Logistics and Supply Chains – An Overview

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Presentation to LSU Capstone Class, Spring 09
My Background

- **ITTS – 07-Present**
  - Policy and Planning Studies for Regional Freight Transportation Improvements

- **USACE – (04-07)**
  - Waterway Planning and Policy
  - Managed Trade Association
  - Latin American Port Technology Transfers

- **FHWA – (99-04)**
  - Preformed Freight Shipment Analysis
  - Truck Operational Studies

- **Standard and Poors DRI (Now Global Insight) – (97-99)**
  - Economic Forecasts of International Trade and Transportation

- **Port of Long Beach – (91-97) Trade Analyst /Marketing Assistant**

- **LSU – (90-91) Researched Latin American Produce Imports**

- **Education – Degrees in Ag. Econ**
  - MS. – University of Tennessee, 1990
  - B.S. – Louisiana State University, 1987 (Ag. Econ. Club)
What Drink Can’t You Live Without?

- When do you expect to get this?
- Where do you expect to get this?
- How much are you willing to pay in time or money to get it?
- What are your expectations?
Why Move Stuff?

- Every company has logistics concerns
  - A firm gathers, transforms, distributes goods and services
- Traditional sale between economic agents
  - Grain train from elevator to ocean terminal
  - Distribution, Warehouse (intermediate goods)
  - Producer to Manufacturer/Processor (primary goods)
  - Retail sales
- Vertically Integrated shipments
  - Poultry industry
  - Best Buy, Wal-Mart
  - Military Deployments
  - Reverse Logistics
Some terms

- Buyer – Seller
- Transportation
  - Carriers
  - Shippers
  - Intermediaries
    - International Trade – Freight Forwarder, Customs House Broker
    - 3PL and 4PL
    - Agent
How You Run The Supply Chain Depends Upon Many Factors

- Commodity
- Mode and Route
- Operational Patterns
- Managing Risks
- Price Management
- Environment
- Customer Demands
Commodity Characterizes Matter

- A Ton of Feathers or Steel (weight and size)
- A $1000 of diamonds or flowers (value)
- 100 shirts or bananas (unit counts)
- Ice Cream or parrots (temperature)
- Water or petroleum (hazardous)
- Natural Gas versus Dirt (natural state)
Some terms

- Intermodal, Multimodal
- Drayage
- Railroads
  - Class I, II, III
  - Shortline
- Trucking
  - For Hire, Private, Public
  - Less Than Truckload or Truckload
- Integrated Carrier
Modal, Value, Weight Relationship

- Timeliness
- Size of Shipment
- Per Unit Costs
- Inland Water
- Pipeline
- Railroads
- Trucking
- Air Service
Containerization

- 20, 40, 45
- Standardized
- Reefer Plugs
- Double Stack – COFC, TOFC
- Truck Sizes
Example – Choices between Baton Rouge and Lafayette

- Automobile
- Bus
- Rail - Amtrak
- Airplane
- Boat
- Walk
- Horse
- Bicycle
- Hot Air Balloon
- Pipeline
- Motorcycle
- Stay Home!
Operations - Traditional Push Supply Chain Framework

“PUSH” METHODS OF CONTROL (relative importance)

Supplier → Supplier → Manufacturer → Distributor → Customer

Transport System

Inventory

Information System
Operations - Modern Push Supply Chain Framework

Supplier → Supplier → 3PL → Supplier → Supplier → Supplier

Supplier

Designer → Manufacturer → Marketer → Distributor → Customer

Recycled products → Point-of-sale data

“PULL” METHODS OF CONTROL (relative importance)

Inventory

Information System
Logistics Software

- Order Fulfillment-Tracking Systems
- Production and Inventory Management Systems
- Warehouse loading and monitoring
- Truck route and loading planners
- Fleet management tools
Transportation Risks

- Loss of Cargo
- Theft
- Natural Disasters, Acts of God
- Spoilage
- Traffic and Congestion
- Changing policies, inspections, etc.
- Strikes, Work Stoppages
Pricing Management

- Manage Costs – Directly to Bottom Line
- Managing both sourcing, inventory and transportation
- Over 10% of all moves are empty - Carriers looking for loads
- Do you really need 15 loaves a bread at a time?
- Cash flow considerations
Environmental Concerns

- Carbonfoot print
- Cap and Trade
- Fair practice production
- Biofuels
- California Truck provisions
Customer Demands

- Electronic Storefronts versus traditional stores
  - Textbooks? Entertainment?
  - What can you not buy online?
- Local Deliveries
  - Distributor and Food Supply Trucks
  - Stocking vending machines
- Density of Customers
- Packaging and Advertising
Plant-Site Selection

- Designed to Minimize Network costs
  - From Supplier
  - To Consumer
- Congestion is important
- In 2008, higher fuel prices forced many firms to consider changing D/C facilities
Economic Development

- Freight Villages
- Logistics Connections
- Business Cluster Activities
- “I-20” Auto Corridor
- I-10/12 Industrial Corridor
An Example – Asian Import to Midwest Market

10 days
4000 miles

2 days
No miles

2 days
1500 miles

4 hours
+/- 2 hours
20 miles
There are many considerations to balancing a Supply Chain

Safe
Secure
Environmental
Responsible
Efficient/Reliable
Cost effectiveness
Accessible to various modes and facilities
Evolution of Logistics

- 1950’s- Focus on Developing U.S. National Transportation Infrastructure
- 1960’s- Start of Asian Import Trade
- 1970’s - Logistics Revolution, containerization
- 1980’s – Quality Management, Fax Machines, Deregulation, Intermodalism, Global Financial Market Integration
- 1990’s - Just in Time/Time Certain Delivery, Internet, Technology productivity gains, collaboration, urban congestion
- 21st Century – Global Supply Chain Management Networks, mass customization, integration, security, Global Competitiveness
What does the Global Supply Chain Mean to the U.S.?

- Cost of logistics in the US was $1.4 trillion in 2007; 10.1% of gross domestic product (GDP), according to CSCMP’s 19th Annual “State of Logistics Report®”.
- US expenditures on logistics are larger than the national GDP of all but ten countries.
- US expenditures on truck transportation alone ($635 billion) are larger than the GDPs’ of all but 16 countries.
- 11.3 million people (8.6% of the total US labor force), United States Department of Labor statistics
- Projected to be 1/3 of National GDP by 2020 (up from ¼ in early 2000’s)
Conclusion...

- Seen as important customer and costs management function, risk management
- Very Technology Dependent
- Paradox - Robust and Fragile
- Congestion and Traffic Management
- Security and Transparency
- Self Gratification partially depends upon transportation activities
What are you going to drink next?

- It came from somewhere
- It was packaged ready for your needs
- It was available when you wanted it
- It should meet your expectations concerning price and quality