

Oil Prices Will Drive Important Changes to Supply Chain Strategies

More Inventory, Flexible Factories, among the Likely Moves, David Simchi-Levi Says; from Pull to Push ?

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How will companies really respond to rising transportation and logistics costs?

Even as oil prices have recently pulled back to levels in the \$90 per barrel range, logistics is still very expensive at those prices, and the new "higher low" sets the stage for increases back to well over \$100 per barrel.

Dr. David Simchi-Levi of MIT has estimated that every \$10 increase the price of oil results in an increase in cost per mile for truckload shipping of at least 4 cents.

In a recent article in the Wall Street Journal, Simchi-Levi along with **Derek Nelson** of Ilog, **Dr. Narendra Mulani** of Accenture and **Jonathan Wright**, also of Accenture, outline the changes they expect to see in supply chain strategy as a result of these rising logistics costs.

Those changes include:

Shift towards More Inventories: In the traditional trade-off between inventory and logistics costs, rising transportation expense inevitably cause the balance to shift to higher inventories.

"When oil was cheaper, the trend was to move factories offshore and keep inventories low because costs associated with manufacturing and inventory outweighed the cheap transportation costs," the authors say. "High oil prices are upending those strategies." Data from the annual State of Logistics Report, sponsored by the Council of Supply Chain Management Professionals, offers evidence this shift has been occurring. While the study found transportation

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costs rose 47% from 2002 to 2007, inventory carrying costs increased even faster, at 62%, the result of changes that on the margin favor inventory over transportation costs.

This might mean, for example, that companies will reduce smaller "just-in-time" shipments in favor of larger, less frequent shipments that can take advantage of lower cost truckload shipments over less-than-truckload moves, or rail movement over truckload.

It could also mean having more distribution centers, at the cost of more inventory, versus fewer, larger one that increase transportation expense.

Moving Production Closer to Home: Rising transportation costs also change the benefit equation for offshoring, especially from Asia. This means companies may rethink offshoring strategies and bring back production to domestic markets or "near shore" countries, such as Mexico for the US or Eastern Europe for European countries.

Naturally, the product areas most likely to see reversal in offshore strategies are ones that have a

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high ratio of logistics cost to product costs. That can include relatively heavy, low value products, or even more expensive products that are bulky and difficult to ship.

The authors note, for example, that electronics maker Sharp Corp. has recently started moving a larger portion of its flat-screen TV manufacturing to Mexico from Asia to be closer to customers in North and South America, reducing logistics expense even at the price of somewhat higher production costs.

Building "Flexible Factories": The authors also predict that companies will increasingly move from dedicated factories that can build a limited number of products to more flexible ones that can cover a much broader array of SKUs.

"While dedicated manufacturing reduces production costs through economies of scale and fewer assembly-line set-ups, it can result in higher transportation costs because companies can't always serve demand from the closest factories," they note. "The opposite is true with flexible manufacturing -- production costs rise, but transportation costs fall."

The authors recently worked with one European manufacturer and found that if there was a jump in oil to \$200 a barrel from \$100, the 14% increase in logistics costs the company would incur as a result could be cut to just 3.5% with a switch to flexible manufacturing, combined with the addition of a single distribution center to the supply chain to reduce transportation miles.

Changing Shipping Strategies: The authors expect changes in basic transportation strategies as well. That includes, as mentioned above, looking to reduce shipping frequencies by shipping larger volumes of product and moving to slower but less expensive modes.

The dynamics will also incent companies to look at reducing packaging and container sizes to get more products on each truck.

Finally, the authors predict that shippers will increase their use of third party warehouse and transportation operators that are able to consolidate shipments across companies and link truckload movements to reduce empty of "dead head" miles.

From Pull to Push?

In perhaps the most provocative point, the authors also say the rising transportation costs might even cause some companies to revert back to more "pushed-based" strategies to increase shipment sizes and allow slower modes of transportation, versus the "pull-based" strategies that tie the supply chain more closely to actual consumption.

"A push strategy becomes more attractive when companies need to ship large quantities to take advantage of economies of scale," the state. "Shipping large quantities implies a company is covering demand for a longer period of time, thus the need to base decisions on long-term forecasts," rather than more near term demand signals.

