# How modern ERP solutions can help manufacturers reshore production

In today's quickly evolving global economy, manufacturers must contend with many issues affecting profitability. The location of manufacturing operations is one of the most basic, strategic decisions. In efforts to control production costs manufacturers have often outsourced labor intensive processes to nations with typically low wages. This has sometimes caused a consumer backlash as poor working conditions in some emerging countries gains exposure. Public sentiment, plus changing economic factors are causing many manufacturers to reexamine their outsourcing policies. As speed of delivery becomes more important, proximity to the consumer gains in priority, just as the ease of doing business, availability of skilled workers and reliable supply chain are factors influencing re-shoring trends.

As manufacturers struggle to find the appropriate balance between low cost suppliers and escalating customer expectations, plant location is a hot topic of debate.

This complex task of closing, moving, and establishing new locations causes numerous logistics and supply chain challenges for manufacturers. In this brief, we'll explore the driving factors in smart plant location and discuss how modern ERP solutions, particularly cloud deployment, play a role in agile response to changing global conditions.

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## Where is production headed?

Outsourcing continues to be a topic of debate among manufacturers, who struggle to find the appropriate balance between low cost suppliers and escalating customer expectations. A recent survey of major US companies found that half of the manufacturers with sales over $10 billion are actively considering bring production back to the United States—known as reshoring—as are more than one-third of companies with sales over $1 billion. This complex task of closing, moving, and establishing new locations causes numerous logistics and supply chain challenges for manufacturers. In this brief, we'll explore what's driving the reshoring movement, and look at how modern ERP solutions, particularly cloud deployment, can help make this undertaking easier.

## What's driving reshoring initiatives?

During the height of the recession, up to 67% of US manufacturers outsourced some portion of their operations to off shore locations, according to The Economist. During the 2000s, multinational corporations increased employment overseas by 2.4 million, according to the US Dept of Commerce. Outsourcing was once considered the only option for US-based manufacturers trying to cut costs. That's no longer the case.

According to The Economist, manufacturers are changing their outsourcing strategies for many reasons, but the primary one is the narrowing wage gap between industrial nations and emerging nations.

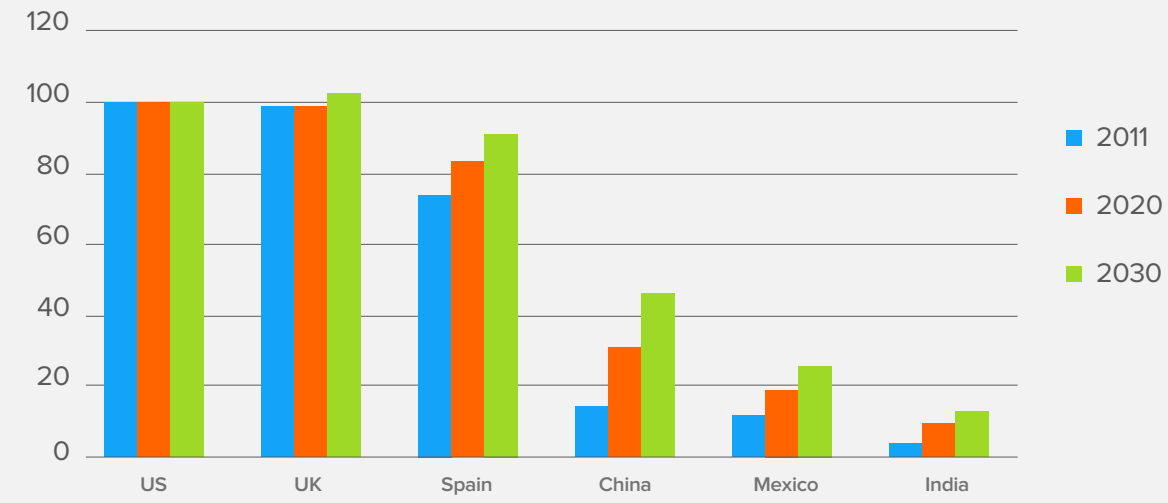
"Wages in China and India have been going up by 10-20% a year for the past decade, whereas manufacturing pay in America and Europe has barely budged. Other countries, including Vietnam, Indonesia and the Philippines, still offer low wages, but not China's scale, efficiency and supply chains. There are still big gaps between wages in different parts of the world, but other factors such as transport costs increasingly offset them," The Economist reports.

The Foreign Policy Group (FP), a US advisory group, agrees that cost savings that once made outsourcing attractive have drastically changed. "Over the last 10 years, the idea of cheap Chinese labor and expensive American labor has become rapidly outdated. Wages in China have risen 400 percent between 2001 and 2012...while wages have barely risen in the United States during the same period. In fact, unit labor costs have come down 12 percent in the United States since 1995."

The wage gap between advanced economies and emerging economies such as China, India, and the Philippines will shrink significantly by 2030 according to an analysis published by PwC.

## Relative monthly wage levels

Projected average monthly wage levels relative to US index = 100




Source: PwC

As the above chart indicates, India's current average monthly wage is around 25 times less than that of the UK. By 2030, it's likely it be only 7.5 times smaller. Average wages in the US are currently 7.5 times greater than in Mexico, but the gap could close to a factor of less than 4 times by 2030. The worker in China, who now earns one tenth of a US worker, may see income levels reaching closer to 45% on the index chart by 2030, according to PwC.

Distance, security, political unrest, and threats to intellectual property are all concerns. Distance—and the costs it entails—is another major drawback.

"Firms are now discovering all the disadvantages of distance. The cost of shipping heavy goods halfway around the world by sea has been rising sharply, and goods spend weeks in transit. They have also found that manufacturing somewhere cheap and far away but keeping research and development at home can have a negative effect on innovation," *The Economist* reports.

Another key reason for choosing a location is to be located near the consumer. So, companies that are locating in China aren't necessarily doing so for low labor wages, but because of the growing middle class in China and increased consumer spending. "China is no longer seen as a cheap manufacturing base but as a huge new market. Increasingly, the main reason for multinationals to move production is to be close to customers in big new markets. This is not offshoring in the sense the word has been used for the past three decades; instead, it is being 'onshore' in new places," says the Foreign Policy Group (FP) article.

A blog posting in Manufacturing.Net brings up yet another factor in reshoring—the availability of resources. "Excellent, competitive stainless steel comes from India because India has the ores and minerals necessary to make it.

While China has no bauxite and is thus not necessarily competitive to produce aluminum stock, Vietnam has become a major supplier of aluminum and rubber because it has those needed natural resources," the blog states.

Perhaps one of the most significant disadvantages to offshoring, though, is the public outcry about dangerous working conditions and worker exploitation in some emerging nations.

For decades the apparel industry relied on outsourcing. According to the American Apparel and Footwear Association (AAFA), 97.7% of apparel sold in the US is made internationally. This is 0.3% decline from 2010, the first-ever decline in import penetration, or the amount of the US apparel market supplied by imports.

This slight decline, likely results from the severe consumer backlash against outsourced apparel, as unsafe working conditions and worker exploitation in textile mills gained world attention. A fire in a China textile plant, killing 14 people who were locked in with no escape route, caused a grass roots boycott of big box retailers, such as Walmart®.

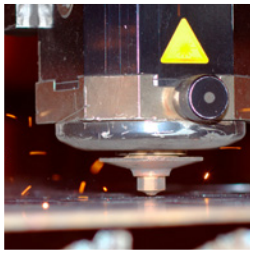
Even technology giant Apple® came under pressure when news stories emerged of Foxconn, its offshore manufacturer of iPhones® and iPads®, installing suicide nets on the top floors of their factory buildings in China after 18 workers attempted suicide.

## Are manufacturers changing their minds?

Manufacturers are starting to see the whole picture, according the Reshoring Initiative, an advocacy group involved in education and lobbying. Their research states:

- Since 2003, new offshoring is down 70% to 80%, while new reshoring is up by 1500%.
- New reshoring is now balancing new offshoring at about 40,000 manufacturing jobs/year, resulting in the first neutral year of job loss/gain in the last 20.
- Reshoring has yielded about 120,000+ manufacturing jobs.

Indeed, well-known companies such as General Electric®, Caterpillar®, and Ford Motor Company® are bringing some of their production back to the US. The Reshoring Initiative counts as many as 200 examples of US companies over the past 10 years bringing their production operations back to the United States.



Recent reshoring examples, as reported by FP:

- General Electric now makes industrial batteries at one of its oldest industrial sites, in Schenectady, NY. The company also has refitted its moribund appliance park in Kentucky to make "smart" washers and dryers.
- Apple recently announced a second new American plant in Arizona. And US-made Macs will soon be rolling out of an Apple-Flextronics plant in Austin, TX.
- Google now assembles smartphones in Texas
- South Korea's Samsung has a plant in Texas where it makes chips for Apple.
- Airtex Design Group, known for its fashion-oriented designs, is producing textiles again in Minneapolis.
- Tesla Motors in Palo Alto, CA, just announced plans to build a massive lithium-ion battery plant in the United States.

A $14 billion NanoTech Complex is being built in Albany New York. This research facility, which is being built with $1 billion in funding from New York State, has 800,000 square feet of labs, clean rooms, and classrooms, providing space for over 3,000 R&D scientists, researchers, and engineers. The site will be home to corporate partners like IBM, Applied Materials, and Intel, who will work alongside Samsung, TSMC, and Toshiba. They are focusing on the next generation of semiconductors. The industry largely left the US for South Korea and Japan a decade ago, but now many are calling Albany the new semiconductor epicenter.

Germany's BASF, China's Lenovo, Chile's Methanex, and Egypt's Orascom are all launching production operations in the United States, indicating that US manufacturing offers benefits, such as being close to the consumer, an educated workforce, and cheaper energy costs.

Manufacturers are starting to realize that the cost savings of offshoring production weren't always living up to expectations. Labor reform is increasing the cost of goods produced in China, while improved productivity is causing the bottom cost of goods to go down in highly industrialized countries, like the US, Germany, and the UK.

An *Industry Week* article recently noted that bottom-line decisions about outsourcing vs. re-shoring need to focus on the total unit costs, not just labor, and includes costs such as transportation, intellectual property risks, and inventory carrying costs. "Manufacturers are overestimating potential savings from overseas operations by 20% to 30%," Industry Week suggests.

"Understanding the Reshoring Decision Process," a paper produced from the Proceedings of the 2014 Industrial and Systems Engineering Research Conference, also explains some of the reasons for reshoring, beyond mere cost savings. Ease of doing business is one example the report cites, saying:

"When selling within the market where products are manufactured, companies do not have to contend with import regulations that they would have to if they utilized foreign manufacturing facilities. In addition to this, it may be easier to coordinate with domestic partners due to cultural commonalities and similar time zones than with those located on the other side of the globe."

Higher risks are also associated with outsourcing, the report contends, and a reason for some manufacturers to bring operations back to US soil, where US copyright and patent laws are easier to enforce. "Offshoring is especially problematic in the high-technology sector. There are risks of technology transfer," the report states.

Charlene Begley, chief information technology officer of GE says in that report, “We lost a lot of the technical capabilities that we have to own.”

Tax implications, subsidies, and incentives are also major driving factors on decisions to re-shore. There is a proposed permanent R&D tax credit that would give US companies incentive to keep R&D facilities in the US. It was passed by the House in May, but it has drawn a veto threat from the White House because the bill didn’t provide a way to offset the $156 billion that the tax break is expected to cost over the next decade.

State and local governments also impose taxes and grant incentives. State governments within the same country may even vie with one another for that chance to host a company within its borders. For example, according to the *New York Times*, Michigan state officials have offered more than $60 million over 12 years in incentives to GE.

Moreover some industries, like contact centers, which are frequently under fire from customers for providing poor service and representatives who are difficult to understand, may soon have another reason to reshore. Recently proposed legislation would require companies that use offshore contact centers to be able to transfer all customer calls to a domestic representative upon request. The bill, known as the US Call Center Worker and Consumer Protection Act, also bans companies that use offshore contact centers from receiving federal grants and loans. The bill is now in committee.

Michael Rendell, PwC partner and Global Human Resource Services leader, said, “Change is continuous and there will be even more movement in the coming years. Companies planning for this today will find themselves with significant advantages.... It’s inevitable that the manufacturing and services industries in countries will transform as the cost base evolves, and also that there will be winners and losers. Governments, regulators and business communities need to be ready for that shift.”

## How can technology make reshoring easier?

Technology is the great enabler to the reshoring initiative. It allows manufacturers, contractors, and suppliers to take advantage of the shifting economic conditions and emerging market opportunities, moving to be closer to customers, raw materials, and favorable incentives—such as lower taxes, less regulation, lower energy costs, and more skilled workers.

One of the ways manufacturers can be ready for these shifting tides is by adopting highly flexible, modern, cloud-based ERP solutions. Reshoring and cloud-based ERP initiatives both focus on increasing manufacturers’:

- Speed
- Productivity

Together, these empower US manufacturers compete on a global scale.

## Speed

In the IDC research paper, The Future of Manufacturing, author Lorenzo Veronesi explains that cloud deployment gives manufacturers greater flexibility. It provides the agility needed to support modern fast-changing conditions such as outsourcing and reshoring.

"By 2016, more than 60% of enterprise grade storage capacity will be provisioned in cloud," he says, adding, "By the same year, global cloud spending will reach $179 billion. These technologies will prove essential for manufacturers to speed IT implementations and reduce costs, as well as achieving process standardization and integration along the supply chain.

The lower total cost of ownership of cloud solutions will help manufacturers upgrade and replace outdated systems with greater ease, allowing even small to midsize organizations to deploy world-class business applications to stay competitive with larger organizations," the report states.

As manufacturers reevaluate their past outsourcing decisions and consider relocating factories closer to corporate headquarters, customers, and engineering teams, they need to be confident that their ERP solutions can support these moves. And they can. Today's modern, cloud-based ERP solutions rely on loosely coupled architecture, like the Internet, which can be expanded without causing breaks in connections. This provides greater agility and allows companies to connect to new branches, divisions, plants, and suppliers with speed, maintaining the end-to-end visibility manufacturers need to run multi-site operations.

Whether contractors, partners, or fabricating resources are next-door or halfway around the world, manufacturers can achieve the same reliable integration of systems. Online portals, dynamic omni-channel resources, mobile connectivity, and cloud deployment all make the global networks easier to manage—and easier to change.

Just because a major fabricator is located in India or China today, there is no logistical reason why a manufacturer needs to feel that geographic location has to be permanent—or that it will take considerable time and effort to change because of the complex IT system involved.

Setting up a new location no longer requires the extra work of researching, buying, implementing, and supporting hardware and servers. Cloud deployment now offers a speedy and reliable alternative, with lower total costs of ownership. What may have taken years in the past, now takes only weeks.

Cloud solutions that are purpose-built for manufacturing and specific vertical industries also eliminate the need for costly and time-consuming modifications.

In a McKinsey and Company article, "Reshaping IT management for turbulent times," the authors say: "IT programmers are flocking to approaches that emphasize the very fast, iterative development of systems through close interactions with users, allowing continual feedback and programming refinement. This agility can deliver new systems and capabilities in a matter of weeks or months instead of years. A frequent iteration cycle also keeps IT developers and business users in sync on requirements and priorities."

When the cloud solution has deep domain functionality built in, a manufacturer can be up and running in a new location more quickly and easily. This agility and speed of deployment makes it possible for manufacturers to react to changing global conditions and make short-term commitments to a regional partner, test a new market, or jump-start a product launch, taking a new innovation to market sooner than competitors can respond.

## Productivity

Modern ERP systems are also helping to drive productivity gains that make reshoring possible for manufacturers.

In an article on ERP Focus, author Bobby Rudder says, “The US has been creating an environment where manufacturers can flourish. Technology and innovation within manufacturing has put the idea of operating “clean and lean” within grasp.

The development of a manufacturing workforce has been supported. State and local governments are providing manufacturing incentives. The effort to entice manufacturers and bring them back is being supported on many different levels, and it is working.”

New and upgraded ERP systems that can run modern-day, robot infused factories and facilities are critical to making manufacturers able to move operations back to the US. User interfaces that appeal to the next-generation workforce with a consumer grade user experience, along with social collaboration components are helping to improve productivity. “The first wave of increased demand for enterprise software updates and implementations has been happening since everyone began emerging from the rubble around 2010,” Rudder says.

Advanced technology also helps improve productivity of workers in industrial nations, allowing the more productive plants to remain cost competitive, even when competing with plants in countries with low wages. The Manufacturing Alliance for Productivity & Innovation (MAPI) believes that manufacturing production has recovered 15% of the 20% decline caused by the recession. The Bureau of Labor Statistics continually reports steady increase of US manufacturing workforce productivity. “Manufacturing sector productivity increased 3.3 percent in the second quarter of 2014, as output increased 6.9 percent and hours worked increased 3.5 percent. The increase in output was the largest since the second quarter of 2010 (11.6 percent).”

*The Economist* in a special report titled “Here, There and Everywhere,” discusses why this improved productivity is an important factor in reshoring. “In the longer term, reshoring will be boosted by the use of advanced manufacturing techniques that promise to alter the economics of productivity, making it far less labor intensive,” the report states. Technology, such as the use of robotics and 3D printing, the report adds, will be key elements of this shift to more cost effective operations.

Modern ERP solutions help manufacturers boost workforce productivity in many other ways, from streamlining processes to eliminating disparate systems and communication gaps. As retiring Baby Boomers have left vacant jobs, US manufacturers have learned tactics for stretching resources, such as turning to business intelligence tools to predict trends, anticipate customer needs, and schedule just-in-time resources. All of these lean practices help make tech-savvy manufacturers, no matter where they are located, more competitive.

Also, to boost competitive capabilities, manufacturers are increasingly turning to partnerships and suppliers to manufacture subassemblies, components, or configurations. Postponing completion or assembly until the consumer actually places an order is another strategy manufacturers are using to meet customer demands. Again, modern technology solutions support this customer-centric approach and allow companies to “pop up” next to manufacturing partners who need completion, assembly, and logistics support for these highly configured complex products.

Bringing engineers, production design, and the consumer closer together has many benefits, including the ability to foster new ideas. Proximity between headquarters and operations also mean fewer globe-crossing trips for key engineers and executives. When the design engineers are located on the same continent as the manufacturing operations, on-site collaboration helps speed the transition from blueprints and schematics to full-scale operations.

Modern ERP solutions support this collaborative aspect of manufacturing by providing integrated social and collaboration tools that allow colleagues, business partners, and customers to communicate in real time—with their conversations tracked and stored as part of the ERP system. Turning to technology is one way manufacturers are improving their productivity and helping to foster innovative ideas and enhance product development.

## What does it all mean?

Such creative problem solving and out of the box thinking is the new mindset of manufacturing. Smaller, more agile factories, fabrication plants, and distribution centers make it possible for manufacturers to compete on a global scale—but with localized versions. Smaller plants—with greater agility—can focus on single products and collaborate with customers and suppliers on innovative, specialized solutions—without slowing down the core make-to-stock operations, which provide the bread and butter for the company and need to operate uninterrupted.

For manufacturers, suppliers, and fabricators, these shifts in thinking and operational strategies mean new challenges. Whether it is moving a plant closer to the consumer to speed delivery or positioning a new plant near a growing market, modern, cloud-based ERP solutions are the key to making geographic decisions practical and cost effective. Modern ERP solutions connect all of these variables into one view of profitability.

Thanks to sound IT solutions, manufacturers are up to the challenge. They can meet the public demand for products that are low-priced and manufactured in countries that protect worker safety. It's a global economy and manufacturers need flexible IT solutions with global capabilities.

Manufacturing.Net summed up the new mind-set well, saying, "In today's flattened-world economy, the concept of made 'here' or 'there' makes no sense. Few end products are completely made in any one country. American cars contain wire harnesses put together in Mexico from wire made in Georgia, engine components machined in Eastern Europe assembled into finished engines in Michigan, sheet metal produced in Pennsylvania and fasteners cold-headed in Taiwan."

With modern, cloud-based ERP solutions, manufacturers have the tools they need to make the right product, the right way, in the right location—and to do it profitably.





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