Introduction to Transportation Systems

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PART II: FREIGHT TRANSPORTATION
Chapter 20:
Ocean Shipping, International Freight, and Freight Summary
Ocean Shipping

- Ocean Shipping Services: Bulk
  - Wet Bulk
  - Dry Bulk

About 5% of the world’s freight bill is for ocean shipping.

Ocean shipping has been called “The Enabler of the Global Economy”.
Ocean Bulk

- The ocean bulk market has some similarities to the TL market in the trucking industry. It is a very volatile market; the freight rates and demand for service may swing widely over the course of a few days.
- It is an easy business to enter and exit in the same way that truckload trucking is; you buy a truck and you are in business, you buy a ship and you are in business.
- So you can easily get in and out, and that leads to the chronic over-capacity and volatility in that marketplace.
Other Ocean Bulk Shipping Points

- Economies of Scale
- Environmental Issues and Risk Assessment
- Safety
The Liner Trade

- Usually, for merchandise (as opposed to bulk), the cargo that an individual customer has is not adequate to fill a ship.
- So, in the liner trade, as in LTL operations and in merchandise trains, a customer shares the capacity with other customers, and benefits from consolidation by sharing the costs as well.
- Container trade is an important example of the liner trade.
Liner Operation

Figure 20.1
Economies of Scale

Economies of Scale in Shipping

Cost/ Container (at Capacity)

Ship Capacity (containers)

Figure 20.2
Liner Decisions

- Operating Speed and Cost
- Service Frequency
- Empty Repositioning of Containers
Intermodalism and International Freight Flows

U.S./Europe Intermodal Services

Figure 20.3
International Trade Patterns

1) Europe -- U.S. (West Coast) via Panama Canal
2) Europe -- U.S. (West Coast) via Mini-Land Bridge
3) Asia -- U.S. (East Coast) via Panama Canal
4) Asia -- U.S. (East Coast) via Mini-Land Bridge
5) Asia -- Europe via Land Bridge

Figure 20.4
More International Trade Patterns

6) All water route from Southeast Asia to East Coast of U.S.

Figure 20.5
Port Operations

- Port Capacity
- Dredging
- Intermodal Productivity
LOS vs. Cost for Various Freight Modes

- Wet and Dry Bulk Ships
- Rail (bulk)
- Rail (merchandise)
- Truck
- Air

Figure 20.7
Freight Summary

- The cost structure: relationship of fixed and variable costs;
- The nature and ownership structure of the physical assets: infrastructure, right-of-way, terminals, vehicles;
- Technology;
- The regulatory framework; and
- The structure of the market.
Some Key Freight Factors

- Vehicle-Cycle
- Vehicles and Infrastructure
- The Market
- Operating Plans and Strategic Plans
The 30 Key Points

- Think about the different modes and intermodal competition and how they relate to our 30 key points. A good exercise would be to study those key points and think about how they relate to different freight modes.

- Think about the triplet: technology, systems and institutions, and how we deal on all these dimensions to achieve competitive modern freight transportation services.

CLASS DISCUSSION