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Is It Time to Rethink Your Manufacturing Strategy?

A brief discussion about a current transformation in manufacturing, which is being driven by factors such as oil price volatility, increasing labor costs in emerging markets and shifts in demand --- and has implications for manufacturing strategies, by David Simchi-Levi, James Paul Peruvankal, Narendra Mulani, Bill Read and John Ferreira

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One crucial enabling factor for outsourcing or offshoring manufacturing was cheap oil. But now, crude oil prices and transportation costs have risen.

[OPERATIONS]

Is It Time to Rethink Your Manufacturing Strategy?

Factors such as oil price volatility, increasing labor costs in emerging markets and shifts in demand all come into play when deciding where to manufacture products.

BY DAVID SIMCHI-LEVI, JAMES PAUL PERUVANKAL, NARENDRA MULANI, BILL READ AND JOHN FERREIRA

For the past 10 years, China was the answer to many manufacturing questions. That's no longer automatically the case.

Supply chain disruptions, fuel price volatility, rising labor costs, advances in technology and a growing realization of the advantages of being physically close to customers are leading some manufacturers to conclude that they are better off with a regional strategy that may or may not include China.

This doesn't mean that the United States or Western Europe will ever again be the manufacturing hubs they once were. For a company doing business in the United States or Western Europe, for example, a regional strategy is likely to mean Mexico or Eastern Europe. And it may not mean a lot for jobs, since technological advances and productivity growth keep reducing the need for labor in manufacturing. However, it does suggest that smart companies are likely to conclude that the optimal manufacturing strategy depends on working out a subtle equation that includes the materials that go into the product, the product itself and the expected growth of the customer base. This equation must be monitored continually so that manufacturing and logistics solutions can be dynamic and flexible to meet the ongoing changes in the market.

Since the mid-1990s, many companies have outsourced or offshored some or all of their manufacturing operations. For most, one crucial enabling factor was cheap oil: Long supply lines were economically feasible because transportation costs were relatively low. Hence, companies emphasized reducing manufacturing costs through (1) offshoring or outsourcing; (2) plant rationalization (leveraging production economies of scale and reducing capital investment); and (3) consolidating distribution centers and warehouses to reduce inventory levels and minimize fixed facility costs.

Now the equation has changed. Crude oil prices and transportation costs have risen, making them far more significant relative to inventory, production and fixed facility costs. This in turn has given rise to three new cost-optimization realities:

1 **Regional distribution centers become more attractive.** As oil prices increase, outbound transportation becomes more expensive. As a consequence, it may be necessary to minimize distances between distribution centers

and retail outlets by adding warehouses. However, a greater number of warehouses implies more safety stock and generally higher inventory levels. To make the right decision, two tradeoffs become extremely important to understand: the cost of oil versus the cost of inventory, and the cost of oil versus the cost of production. Even a $25 per barrel shift in the price of oil can have a dramatic impact on the number of distribution centers a manufacturer should maintain.

2 Sourcing and production may need to move closer to demand. As cheaper manufacturing costs are offset by higher transportation costs, it may be necessary to move more manufacturing and sourcing activities onshore. The merits of doing so can be determined by making total landed cost analyses that consider unit costs, transportation costs, inventory and handling costs, duties and taxation and the costs of finance. Landed cost assessments are a good way to calculate the cost of sourcing or manufacturing in one location and serving customers in other locations. In a total landed cost assessment, the impact of sourcing and production costs generally diminishes as transportation costs increase.

The need to move manufacturing facilities from low-cost countries to locations that are nearer to market demand is strengthened by increases in developing countries' labor costs and the pressure most companies now feel to reduce times to market. These three forces (transportation costs, labor costs and time-to-market pressures) have inspired some companies to move manufacturing facilities from Asia to Mexico. Sharp, the Japanese TV manufacturer, for example, started moving its manufacturing facilities from Asia to Mexico as a way to be closer to customers in the Americas. This shift was driven by the need to keep shipping costs low and time to market short. With the prices of flat-screen TVs falling fast, executives realized that reducing shipping times from about 40 days (when flat-screen TVs were produced in Asia) to seven days (making the units in Mexico) would have a big impact on the bottom line.

3 Supply chain flexibility becomes more critical. When oil price volatility increases, it becomes more important for companies to serve customers from the closest manufacturing plant. However, they are unable to do so if each plant specializes in producing only a few items — a strategy known as dedicated manufacturing.

A dedicated manufacturing approach often reduces manufacturing costs owing to economies of scale and the fact that fewer set-ups may be required to switch between different products. However, dedicated manufacturing can also result in long delivery legs and hence higher transportation costs. In contrast, a flexible manufacturing strategy — with each plant able to produce all, or almost all, products that the company provides — may increase production costs (owing to frequent set-ups and smaller lot sizes), but it is nearly certain to reduce transportation costs. It stands to reason that the more oil prices rise, the more important it is to invest in a flexible strategy.

In fact, our research has found that in order to reduce the impact not just of fuel price volatility but of other sorts of supply disruptions as well, companies should pursue greater flexibility all the way up and down the supply chain. For example, being able to react quickly with new sourcing solutions — whether they are from a different plant or a different supplier — is an effective way to protect operations from the volatility inherent in today's economic environment. Flexible manufacturing may also be optimal for minimizing supply chain disruptions caused by natural disasters such as the April 2010 volcanic eruptions in Iceland, the March 2011 tsunami in Japan and the August 2011 flooding in Thailand.

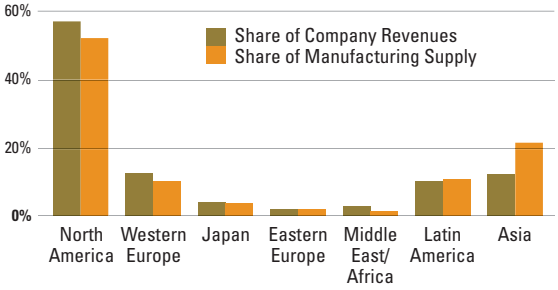
Of course, if the nature of the product or the value of past investments makes it difficult to become more flexible, that "lumpiness" needs to be factored into the larger equation. In that case, however, it is still important to weigh the value of flexibility against other possible strategies so that the organization understands the tradeoff.

Close to You Most companies understand the importance of getting close to the customer, regardless of whether they sell their products to consumers or to other businesses. In most cases, "close" is figurative rather than literal. However, it is increasingly clear that the physical location of supply and manufacturing facilities has a significant impact on close-to-the-customer issues

(Continued on page 22)

FOR LARGE COMPANIES, MANUFACTURING FOLLOWS DEMAND

For companies with more than $10 billion in revenue, the location of manufacturing operations is related to where the company's revenues come from.



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such as providing custom products, responding effectively to customer requests and ensuring reliable delivery in spite of demand swings.

Given that both literal and figurative closeness matter, "Where does (and will) our revenue come from?" becomes the next key question. Data obtained by Accenture suggests that the larger the company, the larger the portion of its revenue generated outside the United States. The same holds true for the manufacturing supply side — where its components and raw materials are produced — and does so most pronouncedly in certain industries, such as electronics and life science.

For large companies that already generate significant revenue outside the United States, supply follows demand. (See "For Large Companies, Manufacturing Follows Demand," p. 21.) Surprisingly, we also found that more than 50% of supply manufacturing for companies with more than $10 billion in revenue is generated in the United States.

For many industries, further shifts in demand are expected that should pull supply chains south and east. The research team analyzed data obtained by Accenture from companies in 17 industries. We compared current revenue and manufacturing distribution by region with the 2013 projections that each surveyed company provided to our researchers. Growth in revenue (demand) and manufacturing supply are expected to come from Asia and Latin America, while North America's and Western Europe's shares of both demand and manufacturing supply will decline. (See "How Demand — and Manufacturing Supply — Are Likely to Shift.")

This trend holds for almost all of the 17 industries we reviewed. The one exception is software. This industry's revenue and supply share in North America is expected to increase slightly by 2013, while India's supply share will increase significantly and China's supply share will decrease significantly.

Manufacturing is now going through a transformational period, driven particularly by increased labor costs in developing countries, shifting demand patterns, significant increase in risk, heightened market volatility and escalating oil prices.

Manufacturing companies should acknowledge that these factors may be the impetus for a shift in how and where they make their goods.

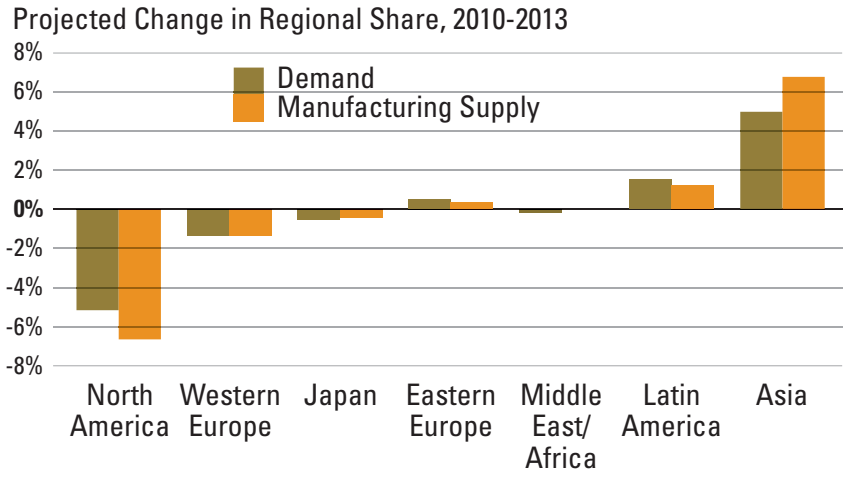
Two decades ago, choosing China as an alternative hub for manufacturing required a major conceptual leap. Now many corporate planners are on the verge of a similar leap, from low-cost manufacturing to a more regional strategy. This strategy does not necessarily mean moving manufacturing activities to the United States; they need only be closer to market demand.

Of course, the new strategy must factor in not only the drivers reported here but also the impact of tax policy and tax incentives, the strength of the company's home market economy and the devaluation of various currencies. Finally, the company will need to find the local talent and skills essential to keep driving productivity and innovation. This is probably the biggest limiting factor faced today by senior executives looking to rationalize their manufacturing strategy. After all, a regional strategy can only work if you can find the right people to execute it — and in many locations, that's not easy.

HOW DEMAND — AND MANUFACTURING SUPPLY — ARE LIKELY TO SHIFT

This graph shows the projected shift in the share of demand — and manufacturing supply — by region from 2010 to 2013 for companies whose revenue exceeds $10 billion.

A positive value indicates growth in that region, while a negative value indicates decline.



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