The Journey from Offsourcing to Onshoring

Many U.S. manufacturers are onshoring or reshoring their businesses back to the United States in an attempt to lower manufacturing costs and increase levels of precision and quality.
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Overview

Outsourcing offers several advantages to OEMs, including access to dedicated product design teams/expertise, manufacturing-cost reductions, minimizing the number of process steps involved, cost-effective customized products, and improved time to market. Interestingly, in comparison with other manufacturing industries such as automotive and industrial equipment, the medical device industry has been relatively late to latch on to the outsourcing trend, deterred primarily by thorny legislative issues.

What Went Wrong With Offshoring

Offshoring, which was once considered highly attractive to almost every large and midsize American company, is now coming to a steady decline. Most American companies are bringing their manufacturing operations back to the U.S. Shifting perspectives on supply chain management, coupled with the realities of total landed cost, are driving manufacturers to weigh the benefits of relocating production operations in China back to the United States. More than a third of U.S.-based manufacturing executives at companies with sales greater than $1 billion are planning to bring back production to the United States from China or are considering it, according to a new survey by The Boston Consulting Group (BCG). The survey, conducted in late February 2012, included responses from decision-makers at 106 companies across a broad range of industries. Thirty-seven percent of those polled said they plan to reshore manufacturing operations or are “actively considering” it. That response rate rose to 48 percent among executives at companies with $10 billion or more in revenues — a third of the sample. (More Than a Third of Large Manufacturers Are Considering Reshoring from China to the U.S., 2012). A host of market challenges and opportunities are driving manufacturers to increasingly consider strategic onshoring or reshoring partnerships, including:

Rising Wages: According to one of the reports, with Chinese wages rising at about 17 percent per year and the value of the Yuan continuing to increase, the gap between U.S. and Chinese wages is narrowing rapidly. Meanwhile, flexible work rules and a host of government incentives are making many states increasingly competitive as low-cost bases for supplying the U.S. market. All over China, wages are climbing between 15 and 20 percent a year because of the supply-and-demand imbalance for skilled labor. After adjustments are made to account for American workers’ relatively higher productivity, wage rates in Chinese cities such as Shanghai and Tianjin are expected to be about only 30 percent cheaper than rates in low-cost U.S. states. And since wage rates account for 20 to 30 percent of a product’s total cost, manufacturing in China will be only 10 to 15 percent cheaper than in the U.S. — even before inventory and shipping costs are considered. After those costs are factored in, the total cost advantage will drop to single digits or be erased entirely. (Made in the USA, Again: Manufacturing Is Expected to Return to America as China’s Rising Labor Costs Erase Most Savings from Offshoring, 2011)
**Tipping Point Sectors:** Interest in shifting manufacturing to the U.S. is particularly strong among companies in several sectors identified in BCG’s March report as nearing a “tipping point.” In these industry groups, China’s cost advantage is likely to shrink within the next few years to the point where companies should rethink where they produce certain goods, mainly those for sale in North America. These tipping-point sectors are transportation goods, appliances and electrical equipment, furniture, plastic and rubber products, machinery, fabricated metal products, and computers and electronics. BCG predicts that production of **10 to 30 percent of U.S. imports** from China in these industries, which account for approximately **70 percent of goods** that the U.S. imports from that nation, could shift to the United States before the end of the decade.

In the new survey, 67 percent of respondents in rubber and plastic products, 42 percent in machinery, 41 percent in electronics, 40 percent in computers, and 35 percent in fabricated metal products said they expect that their companies will reshore production from China to the United States. (More Than a Third of Large Manufacturers Are Considering Reshoring from China to the U.S., 2012).

**Political, Environmental, Economic and Supply Chain Risks:** The combination of these factors is causing many companies serving the U.S. market to shift sources of supply from Asia to the Americas, including Latin America, Canada and the U.S. Except in cases where there is a unique manufacturing process or product intellectual property, most products are candidates to be relocated. Escalating oil prices globally and rising wages in many offshore markets, plus the hidden costs associated with offshore outsourcing erode the cost savings that didn’t account for critical supply chain factors, such as inventory carrying costs, lead times, demand variability and product quality (Gartner Reveals Top Predictions for IT Organizations and Users for 2012 and Beyond, 2011).

**Corruption and Intellectual Property (IP) Risks:** This differs by country in key outsourcing regions, such as Asia. Such data can be factored into outsourcing decisions, and can be useful when defining policies, procedures and governance for doing business in countries where corruption and IP theft are a greater concern.

**Quality Concerns:** Numerous companies that have outsourced a supply chain function, such as manufacturing purely based on direct costs, have experienced problems later. Some companies found that total costs didn't improve as much as anticipated because customer service suffered and quality problems increased after outsourcing. In addition to a robust cost-service analysis capability that addresses make/retain versus buy/outsource, companies must incorporate quality, responsiveness, past performance and risk as decision criteria.

**Shipping Costs:** As companies have gotten better at reducing inventory and adopting just-in-time delivery, supply chains stretching around the world have started to look like liabilities. The fragility of global supply chains became vividly apparent when the tsunami in Japan and floods in Thailand in 2011 caused major disruptions for companies. However,
the average price of a barrel of oil escalated from $22.81 in 2002 to $87.48 in 2011, so the price of shipping finished goods has jumped. A survey of 150 shipping companies by transportation research firm Wolfe Trahan showed a dramatic shift over 2011 in their clients’ thinking. Among companies planning to move production, those considering an increase in outsourcing to China fell to 9 percent in October from 18 percent in April 2011. Those expecting to shift production back to the U.S. rose to 21 percent from 10 percent. Supply chain analysts at researcher Gartner recently predicted that by 2014 the production of 20 percent of goods now made in Asia and destined for U.S. consumers will shift to the Americas. In a recent study by Accenture entitled “Manufacturing’s Secret Shift,” 61 percent of 287 manufacturers surveyed reported that they’re thinking of moving operations closer to customers. (Philips, 2012).

A Boston Consulting Group report released last week predicts that by 2015 it will become cheaper to produce certain products in the U.S. that are sold to American consumers. The products, the report said, would span half-dozen industries and include everything from machinery to electronics to furniture. BCG predicted that improved competitiveness and rising costs in China will put the U.S. in a strong position to add 2 million to 3 million jobs in a range of industries and an estimated $100 billion in annual output by the end of the decade. (More Than a Third of Large Manufacturers Are Considering Reshoring from China to the U.S., 2012). In one of the surveys by BCG, the top factors cited as driving future decisions on production locations include:

- Labor costs (57 percent)
- Product quality (41 percent)
- Ease of doing business (29 percent)
- Proximity to customers (28 percent) (More Than a Third of Large Manufacturers Are Considering Reshoring from China to the U.S., 2012).

In a nutshell, China’s rising wages, increased shipping costs, political and environmental factors, and a particularly agile supply chain have made offshoring less and less attractive. A further add-on to the list is the declining dollar value. Measured against more than 20 other currencies, the dollar has declined 23 percent since its peak in 2002. As a result, the cost of factory labor in dollar terms fell 11 percent in the U.S. from 2002 to 2010, according to the Bureau of Labor...
Statistics. America’s cheap natural gas is especially appealing to the metals and chemicals industries, particularly since natural gas prices in China are more than twice as expensive, according to research by the Jefferies Global Energy Team.

Back to U.S.: The Future of American Manufacturing Companies

A few relevant case studies:

- Unilife Corporation, together with its subsidiaries, engages in the development and manufacture of advanced drug delivery systems in the United States and internationally. For Unilife, moving production to the U.S. helped it win regulatory approval for an important product: prefilled syringes with retractable needles that make it almost impossible for medical personnel to accidentally stick themselves. Although the company used Chinese manufacturers for earlier offerings, syringes preloaded with medications are subject to stringent U.S. Food and Drug Administration rules. So in March 2011, Unilife began making its syringes at a $32 million, 165,000-square-foot plant it built in York, Pa.
- Nissan will shift production of its lithium-ion batteries for the LEAF zero-emission vehicle from Japan to localized manufacturing, re-tooling an existing assembly plant in Tennessee.
- NCR Corp. opened a new 350,000-square-foot ATM manufacturing facility in Columbus, Ga., to produce ATMs for the North American market, bringing production back to the United States from China, India, and Hungary.
- Ford Motor Company will bring in-house approximately 1,975 hourly jobs that would be performed by suppliers inside and outside of the United States, exceeding its original commitment to the United Auto Workers by more than 25 percent.
- Embraer opened its first U.S. aircraft final assembly plant in Melbourne, Fla.
- Electrolux will build a new cooking products factory in Tennessee, representing a shift from Canada.
- Sleek Audio, which produces high-end earphones, moved its manufacturing back to the United States after a three-year foray into China. (Harrington, 2011).

Onshoring Trends

Electronics manufacturing operations with a total value of at least $2.5 billion are expected to be brought to North America in the next three years, according to a much-anticipated new study, On-Shoring in the Electronics Industry: Trends and Outlook for North America, published in August 2012 by IPC — Association Connecting Electronics Industries®. (Source:
IPC (www.IPC.org) a global industry association based in Bannockburn, Ill., dedicated to the competitive excellence and financial success of its 3,100 member companies which represent all facets of the electronics industry, including design, printed board manufacturing, electronics assembly and test).

Based on the IPC survey, 229 companies with global revenues totaling more than $935.3 billion are considering returning overseas operations to North America or building new operations in the region — a trend that is expected to continue for some time.

Survey results showed that original equipment manufacturers (OEMs) were largely responsible for operations returned to North America from overseas since 2009, accounting for more than 90 percent of the value and number of jobs brought back. The electronics manufacturing services (EMS) industry was also a big contributor. One-quarter of operations that returned to North American since 2009 came from China, with other countries making up the other 75 percent.

The EMS industry accounts for the largest share of overseas operations that participating companies plan to bring back to North America in the next three years. New operations, however, represent a much larger share of future North American production and these planned new operations were reported primarily by OEMs.

Vaniman Manufacturing Case Study

In 2002, Vaniman Manufacturing, which makes dental equipment in Fallbrook, California, shifted most of their sheet metal fabrication offshore to China to save money (a 50 percent cost reduction in piece price). However, they were required to purchase significantly larger lots of parts resulting in a higher cost for the larger inventory. In turn, the larger inventory required more storage space. In addition, transportation costs for shipping from overseas were higher. These additional costs and other "soft" costs, such as travel expenses to visit vendors and communication costs, make up what are referred to as the Total Cost of Ownership.

After realizing that these additional costs were eating up the cost savings in the piece pricing, this company brought their sheet metal back to a local supplier in the fourth quarter of 2007. Don Vaniman, who heads the company, cited several reasons for his move: shipping delays, security hassles, and poor quality control. In an interview, Vaniman said that if he would order a thousand widgets in four shipments, three shipments might be all right, but the fourth might be totally wrong. He also feels that the closer the supplier the quicker the service. For example, in the U.S., a supplier would jump through hoops to fix that kind of problem, but in China it could take six months to work out the details.
Vaniman said that the local supplier was able to nearly match the Chinese costs by developing more efficient and creative production techniques, using recyclable packaging for parts delivery, and utilizing larger lot sizes, delivered on a just-in-time schedule. Vaniman was able to significantly reduce their inventory and the space required for inventory, due to smaller lot sizes being delivered just-in-time.

In addition, rising costs in China erased much of the price gap. Vaniman said that six years ago, the cost of producing its parts in the U.S. was as much as 50 percent higher than in China. Now it's only five percent higher.

**Conclusion**

Onshoring or reshoring is considered the most recent trend in lowering manufacturing costs mainly because of rising wages in China, the increased cost of shipping, shipping delays and political and environmental factors. Having said that, growth in medical device outsourcing is outpacing that of the overall medical device manufacturing market. While the device market is expected to grow at an annual rate of 6% – from $98 billion in 2007 to over $120 billion by 2013 — contract manufacturing is forecast to increase by nearly 15% per year, resulting in a total U.S. outsourcing market size of over $12 billion by 2013, nearly double the 2007 market size.

While some of this growth is attributable to a gradually improving global economic climate, demographic factors such as an aging population, longer life expectancies, rising rates of chronic disease and under-served patient populations are also contributing to the upswing. These latter factors are fueling the demand for new, more complex technologies such as minimally invasive, implantable, wireless and wearable devices that can improve patient outcomes and drive down costs. Developing these new technologies often requires specialized equipment as well as expertise in materials, mechanical and manufacturing engineering that would be cost-prohibitive and time-consuming for OEMs to acquire. Instead, they look to contract manufacturers (CMs) who already have the equipment and people in place who can bring these technologies to market quickly. (Medical Device Outsourcing Backgrounder).

The years 2012 and beyond seem to be bright for contract manufacturers. Several U.S. manufacturers are trying to reshore or onshore their business in search of a lower total cost of manufacturing, higher levels of precision and quality, and greater proximity to their manufacturing facilities for quicker and efficient service. Moreover, as medical device firms continue to struggle for resources and maintain an innovation pipeline, contract manufacturers are beginning to offer expanded services, including R&D and design. A new report by visiongain, a London-based business information provider, predicts that global medical device contract manufacturing revenues will reach $95.7bn in 2021. From 2011 to 2021, revenues for this industry will more than double, according to the Medical Devices Contract Manufacturing: World Market Prospects 2011-2021 report, published November 2011. Electronics manufacturing outsourcing will be the fastest
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growing segment in the market, driving contract manufacturer's revenue streams. Visiongain predicts that this market will grow rapidly to 2021. The future of the medical device contract manufacturing market appears promising and has significant potential for growth and investment. (The Global Medical Device Contract Manufacturing Revenues Will Reach $95.7BN in 2021. , 2011).

Bibliography


About Evolve

Evolve is a contract manufacturer offering innovative turnkey solutions for precision mechanical and electro-mechanical products for a variety of customers and industries. With a leading-edge manufacturing facility located in Silicon Valley, along with a talented team of manufacturing professionals, we provide both proximity and expertise.

We respond to all aspects of product manufacturing from configuration management to after-sales service. Our strategic alliances and supplier relationships allow us to maximize capabilities and keep costs low.

Evolve works with clients from pre-clinical stages of product development through final commercialization. We provide dedicated work cells for projects, and can accommodate breaks in production due to re-design and regulatory delays. Where interruptions might otherwise lead to cost delays due to transit problems, we provide a close, protected environment maintained for your project. We can easily start back up without having to reconfigure equipment or re-train staff. Because we are located in Silicon Valley, your engineers can be at Evolve and watch production at your convenience.

To learn more about our services and team visit EvolveMfg.com.