Supply chain calculus

Sourcing raw materials to feed the factories that produce the retail goods being purchased by the world's consumer class requires a special supply chain calculus. This new numerology measures hidden costs, weighs the importance of distance and routes, while ultimately putting product in stores in the most cost-efficient and timely manner possible.

By Matt Miller, AJOT

There was a time, not all that long ago, when global supply chains were relatively simple, well-ordered and predictable: Raw materials from Brazil and Australia fed Chinese factories. Chinese producers gorged American and European consumers. Middle East oil lubricated energy needs pretty much everywhere.

That global map is rapidly evolving, not only as labor costs fluctuate, but as old assumptions about supply chains and sourcing are being rethought and reworked. These patterns will likely get more and more complicated and more dynamic in the years ahead, as will the decisions behind them.

The New GPS – Globally Positioning Sourcing

"It's more complex than it's ever been and it's changing faster than ever before," says Justin Rose, a principal in the Boston Consulting Group who co-authored a paper on the shifting economics of global manufacturing. "The days of a 20-year play, where you move to China and don't worry about it, they're over."

Changes in where goods and materials are sourced will alter the course of not just where factories are located, but of shipping and transportation patterns to service them.

Illustrations abound. Apparel bound for Europe is beginning to shift from China to Turkey, for example. That will impact the port of Rotterdam, posits a Dutch researcher, as goods from Turkey to Europe tend to move by truck instead of ship.

On the other hand, after almost two decades of constant growth fueled by domestic demand, Chinese steel producers saw a downturn last year and face a production glut. Now, they're looking to ship that steel to other emerging markets.

"It's a shifting, moving landscape that has profound implications on where global crossings need to take place," says Foster Finley, a managing director for consultants AlixPartners and the leader of the firm's operations group.

Because of this growing complexity, businesses themselves can have trouble coming to grips with everything that goes into a decision about where to source. "So they don't always have clarity of what costs actually are," says Richard Wilding, professor of supply chain strategy at Cranfield University's School of Management, in Bedfordshire, Britain.

Factoring Sourcing Calculations

More complicated sourcing calculations stem from many factors, Wilding says. These include everything from complexity of a supplier base to the complexities of the customer itself.

The growing use of third-party logistics should help in this process, says Lisa Anderson, a supply chain consultant based in Claremont, California. "The trend is for companies to look at 3PLs as a strategic partner," she says, and rely on them for information and collaboration.

Among the new realities of the global supply chain are these:

Labor costs have changed

*(**CALCULUS** – continued on page 11)*

(*CALCULUS – continued from page 2)*

radically over the past decade, most dramatically as wages in China have increased at a rate of 15% to 20% a year. A fundamental reordering of sourcing is coming in the wake of that shift.

Low-cost labor is still important when determining where something is sourced, but it is by no means the only determinant as it was when Western businesses flocked to China. In many cases, labor costs are losing ground in decision-making to everything from worker productivity to the number of times a cargo must be transshipped.

Changes in sourcing reflect not only obvious developments such as increased labor rates in China, but a better understanding as well of what is often termed "hidden costs." These are factors shippers previously overlooked, downplayed or disregarded in their cost equation. They include a laundry list that ranges from the level of corruption and IP leakage to the time it takes to clear customs. Wilding calls this the "true cost to serve."

Infrastructure is becoming a bigger component in the supply chain calculus, says Anderson. As demands for faster delivery times grow, companies are assessing the state of roads, rail links and port congestion.

The energy equation has been turned on its head with the boom in natural gas. That will have an increasingly large effect on sourcing, especially for energy intensive industries, a factor that favors the United States.

Near-shoring and, to a lesser extent, re-shoring have gained traction, Mexico and the US are the biggest examples of this trend, with productivity gains well outpacing any increase in labor costs. "It's just starting," says Rose, of these two trends. "It will pick up steam through the end of this decade."

This isn't just a North American phenomenon. Poland has become the supplier destination of choice for neighboring Germany. Southeast Asian countries are expected to gain ground in this as

(*CALCULUS – continued on page 12)*

(**CALCULUS** – *continued from page 11)*
well as China looks regionally for its own supply chain.

Dual-sourcing is also gaining in popularity. There are two versions. One involves the use of both a low-cost producer and higher one nearby depending on the lead-time. It's an attempt to maintain what Wilding calls a "lean and agile supply chain." Wilding cites the example of a retailer like Marks & Spencer. The retailer predicts a baseline demand for a blouse and will source that in, say, China, with a three-month lead-time. But it keeps fabric on hand and if demand exceeds predictions, it will source closer to home, say in Turkey or Portugal with a three-week lead-time.

The other use of dual-sourcing is an attempt to insure continued supply in the event of a catastrophic event. The Fukushima earthquake brought this need home.

Goods with faster product cycles and manufacturing that requires lower capital costs will be far more vulnerable to change in supply chains.

Demands for shorter lead times and quicker delivery will continue to increase, impacting sourcing decisions and demanding greater control over the supply chain. Anderson calls this "the Amazon effect." She says her clients expect at least a 20% lead-time reduction and "desire" one closer to 50%.

The rise of middle-class consumers in emerging economies from China to Colombia will influence sourcing decisions.

Sourcing is becoming more and more product specific.

That last point, says Finley, is absolutely fundamental. Finley talks of "eight critical factors" when deciding where to source a good. These range from tariffs to the local costs of raw materials. But at the top of the list is the good itself. "That is the single biggest determinant where an item is made," he says. "The product category is of huge importance as it will determine labor costs, as well as local skills/qualifications, local materials and duties."

Finley cites two contrasting examples.

On one extreme are garments, with more than a dozen fashion cycles in any one calendar year, relatively small and quick runs, plenty of competing sources and relatively little cost to shifting production. "Internationally, it's a very, very volatile market," Finley says.

So, those in the garment industry – fashion designers, merchandisers, retailers – are more comfortable with changing sources quickly and often, if they can save money in the process. That's especially true if the goods aren't low volume, high-end fashion.

That's why, for example, some Chinese garment manufacturers have lost out to Bangladesh over the past several years. Now, Bangladeshi factories, currently many retailers' top choice for sourcing even after the disastrous factory fire in late 2012, are in danger of losing their edge to new darlings of the industry.

Sri Lanka is one such rising star *(See related article on page 11)* Ethiopia is another and European retailers such as H&M and Tesco are beginning to source there. Not only are labor costs lower but Ethiopia, with its proximity to the Suez Canal, can lower transport time to Europe by one-third over Asia, according to the country's boosters.

On the other extreme are manufacturers whose products are so specialized, with operations so capital intensive, that there may be just a handful of them around the world. Labor cost differentials are a relatively minor consideration and shifting suppliers is extremely difficult and hugely disruptive.

This is true of certain chemicals or specialty steel makers. However, even the auto industry is reluctant to switch suppliers because of capital costs. Tooling is expensive; a single aluminum die casting machine easily costs $500,000. And while car manufacturers may unveil new models each year, key components such as drive trains or wiring harnesses are standardized for years.