Business and Supply Chain M&S Applied Research Area

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Content

- Introduction
- Warehousing research
- Transportation research
  - Economic Impact Modeling
  - Routing Optimization
- JIT Production / Logistic research
- Future Endeavors
The Business and Supply Chain Applied Research Area - Overview

It seeks to identify and pursue fundamental research that:

- Bridges the gap between theory and practice.
- Uses M&S to develop innovative approaches in:
  - Supply chain, economics, operations research, and operations management.
Research Areas

1. Applications:
   - M&S in Manufacturing,
   - M&S in Service, and
   - M&S in Institutional Enterprises

2. Theoretical:
   - Optimization and Simulation-based Optimization
   - System Dynamics
   - DES
1. WH study: Optimizing SKUs slot assignments
Considering the dynamics of the demand

- Proposed a SKU assignment technique:
- Combined Optimization and Zoning, such that:
  1. Correlations.
  2. Throughput (fast/slow movers).
  3. Different weights.
WH study - Results

Time average

<table>
<thead>
<tr>
<th>Number</th>
<th>Sku per order</th>
<th>Batches</th>
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Traveled distance

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2. Economic modeling: Determining economic impact of transportation alternatives
System dynamics model that consider direct and indirect economic impacts

Preliminary results:

Volume / Capacity

Effect on moving in

Effect on moving in: Current
3. JIT Production and Supply Chains
JIT Supply Chain

JIT supply chain systems:

- Demand from customers - Pull products
- Produce only WIP and final inventory
- More Efficient

Demand triggers what to produce on each stage
* Coordination
Looking Ahead

- Course: Supply Chain and Reverse Logistics –Spring 2010