

## Combating the Logistics Perfect Storm

Lee Buddress, Ph.D., C.P.M.  
Portland State University  
503-725-4769; [leeb@sba.pdx.edu](mailto:leeb@sba.pdx.edu)

Michael E. Smith, Ph.D., CQA  
Western Carolina University  
828-227-3697; [mesmith@wcu.edu](mailto:mesmith@wcu.edu)

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**Abstract.** This country is rapidly approaching a logistics perfect storm. Across all modes of transportation, there are serious capacity constraints. For decades, we have underfunded our logistical infrastructure. The result is that logistical costs have risen dramatically, reliability is deteriorating and supply managers are scrambling to assure deliveries of materials in a 'lean operations' environment. We need to understand the events that created these circumstances so we may develop strategies to combat them.

**Introduction.** Several years ago, an individual held the position of Traffic Manager for his firm. He was responsible for the day-to-day logistical requirements such as rail car and truck transportation for his firm's products. At that time, in his words, "Logistics was not very high on the list of priorities of senior management, *because it was always available.*" In today's logistical environment, he orders five railcars for the mill and receives two. The next day, he orders five more and receives one. On the third day, the mill shuts down because all available space is taken up with finished product. Today his title is Vice President of Logistics.

The article headline begins, "Nation's deteriorating infrastructure poses security risk," and continues to note that homeland security experts worry about the state of various components of our infrastructure including power, schools and drinking water.<sup>1</sup> Experts worry that too little attention is being paid to how fast the country's basic infrastructure is deteriorating. Recently, the American Society of Civil Engineers conducted a survey of the nation's basic operating systems and gave them an overall grade of "D".<sup>2</sup> In reviewing the findings of this study, the president of UPS remarked that if our kids brought home a report card like this, they would be grounded indefinitely. Highways and other infrastructure elements are deteriorating. That means congestion, delays and increased and less dependable lead times. In the face of these and other logistical challenges, supply managers must become more active managers of logistics requirements.

Across all modes of transportation, capacity difficulties exist. Unlike in the past, the logistics system in this country is at capacity. Today, many firms have moved from carrier strategies aimed at cost reduction to ones focused on obtaining needed capacity. There is a chronic shortage of long haul truck drivers and train engineers. This is compounded by a severe shortage of diesel mechanics. Ports are perpetually congested, in part from delays from trucking and rail services.

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<sup>1</sup> McCutcheon, Chuck. *Portland Oregonian*, August 27, 2006, p. A4.

<sup>2</sup> [www.ASCE.org](http://www.ASCE.org)

Skyrocketing fuel prices have become the excuse for cost increases in almost everything. According to a recent national assessment, the cost of transportation now approaches nine percent of the value of the average product.<sup>3</sup> All of these conditions argue for increased emphasis on managing the logistical functions. Supply professionals must become more expert in logistics management. Contracts must be structured to accommodate today's logistics market realities. Inventories may need to be forward-positioned to insure availability in the face of increased global supply chain risks.

**Infrastructure Congestion.** To appreciate the scope of the congestion issue, in 1956, Dwight Eisenhower signed the Federal-Aid Highway Act, authorizing construction of 41,000 miles of interstate highways (later increased to its present 46,837 miles). In 1956, there were 54,013,753 registered vehicles in the U.S. In 2003, there were 135,669,897 registered vehicles.<sup>4</sup> Separately, freight traffic is estimated to double in the next twenty years.<sup>5</sup> In a study of the costs of congestion in the Portland, Oregon metropolitan area, it was estimated that failure to adequately fund infrastructure improvements could cost as much as \$844 million *annually* by 2025.<sup>6</sup> The September, 2006 issue of *LogisticsToday* evaluates another aspect of congestion, noting that consumer goods imports are forecasted to grow by three million TEU (Twenty foot equivalent container units) by 2010 – a 60% increase. Intermediate goods (those we source from offshore suppliers) are expected to increase by 1.4 million TEU - up 70%. West Coast ports are already congested, in spite of significant expenditures to alleviate this condition.

Outsourcing is, at the same time, significantly straining global logistical capabilities, while increasing the emphasis on managing global supply chains. The “China Price” has proven so enticing that there seems to be a compulsion to outsource, not only to China, but to other Asian countries, as well. While the purchase prices may be attractive, many firms are now realizing that the real total landed cost, plus the additional administrative costs associated with engaging suppliers half a world away may not be all that profitable. Nevertheless, the trend, and its impact on logistics, will continue for the foreseeable future.

**Mode Analysis.** To evaluate the logistical environment, we begin with the most common method – trucking. Like many other industries, trucking is facing a retirement problem. Traditionally, long haul drivers have expected to be away from home for several weeks, as they are routed from load to load. As older drivers approach retirement, new younger drivers are more reluctant to accept long times away. It is not uncommon to see drivers begin their careers on long haul routes to obtain the necessary experience to acquire a local driving job. Truckload carriers commonly experience driver turnover rates from 60% to 100% annually. In their current *State of Logistics Report*, the Council of Supply Chain Management Professionals (CSCMP) estimates the nationwide long-haul driver shortage to exceed 80,000.<sup>7</sup>

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<sup>3</sup> CSCMP, 17<sup>th</sup> Annual State of Logistics Report (2006).

<sup>4</sup> U. S. Department of Transportation, Bureau of Transportation Statistics.

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<sup>6</sup> Economic Development Research Group, *The Cost of Congestion to the Economy of the Portland Region*. Prepared the report for the Portland Business Alliance, the Port of Portland and Metro, November 25, 2005

<sup>7</sup> CSCMP, 17<sup>th</sup> Annual State of Logistics Report (2006).

Railroads are no less constrained. They, too have a significant retirement problem that cannot be quickly resolved. It takes as long as a year to train an operating crew. Train operators go through simulator training just like airline flight crews. Railroads are also faced with a shortage of equipment, as about 40% of the rail cars in this country are between 25 and 40 years old, and the rail car manufacturers cannot keep up with orders. Motive power is also in short supply.

From the shippers' perspective, there is an additional compounding factor. Railroads have merged until there are only five class one railroads left in this country. Burlington Northern Santa Fe and Union Pacific Southern Pacific operate primarily in the west. Kansas City Southern runs north-south through the middle of the country into Mexico, and the CSX and Norfolk Southern operate in the east. In many areas, they operate as monopolies, with increasing rates and deteriorating service.

Airfreight carriers, especially UPS and FedEx have patiently awaited the arrival of the Airbus A-380, a giant airplane with great capacity to haul large volumes of freight. Unfortunately, there have been successive delivery delays, now approaching two years, that have provoked FedEx to cancel its ten-plane order. Even when the planes arrive, the infrastructure will struggle to accommodate them. Few airports have runways designed to accommodate the concentrated weight of a loaded A-380 on landing. New passenger facilities will be needed to allow for simultaneous loading and unloading from two decks.

Seaborne commerce is not exempt from capacity and infrastructure problems. Eastbound container shipping capacity is still constrained, in spite of the huge new ships now under construction or just entering service. The recently launched Emma Maersk is the longest ship ever constructed at 1302 feet long by 183 feet in beam, she draws almost 50 feet of water when fully loaded. While Maersk conservatively rates this ship at 11,000 TEU, other experts suggest she probably can handle about 14,000 TEU. Like with the A-380, there are few ports that have the capacity to handle such a giant. Shoreside infrastructure will need to be likewise enhanced. Not only will ports need new container cranes with extended booms to reach the outer tiers of containers on the Emma Maersk and similar ships, but also the rail and truck infrastructure needs to be enhanced to efficiently move such large volumes of containers to and from the ports. It has been suggested, only partly tongue-in-cheek, that the first containers off such a ship might reach the Midwest before the last ones are offloaded.

There are other compounding factors between the transportation modes. Because of poor rail service, some shippers have switched to truck – compounding the trucking capacity crunch. Trucking companies, in a search for ways to accommodate shippers in the face of capacity constraints, have tendered trailers and containers to the railroads, compounding railroad capacity difficulties. Indeed, the largest shippers on some railroads are the trucking companies. The vast increases in intermodal container traffic from foreign suppliers and the enhanced revenue from such traffic have prompted the railroads to prioritize this cargo to the detriment of their other traditional high volume shippers, especially coal and grain trains.

**Combating the Perfect Storm.** Given the state of our infrastructure, what can supply managers do to ameliorate this condition? The following are suggestions.

First and foremost, look for additional carriers. This is counter to the prevalent trend to minimize the number of suppliers a firm employs, but examples abound to demonstrate that even such large firms as P&G have moved from cost reduction tactics to the search for committed capacity sufficient to support operations. It is unacceptable for production or customer shipments to be delayed for lack of carrier capacity.

Supplier evaluation and cost analysis are just as important for logistical suppliers as for parts and material suppliers. In particular, carefully analyze not only quoted per-pound rates, but beware of accessorial charges, as well. Request and analyze each carrier's rules and contract of carriage. Many contain additional charges beyond the base rate for a wide array of services. Be careful, at the same time, to discover the limits of liability of each carrier. It is not required that carriers reimburse the full value of damaged or lost cargo. Finally, carefully evaluate fuel surcharges. Several carriers lately have experienced significant increases in profitability from such charges, so insist on justification for these, or any other surcharges.

Second, consolidate whenever possible. Moving from less-than-truckload to truckload volumes by combining shipments from several suppliers will not only make the shipments more attractive to carriers, it will reduce price per pound shipping costs and may reduce transcontinental transit times by as much as two thirds. This strategy may also incorporate increasing order sizes to full truck quantities. The trade-off between increased inventory carrying costs and decreased unit prices and shipping costs, must be evaluated, however.

Several new time-specific services are now being offered by many carriers. As always, the trade-off is between time and cost. Time-specific truck shipments now compete with second day air in many areas. Recently, APL and Con-way teamed up to offer time specific transpacific surface shipments designed to compete with some air shipments. Because they control their own terminals, APL can be assured that shipments under this new service will be last onto the ship (allowing later deliveries by suppliers) and first off for delivery to Con-way for ground delivery. These new alternatives are certainly worth evaluating.

Shippers are continuing to evaluate other alternative modes of transportation. Traditionally, lumber mills in the northwest have shipped to the housing markets in the Los Angeles area by truck. Given trucking capacity constraints, several have shipped large quantities of lumber by barge. Transit times are longer, but capacity is available, and prices are significantly less.

In addition, shippers should evaluate the other infrastructure components. Are there alternate ports that can be effectively used for inbound shipments of outsourced goods if particular ports experience chronic congestion? What is the status of the shoreside infrastructure, so that shipments can efficiently be moved to destination? Border crossings, bridge weight restrictions and the increasing use of toll roads all may impede shipments or increase costs or both, and should also be examined.

There are several administrative functions that may benefit from critical examination. It is likely to be beneficial for us to reevaluate our assumptions. What are our estimates of requirements, timing and costs? How good is our forecasting? How are we at communicating our forecasts to our suppliers and carriers? Purchasing research and simulation tools are often useful in this regard. The saying goes, "Trust but verify." This is especially appropriate for invoicing and performance measurement. Are all invoices rendered in agreement with our contract rates? If

performance guarantees accompany shipments (for example, delivery by 10:30 AM, or other time specific guarantees) are the guarantees met? Clearly, if the guarantee is by 10:30 and the shipment arrives at 10:32, no one will complain. However, if we pay the premium for 10:30 AM delivery and the shipment is tendered at 2:00 PM, we should have a process in place to make a claim against the guarantee.

Two final cautions: Don't forget continuity planning, and especially, don't forget supplier relationships. What are carriers' contingency plans if shipments go astray? What are ours? While it is in favor today, to pursue lean practices to the utmost, there is a fine line between lean and starving to death. A small safety stock may save the day (and the supply manager's career). Lastly, never forget that when supply (or capacity) is tight, it is our relationships with our suppliers upon which we depend to assure us of continuity of supply, regardless of whether it is a supplier of parts or of a service.

**Governmental Influence.** It is becoming increasingly clear that part of our challenge is to make sure that legislators truly understand and appreciate the logistical challenges we face – it is an educational challenge. Allocation of funds to address infrastructure improvements will only come with full awareness of the magnitude of the deficiencies. It is incumbent on each of us to make known to our legislators our concerns and priorities. As an example of the difficulty, In 2005 Congress passed, and the President signed a \$286 billion, five year transportation bill that contained no less than 6,371 earmarks. Some call those 'pork'. Earmarks are not necessarily detrimental, but the extent of these calls into question the practicality of some.<sup>8</sup>

**Conclusions:** It is clear that this nation's infrastructure has been chronically underfunded. Estimates are that our interstate highway system, on which we are so dependent, is deteriorating faster than it is being repaired. Our ports are congested, truck and rail transportation modes are at capacity and freight transportation is forecast to double by 2020. It is imperative that supply managers appreciate the magnitude of the potential difficulties and actively manage their transportation requirements and carriers to avoid production delays, unhappy customers and loss of profitability. It is also essential that we take the case to both the state and federal legislatures to assure continued national and firm competitiveness. A world-class logistical system must be one of our nation's core competencies.

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<sup>8</sup> For further information on this issue, see [www.taxpayer.net](http://www.taxpayer.net).