Webinar: Measuring & Managing Supply Chain Performance

with

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COURSE INFORMATION
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MEASURING AND MANAGING SUPPLY CHAIN PERFORMANCE

WEB.SESSION
SUPPLY CHAIN & LOGISTICS INSTITUTE
MARIA REY-MARSTON
09.25.2014

November 5-7, 2014 at Georgia Tech
Measuring and Managing Supply Chain Performance

MEASURES OF SUPPLY CHAIN OPERATIONS SUCCESS
01. RESOURCE LEVEL:
Cost and Productivity
02. PROCESS LEVEL:
Velocity and Quality

PROCESSES THAT DRIVE SUPPLY CHAIN PERFORMANCE
01. MEASURES OF SUPPLY CHAIN OPERATIONS SUCCESS

RESOURCE LEVEL: COST AND PRODUCTIVITY
PROCESS LEVEL: VELOCITY AND QUALITY
WHAT DO WE GET PAID TO DO?
BUT IS MORE THAN THAT... LET'S GET BACK TO THE BASICS!

DO MORE
WITH LESS
BETTER
FASTER
SUCCESS

PRODUCTIVITY
FINANCIAL
QUALITY
VELOCITY/TIME
SATISFACTION

MEASURES OF SUPPLY CHAIN OPERATIONS SUCCESS

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SCM Performance

Measures of Supply Chain Operations Success

- Cost
- Productivity
- Velocity
- Quality
MEASURES OF SUPPLY CHAIN OPERATIONS SUCCESS

SCM PERFORMANCE

RESOURCE PRODUCTIVITY

- Warehouse Density
- Inventory Turns
- Man-Hour Efficiencies
SCM PERFORMANCE

ELAPSED TIMES FOR PROCESS EXECUTION

Customer Order Cycle Time

Sourcing Cycle Time
MEASURES OF SUPPLY CHAIN OPERATIONS SUCCESS

SCM PERFORMANCE

QUALITY

PROBABILITY OF SUCCESS

Perfect Order Percentage
Demand Forecast Accuracy
On-Time In-Full Delivery (OTIF)
MEASURES OF SUPPLY CHAIN OPERATIONS SUCCESS

SCM PERFORMANCE

COST

PRODUCTIVITY

VELOCITY

QUALITY

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01. Indicators and Profiles

02. Properties of Supply Chain Indicators

03. Design of Supply Chain Scorecard
Not everything that is quantitative is a performance indicator

01. Indicators and Profiles

- **Statistics** (Neutral)
- **Profiles** (Behavioral but not Judgmental)
- **Performance Indicators** (Judgmental)
01. Indicators and Profiles

An example...

CUSTOMER / ITEM ABC

INDICATOR OR PROFILE?

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01. Indicators and Profiles

FORECAST PROFILE FOR 2 SKU’S

Indicator AND Profile

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Profiles Help Us Make Decisions

01. Indicators and Profiles

- Customer Response Measures
- Customer Classifications
- SKU Classifications
- Customer-SKU Classifications
- Customer Service Policy Design
- Inventory Management Performance Measures
- SKU Categories for Inventory Management
- Forecasting Models by SKU Category
- Inventory Turnover and Fill Rate Targets by Logistics Segments
- Inventory Reduction Opportunities by Logistics Segment

INVENTORY STRATEGY
6/18/93 "Snapshot versus Strategy"

<table>
<thead>
<tr>
<th>DFUs</th>
<th>Inventory</th>
<th>% Sale</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>80%</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0%</td>
<td></td>
</tr>
</tbody>
</table>

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## Key Principles

<table>
<thead>
<tr>
<th>Top-Down Alignment</th>
<th>Control</th>
<th>Lateral Coherence</th>
<th>Bottom-Up Aggregation</th>
<th>Balance</th>
</tr>
</thead>
</table>

### 02. Properties of Supply Chain Indicators
Lateral Coherence
Where is the problem?

SALES
Revenue Growth
Q x P

PLANNING
Inventory Turns
Q Sold/Q Held

PROCUREMENT
Unit Cost Reduction
Q (cost) x P (cost)
## LOGISTIC PERFORMANCE SYSTEM

<table>
<thead>
<tr>
<th>Customer Service</th>
<th>Inventory Planning</th>
<th>Supply</th>
<th>Transportation</th>
<th>Warehousing</th>
<th>Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry Error %</td>
<td>Fill Rate %</td>
<td>Perfect %</td>
<td>On Time %</td>
<td>Shipping Accuracy %</td>
<td>Perfect Order Percentage</td>
</tr>
<tr>
<td>Status Error %</td>
<td>Forecast Accuracy %</td>
<td>Perfect P/0 %</td>
<td>Damage Free %</td>
<td>Inventory Accuracy %</td>
<td>CoS, ROL, FTE, C/C Time</td>
</tr>
<tr>
<td>Invoice Error %</td>
<td></td>
<td></td>
<td>Perfect Documentation %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order Entry Time</td>
<td>Days of Inventory</td>
<td>Purchase Order CT</td>
<td>In-Transit Time</td>
<td>Warehouse Order Cycle Time</td>
<td></td>
</tr>
<tr>
<td>Order Processing Time</td>
<td></td>
<td>Supplier Lead Time</td>
<td>Loading/Unloading Time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Orders per Hour</td>
<td>Inventory Turnover</td>
<td>Purchase Orders per Hour</td>
<td>Fleet Utilization</td>
<td>Units per Man-hour Storage Density</td>
<td>Perfects Orders per logistics FTE, ROL, C/C Time</td>
</tr>
<tr>
<td>Customer Service Costs</td>
<td>Inventory Carrying Cost</td>
<td>Procurement Costs</td>
<td>Transportation Costs</td>
<td>Warehousing costs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lost Sales Cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Balance
At least one of each!

- COST
- PRODUCTIVITY
- VELOCITY
- QUALITY
The overall goal is alignment with corporate-level indicators

Design Features

- Optimal Scope
- Optimal Detail
- Optimal Frequency
- The Cube
## Decisions to Determine Optimal Design

<table>
<thead>
<tr>
<th>Measurement Scope</th>
<th>Level of Detail</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit of Analysis</td>
<td>Activity Being Measured</td>
<td>Intervals between measurements</td>
</tr>
</tbody>
</table>

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The Cube
Measures

DIMENSIONS

CONTEXTS

PERSPECTIVES

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The Cube of Supply Chain Performance Measures

- **DIMENSIONS**: What is being measured?
- **PERSPECTIVES**: Who Cares?
- **CONTEXT**: What, When and Where?

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The Cube of Supply Chain Performance Measures

KPIs
3D view of success in SCM

Perspectives
Who Cares?

Dimensions
What is being measured?

One KPI example
D: Quality = Line Fill Rate
C: Project = Field01 Team
P: Supplier = XYZ33

Context
What, When and Where?

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“Combination of Interdependent Events”

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The probability of experiencing a perfect order is the multiplication of the probabilities of the 8 independent events.

All SCM functions are represented in this KPI!

<table>
<thead>
<tr>
<th>KPI</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is entered correctly</td>
<td>97%</td>
</tr>
<tr>
<td>Has available inventory</td>
<td>80%</td>
</tr>
<tr>
<td>Has the right amount of the right products</td>
<td>95%</td>
</tr>
<tr>
<td>Is damage Free</td>
<td>96%</td>
</tr>
<tr>
<td>Arrives On-time</td>
<td>72%</td>
</tr>
<tr>
<td>Arrives at the right location</td>
<td>94%</td>
</tr>
<tr>
<td>Is communicated electronically</td>
<td>89%</td>
</tr>
<tr>
<td>Has no invoice/collection errors</td>
<td>93%</td>
</tr>
<tr>
<td>Orders that are perfect</td>
<td>48%</td>
</tr>
</tbody>
</table>
Disney World was predicting additional warehousing space requirements based on inventory turns reduction and equal storage density.
The Aggregation Property

- Reviews 0.3%
- Unloading Material 0.5%
- Decontamination 0.5%
- Cleaning 1%
- Loading Material 1%
- Calibration 1%
- Unscheduled Stops 1%
- Replenishment 2%
- Maintenance 2%
- Test Batch 4%

Production 48%
Other obvious ones

S M A R T

Specific  Measurable  Action Oriented  Relevant  Timely
Be Cautious with the Calculations, the Time Periods and the Reporting – An Example

**FILL RATE**
(by Unit of Measurement)
- Total Fill (Binary)
- Unit Fill (Percentage)
- Case Fill
- Order Fill

**FILL RATE**
(by Location)
- Global
- Local

**FILL RATE**
(by Time Period)
- Initial
- At x hours
- Final
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**Measuring and Managing Performance in Supply Chain and Logistics Operations**

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