

View Point



Leveraging Internal Visibility to Reduce Item Landed Cost

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Abstract

Traditional approaches that help companies reduce landed costs focus on the symptoms and not the causes of the problem. If a company views transportation as a problem area, it may implement a Transportation Management System (TMS), expecting it to curtail creeping landed costs. While any worthwhile TMS streamlines transportation procurement and generates optimal loads and routes, it is constrained by inputs.

This paper goes beyond the symptoms contributing to landed cost and, instead, examines underlying factors to provide a solution. While the reasons for a rise in transportation spend, such as rising fuel costs and external supply chain visibility, are well known, the oft-overlooked causes pertain to organizational behavior. Infosys' Logistics Optimization (LogO) solution, which ensures internal visibility coupled with collaboration, can go a longway in addressing this issue.

Introduction

The late 20th century brought in several popular cost-cutting concepts – such as just-in-time and quick response – that reduced inventories. However, the unrelenting focus on lower inventories resulted in smaller order quantities which, in turn, meant frequent less-than-truckload (LTL) shipments. Although transportation costs increased as a result, the prevailing low oil prices and low interest rates ensured this was no cause for alarm.

	2000	2001	2002	2003	2004	2005	2006
Total Logistics costs as a % of sales	9.44%	9.17%	7.65%	7.52%	8.37%	7.51%	8.79%
Component Costs							
Transportation Costs	37%	47%	43%	35%	39%	45%	50%
Warehousing Costs	25%	20%	26%	21%	23%	22%	17%
Ordering / Admin Costs	17%	11%	10%	9%	11%	9%	11%
Inventory Carrying Costs	21%	22%	21%	35%	27%	24%	22%

Table 1: Logistics Cost

Source: Herbert W. Davis Co

Rising interest rates and high oil prices in the early years of the 21st century have come as a double whammy to compound the impact of reduced inventories on overall landed costs of items. Table 1 depicts the break-up of logistics cost as a percentage of total sales. It clearly indicates that transportation costs, which make up nearly 40% of all logistics costs, are steadily increasing.

Gartner's January 2006 report¹ confirms the impact of transportation on overall logistics cost stating that “rising transportation costs threaten to negate supply chain cost reductions achieved...” The same report concludes that “transportation budgets worldwide could increase as much as 25% over the next few years...” In a different report² published in October 2005, an AMR analyst opines: “Using inbound logistics collaboration technology, retailers can expect to reduce freight budgets by up to 10%...”

The Grocery Manufacturer's Association's (GMA) 2005 Logistics Survey³ reported some interesting findings. While 83% of respondents cited reduction in transportation costs as their topmost priority, the report concluded that 38% of these costs were on account of inbound transportation. Finally, it observed that per mile costs had increased sharply by over 23% in a two-year period.

<p>Characteristics of LTL freight</p>	<p>The US LTL industry was estimated at \$27 billion in the year 2000. Two of the biggest costs for LTL carriers are fuel and labor. Due to strong unions, labor costs for LTL carriers are more or less fixed. Hence, minimizing fuel usage is a significant goal. This entails maximum utilization of every trailer for every driven mile. Ideally, every trailer should contain a full complement of freight by weight as well as volume. The weight and volume characteristic of freight is referred to as “freight mix”.</p>
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Impact of less-than-truckload Shipments

LTL is a significant component of retailers' inbound shipment. Moreover, transit time for LTL freight is longer than for full-truck-loads (FTL) because it does not depend solely on the distance between shipper and consignee. It also depends on the design of terminal networks, break-bulks for a given carrier and the carrier's agents and inter-line partners. These factors add up to a higher per-unit cost for LTL freight as compared to FTL, making it imperative for a retailer to reduce LTL shipments.

Inbound Transportation and Visibility

Most retailers consider outbound store distribution within their ambit while inbound transportation is the responsibility of suppliers. With inbound transportation being outsourced, retailers negotiate item rates that include shipping costs (also called prepaid) to their receiving DCs (distribution centers). Consequently, while the selling price of goods includes landed cost at the warehouse, it also represents an element of trust in the supplier's ability to negotiate the best rates with carriers.

However, some retailers (especially grocers) have come to realize that lack of control over inbound transportation adversely impacts landed cost. In an effort to introduce transparency in freight rates charged by the vendor, many retailers have their vendors present the cost of goods sold (COGS) and associated freight charges as separate line items. This enables 'collect' freight – a process where the retailer pays the freight invoice directly to the carrier or arranges his own transport to backhaul inbound goods. Changing from prepaid to collect represents a paradigm shift that not all retailers have made.

For retailers attempting to make the switch, supply chain visibility becomes a key factor in cutting landed costs. Conventional wisdom places the onus of providing such visibility on external trading partners. However, Infosys' point of view is that there is also an issue of visibility which is internal to the retailer organization.

External Visibility

External supply chain visibility – ensured through information exchange between trading partners via Electronic Data Interchange (EDI) or other mechanisms – has been difficult to achieve given the cost and scale of coordination required. Few companies have a full-fledged advance ship notice (ASN) program covering all vendors and items. ASN implementation is usually confined to a few large players who have the wherewithal to invest in EDI and other high-cost infrastructure. Supplier portals, the relatively inexpensive alternative to EDI, are becoming popular, albeit slowly. The poor external visibility that ensues as a result, forces most retailer warehouses to operate in a reactive mode.

Internal Visibility

External visibility initiatives are inherently harder to drive and bring to fruition because they deal with entities alien to the organization. However, it is surprising that departments or business units within the same organization inadvertently work in silos. This is often for reasons beyond the intended goal of focusing on the profit center.

For example, multiple business units may be sourcing from vendors in the same vicinity. However, due to lack of internal visibility, they are unaware of the potential to share trucks and hence reduce shipment cost. While the ostensible reason could be that the shipment dates are too far apart or there are limitations in the equipment, the result is the same – having two vendors in proximity to each other delivering independent LTLs to the same destination warehouse. With the benefit of internal visibility, buyers can consolidate their respective LTL shipments into one FTL shipment while planning for the POs (purchase orders).

Therefore, if an internal visibility initiative is to succeed, it requires a technology-enabled, executive-level intervention that can break such silos, enabling seamless communication between departments.

Infosys' Logistics Optimization (LogO) Solution

Infosys' approach to reducing landed costs begins with clustering purchase order lines using spatial and temporal proximity parameters, i.e., areas where the shipment originates (zip code) and dates on which the freight is dispatched (see Figure 1).

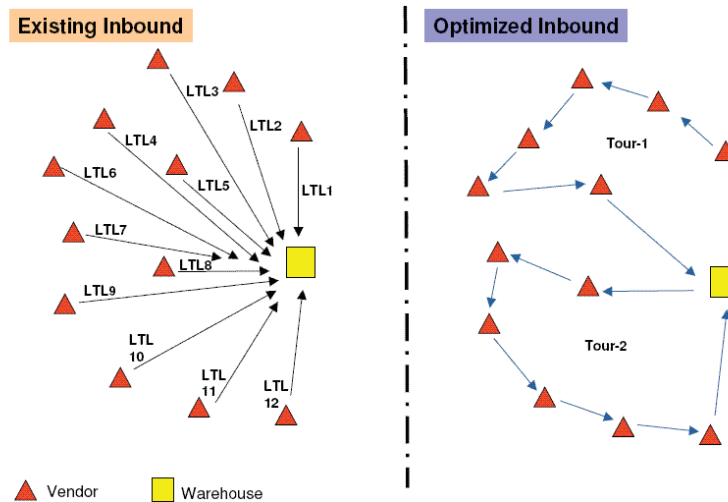


Fig 1: Inbound Consolidation

To fulfill the spatial-proximity parameter, a department expecting an inbound shipment needs to search for other PO lines within the specified radius of a given origin-shipping location. It can thus consolidate the delivery of its goods with those of other units to ensure FTL shipment.

The temporal-proximity parameter extends the spatial search by looking for other PO lines within a specific timeframe prior to or following the ship date for the PO line under consideration. Integration with spatial parameters further enhances the cluster size, thereby increasing consolidation opportunities.

A dashboard-like tool can provide internal visibility to purchase orders across business units within the organization. Buyers can conduct in-depth analyses of orders by varying spatial and temporal parameters on vendor locations and adjusting proposed delivery dates. Such processes will highlight orders that are potential candidates for consolidation even before they are released to the vendor.

While it is desirable that consolidation is undertaken using near real-time signals (such as an appointment or an ASN), reacting to such signals may be impractical under certain circumstances. Due to a certain latency built into EDI systems, retailers may receive ASNs after the product has been delivered.

Even with improved visibility, due diligence is essential. Therefore, various signals such as appointment schedules, ASNs, POs, etc., should be duly considered in order of suitability. While analyzing these signals, a supply chain manager needs to prioritize those closest to execution (such as appointment schedules) and then work with orders further upstream (such as PO creation) in the planning process, as depicted in Table 2.

No	Signal	Reliability	Usability
1.	Delivery Appointments	Excellent	Too late to react
2.	ASN	Very Good	Can be too late if generated after truck leaves origin
3.	PO	Good	Allows for sufficient time to plan and execute consolidation

Table 2: Signal Reliability and Usability

Considering all this, how is the Infosys Logistics Optimization (LogO) solution different from a demand planning tool or a Transportation Management System (TMS)? A review of commercial off-the-shelf applications in the supply chain domain reveals that none currently address the finer details of the issue as proposed in this paper. Table 3 illustrates some of the key limitations of a demand planning tool and a TMS.

Demand Planning Tools	TMS
<ul style="list-style-type: none"> • Use granular forecasts and build truck loads out of them • Functionality is limited by item, category or shipping lane • Do not address the divide amongst buyers or departments 	<ul style="list-style-type: none"> • Acts on POs already released to the vendor • Does not proactively suggest ship/ delivery date changes to the PO

Table 3: How LogO compares with Demand Planning or TMS

When achieved early enough in the PO lifecycle, the Infosys approach can:

- Provide much-required internal visibility to buyers across departments, enabling them to make informed decisions regarding delivery date collaboration
- Proactively suggest changes to delivery dates during the planning stage
- By acting as a pre-processor to the order management process, LogO provides a preoptimized data set as input into TMS. This allows TMS to consolidate far more LTLs into FTLs, resulting in higher transportation savings

While both TMS and the LogO solution strive to minimize LTL shipments, Infosys' consolidation approach provides significant incremental savings over and above what TMS delivers.

Adjusting Requested Delivery Dates

The only argument against making PO delivery date changes could stem from the likely impact on warehouse inventory levels. However, Infosys' proposed solution takes this into account by disallowing changes to POs identified as 'must-go' shipments by the Demand Planning System.

Such an impact can be minimized by allowing for a buffer stock at the receiving distribution center or by specifying a smaller temporal parameter. In either case, any inventory risk would be limited to the first cycle of optimization since future orders will be attenuated by shifted delivery dates and corresponding inventory levels. Further, the benefit of transportation savings is expected to far outweigh the short-term inventory exposure.

Implementation Considerations

The Infosys approach enables companies to reduce LTL shipments and, thereby, transportation costs. However, certain key elements need to be considered during implementation:

- **Taking control of inbound transportation:** Benefits accruing from this solution are proportional to the extent of control a retailer has over inbound transportation. For many retailers, this could mean switching from pre-paid to collect — a paradigm shift in the way they currently operate.
- **Aligning solution parameters with TMS:** By proposing alternate dates for POs, the solution pre-processes the input into TMS. However, to realize the full potential of the solution, common parameters need to be synchronized across TMS and LogO.
- **Buyer acceptance of date changes:** This is critical to the solution's success. It is imperative that all buyers are trained to appreciate the positive correlation between compliance and savings potential thereof. It is important to highlight that buyers have an incentive to collaborate since a reduction in transportation cost implies an automatic reduction in 'landed cost', a buyer metric.

Benefits

Our conservative estimates indicate that by implementing the Infosys solution LTL spend can be reduced by at least 2-4% annually. This translates to annual savings of approximately \$100,000- \$200,000 for every billion dollars in sales. Incidental benefits include:

- Fewer trucks mean fewer delays which, therefore, translate into savings in transit times*
- Improved receiving efficiency*
- Less handling due to fewer trucks**
- Better on-time delivery due to fewer trucks
- Fewer trucks also mean fewer damage claims resulting from loss-in-transit
- Less misrouting due to fewer LTL shipments
- We estimate a reduction of close to \$100k per year in labor costs across guard check-in, yard jockey for non-live unloads, etc.
- Improved asset utilization
- Fewer security challenges due to fewer trucks

Conclusion

The Infosys solution demonstrates that the best way to reduce landed costs lies with addressing the root issue. The fact that the solution footprint is confined to the retail organization, with little or no involvement of supply chain partners, ensures it can be implemented easily. The solution does not duplicate the functionality of a TMS; rather it enables a TMS to run more efficiently by providing a pre-optimized dataset. With minimal investment, it has a relatively short implementation cycle, and potential savings can be realized immediately.

The process is minimally invasive, ensuring limited change management since most POs are verified by buyers prior to being sent to suppliers. Since inbound consolidation works better when the retailer controls transportation, it leads to a transformational shift in the inbound logistics business. This gives retailers a more effective handle over controlling costs.

* One recent study indicated that on average, a carrier's value savings in transit time are between \$144 and \$192 per hour, while the costs related to a non-scheduled delay are valued at \$371 per hour. http://www.ops.fhwa.dot.gov/freight/publications/eval_mc_industry/

** The 1999 Dry Van Drivers Survey found that drivers spent an average of over three hours at each trip end waiting,

loading, or unloading. It is estimated that reducing loading, unloading, and wait time by ten percent would allow motor carriers to earn an additional \$156 million in profits.

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