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## Homeward bound: nearshoring continues, labor becomes a limiting factor, and automation takes root

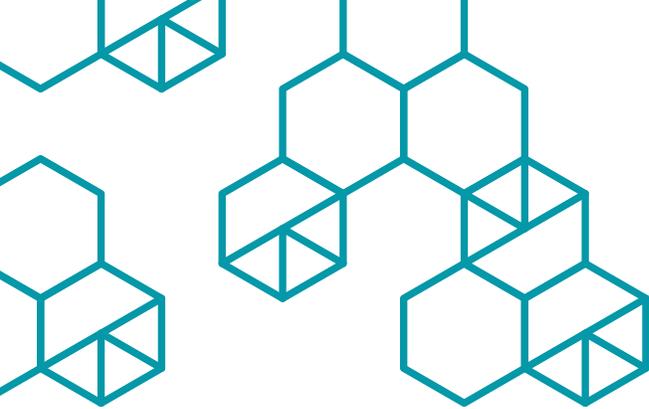
The trend of nearshoring—in which companies in developed markets like the United States and western Europe move production facilities closer to their main bases of consumption—continues apace. Many of the labor-cost advantages that initially spurred companies to move their manufacturing offshore have eroded—most notably in China—yet as companies bring manufacturing capacity back, they face a new challenge: not all local labor markets are sufficiently deep to meet rising demand.

That rising demand represents a clear challenge, but automation in select circumstances could offer a solution. Automation technology, including robotics, has made tremendous strides in the past five years.

Capabilities have improved dramatically, and costs have shot down. Today this kind of technology can help manufacturers augment—or entirely replace—functions previously performed entirely by humans.

To exploit those technologies, manufacturers will likely have to make capital-intensive investments, but they should understand, too, that automation cannot replace a human workforce. Instead, automation shifts the focus to a new set of critical skills. As automation technology becomes more available and more affordable, companies will have to adopt longer-term views on developing and retaining talent aligned with the tactical use of robotics.

Two caveats are in order. First, Brexit and the recent US presidential election introduced significant uncertainty into global trade, with a strong possibility of more-protectionist stances, which are serving to reverse several decades of steadily easing global trade barriers. In addition, currency markets introduce another layer of uncertainty. For example, the Chinese renminbi declined about 10% against the US dollar during the past year. Companies will have to consider both factors—trade barriers and volatile exchange rates—as they develop their manufacturing and sourcing strategies.



### LABOR SHORTAGES LOOM

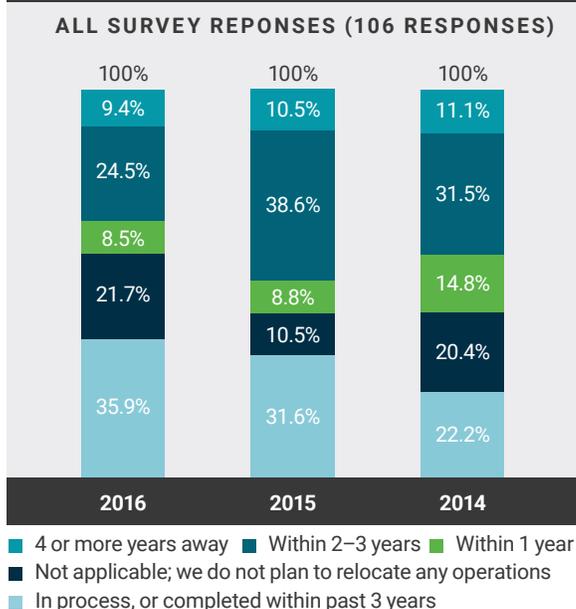
Our 2016 annual survey of manufacturing and distribution companies serving North America and western Europe found that 69% say they consider nearshoring a possible opportunity to meet US and European demand—up from just 40% in last year’s analysis. In addition, more than two-thirds say they’ve nearshored in the past three years or plan to do so in the coming three (figure 1). The survey included responses from senior supply chains, logistics, and manufacturing executives across a range of industries, including automotive, consumer products, and aerospace and defense.

As the companies surveyed relocate production closer to home, some are facing mounting labor challenges—especially when it comes to finding people to fill key manufacturing roles, such as process or product engineers, experienced line operators, and experienced frontline supervisors (figure 2). Those shortages may lead to higher-than-expected labor costs, reliance on contractors or temporary labor, and other ramifications that could make nearshoring less attractive for labor-intensive manufacturers going forward.

To address shortages in skilled labor, more than 60% of respondents say they are building relationships with local education providers, 55% are increasing wages to attract additional candidates, and 53% have internal apprenticeship programs in place. The internal apprenticeship model is particularly popular among some companies in Germany, which has a strong educational heritage of vocational training. (For unskilled labor shortages, temporary labor is the most common solution, adopted by 48% of respondents.)

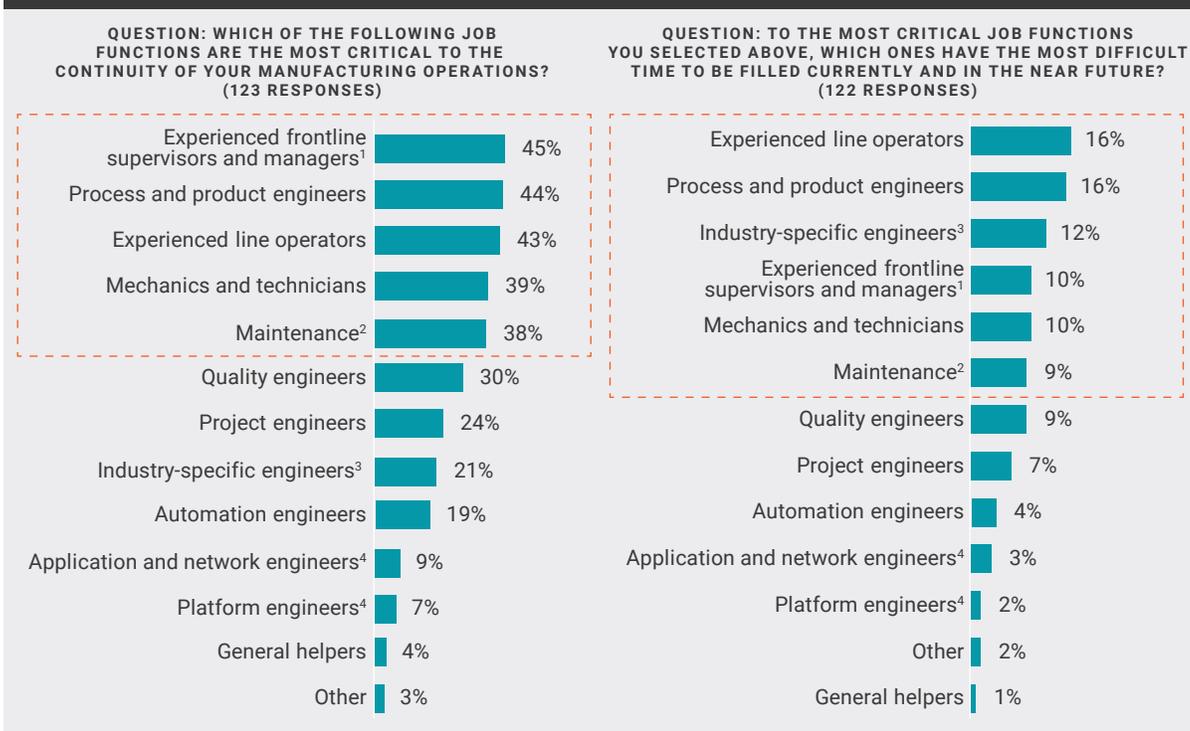
Even with those measures, the issue is likely to persist. In the US, manufacturers pay relatively lower wages to skilled and unskilled laborers. Moreover, the future outlook for such positions—even those requiring a college degree—is lower than that for STEM (science, technology, engineering, and mathematics) and IT jobs. Through 2025, according to the Manufacturing Institute, the US will have to fill 3.4 million manufacturing jobs because of overall economic expansion and retiring baby boomers. Some of those jobs will be filled, but projections say at least 2 million will remain unfilled.

**FIGURE 1:** How soon are you likely to relocate operations to the Americas to meet US demand requirements?



Source: AlixPartners Strategic Manufacturing Sourcing Surveys 2014–2016

**FIGURE 2: Job functions criticality and availability**



Source: AlixPartners Strategic Manufacturing Sourcing Survey 2016

Notes: <sup>1</sup> Shift supervisors, crew supervisors, etc.

<sup>2</sup> Electrical, mechanical, etc.

<sup>3</sup> Aerospace, marine, automotive, petroleum, chemical, metallurgy, ceramic, etc.

<sup>4</sup> IT

The US is also facing severe shortages in skilled tradespeople—such as electricians, welders, and pipefitters—who play critical roles in maintaining manufacturing infrastructure. The average age of people with those skills has risen steadily since 2000. Many of them will retire in the next two decades, and there will not be sufficient numbers of younger people to fill the gaps. Already, skilled trade workers represent the employment category that employers are struggling the most to fill, not only in the US but also globally—and particularly in key developed markets such as the United Kingdom and Germany.

### AUTOMATION AS A POSSIBLE ANSWER

In the face of challenging labor markets, robotics and automation may be potential solutions. Those technologies have evolved to the point where they're cost-effective for the augmentation of many manufacturing processes.

Two-thirds of respondents say they plan to invest a significant portion of their future capital in robotics and automation technologies alongside investments in production equipment and lines at existing

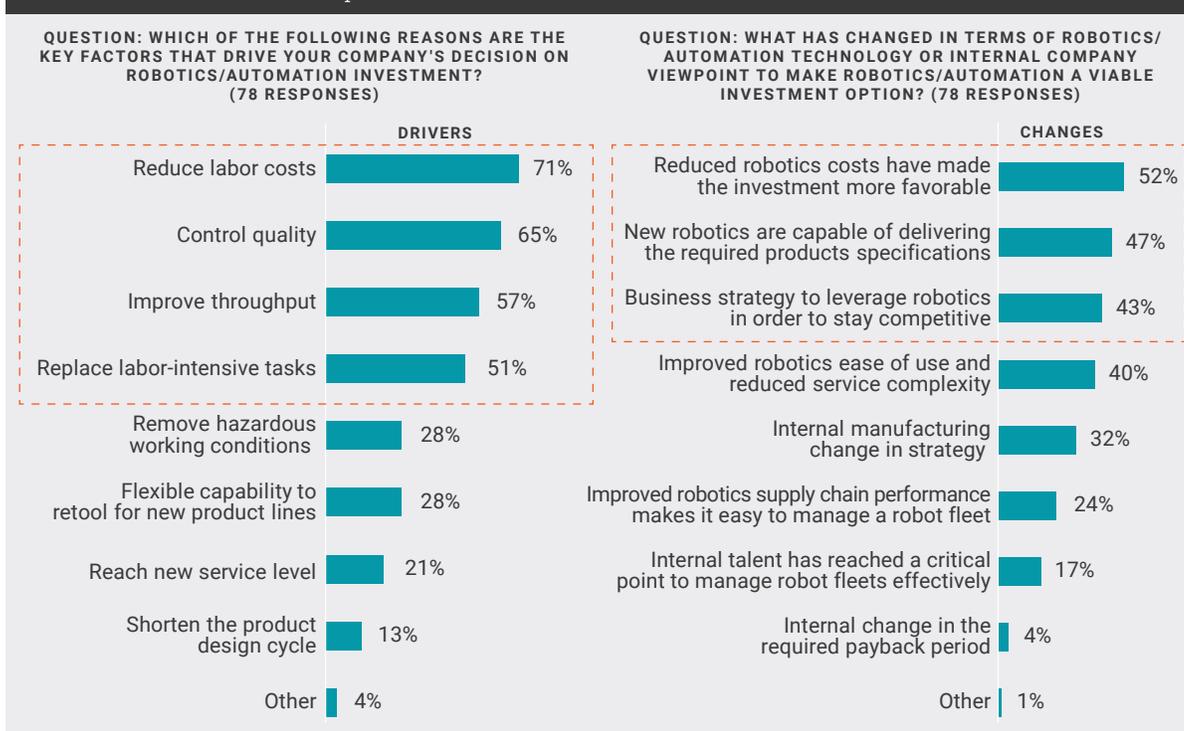
facilities (70% of respondents) and in optimizing their production footprints (64%).

The case for those investments is strong: robots and automation technologies enable companies to reduce labor costs, enhance quality control, and improve throughput. And in the past several years, respondents say, robotics costs have fallen, even as capabilities have increased (figure 3).

All trends point to increased automation among North American and European manufacturers for the foreseeable future. According to the International Federation of Robotics, the worldwide supply of industrial robots is projected to increase 15% annually through 2018 (up from 11% increases through most of the 2000s). The installed base worldwide by that point will have reached 2 million units.

A key driving factor in the shift to automated production is the Internet of Things, wherein all of the nodes in a supply chain—including individual pieces of equipment on manufacturing lines—are linked via sensors and able to communicate with one other. As a

**FIGURE 3** Rationale for a capital investment in robotics/automation



Source: AlixPartners Strategic Manufacturing Sourcing Survey 2016

result, companies can capture greater data about their supply chain, optimize performance, reduce energy consumption, and improve utilization rates, all of which will enable companies to run their facilities far more efficiently with regard to both labor and capacity.

Automotive and electronics manufacturers have been the biggest adopters of automation technology thus far. But companies in other sectors—such as pharmaceuticals, instrumentation and measurement devices, medical equipment, and pulp and paper—will likely begin to shift more of their manufacturing capacity to robots in the coming years.

Automation can ultimately make manufacturing more flexible and customizable, potentially enabling a shift away from mass production and toward networks of smaller facilities located close to customer hubs.

### RECOMMENDATIONS

Our analysis points to clear recommendations for both manufacturers and investors. For manufacturers, the first priority is talent. A more automated manufacturing environment does not eliminate the need for talent. Companies can't automate everything, and some degree of human oversight will always be required. Rather, more-automated manufacturing changes the

critical skills that workers and managers have to have. For instance, companies will have to build relationships with educational institutions and other sources of talent. They could also consider moving facilities closer to talent hubs, being mindful of consumer proximity. And they'll have to invest if they want to develop internal talent and thereby ensure that the current workforce is fully immersed in relevant technologies.

In addition, manufacturers will need to understand the ever-evolving landscape of automation and robotics, and they have to monitor future developments. As the technologies advance, they could reset the bar regarding what companies can achieve in the areas of labor-cost reductions, floor space requirements, quality and/or throughput, and maintenance and support needs. Such advances could change the return-on-investment calculation of the investments needed to implement new technologies. To capitalize, companies have to stay abreast of emerging technologies to be in a position to choose the right solutions for their unique needs.

Finally, manufacturers will have to know about changes in customer requirements such as shorter product life spans and greater customization. Those shifts in turn could require more-flexible manufacturing processes, which robotics and automation can help deliver.

Investors evaluating manufacturing assets must factor nearshoring, labor, and automation into a financial model for a specific entity. Before making such outlays, though, investors must carefully assess production facilities as part of the due diligence phase by answering such questions as:

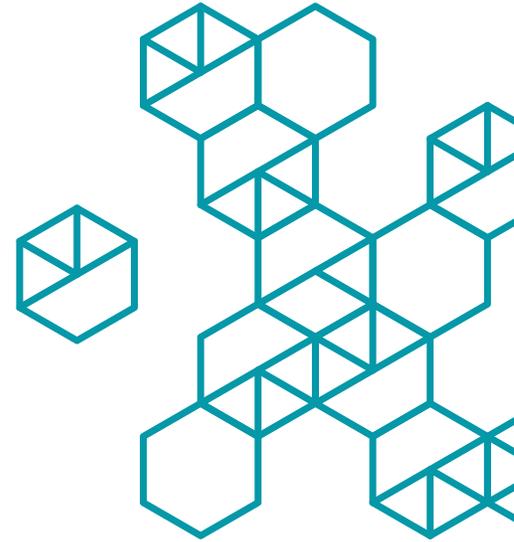
Are existing facilities in optimal locations? If not, how much does that potentially reduce the purchase price for the companies, and how costly would it be to relocate those facilities?

- What is the current state of automation at the company's facilities?
- What capital investments would be required to make the target company competitive in terms of automation and robotics? Could those investments be recouped when the asset is later sold?
- Does the company have the talent in place in order to upgrade with regard to automation and robotics? If not, can the investors source that talent elsewhere?

Once the acquisition is complete, investor-owners will have to determine whether needed automation investments correspond with planned investment cycles.

## CONCLUSION

A decade ago, the labor-cost advantages of offshoring were clear. Today, determining the strategic location of manufacturing assets is a complex, high-stakes process. Moreover, rapid technological advances in robotics and automation are introducing new variables that compound the challenge, but also introduce some new opportunities. Given these factors, executives and investors need a rigorous process to assess, design, and implement strategic manufacturing sourcing programs. The decisions aren't easy, but management teams that get them right can give their companies a clear competitive edge. **A**



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