Outbound Transportation Collaboration
Do-It-Yourself (DIY)

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Summary: Outbound transportation collaboration is the act of cross-company consolidation of shipments originated from and destined to a common area. It can reduce transportation cost depending on the level of synergies that exist between companies’ supply chains. For companies who are interested in tackling collaboration on their own (DIY), this research outlines a methodology to identify partners, quantify the benefits and implement such collaborations. This methodology was applied to a set of six shippers as a case study.

KEY INSIGHTS

1. Companies can benefit from outbound transportation collaboration even if they are in completely different industries.

2. Collaboration savings depend on several factors, two of the most important ones being the mix of shipments (less than truckload [LTL] vs. truckload [TL]) and line haul distances.

3. DIY transportation collaboration is being used with success but it adds overhead on the involved parties and is not scalable.

   Companies are considering using third parties to facilitate collaboration. Third parties can streamline information sharing and removing the overheads involved for the shippers.

Introduction

Historically, collaboration in the supply chain has gone through various stages. It started from interdepartmental coordination of activities within the company and then it evolved into collaboration with the customers and suppliers. Such collaborations always opened up new opportunities for efficiency gains that did not exist before. In the recent years, another form of collaboration is becoming popular which is called horizontal collaboration. This type of collaboration is between unrelated companies with the objective of taking advantage of supply chain synergies that may exist between them. Two major changes have motivated this movement: the constant increases in transportation costs, and the inefficiencies that exist in over the road (OTR) transportation.

Outbound transportation collaboration is a subset of horizontal collaboration which focuses on consolidation of shipments originating from and destined to the same areas. Larger shipment sizes typically result in lower cost per unit (Figure 1). Transportation collaboration can be done actively (planned) or passively (opportunistic) by the companies themselves (DIY) or using a 3PL.

The focus and scope of this research is on the passive DIY collaboration. I have defined a practical three step approach to first qualify collaboration partners, second to quantify the potential savings of collaboration, and third to implement, if such a relationship makes sense. I applied these steps as a case study for a set of six shippers in the Midwest of the US.

Homayoun Taherian came to the SCM program with ten years of experience in manufacturing and logistics. In his latest role he served as a senior supply chain consultant in a global third party logistics provider (3PL).
Methodology

There are three steps in establishing outbound transportation collaboration among companies.

Step 1: Collaboration Qualification

Before spending too much effort in such a relationship, it would be helpful to see if the companies are compatible from various perspectives. There are hard and soft constraints that should be evaluated before getting too deep into collaboration conversations.

Hard constraints are factors that stop collaboration in its heels such as, product compatibility (food vs. chemicals), shipping vehicle commonality (dry van vs. flatbed), etc.

Soft constraints are factors that can be overcome with enough will and investment such as competitive considerations, organizational cultural differences, etc.

Step 2: Savings Analysis

The next step is to quantify the potential savings through collaboration. The savings will occur through shipment consolidation. I used two main forms of consolidation analysis which were multi-stop truckload (MSTL) and pool point distribution.

Pool point distribution, also known as hub and spoke distribution, involves the consolidation of several LTL shipments at the origin on a TL and handing those off to an LTL carrier at the destination region to be delivered to the final customer locations. In pool point distribution, the costs involved are: origin pickup stop-off charges, TL line haul charges and destination local delivery charges via LTL. In pool point analysis it is important to consider the impact on service levels due to the potential delays to create consolidation.

MSTL is combining several large LTLs into a TL or consolidating LTLs on existing TLs with available capacity. The costs involved in MSTL are origin pickup stop-off charges, line haul charges, destination stop off charges and out-of-route-miles charges.

Step 3: Implementation

Assuming companies find savings, they need to take a series of actions in order to materialize those. I performed interviews with eight companies (different group from the thesis partners) who are already engaged in DIY collaboration and shared their collaboration models for interested companies who are starting down this path.

Case Study

I applied the above methodology to a group of six companies (referred to as companies A through F) located in the Midwest region of the US. The companies shipping origins were located in a 10 mi radius area. They manufacture consumer goods, chemicals, electronics, construction and agricultural machineries. In the year 2011, the six companies shipped 1.5 trillion lbs (300,000 shipments) originated and destined within the US.

Companies A to D are mainly LTL shippers. Company E is mainly a TL shipper and company F is mainly a small parcel shipper.

Step 1: Collaboration Qualification

There were no hard constraints that would have prevented the companies to collaborate. More specifically, all companies shipped palletized products via regular dry vans through traditional modes of road transportation (small parcel, LTL and TL).

The companies were evaluated against each other for the soft constraints such as shipment size and frequency, competitive considerations, private vs. common carriers etc. Some of the soft constraints such as company culture compatibility required direct conversations between the parties involved and was out of the scope of this thesis.

Figure 2 shows the weight shipped to the destinations for each company. The size of the bubbles represents the weight shipped to the locations. Wherever the points overlap is a sign of opportunity for collaboration.

Figure 2: 2011 Weight Shipped to Destination Points

Step 2: Savings Analysis

The savings for the six companies were quantified using two main approaches; pool points and multi-
stop truckloads (MSTL). Both studies were performed on 20 regions with high density of TL and LTL shipments. Examples were San Francisco (SF), LA, NY etc. Both analyses revealed that two of the companies (A and F) do not have much synergy with the other four. In fact, the two companies only contributed to less than 10% of the total potential savings.

*Pool Point Analysis:* The pool point analysis on the 20 regions revealed that only three locations (LA, SF and NY) will result in savings without incurring long shipment delays. The savings were estimated at $250,000 annually which is equivalent to 8% of the LTL spending for these three locations. For each pool point region, I calculated the TL weight breakeven point at which using the pool point option would result in savings. The average breakeven point for the three aforementioned locations was 32,000 lbs on a TL.

In order for pool points to be a practical option, there should be a high frequency of LTL shipments to a dense shipping area. This will enable the creation of highly utilized TLs that ship frequently to the pool point region without jeopardizing customer delivery dates.

Companies B, C and D (all LTL shippers) were the main beneficiaries of pool points accounting for 90% of the savings.

*MSTL Analysis:* The MSTL analysis on the same 20 regions showed that there is a possibility to save $750,000 annually. The savings were calculated based on the assumption that a maximum of three LTLs can be consolidated on a TL. Contrariwise to pool points, MSTLs don’t have the issue of shipment delays (assuming all pickup and deliveries are performed without any hiccups).

Similar to the pool point scenario, the MSTL savings were allocated to the companies based on their weight of the shipments consolidated on the TLs. In the MSTL scenario, three companies (C, D and E) will share 90% of the savings. Company E (mainly a TL shipper) is the largest beneficiary with 39% of the savings. Without company E in the community, the MSTL savings would be significantly lower.

The potential collaboration savings from pool points and MSTLs is dependent on several factors such as the mix of shipments in the community, current carrier contracts etc. One of the factors that is highly correlated with the consolidation savings is the line haul distance. As we can see in Figure 3, the longer the line hauls, the higher the potential savings through consolidation.

*Figure 3: Pool Point & MSTL Savings vs. Line Haul Distance*

**Step 3: Implementation**

Step three of the methodology focuses on implementing the DIY transportation collaboration and is being investigated by the research participants at this moment.

**Conclusions:**

Outbound transportation collaboration is a new area of opportunity that could make paradigmatic changes in the supply chain industry in the next few years. This research highlights that there are savings that could be achieved through collaboration between companies who, from a traditional perspective, have nothing in common.

Transportation collaboration if successful should result in shipment consolidation. The size of the opportunities depends heavily on the shipment characteristics of the companies involved and the level of synergies that exist in their supply chains.