



*Transportation Management Case Studies*

*Memorandum 707*

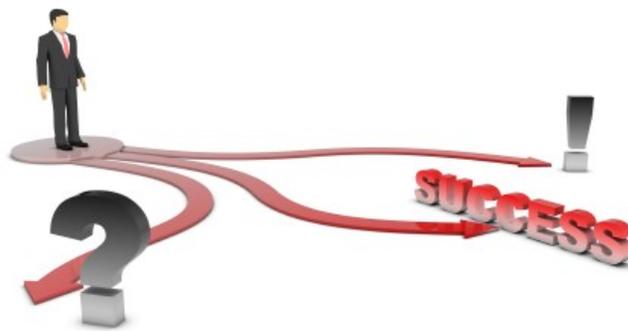
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## *Transportation Management Case Studies*

Transportation management has come a long way since the days of the “green eye shade” with its emphasis on regulated freight tariffs and classifications. In those days, the business needed to conform to the way transportation services were delivered by law. The idea of applying purchasing competencies to buying transportation services was unheard of, but, changes have occurred: the skill set to be a traffic manager had nothing to do with the skills in use by the purchasing department, and the industry has been deregulated.

Today, transportation services are as essential to the success of any supply chain and the providers of these services (truck, rail, ocean and air carriers, and the facilitators of their use, brokers, forwarders, third-party logistics, and freight payment services) are viewed as links in the chain. Transportation management is not an isolated function and the opportunities for lowering freight cost are linked to the overall economics of the supply chain.



*Not everyone can have the lowest.*

The following case studies describe some of the detailed component issues that arise in transportation management. While overall supply chain initiatives are formed and expanded, the basic skills of traffic management continue to be relevant and necessary. We rely on the professional transportation manager to focus on the best way to provide for the transport of goods through the chain and to participate in the important cost tradeoffs necessary to optimize the full product movement cost.

### Case One – Carrier Negotiations

High transportation rates are the most common reason for high transportation cost. This client compared his transportation cost as a percent of sales to other companies in the home workshop and power tool industry and was shocked to see that his cost was in the highest quartile. Seventy-five percent of the comparison group of companies had costs that were lower than his! A quick check with the traffic manager assured top management that “our rates are the lowest possible.” While all traffic managers claim to have the lowest rates, only one can truly have the lowest rates.

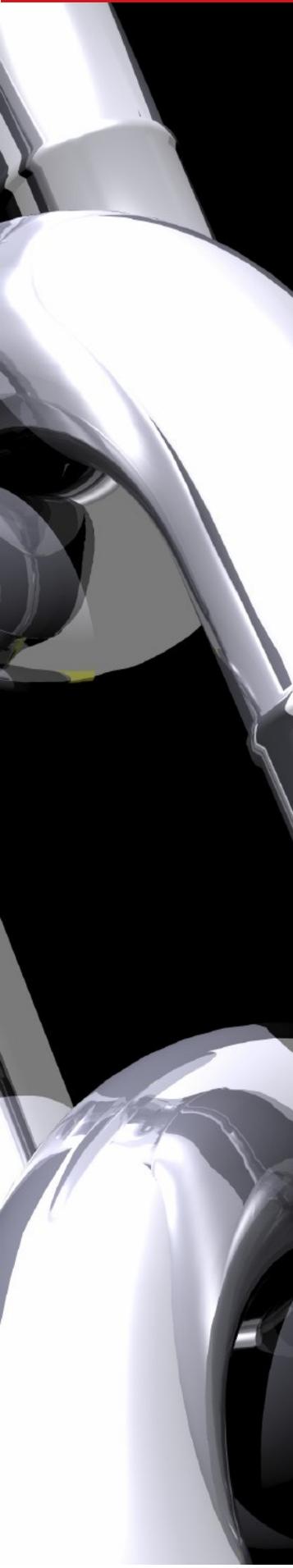
A more thorough review of the situation uncovered three significant opportunities to reduce freight costs:

1. Carrier selection and rate negotiation for LTL shipments.
2. Optimization of the plant and warehouse network.
3. Improvement in stock performance to increase shipment sizes.

The highest potential savings was the result of obtaining the lowest rates possible from a few of the best carriers. Rate benchmarking based on a sample of freight bills and comparison of average cost per hundredweight against a database of other similar shipper rates confirmed that lower rates could be negotiated. For less-than-truckload shipments, the potential rate reduction was 20 percent. After negotiation and implementation of new dispatching decision rules, the actual rate reduction achieved was nearly 24 percent.

The second cause of high freight cost was a poor network of plants and warehouses. By concentrating these facilities in a single geographic region, the deliveries to customers across the country were made with long distance LTL and truckload shipping. Others in the industry had a network of warehouses configured to allow for more economic positioning of stock near the customers. This resulted in shorter LTL shipping distances and an overall cost advantage.

Finally, a comparison of average shipment sizes revealed a significant difference compared to other companies. The smaller average shipment size for our client was not the result of order sizes but of shipment sizes. Orders were being split into several shipments because the products were not in stock when needed. The potential here has not been achieved, but it is significant. Just take a look at the cost per hundredweight of 1,000 or 2,000 pound LTL shipments compared to 10,000 pound LTL shipments, and the **25 percent** additional savings opportunity becomes clear (see Case Three).



Carrier Selection. This client used 68 different common carriers for LTL shipments from their single location. While the traffic department reported an ongoing program to reduce the number of carriers, there were many reasons for the long list. Most of the reasons related to specific customer requirements or preferences. The logistics department needed to gain the confidence and support of sales management to simplify the outbound routing to include no more than four outbound carriers. The result was three outbound carriers selected as core carriers, and the three included one carrier that was not on the original list of 68! An important key to reducing freight rates is to be able to provide significant volume to a candidate carrier.

Many carriers were eliminated even before the rates were discussed. Trucking is a service to both the shipper and consignee. A list of key service requirements was developed and carriers were invited to present qualifications and demonstrated performance in meeting the transportation quality needs of this client. At the same time, an information package containing details on the shipping volumes, destinations and shipment sizes was prepared and distributed to the candidate carriers. Both regional and national carriers were included in the list.

Rate Negotiation. The list was now reduced to about a dozen qualified candidate carriers. Each was then invited to visit the site with the objective of presenting their specific qualifications to handle the business (all the business, if they could), to walk through the shipping operation and view the condition of the freight and dock areas, and to hear an explanation of the rate expectations of the client. Within two weeks of the last of these meetings, rate quotes were received and evaluated. The client prepared a draft of the routing guide, estimated the savings and impact on transit times, listed the customers that would be affected by the new routing, and reviewed the recommendations with sales management. Customers and carriers were notified and the new rates and routings were in effect.

The results were excellent—cost reductions were realized, service levels improved (less damage, more consistent and shorter transit times), and few complaints from customers. These were resolved quickly by working with the carrier involved and the customer. Fifty percent of the total opportunity for freight cost reduction was realized in the first pass.

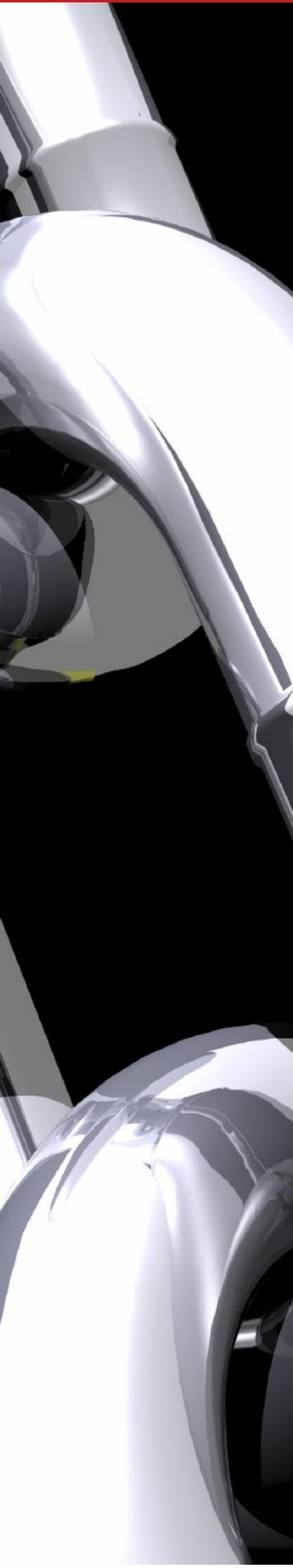
## Case Two – Freight Rate Benchmarking

How do you know that your freight rates are the lowest possible? Division management, with their eyes on the bottom line, demanded an answer to the question. This client, a division of a large corporation, enjoys the benefits of corporate buying power in transportation services and expected competitive rates. In this case, the preferred carriers (and rates) are defined and available through corporate, but the carriers and routing are not strictly imposed on the divisions. “Local” decisions on carrier selection and routing are allowed, and compliance with corporate routing is not measured. Benchmarking and analysis were to provide the answer and identify any opportunity to reduce cost and improve profitability. Expectations were that the exercise would confirm that freight rates were good.

The client recognized that overall transportation cost benchmarking would not answer the question. Both overall freight cost as a percent of sales and cost per hundredweight are the result of the rate structure, as well as a number of other significant factors that could not be ignored. The plan was to benchmark average rates within small groups of comparable benchmark data. These benchmark data were from manufacturers who shipped from one or two shipping locations to the 48 United States. This creates a comparison group where the distances shipped are similarly long, ranging from local to over 1,000 miles. Benchmarks were to be prepared for each shipment size range corresponding to the LTL weight breaks in the tariff. This technique eliminates any differences in average shipping size of the participating companies from the benchmarks. Companies with identical freight classes were selected.

The database for comparison included freight bill detail for all shipments made over a six-month time period. The base data included origin, destination, weight and freight charges. The specific carriers used for each shipment were known but not used in the benchmarking analysis. In addition, the mileage for each freight bill was posted to the database. Bills were coded for LTL and truckload and separate comparisons were done for each. The comparison metric was cents per hundredweight per mile (\$/lb./mile).





The analysis reported the lowest rate, average rate and a calculation of the savings potential by using the lowest rate for all shipments in the comparison cell, a section of the database corresponding to comparable shipping regions and destination areas. Once the overall picture was assembled by combining these cells into a summary report, an overall assessment examined rate levels and produced maps to illustrate the geography of the rate comparisons. Picture a U.S. map image with red, blue and green “pushpins” placed at each shipping destination. Red pins are cities where average rates are 20 percent or more over the lowest rate. Green pins are 5 to 20 percent of the lowest rate. Blue pins are those where average rates are close to the lowest rate. These comparisons and maps can be prepared by shipping size and region of origin.

In this case, there were hardly any red pins. However, the overall rate savings potential on LTL was 12 percent and something less for TL. Regionally there were significant differences. Higher rate savings were possible for outbound shipments that were made from the plant in the “rust belt” region than from the more centrally located plant. There is an additional benefit from continuing carrier selection and rate negotiation work.

### Case Three - Five Reasons for High Transportation Cost

Here's another case where freight cost as a percent of sales benchmarked high. This shipper of computer accessories had a demonstrated history of continuous improvement in freight cost as a percent of sales. In spite of this performance, the benchmark indicated the strong possibility that costs could be lowered. The following are the findings on each of the top five reasons for high transportation cost.

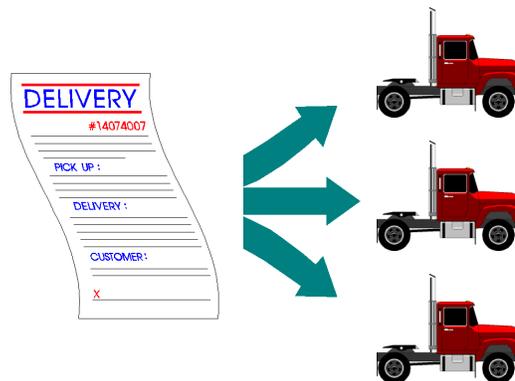
**1. High freight rates.** The base LTL tariff used in this company was based on origin and the destination state. Rates were based on shipment size and on FAK classification. The questions to be answered were: Are overall rate levels competitive? Is there any advantage to a state (rather than ZIP) based rate structure? The general rate benchmarking process described in Case Two (above) followed that. The results were overall levels higher than the lowest benchmark by 1 to 10 percent, depending on the destination region. States closer to the shipping point had good rates; those farther away had the most potential for reduction. For large states like California and Texas, there was some justification to "sharpen the pencil" and use ZIP-based rates; for most states the single rate base yielded good results.

**2. Outdated warehouse network.** The most common problem in configuring a logistics system to serve customers while minimizing cost is keeping up with the changes necessary to meet the current demands for quality in product delivery. The concepts are clear and the tools are available; it's just that the pressure of day-to-day operations can easily put off the network reevaluation until it is overdue. In this case, the most important change occurred on the supply side of logistics. Manufacturing had gone global. The current network was designed when over 90 percent of the products sold in domestic markets were manufactured in one of two centrally located plants. Now, over 50 percent of the product is made in the Far East and over 15 percent (and growing) is made in Mexico. Even with calculations on the back of an envelope, the client quickly realized that bringing product from China into the U.S. and halfway across the country before reshipping it to a Southern California customer would result in high freight cost as a percent of sale. Add to this a rapidly decreasing price structure and the result is an opportunity to do better.

**3. Out-of-area shipping.** Out-of-area shipping occurs when the primary shipping point cannot fulfill an order and the order is routed to an alternate facility. This happens when the primary shipping point is out of stock on one or more items or is overloaded with orders beyond the current capacity. When out-of-area shipping occurs, two things happen and neither is good! First, the transportation cost is usually higher because the secondary location is farther from the customer. Second, the transit time is longer for the same reason, so the shipment may arrive later than expected. A good database of freight bills, properly coded, can help to identify the extent of out-of-area shipping and provide the tools for estimating the additional cost involved.

**4. Poor compliance with prescribed routings.** Prescribed routings include the correct use of mode and carrier for a specific size of shipment. In most cases, local shipping personnel should follow the routing guide as prepared by a professional traffic manager. A routing guide should be customized for each location and include the best route and at least one alternative routing along with the cost and service difference between the two. Complete routing instructions may include specifications for parcels, emergency parcels, less-than-truckload shipments, priority LTL, and truckload shipments. The best mode and carrier should be specified by destination region, state, city, or ZIP Code as needed. As mentioned above, a good freight payment database can support analysis of compliance with these instructions. It is not unusual to identify 15 percent freight savings in cases where professional routing guides are not maintained and where compliance is not monitored.

**5. Split shipments.** Compare orders to shipments. Are you able to ship *perfect orders* (on time, without errors and complete)? When orders are split into multiple shipments, the resulting individual shipments move at higher freight costs per pound than if they were all shipped together so that one shipment is created from one order. Inefficient things happen when split shipments occur. Beyond the premium in transportation cost, there are additional clerical and material handling costs that relate to the processing and receiving of each individual component of the order. The extent of this split shipment problem can be quantified if the freight payment database contains the unique order number corresponding to the freight bill. When more than one freight bill contains the same order number, a split shipment has been identified. The solution to the split ship condition may be in production. However, the planning and deployment techniques to make the best of the situation are urgently needed. Shipping costs can be as high as 30 percent above “normal” levels due to unnecessary split shipping.



In this case, opportunities amounted to 15 to 20 percent of transportation costs. The savings came from taking a first step in improving each of the five areas listed above. Not all of the issues have been solved, so the opportunity to improve next year still exists.

#### Case Four

High transportation rates are not always the root cause of inflated transportation costs. A large food processor was surprised when they had completed benchmarking their operations and discovered that they were spending more on freight than the average industry competitor. What seemingly contradicted this finding was that their transportation rates were found to be especially low, among the best in the industry. Management was shocked to see that this was not translating to the bottom line. In addition, the shipping department had implemented procedures to consolidate outbound customer orders wherever possible, which should have also translated to lower freight costs.

As with any complicated process, closer examination by management often uncovers some surprising revelations. This case was not much different. Much of the savings the company thought they were achieving through the combination of outbound orders were being passed along to a transportation broker. The company was combining several loads a day manually, yet they still were sending these full truckloads through a transportation broker. This broker would charge them LTL rates for these shipments, even though most of the consolidation was completed by the company. Almost immediately, new policies and practices were instituted to insure that the savings generated from the load consolidations were now realized by the company; but, this only partially explained the high comparative costs.

In benchmarking the policies, practices and costs of their operation, management began to realize that many competitors were performing much more sophisticated load planning processes. Manually combining orders into full loads was not efficient, especially with the high number of orders shipped per day. Currently, the load planner was only spending an hour a day examining outbound shipping paperwork for any obvious consolidations. To really lower transportation costs and gain a significant competitive advantage, load planning had to be completed at a more detailed level. This would require more time and effort from the load planner, much more than current effort used to combine a few obvious loads. However, to do this effectively, the proper support tools were needed.

Before any support tools were acquired, the new load planning process had to be designed and specified. From the requirements generated from the design, a new PC-based load planning package was acquired to support the operation. The package provided the load planner with the capability to view all open orders, even those that were not expected to ship for several days. Loads could be created days in advance, with the flexibility to adjust them up until the day of shipment. This allowed for a much more extensive level of consolidation, and helped to establish an even more cost-effective pool distribution network.



The pool distribution network was established in five major market areas. Outbound orders to the regions surrounding the major markets were combined, and sent in full truckloads direct to that market on a daily basis. Once the loads arrived at the market, they were broken down and shipped via LTL carriers to their end destination. This method of shipping helped to further reduce transportation costs. The long travel distance was covered at much cheaper full truckload rates, with the shorter remaining distance from the major market to the end customer covered at the more expensive LTL rates. Furthermore, by shipping to these markets daily in full truckload quantities, service times did not decrease from the standard LTL shipments.

The resulting load planning process will reduce transportation rate costs over 15 percent, or roughly \$800,000. As with many companies, it was assumed that low transportation rates translated into lower transportation costs. Negotiating the lower rates was only the first step in reducing transportation costs. The important step is making sure the outbound loads ship at these low rates. When a significant percentage of the outbound weight is being shipped at the higher, small shipment rates, the unused low rates don't make the same contribution to the bottom line.