Outbound Transportation Collaboration
Do-It-Yourself (DIY)

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MIT SCM ResearchFest
May 22-23, 2013
Agenda

• Overview

• Methodology

• Case study
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Outbound Transportation Collaboration

• Consolidation of shipments across firms shipping from common origins to common destinations
• Focus of research: ground transportation

- Transportation Collaboration
  - Do-It-Yourself (DIY)
    - 3rd Party
    - Passive (Opportunistic)
    - Active (Planned)

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Motivation?

- Steady rise in transportation costs

- Desire of customers to reduce inventory levels

- Transportation inefficiencies
Transportation Collaboration Benefits

- **Shipper Benefits**
  - Consolidation of Shipments
  - Improved Vehicle Utilization
  - Reduced Transportation Cost and CO\textsubscript{2} Emissions

- **Recipient Benefits**
  - Opportunity to reduce inventory levels and receiving costs
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Research Questions

1. How do you qualify shippers for transportation collaboration?

2. What are the potential savings from outbound transportation collaboration?

3. How do you implement a DIY collaboration model?
Collaboration Qualification

- **Hard constraints**: Collaboration is not possible
  - Shipping food and hazardous material
  - Shipping using bulk tanker vs. dry van

- **Soft constraints**: Collaboration is possible with enough will and investment
  - Competitive considerations
  - Company culture
Savings Quantification

• Consolidation analysis using pool point distribution and multi-stop truckloads (MSTL)
DIY Implementation

• Conducted interviews with several companies with DIY collaboration experience

• Key interview sections:
  • Collaboration motivation and background
  • Scope of collaboration
  • Data sharing and analysis
  • Collaboration process
  • Collaboration costs and benefits
  • Savings sharing
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Case Study

- Six companies (A thru F) in the Midwest
- Shipping origins are in a 10 mile radius area

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<thead>
<tr>
<th>Company</th>
<th>Industry</th>
<th>Avg. Lbs/Shipmen</th>
<th>Dominant Shipment Type</th>
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<td>A</td>
<td>Agriculture Machinery</td>
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<td>B</td>
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Destinations
Pool Point Analysis

• Excluded TL volume for each region

• Compared current LTL cost to pool point costs

• Pool point costs:

  - Pickup charges via MSTL at the origin
  - Line haul charges to LTL carrier hub at destination region
  - LTL delivery charges at the destination

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Pool Point Results

• 3 of 20 regions show savings without shipment delays
  • Regions include SF, LA, NY and amount to $263,000 in savings (8% of LTL spend to these regions)

• Companies B, C and D achieved 90% of the savings

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Pool Point Results

- Pool point savings can increase up to $1.5M if companies are able to delay their shipments.
MSTL Analysis

- Consolidate LTLs on TLs
- LTL shipments ride for free
- MSTL extra costs:

  Destination stop off and out-of-route-mile charges

  Origin stop off charges
MSTL Results

- 18% of the LTL volume to the 20 regions was consolidated on MSTLs
- $744,000 in savings was identified. SF, NY and LA represent 55% of the savings
- Companies C, D and E achieved 90% of the savings

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Consolidation Summary

- Companies A and F do not benefit much from collaboration in this community
- Savings are not mutually exclusive

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Conclusions

• Companies in very different industries can benefit from transportation collaboration
• MSTL opportunities depend largely on existing TL volumes
• Pool point opportunities depend largely on consistent LTL volume to small destination areas
• Longer line hauls show higher savings potentials
Questions?

Thank you
Collaboration in Supply Chain

Vertical Collaboration
- External Collaboration (Suppliers)
- External Collaboration (Other Organizations)
- External Collaboration (Customers)

Horizontal Collaboration
- Internal Collaboration
- External Collaboration (Competitors)

Barratt, 2004