Order and Truck Optimization: Increasing Sustainability and Profitability
Agenda

- Introductions
- The Opportunity… *Why Optimize Orders?*
- Kraft Foods “Super Truck” Case Study… *Internal Replenishment and VMI Orders*
- Transportation | Warehouse Optimization Case Study… *Customer Orders*
- Optimizing Trucks for Smarter Transportation… *Conclude & Questions*
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The Opportunity… Why Optimize Orders?

- Many supply chains remain under pressure to manage the cost equation, while meeting the strategic objectives of providing superior customer service and generating growth.

- Based on the 2010 IBM-GMA Logistics Survey, reduced logistics costs, increased customer responsiveness and profitable growth remain management’s top three supply chain objectives, matching results from 2008.

![Figure 1: Top three supply chain objectives](image)

- Additionally, the global recession has placed even greater emphasis on cost containment, especially given the dynamic fluctuations of costs outside of management control, including commodity and fuel costs.
The Opportunity… *Why Optimize Orders?*

- The Good…according to the IBM-GMA survey, total logistics costs (as a percentage of sales) have decreased since 2008

- The Bad…freight costs continue to climb, up 11% from the 2008 survey, driven by a variety of factors, including a shortage of qualified drivers (CSA 2010), less competition and increased technology requirements (GPS, track & trace, etc.)

Transportation costs account for the largest percentage of total logistics costs = obvious target for savings initiatives
The Opportunity… *Why Optimize Orders?*

- In addition to managing supply chain costs and growing the business, many companies are also embracing the commitment to “go green” and focusing on sustainability initiatives
  - Governmental requirements
  - Customers and investors desire it
  - Competitors are doing it, and;
  - Good business practices demand it

- However, it is clear in today’s economic environment, sustainability initiatives that do not produce a solid return on investment are often a lower priority for many companies
The Opportunity… *Why Optimize Orders?*

- Since transportation costs account for the largest percentage of total logistic costs, there is a clear opportunity to embrace, develop, and deploy enhanced technology that can impact the bottom line.

- A part of IBM CRP’s strategic roadmap includes developing new capabilities to help our clients embrace sustainability to drive business value and deliver financial benefits.

- Additionally, consider the “story” if those enhanced capabilities could be integrated into the larger sustainability initiatives within your organization, leading to a win-win outcome, ultimately helping your company save money, while saving the planet…
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Super Truck

Pam Haining
Kraft Foods
Senior Director, Logistics Development
Kraft Foods 2011
A global snacks powerhouse and unrivaled portfolio of brands people love
(1) 2009 Pro Forma amounts are based on the acquisition of Cadbury and the divestiture of the Pizza business. (2) Biscuits and Confectionery were previously reported combined and known as Snacks. With the Cadbury acquisition, the Biscuits and Confectionery sectors have been separately broken out. The Biscuits sector primarily includes cookies, crackers and nuts. The Confectionery sector includes chocolate, gum and candy.
Super Truck

- Why Super Truck
- What does Super Truck do
- Implementation
- Results

SUPER TRUCK
More Product - Fewer Trucks
Why Super Truck

- Transportation Spend
- Trailer Utilization
- Unit Loads not optimal
- Sustainability

SUPER TRUCK
More Product - Fewer Trucks
At $1.2B, Transportation is the largest component of supply chain spend.

<table>
<thead>
<tr>
<th>Scope</th>
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<tbody>
<tr>
<td>• 920,000 Annual shipments</td>
</tr>
<tr>
<td>• 400+ Inventory locations</td>
</tr>
<tr>
<td>• 3,800 customer ship to locations</td>
</tr>
<tr>
<td>• 5 Protection classes</td>
</tr>
<tr>
<td>• 25,800 Lanes</td>
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</table>
## Huge Opportunity to improve utilization

### 2005

<table>
<thead>
<tr>
<th></th>
<th>Legal</th>
<th>Outbound</th>
<th>%</th>
<th>Replenishment</th>
<th>%</th>
</tr>
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<td><strong>Dry</strong></td>
<td>45,000</td>
<td>37,363</td>
<td>83%</td>
<td>34,770</td>
<td>77%</td>
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<td><strong>Ref</strong></td>
<td>43,360</td>
<td>33,021</td>
<td>76%</td>
<td>35,679</td>
<td>82%</td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>Legal</th>
<th>Outbound</th>
<th>%</th>
<th>Replenishment</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dry</strong></td>
<td>2,980</td>
<td>1,350</td>
<td>45%</td>
<td>1,903</td>
<td>64%</td>
</tr>
<tr>
<td><strong>Ref</strong></td>
<td>2,640</td>
<td>1,400</td>
<td>53%</td>
<td>1,470</td>
<td>56%</td>
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</table>

**Gross Weight**

**Cube**

**SUPER TRUCK**

More Product - Fewer Trucks
Unit loads over 50” prevent optimal trailer utilization

Pallet Heights By BU

- Double stack on a dry or refer trailer
- Refrigerated
  - Mostly RTD, ships alone/weights out
  - 86%
- Double Stack on a dry trailer, not refer
- Not Optimal
- Not Optimal
- 70” and greater
We’ve shown steady progress against our goals* from 2005 through 2009

- 174 million pounds packaging material eliminated – exceeding our 150 million pound goal two years early!
- 5% reduction plant energy usage (towards a goal of 25%)
- 17% plant energy-related carbon dioxide emissions (towards a goal of 25%)
- 32% reduction plant water consumption – exceeded goal of 15%, two years early!
- 30% reduction in plant waste – doubling our goal of 15%, two years early!

*Goals to be achieved by 2011 with a base year of 2005
The Journey

• **Scope**
  – Replenishment – Plant to DC
  – Customer Outbound
  – Unit Load Optimization

• **Goal**
  – Find/Develop a tool to build a better load – bricks and feathers
  – Optimize unit loads to improve cube utilization (>50")

**SUPER TRUCK**
More Product - Fewer Trucks
What Does Super Truck Do?

1. Begin with baseline load for ship day

Constraints include:
- trailer load height and weight

2. Reconfigures load for day & reallocates space

3. Use future shipments to fill available capacity to limits

4. Ship more product on the same trailer

BASELINE TRAILER - Monday
80% Utilized

FUTURE TRAILER - Monday
96% Utilized

BASELINE TRAILER - Tuesday

FUTURE TRAILER - Monday

50% Available Cube
50% Cube Utilized
Trailer Wt. 36,000# (80%)

50% Available Cube
50% Cube Utilized
Trailer Wt. 36,280# (81%)

80% Cube Utilized
Trailer Wt. 42,000#
2 Pilot Plants
- Stand Alone TWO
- Flat files between Manugistics and TWO

Developed interface between Manugistics and TWO

Implemented at 35 plant buffers

Developed interface between IBM VMI and TWO

Implemented with large VMI customers (3+ loads per week), phased roll-out

Developed interface from TWO to WMS to utilize load plans to improve loading efficiency
Replenishment Load Optimization improved net weight per truck 4%

Since 2008
9,000 less trucks on the road
6.2 Million less miles

Implementation Begins
VMI on Super Truck improved Net Wt/Load 3%

Implementation Begins

Super Truck is used on customer who receive three or more loads per week
### VMI Customer Example

**Origin: Kraft Dry Mixing Center**

Per Truckload Averages

<table>
<thead>
<tr>
<th></th>
<th>April 26 - July 15</th>
<th>Aug 1 - Sept 16</th>
<th>Net Change</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Gross Lbs</td>
<td>CAW</td>
<td>Gross Lbs</td>
</tr>
<tr>
<td>DC 1</td>
<td>36190</td>
<td>42614</td>
<td>39481</td>
</tr>
<tr>
<td>DC 2</td>
<td>34479</td>
<td>41953</td>
<td>38282</td>
</tr>
<tr>
<td>DC 3</td>
<td>36760</td>
<td>42288</td>
<td>40162</td>
</tr>
<tr>
<td>DC 4</td>
<td>40981</td>
<td>42543</td>
<td>41152</td>
</tr>
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Lessons Learned

• Must have the order demand stream in order to optimize mix on the load
• Don’t boil the ocean, go after demand you can control
• Do it in phases
• Get the data to build your business case – unit load optimization
• Track and Measure
• Never give up!

SUPER TRUCK
More Product - Fewer Trucks
QUESTIONS?

SUPER TRUCK
More Product - Fewer Trucks
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Case Study: Procter & Gamble - a Company That Sustains

THE P&G STATEMENT OF PURPOSE

“We will provide branded products and services of superior quality and value that improve the lives of the world's consumers, now and for generations to come”
Shipping Direct to the Customer from the Plant Creates Order Optimization Challenges

- Typically customers create the order - the challenge becomes how to encourage right the decisions

- High cost to serve
- Lower fill rates
- Poor truck utilization
- High damage

Customer write orders

Lots of single-case line items

High cost to serve
Lower fill rates

Poor truck utilization

High damage
1992 – P & G Recognizes Need to Consistently Execute is the Basis for Increasing Shipment Size

Tribal Knowledge

Optimization system

Implement expert software

34,000 lbs

34,000 lbs

12,000 lbs
When You can Execute, Then go Back to the Customer

When you can do this…
Then you can do this…
…and the results are

- Bigger loads with
  - No “cuts”
  - Legal
  - Damage-free
  - Consistent

- P & G most admired CPG company

34,000 lbs
34,000 lbs
12,000 lbs
What is it Worth?

Happy Transportation Management + Happy Customers = PRICELESS
Extra slides
Challenges: Tribal Knowledge:
What is a Full Truck?

<table>
<thead>
<tr>
<th>Company</th>
<th>Refrigerated truck carrying capacity (weight)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>43,000 lbs</td>
</tr>
<tr>
<td>B</td>
<td>43,500 lbs</td>
</tr>
<tr>
<td>C</td>
<td>44,000 lbs</td>
</tr>
<tr>
<td>D</td>
<td>45,000 lbs</td>
</tr>
</tbody>
</table>
Challenge: Accounting for Pallet Weight

Plan net weight (no pallets)

Ship gross weight

How do I deal with this?
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Optimizing Trucks for Smarter Transportation…Conclusion

- Optimizing orders and trucks delivers clear and ongoing value:
  - Cost Savings
    - Lower transportation spend by placing fewer trucks “on the road”
    - Increase utilization 4%-10% for typical mixed product clients
  - Sustainability
    - Reduce carbon emissions, traffic congestion and continue the focus on “Green” business practices
  - Sales Growth
    - Improve customer service levels and in-stock by optimizing trucks

- Targeting specific improvements to existing solutions (e.g. truck optimization of customer VMI orders) enables quick time to value, minimal investment and enhances the current value of your Continuous Replenishment Program.
Thank You!

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