The Logistics Chain and Competitive Strategy

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Organization of American States’ 8º Meeting of the Inter-American Committee on Ports

Welcome to FastPath: A Computerized Transport Logistics Diagnostic Tool

Created for USAID by Nathan Associates Inc. and Sophia Yu Consulting, Inc.

Welcome | About the Tool | Help

Welcome to FastPath:
A Computerized Transport Logistics Diagnostic Tool

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Example Logistics Chain | Define Scenario | Start Existing Scenario | Exit

FastPath

FastPath

FastPath
Presentation Topics

• Back to Some Business School Basics
• Applying Business School Concepts to Transport Logistics Chains
• Upcoming Challenges in Latin America
• Possible Solutions for Greater (Logistics) Competitiveness
Back to Some Business School Basics
Michael Porter underscored the need to assess competitive advantage in terms of the various component activities and processes.

Value chain comprised of primary and support activities:

<table>
<thead>
<tr>
<th>Primary</th>
<th>Secondary</th>
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<tr>
<td>- Inbound logistics</td>
<td>- HR management</td>
</tr>
<tr>
<td>- Operations</td>
<td>- Technology development</td>
</tr>
<tr>
<td>- Outbound logistics</td>
<td>- Procurement</td>
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<tr>
<td>- Marketing and sales</td>
<td></td>
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<tr>
<td>- Customer service</td>
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Each activity assessed in terms of competitive advantage.

“Extended enterprise” is the vehicle to gain or lose competitive advantage -- the supply chain thus becomes the value chain.
Companies Have Changed Behavior in View of Competitive Realities

• Companies traditionally sought cost reductions or profit improvement at the expense of supply chain partners

• Now companies seek to make the entire supply chain more competitive through added value and cost reduction – real competition has transitioned from company vs. company to supply chain vs. supply chain
The New Realities

1. New rules of competition – the need to create value delivery systems that are more responsive to fast-changing markets and are more consistent and reliable

2. Industry globalization – supply chains are lengthened; time compression is a priority

3. Downward pressure on price

4. Customers take control
Downward Pressure on Price
Downward Pressures on Price (continued)

• focus on JIT shifted inventory costs elsewhere in the supply chain -- to suppliers and customers
  • True cost of inventory can be 25% or more per year of its value; inventory costs include
    - Cost of capital
    - Storage and handling
    - Obsolescence
    - Damage
    - Pilferage
    - Insurance
    - Management costs
Customers Take Control

“In 50 years...the cost of distributing necessities and luxuries has nearly trebled, while production costs have gone down by one-fifth... What we are saving in production we are losing in distribution”

Ralph Borsodi, The Distribution Age, 1929 (!)

• The wider supply chain is perhaps the remaining opportunity for significant cost reduction
Applying Business School Concepts to Transport Logistics Chains
Why Transport Logistics Chain Efficiency is Important – Economics Perspective

• Initial interest in shipping/transport costs
  — Limao and Venables (2000) – 10 % increase in transport costs reduces trade volume by 20 %
  — Radelet and Sachs (1998) – doubling shipping costs slows GDP growth by 0.5 %

• Recent growing (research) interest in port and transport logistics chain efficiency
  — Clark, Dollar, Micco (2001) – port inefficiency increases distance by 60%
  — Wilson, Mann, Otsuki (2003) – efficiency improvement in ports has greater impact than Customs improvements and use of e-commerce
  — Hummels (2001): Inventory costs due to transport delays equivalent to 0.8 %/day of delay of the value of the goods being delivered
  — Kent, Fox (2004) – assess impact of port inefficiency on welfare – port inefficiency, when mitigated, induces GDP growth by 0.47 percent
  — Djankov, Freund, and Pham (2006) -- each additional day required for a shipment imposes “extra” economic distance of 70 km per day
The Transport Logistics Chain

- Transport logistics chain consists of assets (links and nodes) and processes associated with moving freight
  - links are associated with freight movements (roads, rail, inland waterways)
  - nodes refer to where freight is processed (ports, distribution centers, dry ports, border crossings)
Supply Chain Concepts Are Applicable to the Transport Logistics Chain

- Need to get away from port-centric thinking
- Majority of transport logistics chain (links and nodes) is outside control of port operator
- Majority of assets are outside control of supply chain managers
Clarity in the Transport Logistics Picture

Entre, entre, por favor, toma un asiento
Between, between, please, drink a chair
Come in, come in, please have a seat
Understanding of transport logistics needs clarity
The need for a transport logistics diagnostics tool

- Vast majority of logistics software devoted to supply chain planning and management
- Most assessment tools devoted to single mode or node
  - Lack holistic approach to transport logistics chain analysis
- Government and industry need ability to:
  - Benchmark performance relative to historic performance and global standards
  - Measure impact in industry terms
  - Identify and optimize solutions
FastPath Schematic of Buenaventura-Bogotá Corridor
Impact of Reducing Congestion Delay by 30 Minutes at Each Point

• Bogota-Buenaventura Route
  — Total volume = 351,322 TEUs
    • Imports – 175,661 TEUs
    • Exports – 32,934 TEUs
  — Import truck trips - 112,696 TEUs
  — Full export truck trips: 22,226 TEUs
  — Empty TEU export truck trips: 71,363 TEUs
  — Total truck trips in both directions: 206,285

• 6 road bottlenecks

• Reducing congestion delay by 30 minutes at each bottleneck: total potential saving time is 3 hours. Current travel time between Buenaventura and Bogota is 30.5 hours, assuming 10 hours rest time
Upcoming Challenges in Latin America
Reduced Congestion Delay Impact (continued)

- With the reduction of travel time and resulting truck productivity improvement, the same volume of containers could be handled using only 185,995 truck trips.
- If the original number of trucks remains constant, the number of additional cargo volume that could be transported is about 34,500 TEUs.
- Assuming a 100 truck company, operating costs reduced by 8 percent.
Colombia’s Transport Logistics Challenges

- Panama Canal effect
  - Deployment of larger fleets
    - Decreased frequency of calls
    - Higher peak load volumes

<table>
<thead>
<tr>
<th>Period</th>
<th>Workload Factor Increase</th>
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<tr>
<td>1975-2013</td>
<td>700+%</td>
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<tr>
<td>- mid-1990s (introduction of K and S Class Ships)</td>
<td>49%</td>
</tr>
<tr>
<td>- 2006 (introduction of E Class Ships)</td>
<td>69%</td>
</tr>
<tr>
<td>- 2012 (CMA CGM Marco Polo + EEE Class in 2013)</td>
<td>17% (estimated)</td>
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Source: Jeffrey Martin, Sally Martin, and Stephen Pettit, “Container ship size and the implications on port call workload”, presented at IAME Conference, France, 2013 (based on experience in Northern European terminals)
Challenges (continued)

• Higher peak load volumes
  — Challenge terminal efficiency
  — Require increased investment
  — Who pays? Costs likely to be passed on to shippers
  — Greater stress on hinterland routes
Possible Solutions for Greater Competitiveness
Possible Solutions for Improving Transport Logistics Chain Performance

- Eliminate bottlenecks in national transport logistics system
  - Identify problems by conducting transport logistics diagnostics
  - Assess efficacy of proposed solutions
  - Truck entry control system in port cities?
- Consider integrated *Intelligent Logistics System*
- Promote partnerships/collaboration
  - Rationalize logistics assets, marketing, services via “co-opetition”
  - Promote collaboration among public and private logistics players
    - Consider establishing National Logistics Council
- Increase trucking fleet utilization efficiency
  - Establish freight auction exchange
Intelligent Logistics System

Source: ILS concept developed by Paul E. Kent, Ph.D., Nathan Associates Inc., PKent@nathaninc.com
Components of Intelligent Logistics System

• Network of dry ports and truck staging areas
• Monitoring and control IT technologies – GPS/smart seals, data exchange technologies
• Services to trucks, cargo, and drivers
Framework for the Intelligent Logistics System

Secure Network with fixed or mobile Control Center

Mobile Device: real-time access to all secured data including:
- Complete logistics movement tracking and subsequent identification of all key personnel and cargo end-to-end
- Security/sensor feeds (including audio/video/imaging)
- Event/incident management

Smart Sensor Network:
- indoor/outdoor fixed and mobile location tracking
- smart seals
- other application specific sensors
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Gracias!

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