Introduction to Transportation Systems

PART II:

FREIGHT TRANSPORTATION

Chapter 19:

Trucking

Trucking

- Publicly-Owned Infrastructure (usually)
- Truck and rail differ in right-of-way technology. The railroads are steel-wheel on steel-rail; the highways are rubber tires on concrete or asphalt.
- In trucking we use internal combustion or diesel engines; in railroads, we use electric or diesel power.
- In railroads, we have rail cars that are unpowered, pulled in trains of multiple vehicles by locomotives. Trucks have “tractors” which usually pull a single trailer, but sometimes “tandem-trailers”.

Trucking Cost Structure

Unlike railroads, the motor-carrier industry tends to be primarily a variable-cost rather than a fixed-cost industry. This is not surprising, given the fact that they do not own their own right-of-way.

Truckload Operation (TL)

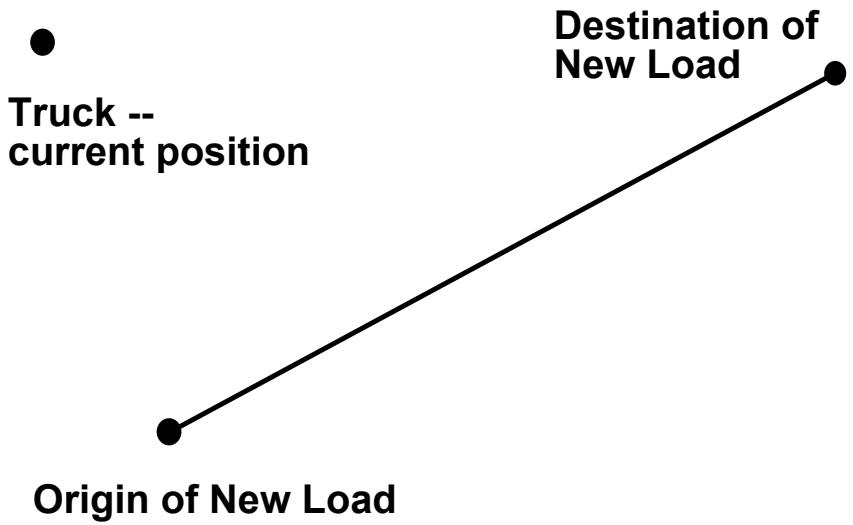
- A trucker is in the business of providing and driving a truck to take your goods from point A to point B. You, in effect, rent the truck for that move; the driver drives the shipment from A to B.
- This is an origin-destination service; the truck is dedicated during that trip to a single shipper.

Owner/Operators

- The driver may be an independent “owner/operator” who owns, perhaps, only that one truck and who is desirous of keeping it as productive as possible.
- To help the owner/operator, there are services that provide information about potential loads. And if that new load is right up the street from where he dropped off the earlier load, then there is no dead-head time.
- But if he needs to travel some distance to pick up a new load, no one pays him while he does that.

Load-Screening

Choosing a Load



How does the trucker make a decision?

CLASS DISCUSSION

Figure 19.1

Empty Truck Positioning and Dispatching

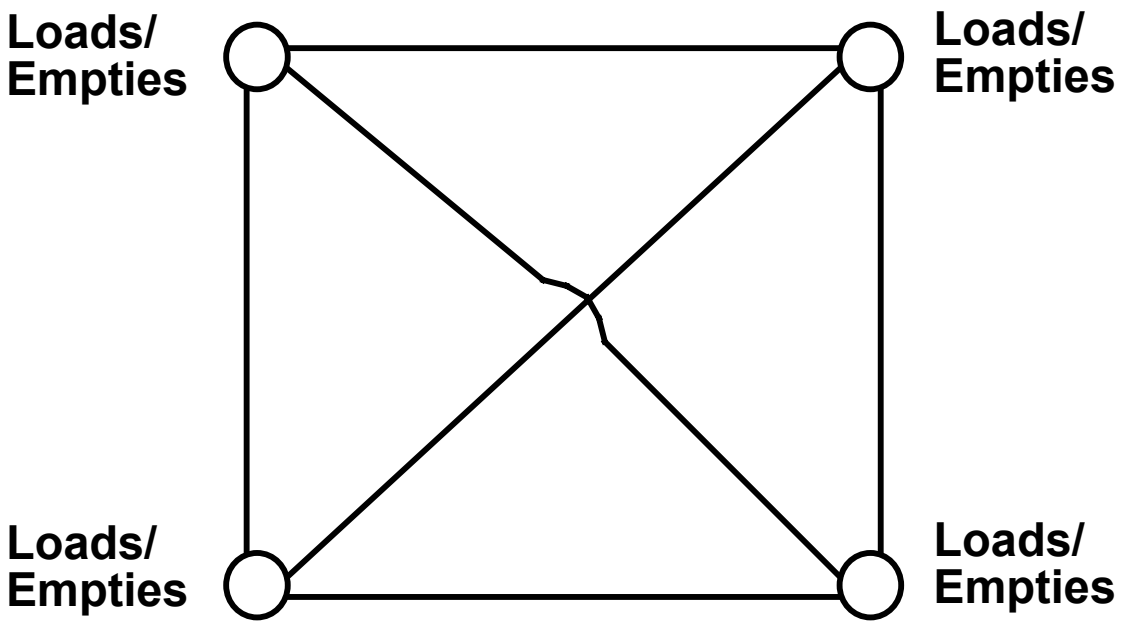


Figure 19.2

Intermodal Partnership

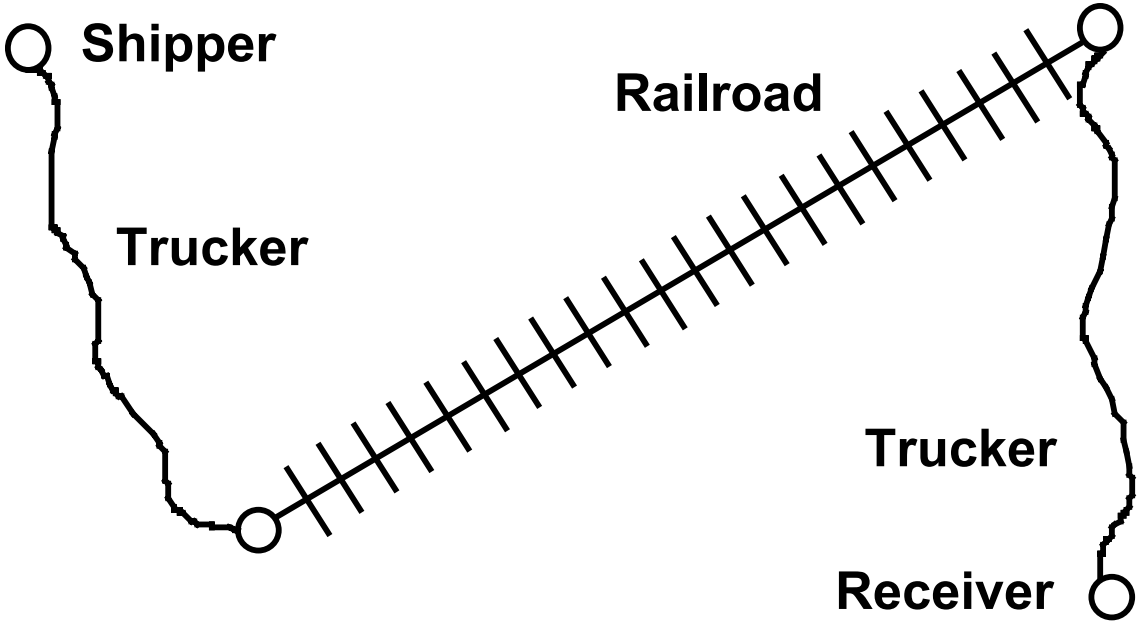


Figure 19.3

Intermodal Truck/Rail Partnerships

- The challenge for the railroad industry has been that customers (shippers and receivers) who use trucks are used to and expect high-quality service. They expect high reliability.
- So the railroad industry cannot treat these containers just like any shipment. It must treat them as though it is a truck that happens to be on a railroad at this particular moment.
- The kinds of service that the railroads provide for intermodal reflect the high-quality service that trucking customers expect.
- There are those in the railroad industry who feel that, although there are very good rates of growth in intermodal traffic, they are not making very much profit on intermodal. They suggest that because the services that are provided are very expensive, rates are such that it is not a money maker.

Intermodal Truck/Rail Partnerships (continued)

- The fundamental challenge of intermodal transportation is as follows: you use the inherent advantages of each modal partner -- the universality of the highway/truck network and the low-cost "line-haul" attribute of the rail network.
- But if you cannot do an efficient transfer between the two of them, you dissipate the advantage. Containerization is a fundamental aspect of that.
- The fact that containers are uniform in size and transfer equipment (e.g., cranes) exists to deal with containers -- moving them readily from one mode to the other -- is fundamental to the idea of intermodal transportation.

Less-Than-Truckload Operation (LTL)

LTL Network

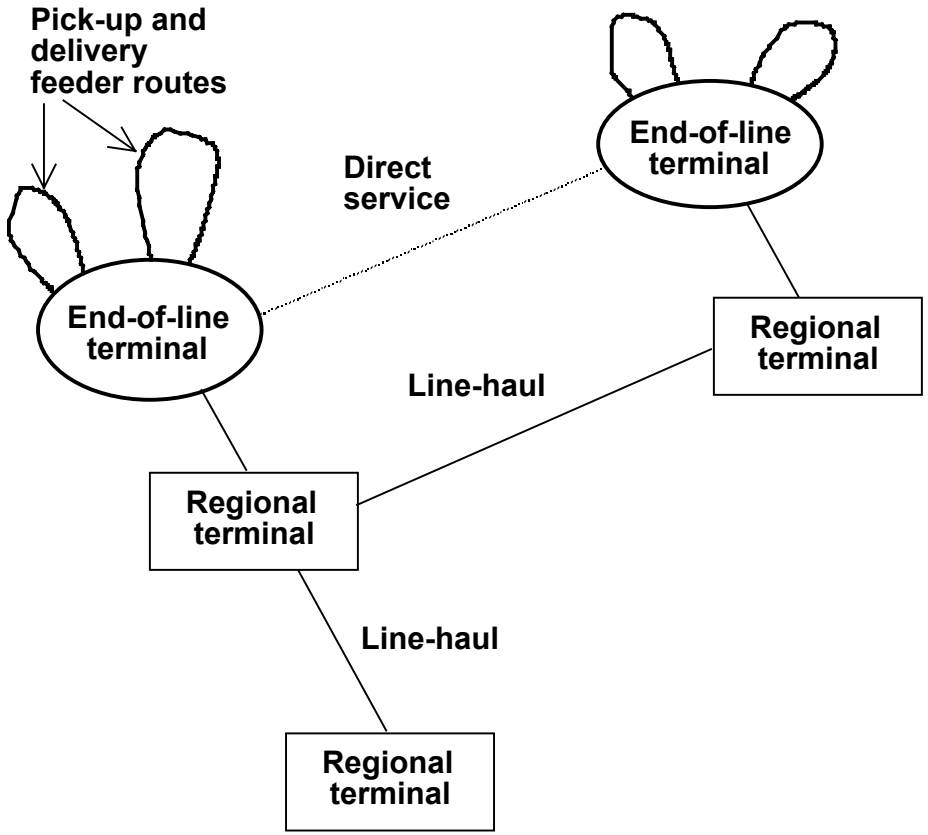


Figure 19.4

New Trucking Technologies

- Automatic Vehicle Location
- In-Transit Visibility
- Weigh-in-Motion
- Paperless Transaction
- Private Carriage