility**

- Growing global operations / complexity (e.g. longer lead times and lead-time variability, or need to gain visibility): 45%
- Need to improve supply chain operational speed and / or accuracy: 43%
- Increased stakeholder and customer demand for accuracy and timeliness of inbound / outbound shipment events: 30%
- The business mandate to reduce supply chain execution costs: 26%
- The need to reduce, proactively allocate, or manage inventory held at various stages in the supply chain: 15%
- Need to optimize the numbers of trading partners, suppliers, carriers, logistics service providers (LSPs): 13%
Gartner’s Supply Chain Maturity Chart Emphasizes Visibility & Analytics
“Control Tower” Company-Wide Visibility

- Company wide culture of transparency:
  - Consolidating data from multiple systems/companies
  - Better Root Cause Analysis
  - No Blame Game

- Foresight to look into the future:
  - Use alerts and reports to manage by exception
  - Prevent fires before they occur
Common Visibility Challenges

- Data locked in departmental “silos”
  - In plant: ERP system has data, but users lack information
  - Across supply chain: Multiple countries/companies running different systems

- How can the team see a potential problem in advance, so team members can proactively prevent it?

- How to sustain this visibility over time, and scale it to all global locations?
Eight Best Practices for Daily Factory Management & End-to-End Supply Chain Visibility in the Case Study

1. Provide holistic, end-to-end visibility
2. Consolidate data from multiple systems
3. Integrate with suppliers and customers
4. Move beyond historical metrics to predictive analytics
5. Manage by exception using alerts and heuristics
6. Automate data feeds for real-time visibility
7. Monitor the health of the flow
8. Leverage cloud-based software as a service
Overview of Today’s Case Study

- Needed to improve visibility
  - complex recipes/BOMs, limited shelf life, and many SKUs
  - data in ERP system(s), but not visible across team
- Initial Implementations in Two Divisions:
  - CPG Division #1
    - manufactures domestically & at Contract Manufacturers in U.S.
    - distributes globally, with strong sales growth internationally
  - CPG Division #2
    - manufactures in multiple plants in the US.
    - distributes primarily in North America
- Built dashboards for daily, proactive visibility
  - Initial focus: in factories, for Daily Management Meetings
  - Expansion: Across the global end-to-end supply chain
- Results
  - Lower manufacturing, transportation, obsolescence, and storage costs
  - Faster and more flexible New Product Introductions (NPI)
  - Reduced inventory by 15%
  - Reduce cycle times by 26%
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Five Step Process: Building Dashboards for Daily Factory Management

1. Build the business case and scoped initial implementation sites
2. Process Design Workshops at each site, with global planners:
   - Plant defined “flow paths”, and events they needed to see clearly, before they caused problems like an unexpected line shutdown:
     - Raw Materials, WIP or Packaging not ordered/staged early enough
     - Quality inspections that were not completed early enough
     - Ingredients approaching expiration date
   - Plant also defined events to prevent congested floor space.
     - Raw Materials or Packaging order/staged too early
   - Global Supply Chain Planners needed visibility into international finished goods warehouses that were running other ERP systems.
3. Configured the dashboards & alerts, with data from multiple systems
4. Daily Management Meetings to see and prevent potential problems
5. Refined the dashboards with experience and continuous improvement
Design Workshop To Map Out Future State

- Created Flowpaths for each product family
- Mapped ERP Transactions to each step in the Flowpaths
- Defined “pain points,” i.e. events and alerts to see and prevent potential problems
Consolidated Data Daily from Multiple Sources

- Dashboards for:
  - Daily Factory Management
  - End-to-End Supply Chain Visibility

- Other Advanced Analytics (see our other case studies):
  - End-to-End Supply Chain and SCOR metrics
  - Inventory Optimization
  - Demand & Supply Planning across multiple ERP systems
  - Production Cadence/Lot Size Optimization
  - Pull Replenishment
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Using the Dashboard in Daily “Huddle” Meetings

- Visibility on problems & exceptions (hopefully before they occur)
- Clear accountability (red/yellow/green) “I’ll prevent this problem by...”
- Holistic, cross-functional, flow path visibility:
  - Purchasing
  - Planning
  - Receiving
  - Quality
  - Staging
  - Manufacturing
  - Packaging
  - Shipping
  - Etc.
Case Study: Dashboards for Daily Factory Management

Flow Path Health

FLOW PATH HEALTH

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
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<tbody>
<tr>
<td>Purchase Orders</td>
<td>140</td>
</tr>
<tr>
<td>Packaging Off-Site</td>
<td>0</td>
</tr>
<tr>
<td>Packaging On-Site</td>
<td>580</td>
</tr>
<tr>
<td>Packaging At Line</td>
<td>0</td>
</tr>
<tr>
<td>RM in QC Testing</td>
<td>0</td>
</tr>
<tr>
<td>RM in Flm. Storage</td>
<td>0</td>
</tr>
<tr>
<td>RM On-Site</td>
<td>0</td>
</tr>
<tr>
<td>RM At Line</td>
<td>0</td>
</tr>
<tr>
<td>WIP – Stage 1</td>
<td>0</td>
</tr>
<tr>
<td>WIP – Stage 2</td>
<td>0</td>
</tr>
<tr>
<td>WIP – Stage 3</td>
<td>0</td>
</tr>
<tr>
<td>WIP – Stage 4</td>
<td>0</td>
</tr>
<tr>
<td>At Final Assembly</td>
<td>0</td>
</tr>
<tr>
<td>FG Awaiting Shipment</td>
<td>0</td>
</tr>
</tbody>
</table>
Case Study Example: Purchasing Raw Materials

- Red: Late POs
- Yellow: POs due in 3 days

<table>
<thead>
<tr>
<th>Order Number</th>
<th>Production Order Qty</th>
<th>Description</th>
<th>Age</th>
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<tbody>
<tr>
<td>4505519727</td>
<td>1,480</td>
<td>RM Shea Butter Liquid</td>
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<tr>
<td>4505537456</td>
<td>1,270</td>
<td>RM Lancin, USP</td>
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<tr>
<td>4505558624</td>
<td>10</td>
<td>RM Covi-FOX T-90 EU C</td>
<td>6</td>
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<tr>
<td>4505537417</td>
<td>40</td>
<td>RM Campo Plantservativ...</td>
<td>6</td>
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<tr>
<td>4505483991</td>
<td>290</td>
<td>RM Jojoba Pro-N (JPN)</td>
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</tr>
<tr>
<td>4505516693</td>
<td>110</td>
<td>RM Rice Ext</td>
<td>1</td>
</tr>
<tr>
<td>4505536403</td>
<td>250</td>
<td>RM Baobab Oil Refined</td>
<td>1</td>
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<tr>
<td>4505547163</td>
<td>50</td>
<td>RM Flavi Natural Strawb...</td>
<td>1</td>
</tr>
<tr>
<td>4505552735</td>
<td>5</td>
<td>RM Aloe Vera Organic W...</td>
<td>0</td>
</tr>
</tbody>
</table>
Case Study Examples: Purchasing, Quality Inspection & Material Handling Staging

- Blue: Missing Materials, Needed in Next 7 days (Purchasing)
- Separate column if Materials On Site, Awaiting Quality Release (Quality Inspection)
- Separate column if Materials On Site and Released, but Not Staged at Line (Matls)

### Table Data

<table>
<thead>
<tr>
<th>Qty</th>
<th>Description</th>
<th>Details</th>
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<tbody>
<tr>
<td>100,537</td>
<td>UNI TUBE COCONUT ...</td>
<td>Details</td>
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<tr>
<td>8,134</td>
<td>CAP WHITE W/INDUC...</td>
<td>Details</td>
</tr>
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<td>70,000</td>
<td>BEESWAX NO UPC LA...</td>
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<tr>
<td>30,911</td>
<td>TBE-ClosAssm BB Ultc...</td>
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<tr>
<td>250</td>
<td>RM Cocoa Pwdr Fine M...</td>
<td>Details</td>
</tr>
<tr>
<td>32,023</td>
<td>RM Pumpkin Spice MO...</td>
<td>Details</td>
</tr>
<tr>
<td>6,733</td>
<td>RM Foamation Dry 50 Y...</td>
<td>Details</td>
</tr>
</tbody>
</table>

### Diagram

- RM missing

- Purchase Orders
- Pkg Off-Site
- Pkg On-Site
- RM in Storage
- RM On-Site
- WIP - Stage 1
- WIP - Stage 2
- WIP - Stage 3
- WIP - Stage 4
- Packaging
Alert Center to Email/Text Urgent Notifications

Email/text alerts, if desired, e.g.,

- **Yellow**: send email to Quality Inspector
- **Red**: send escalation email & text to Quality Manager
Expanded Used for End-to-End Supply Chain Visibility

- Spans from receiving dock of plant in US to shipping dock of China DC
- Simplified view of product freshness reduces expiry losses and disposition costs
- Proactive alerts via email or text across 2 companies & 3 divisions
Case Study Example: Freshness of Global Inventory

- Five alerts based on freshness and expiration dates: Purple, Light Green, Pink, Orange, and Gray

FLOW PATH HEALTH

- On Ship to China
- Cust. Orders China
- FG in China
What It Feels like to Achieve End-to-End Supply Chain Visibility
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Case Study Benefits: Manufacturing Flexibility

1. Lower manufacturing costs, e.g., fewer production disruptions
2. Lower transportation costs, e.g., reduced expedited freight costs
3. Lower obsolescence costs, e.g., expired products
4. Reduced inventory and storage costs (see chart)
5. Faster New Product Introductions, e.g., faster cycle times (see chart)
Reduced Total Inventory $19 million (15%)
Cycle Times Reduced 26% from 117 Days in 2015 to 87 Days in 2017
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Questions & Discussion
Thank You!
More Questions?

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