HARNESSING THE POWER OF SUPPLY CHAIN TECHNOLOGY & SYSTEMS

IF YOU SUPPLY THE SUPPLY CHAIN, YOU BELONG AT MODEX.

The greatest supply chain show on earth.

SESSION 205

PRESENTED BY:

JOHN HILL, ST. ONGE COMPANY
RANDY McCLOY, MEIJER

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Strategically position supply chain information systems & technology solutions for the end-user, supplier, academic and media communities.

Become the definitive non-commercial resource for data and guidance on selection, integration, deployment and use of existing and future information systems and technology solutions for the supply chain.

Foster open, bidirectional information exchange through sponsorship of “safe haven” events that facilitate collaborative interaction between group members, end users, consultants, market research firms, vertical market and professional organizations, and regulatory agencies.
BEFORE & BEYOND THE WAREHOUSE

Control Towers

ESC M
RFID
Voice
WMS
WES
ITLS

Barcode

 SCP

WCS
Analytics

TMS

LMS

OMS

YMS

Convergence
The trend in item coding is toward miniaturization. The use of such micro-encoding will permit assignment of a unique number to any product whose value warrants tracking, whether it’s an automobile or a shipment of caviar – in plant or across the country. Within the next ten years, such product coding will be commonplace and, in fact, be standardized.

Material Handling Engineering, 1972
Warehouse Management Systems (WMS) leverage inventory, space, equipment & labor to optimize the flow of materials & data from receiving & putaway to order picking, value-added processing & shipment.
TMS optimize the use of transportation resources to manage inbound, internal & outbound shipments at the lowest cost consistent with customer service standards & trading partner requirements.

Various, late 1980’s
The best decision making is executed on the basis of events as or before, not after, they occur. Responsive systems provide discipline and control, based not only upon plans & performance goals, but also upon the dynamics of actual operations.
MATERIAL & DATA FLOW SYNCHRONIZATION
‘90’s SYSTEM CONCEPT

SUPPLY CHAIN VISIBILITY & EVENT MANAGEMENT

POS

Customer Orders

Order Management

Purchasing

Corporate Inventory Records

Demand & Supply Planning

Manufacturing

WMS

TMS

YMS

LMS

ITLS

SUPPLIER SHIPMENTS

RETURNs

CUSTOMER SHIPMENTS

Data & Material

Data
The 2015 MHI Annual Industry Report
Supply Chain Innovation
Making the Impossible Possible

Five-Year Outlook for Supply Chain Management Systems Convergence
Monday, October 5 | 9:30 AM - 10:30 AM

Supply chain information systems are converging to address new challenges as a result of massive trends like the Internet of Things, Cloud Computing and Omni-Channel logistics. This expert panel will discuss these challenges and how users will be able to tackle them with an emerging new breed of enterprise-wide supply chain systems that blend demand sensing, forecasting, predictive analytics and planning with automatic data collection, mobile computing and order, warehouse, workforce and transportation management.

Moderator: Dwight Klippich, Gartner ~ Panelists: Chad Collins, COO, HighJump ~ David Johnston, SVP, JDA ~ Jeff Cashman, SVP, Manhattan ~ Maha Muzumdar, SVP, Oracle ~ Hans Thalbauer, SVP, SAP
CHALLENGES

- SKU Proliferation & Less Inventory per SKU Continue to disrupt.
- Batch-less Material Flows.
- Increased Warehouse & DC Density.
- Monitoring & Addressing In-Transit Damage.
- Integrating Yard, Inventory, Warehouse & Transport Management.
- Unraveling the WCS / WES / WMS Conundrum
- Move from Static to Fluid & Better Forecasting & Predictive Analytics.
CHALLENGES

- Improve real-time visibility & end-to-end product tracking.
- Multi-channel fulfillment, ecommerce & ship-to-store support.
- Improving consumer throughput at the store & capturing data on lost opportunities when they leave empty-handed.
- Using RFID to consume on scan & replenish when consumed.
- Discrete transaction recording – better use of engineered time & value standards.
- Capital available, but justifications not clear, nor aligned to strategic plans.
What do you require from suppliers to overcome these challenges?

• Commitment to high-standards.
• Partnering from the onset – Proactively jump on board and work with us.
• Provide informed response to cost / value questions & help with ROI.
• Provide complete education on SC ecosystems – don’t just sell pieces without explaining the entire puzzle.
• Lack expertise to optimize what we have, let alone manage new innovations.
• Technology evolving too quickly - we need adaptable solutions that enhance not interrupt our progress.
• MHI’s Solution Groups could definitely help by exposing us to a broader storehouse of information and detail on companies that specifically address my company’s needs.
## SOFTWARE CATEGORY

<table>
<thead>
<tr>
<th>SOFTWARE CATEGORY</th>
<th>% USING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Analytics</td>
<td>65%</td>
</tr>
<tr>
<td>Control Tower</td>
<td>9%</td>
</tr>
<tr>
<td>Distributed Order Management</td>
<td>26%</td>
</tr>
<tr>
<td>Demand Planning</td>
<td>43%</td>
</tr>
<tr>
<td>Enterprise Resource Planning</td>
<td>65%</td>
</tr>
<tr>
<td>Inventory Optimization</td>
<td>26%</td>
</tr>
<tr>
<td>Labor / Workforce Management</td>
<td>48%</td>
</tr>
<tr>
<td>Order Management</td>
<td>61%</td>
</tr>
<tr>
<td>SC Design / Network Optimization</td>
<td>30%</td>
</tr>
<tr>
<td>Supply Chain Planning</td>
<td>39%</td>
</tr>
<tr>
<td>Global Trade Management System</td>
<td>17%</td>
</tr>
<tr>
<td>Transportation Management System (TMS)</td>
<td>43%</td>
</tr>
<tr>
<td>Warehouse Control System (WCS)</td>
<td>35%</td>
</tr>
<tr>
<td>Warehouse Management System (WMS)</td>
<td>57%</td>
</tr>
<tr>
<td>Yard Management (YMS)</td>
<td>26%</td>
</tr>
</tbody>
</table>

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Automatic Identification & Data Collection Tools
- Barcode, RFID, Voice & related devices; e.g., Tablets, SmartPhones, SmartGlasses, Smart Shelves, etc.
- Cubing & Weighing Tools

Parcel Management Systems

Routing & Tracking Systems

Slotting Tools & Systems

Warehouse Execution Systems (WES)

Asset Management Systems

Analytical Modeling & Simulation Systems
SC SYSTEMS CHALLENGES

- Requirements Definition & Understanding
- Facilitating “Apples to Apples” Comparisons
- Contract Negotiations
- ERP & Other Systems Integration & Testing
- Material Handling System Integration
- Training
- Acceptance Testing
- Start-Up
- Post-Deployment Performance
<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>DESCRIPTION</th>
<th>HOW USED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Planning And Optimization</td>
<td>Tools that help with design of optimal supply chain networks, managing trade-offs between cost (manufacturing, inventory, distribution, transportation) and service.</td>
<td>Historically used once or every year or two as a strategic way to analyze and optimize supply chains, often focused on distribution networks. Currently used to solve a much wider set of problems, including manufacturing site and sourcing analyses; and, used, by many on a continual basis for tactical planning.</td>
</tr>
<tr>
<td>Supply Chain Simulation</td>
<td>Tools that enable companies to evaluate how different network designs and strategies “playout” based on defined sequences of events. Often uses “Monte Carlo” simulation to model the probability of different outcomes in a process that cannot easily be predicted due to the intervention of random variables (such as unpredictable short-term demand).</td>
<td>Allows companies to get a better feel for how real-time variability can impact supply chain performance and risk. For example, simulation might allow analysis of inventory positions, their deployment and how they are affected by changes in downstream demand signals, and the reorder policies in place to respond to those signals. Can also show how an “optimal” solution may leave a company vulnerable to an unlikely series of events or unexpected variability in supply or demand.</td>
</tr>
<tr>
<td>Inventory Optimization</td>
<td>Tools used to identify optimal inventory levels and policies for a range of inventories, especially for those with multiple “echelons” of inventory stocking points.</td>
<td>Tactical applications that optimize safety stock and related inventory policies to meet customer service targets with the best levels of inventory at each node in the supply chain, based on forecasted demand. Also useful for making postponement decisions and navigating push versus pull versus hybrid inventory strategies.</td>
</tr>
</tbody>
</table>

Courtesy of Supply Chain Digest, www.scdigest.com
SCP platforms enable companies to create, manage, link, align, collaborate and share its planning data across a supply chain — from demand plan creation through the supply-side response, and from detailed operational planning through tactical-level planning. Components include:

- Sales and operations planning (S&OP)
- Demand planning
- Inventory planning
- Replenishment planning
- Order promising
- Production planning
- Manufacturing scheduling

Dwight Klappich, Gartner
Descriptive analytics allows user to condense big data into smaller, more useful nuggets of information. The purpose of descriptive analytics is to summarize what happened.

Predictive analytics is the next step up in data reduction. It utilizes a variety of statistical, modeling, data mining, and machine learning techniques to study recent and historical data, thereby allowing analysts to make predictions about the future.

Prescriptive analytics recommends one or more courses of action – showing the likely outcome of each decision to enable the decision-maker to take action. Predictive analytics typically predicts "multiple futures" based upon the decision-maker's actions. The software requires a predictive model that outputs actionable data and a feedback system that tracks the outcome produced when actions are taken. With this history, the model is able to predict the possible consequences based on various actionable options and also recommend the best course of action for any pre-specified outcome.
VISIBILITY & CONTROL TOWERS
Real-time data enabled by trading partner connectivity: Centralized data aggregation and decision making requires a truly multi-enterprise solution. A solid integration backbone that accommodates various information systems and data formats is fundamental.

Cross-functional business process & program governance: full-time representation from the planning, order management, order fulfillment, and logistics execution functions – as well as key trading partners – is imperative.

KPIs and dashboards: A dashboard to monitor and track inventory levels, output targets, planned and in-transit shipments, critical orders, etc. An exception management framework that includes the metrics to be tracked based on pre-defined business needs and the tolerances that trigger alerts.

Supply chain execution & problem resolution: Execution is key! A perfect plan is useless if it cannot be executed within a defined period of time. Once a decision is made (e.g., a re-route or transportation mode change at the next milestone), work flows should be executed to take the appropriate corrective actions.
End-to-end supply chain visibility: A Supply Chain Control Tower monitors real-time key performance indicators (KPIs) from across the extended supply chain – from inventory positions to late shipments to impending part shortages at critical component suppliers, the Control Towers provide real-time insight into the performance and vulnerabilities of the extended supply chain.

Exception-based management and problem resolution: Once access to timely, end-to-end information is established, the focus shifts to identifying and resolving potential problems. The Control Tower makes this possible by providing information in an exception-based framework – alerting team members to those issues requiring resolution. Integration and real-time data exchange with partners allow team members to take corrective action before effects are felt downstream.
Random infusions of technology will merely leave your enterprise in greater disarray.

Measured KPI-based opportunity analysis, justification, solution selection & implementation are the keys to achieving supply chain excellence!

Insist upon solutions that delineate a clear migration path as features evolve, systems that adapt to changing requirements & a phased implementation program that enables you to walk before you run.
"Would you tell me please, which way I ought to go from here?" "That depends a good deal on where you want to get to," said the cat. "I don't much care where," said Alice. "Then it doesn't matter which way you go," said the cat.
THE BEST TECHNOLOGY INSTALLED IN OPERATIONS WITH ILL-CONCEIVED MATERIAL FLOWS & PROCESSES WILL ONLY ENABLE USERS TO DO THINGS BADLY - - - FASTER!
Discovery & Data Collection
Process, Material & Data Flow Mapping
Define Trading Partner Requirements
Identify Gaps & Opportunities
Examine Alternatives to Close the Gaps
Define Physical, Functional & System Needs
Profile & Measure Current Performance
Establish Target Performance Metrics
Value Potential Incremental Gains
Match Likely Costs & Benefits
Prepare Investment Package
Launch Selection Process
End Myopic Focus on Operational Execution!

Above Average

Average

Below Average

Demand Forecast

Cash-to-Cash

AP

Inventory Total

Inventory Obsolescence

AR

Perfect Order

Transp., W/H & DC Costs

Supplier Quality

Supplier On-Time

Raw Matls Inventory

Purchase Costs

Direct Matl Cost

FG Inventory

WIP Inventory

Plant Utilization

NPD Time

Order-to-Ship

Order-to-Delivery

Value of Total Inventory (% of Sales)

Direct Material Cost (% of Sales)

Supplier Receipts – On Time (%)

Supplier Receipts – Passing Quality (%)

Plant Utilization (%)

Demand Forecast Error (%)

NPD Time – Concept to Shipment (Months)

New Product Introduction Forecast Error (%)

Transportation Costs (% of Sales)

Warehouse and DC Costs (% of Sales)

Inventory Obsolescence (% of Inventory Value)

Order to Ship (days)

Order to Delivery (days)

Perfect Order – OTIF (%)

Days of Raw Material (days)

Days of Work-in-Progress (days)

Days of Finished Goods (days)

Supplier Receipts

On Time (%)

Passing Quality (%)

Plant Utilization (%)

Demand Forecast Error (%)

NPD Time – Concept to Shipment (Months)

New Product Introduction Forecast Error (%)

Transportation Costs (% of Sales)

Warehouse and DC Costs (% of Sales)

Inventory Obsolescence (% of Inventory Value)
DC Measures 2015

By

Joseph Gilmore, CFI, CSCP
Norton

Susan J. Schaefer

Earl Muchtig, PhD
Kansas City Area Logistics

Dwain Williams, PhD
Assistant Professor of Logistics
Kansas State University

Findings of a survey of e-Benchmarking measures among WERC members and DC Velocity readers.

"We must select the most appropriate metrics to fuel our improvement efforts."

We began this study in 2003. The goal was to help practitioners gain a better understanding of specific metrics and base performance on changed over time. Each year has seen a different set of the data from the WERC Executive and Research Council members, DC Velocity readers, and other industry professionals. We are highlighting the most relevant metrics to the industry according to respondents. Underlying the importance of the perfect order, we present a deep dive into the definition (or metrics), tracked kpi changes in performance, and tracked kpi changes in improvements.

WERC thanks the sponsoring companies, their help makes our report possible.

### Capacity/Quality Metrics

<table>
<thead>
<tr>
<th>Metric</th>
<th>Major Opportunity</th>
<th>Disadvantage</th>
<th>Typical</th>
<th>Advantage</th>
<th>Best-in-class</th>
<th>Median</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Warehouse Capacity Utilized**</td>
<td>Less than 75%</td>
<td>&gt; 75%</td>
<td>&gt; 90%</td>
<td>&gt; 98%</td>
<td>&gt; 99%</td>
<td>&lt; 1%</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td>Peak Warehouse Capacity Utilized**</td>
<td>Less than 60%</td>
<td>&gt; 75%</td>
<td>&gt; 85%</td>
<td>&gt; 93%</td>
<td>&gt; 96%</td>
<td>&lt; 1%</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td>Inventory Accuracy by Location</td>
<td>Less than 95%</td>
<td>&gt; 95%</td>
<td>&gt; 99%</td>
<td>&gt; 99%</td>
<td>&gt; 99%</td>
<td>&lt; 1%</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td>Order Picking Accuracy (Percent by Order)</td>
<td>Less than 90%</td>
<td>&gt; 90%</td>
<td>&gt; 95%</td>
<td>&gt; 98%</td>
<td>&gt; 98%</td>
<td>&lt; 1%</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td>Material Handling Damage</td>
<td>Greater than 2%</td>
<td>&gt; 2%</td>
<td>&gt; 4%</td>
<td>&gt; 6%</td>
<td>&gt; 6%</td>
<td>&lt; 1%</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td>Equipment/Tork/Risk Capacity Utilized</td>
<td>Less than 67%</td>
<td>&gt; 67%</td>
<td>&gt; 80%</td>
<td>&gt; 87%</td>
<td>&gt; 87%</td>
<td>&lt; 1%</td>
<td>&lt; 1%</td>
</tr>
</tbody>
</table>

### Product Handling Metrics

<table>
<thead>
<tr>
<th>Metric</th>
<th>Major Opportunity</th>
<th>Disadvantage</th>
<th>Typical</th>
<th>Advantage</th>
<th>Best-in-class</th>
<th>Median</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual Workforce Turnover</td>
<td>Greater than 95%</td>
<td>&gt; 95%</td>
<td>&gt; 100%</td>
<td>&gt; 102%</td>
<td>&gt; 102%</td>
<td>&lt; 1%</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td>Productive Hours to Total Hours</td>
<td>Less than 75%</td>
<td>&gt; 75%</td>
<td>&gt; 85%</td>
<td>&gt; 93%</td>
<td>&gt; 96%</td>
<td>&lt; 1%</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td>OSHA Recordable Injuries (TRIR)</td>
<td>Greater than 5</td>
<td>&gt; 5%</td>
<td>&gt; 7%</td>
<td>&gt; 9%</td>
<td>&gt; 9%</td>
<td>&lt; 1%</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td>OSHA Days Away From Work (DIWC)</td>
<td>Greater than 5-42</td>
<td>&gt; 5-42</td>
<td>&gt; 0</td>
<td>&gt; 0</td>
<td>&gt; 0</td>
<td>&lt; 0</td>
<td>&lt; 0</td>
</tr>
</tbody>
</table>

### Perfect Order Metrics

<table>
<thead>
<tr>
<th>Metric</th>
<th>Major Opportunity</th>
<th>Disadvantage</th>
<th>Typical</th>
<th>Advantage</th>
<th>Best-in-class</th>
<th>Median</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of Orders on Time Delivery</td>
<td>Less than 85%</td>
<td>&gt; 85%</td>
<td>&gt; 90%</td>
<td>&gt; 93%</td>
<td>&gt; 95%</td>
<td>&lt; 1%</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td>Percent of Orders Shipped Complete</td>
<td>Less than 95%</td>
<td>&gt; 95%</td>
<td>&gt; 99%</td>
<td>&gt; 99%</td>
<td>&gt; 99%</td>
<td>&lt; 1%</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td>Percent of Orders Shipped Damage Free (OUSD)</td>
<td>Less than 97%</td>
<td>&gt; 97%</td>
<td>&gt; 99%</td>
<td>&gt; 99%</td>
<td>&gt; 99%</td>
<td>&lt; 1%</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td>Percent of Orders with Correct Documentation</td>
<td>Less than 95%</td>
<td>&gt; 95%</td>
<td>&gt; 99%</td>
<td>&gt; 99%</td>
<td>&gt; 99%</td>
<td>&lt; 1%</td>
<td>&lt; 1%</td>
</tr>
</tbody>
</table>

### Cash-to-Cash Metrics

<table>
<thead>
<tr>
<th>Metric</th>
<th>Major Opportunity</th>
<th>Disadvantage</th>
<th>Typical</th>
<th>Advantage</th>
<th>Best-in-class</th>
<th>Median</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventory Days of Supply</td>
<td>Greater than 40</td>
<td>&gt; 40</td>
<td>&gt; 50</td>
<td>&gt; 55</td>
<td>&gt; 55</td>
<td>&lt; 10</td>
<td>&lt; 10</td>
</tr>
<tr>
<td>Average Days Payable</td>
<td>Greater than 60</td>
<td>&gt; 60</td>
<td>&gt; 70</td>
<td>&gt; 75</td>
<td>&gt; 75</td>
<td>&lt; 10</td>
<td>&lt; 10</td>
</tr>
<tr>
<td>Average Days Sales Outstanding</td>
<td>Greater than 60</td>
<td>&gt; 60</td>
<td>&gt; 70</td>
<td>&gt; 75</td>
<td>&gt; 75</td>
<td>&lt; 10</td>
<td>&lt; 10</td>
</tr>
</tbody>
</table>
The SCORmark benchmark assesses operational performance, complexity & process maturity through the plan, source, make, deliver, return & enable processes of supply chains.

<table>
<thead>
<tr>
<th>Performance Attribute</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>The ability to perform tasks as expected. Reliability focuses on the predictability of the outcome of a process. Typical metrics for the reliability attribute include: On-time, the right quantity, the right quality.</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>The speed at which tasks are performed. The speed at which a supply chain provides products to the customer. Examples include cycle-time metrics.</td>
</tr>
<tr>
<td>Agility</td>
<td>The ability to respond to external influences, the ability to respond to marketplace changes to gain or maintain competitive advantage. SCOR Agility metrics include Flexibility and Adaptability.</td>
</tr>
<tr>
<td>Costs</td>
<td>The cost of operating the supply chain processes. This includes labor costs, material costs, management and transportation costs. A typical cost metric is Cost of Goods Sold.</td>
</tr>
<tr>
<td>Asset Management Efficiency</td>
<td>The ability to efficiently utilize assets. Asset management strategies in a supply chain include inventory reduction and in-sourcing vs. outsourcing. Metrics include: Inventory days of supply and capacity utilization.</td>
</tr>
</tbody>
</table>

Perfect order fulfillment
Order fulfillment cycle time
Upside supply chain flexibility
Upside supply chain adaptability
Downside supply chain adaptability
Overall value at risk
Total cost to serve
Cash-to-cash cycle time
Return on supply chain fixed assets
Return on working capital
### Impact on Supply Chain Performance

<table>
<thead>
<tr>
<th>Measure</th>
<th>Calculation</th>
<th>Current</th>
<th>Target</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-Time Delivery</td>
<td>Total Orders On Time / Total Orders Shipped</td>
<td>87%</td>
<td>97.5%</td>
<td>$</td>
</tr>
<tr>
<td>Order Accuracy</td>
<td>Ensure Orders / Total Orders Shipped</td>
<td>92%</td>
<td>99%</td>
<td>$</td>
</tr>
<tr>
<td>Order Cycle Time</td>
<td>Actual Ship Date - Customer Order Date</td>
<td>12 Hrs</td>
<td>8 Hrs</td>
<td>$</td>
</tr>
<tr>
<td>Inventory Accuracy</td>
<td>Actual Qty by SKU / Reported Qty by SKU</td>
<td>96%</td>
<td>99.9%</td>
<td>$</td>
</tr>
<tr>
<td>Damaged Inventory</td>
<td>Total Damage % / Total Inventory Value</td>
<td>.75%</td>
<td>.25%</td>
<td>$</td>
</tr>
<tr>
<td>Days on Hand</td>
<td>Avg. Inventory Value ($) / Average Daily Sales ($)</td>
<td>50 Days</td>
<td>42 Days</td>
<td>$</td>
</tr>
<tr>
<td>Storage Utilization</td>
<td>Avg. Inventory Sq. Ft. / Storage Capacity Sq. Ft.</td>
<td>78%</td>
<td>85%</td>
<td>$</td>
</tr>
<tr>
<td>Orders per Hour</td>
<td>Orders Picked &amp; Packed / Total Warehouse Capacity Hrs</td>
<td>15/Hr</td>
<td>20/Hr</td>
<td>$</td>
</tr>
<tr>
<td>Lines per Hour</td>
<td>Total Lines Picked / Total Warehouse Hrs</td>
<td>40/Hr</td>
<td>58/Hr</td>
<td>$</td>
</tr>
<tr>
<td>Cost per Order</td>
<td>Total Warehouse Costs / Total Orders</td>
<td>$4.26</td>
<td>$3.62</td>
<td>$</td>
</tr>
<tr>
<td>Cost % of Sales</td>
<td>Total Warehouse Costs / Total Revenue</td>
<td>.3%</td>
<td>2.7%</td>
<td>$</td>
</tr>
</tbody>
</table>

**Value Proposition**
- **On-Time Delivery:** Competitive differentiation & improved customer retention through high service levels & quality. Reduced penalties, charge-backs, refused shipments, reprocessing costs & lost sales.
- **Order Fill Rate:** Increased throughput, lower warehouse costs per order, faster order cycle times & reduced or eliminated backorder processing costs. Improved capacity utilization.
- **Order Accuracy:** Elimination of picking, packing & expected shipping costs.
- **Order Cycle Time:** Time from order receipt to fulfillment and delivery.

**Value Proposition**
- **Dock-to-Stock Time:** The faster goods are received & processed, the more quickly they can be made available for order filling & shipment.
- **Visibility:** Visibility from manufacturing to the warehouse & in-transit to the customer enables better planning, exception handling & service.
- **Damage:** Damage reduction lowers inventory / working capital requirements & replacement costs. It also directly improves cycle times & customer service.
- **Days on Hand:** Reducing the number of days on hand cuts working capital & warehouse space requirements.

**Value Proposition**
- **Transportation Costs:** Lower overall transportation costs per order shipped directly contribute to improved margins. Assessment of these costs by customer helps with fine-tuning service level targets & policies.
- **Warehouse & Transportation Costs as % of Sales:** Total warehousing & shipping costs divided by total sales for the fiscal year.
USE THE DUPONT MODEL TO ASSESS THE IMPACT OF KPI ACHIEVEMENT ON COMPANY FINANCIALS
Have A Great Show!

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