CHAPTER 15: Key Concepts for Shippers

The focus of this chapter is on truckload transportation concepts that apply specifically to shippers. The concepts will assist the shipper in the process of effectively managing truckload transportation operations and costs. The greater the shipper is able to understand the carrier business model, the more effective the shipper will be at negotiating with carriers, complying with the needs of carriers, and managing overall transportation costs. This chapter will introduce a number of concepts that combine carrier expertise with common shipper challenges and decisions.[1]

Shipper Transportation Cost Measurements

Every shipper has a unique network of distribution centers, products, customers, and service platforms. Many shippers also have very specific transportation requirements and unique network characteristics. Most shippers also have internal methods by which truckload transportation costs are measured, benchmarked and allocated. The goal of these internal transportation cost tracking methods is to measure costs, explain variances in costs, and identify opportunities to reduce costs.

Because transportation networks are extremely dynamic and complex, shippers sometimes develop cost measurements that don't accurately reflect the true cost dynamics of the network, or even worse, that provide misleading cost information. Several common shipper transportation cost measurements are listed below.

Common Shipper Transportation Cost Metrics			
Transportation Cost Measurement	**Calculation**	**Strength**	**Weakness**
Cost Per Mile	Total Cost ÷ Total Miles	Simplicity Easy to Understand	Ignores Many Critical Factors
Cost Per Unit of Product	Total Cost ÷ Units of Product	Simplicity Relates Easily to Core Business	Ignores Distance and Volume of Product Per Load
Cost Per Unit of Product Per Mile	Total Cost ÷ Units of Product ÷ Total Miles	Considers Relative Distance in Cost Metric	Difficult to Interpret and Compare

Shippers often use metrics of this type to measure cost performance, set transportation cost goals, and make critical business decisions. While each measure provides useful information, the shipper must keep many other operating factors in mind before reaching any final conclusions about the cost performance of the transportation network. When these measures are used to compare shipper facilities in different locations with different products and networks, the relative results can be particularly misleading and inaccurate.

[1] Readers will get much greater value from the concepts in this chapter after first reviewing all other chapters in this book.

In most cases, the shipper's goal should be to minimize total transportation costs and not to minimize a particular measurement of transportation costs. Shipping managers that make decisions and design solutions based strictly on a discrete goal for a certain measurement are at risk of making decisions that will only *appear* to reduce transportation costs. Certain initiatives intended to decrease transportation costs may actually result in increased costs. Those decisions and network changes may not be in the best interest of the organization as a whole and may actually reduce the shipper's overall profits. The examples and illustrations that follow will show how these cost measurements can be misleading and lead to poor decisions.

Cost Per Mile

Cost per mile is a useful measure when applied and interpreted correctly. However, when other network operating factors are not also considered, comparing cost per mile trends and relative costs among facilities can be very misleading. The measurement program must be designed and interpreted carefully in order to avoid inaccurate conclusions. Cost per mile is particularly sensitive to average length of haul levels and market pricing conditions.

Length of Haul. In the majority of cases, the most critical consideration with respect to cost per mile analysis is length of haul. A facility with a longer length of haul will typically have a lower cost per mile than a facility with a much shorter length of haul. The example below compares the transportation costs of two facilities with significantly different average length of haul levels.

Cost Per Mile Comparison by Facility

Transportation Cost Per Mile by Facility	Facility A	Facility B
Total Shipments	1,000	1,000
Average Length of Haul	300	500
Total Miles	300,000	500,000
Total Transportation Cost	$ 750,000	$ 1,000,000
Average Cost Per Shipment	$ 750	$ 1,000
Average Cost Per Mile	**$ 2.50**	**$ 2.00**

The table shows that Facility B has a much lower cost per mile than Facility A. If cost per mile was the only factor considered by management in evaluating cost performance, Facility B would be considered more cost efficient than Facility A. However, Facility A has a lower total transportation cost than Facility B, mainly because of the lower average length of haul and fewer total miles.

The only meaningful conclusion that the shipper's management can reach from this information is that the difference in cost per mile for the two facilities is, at least in large

part, a function of the length of haul difference between the facilities. There is no specific information to indicate that one facility has outperformed the other in terms of transportation cost efficiency as measured by the cost per mile metric. Facility B may be in a poor location relative to its customer base, which increases length of haul. The longer length of haul results in a higher total transportation cost but a lower cost per mile.

Market Conditions. A second factor that should be considered in comparing cost per mile for multiple facilities is each facility's general market type. If Facility A is located in a strong headhaul market and Facility B is located in a severe backhaul market, the cost per mile measurements for each facility will be difficult to compare.[2] Consider the example for the two facilities shown below.

Cost Per Mile Comparison by Facility

Transportation Cost Per Mile by Facility	Facility	
	B	H
Total Shipments	1,000	1,000
Average Length of Haul	700	700
Total Miles	700,000	700,000
Total Transportation Cost	$ 1,225,000	$ 1,715,000
Average Cost Per Shipment	$ 1,225	$ 1,715
Average Cost Per Mile	**$ 1.75**	**$ 2.45**

In this example, Facility B has a much lower cost per mile than Facility H. However, both facilities have the exact same length of haul. The primary reason for the difference in cost per mile is that Facility B is located in a backhaul market and Facility H is located in a headhaul market. The difference in cost per mile is related primarily to the prevailing markets rates in each market, not any particular efficiency created by Facility B's management or transportation providers.

While the origin market is a key factor influencing cost per mile, the market characteristics of the various destination markets could also influence a facility's cost per mile. For example, a facility that ships often into backhaul markets will likely have a higher cost per mile than a facility that ships more often into headhaul markets. Management should take market type into account when interpreting per-mile cost performance for a facility or group of facilities.

[2] One-way headhaul markets typically have higher than average rate per mile levels across all distances while one-way backhaul markets typically have lower than average rate per mile levels across all distances.

These pages are a sample from the 464-page book:

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