ACCELERATING THE ADOPTION OF SMARTER MANUFACTURING

2021 INDUSTRY SURVEY

alift Where Manufacturing Technology and Talent Matter
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EXECUTIVE SUMMARY

Smarter manufacturing, the connection of materials science, manufacturing processes and systems engineering, is clearly the imperative of the future. According to industry, this smarter future could have tremendous and far-reaching benefits for U.S. manufacturing, including a more secure and resilient supply chain and more and better jobs coming back to the United States.

A new comprehensive survey of top leaders from several large U.S. manufacturing sectors sponsored by LIFT, the Detroit-based Department of Defense manufacturing innovation institute, Siemens and Kearney, shows that while most industry knows (nearly 90 percent) they must make the move to smarter manufacturing to de-risk their organizations and labor supply, the concept of making such a move is too complex and they aren't sure the return on investment (ROI) has been fully realized, so they are looking for partners to help guide them along the way.

The online study polled 500 manufacturing industry personnel at the director level or above with technology and product or product development in their job titles across 10 sectors (aircraft/aerospace, automotive, defense, energy, food/beverage, gas/oil, industrial and commercial machinery, medical/surgical/dental, semiconductors, and shipbuilding/marine) between September 7 and September 27. These individuals came from all types of companies, but the study focused on small-to-midsize firms, who are often leading indicators of larger trends. More than half of the respondents represented firms of between 250 and 1,000 employees.

PARTNERSHIPS ARE NEEDED TO ACCELERATE ADOPTION

On a top-line level across industry, three in five (59 percent) of respondents said their companies have already been using some level of smarter manufacturing and expect this to continue over time. While the survey showed an industry-wide shift toward smarter, more automated manufacturing across the country, the level and progress of adoption of these techniques differed significantly.

The survey provided some clear suggestions for increasing the rate of adoption of smarter manufacturing technologies, including the need for increased funding and opportunities to consult with experts in implementation of these technologies, which tied for the top response, both at 71 percent. In addition, 61 percent of respondents suggested partnering with a software vendor to co-create solutions, which could create a glidepath for some industries that have made relatively less progress on the path to a smarter future. In fact, enthusiasm for this method was highest in the defense, semiconductors, and shipbuilding sectors, with more than three-fourths of respondents across those three verticals expressing interest in this solution.

COMPLEXITY IS THE MAIN CHALLENGE

Nearly all companies that have attempted the transition to smarter manufacturing—98 percent—reported having encountered at least one significant challenge. For 58 percent of the respondents, the main challenge in moving more quickly toward a smarter manufacturing process was the complexity of system integration.

Other obstacles frequently mentioned by respondents included the lack of skilled workers, identified as an issue by 53 percent of companies, and the substantial costs required to start this type of transition, which was called out by 49 percent of respondents. Interestingly, no industry had more than 50 percent of respondents cite resistance from management as a key factor impeding the transition to a smarter manufacturing process, with defense and shipbuilding tied for the lead in that category with 46 percent—possibly reflecting the more experienced makeup of senior leadership in those fields.

THE ROI QUESTION

Despite more than four in five respondents said their organizations have a firm commitment to a transition toward smarter manufacturing, and it being a top priority for their organizations, two-thirds of respondents expressed concern that the return on investment of this digital transition has not yet been fully proven, and it is not yet clear that the costs outweigh the benefits.

The cost-benefit analysis behind the transition to a smarter manufacturing process also varies significantly by industry, and responses to the survey reflected this. For example, in industries that manufacture high-value items with complex processes, such as semiconductor, respondents endorsed transitioning to a digital or smart manufacturing solution at a significantly higher rate than average.

TALENT WANTED

Smarter manufacturing requires higher skill level jobs at higher wages and drives growth both within organizations and the organic industrial base in the U.S. The need for increased talent with the knowledge, skills, and abilities to work in smarter manufacturing is clear.

The skilled worker issue was heavily dependent on industry, with 78 percent of semiconductor industry representatives and 76 percent of respondents from the shipbuilding industry mentioning it as a material issue, while just 34 percent from the automotive industry called out a lack of skilled workers as a top concern. When asked specifically about labor concerns, 70 percent of all respondents identified the availability of workers overall as an issue, with 67 percent mentioning the availability of labor with the necessary technical skills. A full 55 percent also responded that high school curricula are not aligned with the contemporary needs of the industry, another critical component of solving the employee concerns that can accelerate adoption of smarter manufacturing.

OPPORTUNITIES EXIST ON U.S. SHORES

While making the transition to a smarter, technologically focused manufacturing process certainly requires significant investment and effort, companies across industries are noticing specific opportunities this shift has unlocked.

For example, the COVID-19 pandemic's impact on the global supply chain has had many companies and organizations reevaluate their product logistics and sourcing. With a smarter manufacturing process, it can be more cost effective to produce in the U.S.—as well as providing more predictable timing and shipping costs. This sentiment came through in the survey, with respondents indicating that their companies are looking at reversing years of outsourcing and bringing more manufacturing back to domestic facilities. In addition, these companies are looking at more U.S.-based suppliers to reduce geopolitical risk going forward.

The respondents also identified numerous and varied benefits in making the transition toward smarter manufacturing, which applied unequally across industries. For example, aerospace industry respondents were overrepresented in naming reduced quality control risks as a perk of digitalization, while semiconductor companies—which have been among the businesses most affected by the unusual activity in the global supply chain—were 35 percent more likely than respondents from other industries to identify the ability to better estimate production delays as a significant perk of smarter manufacturing.

THE RACE IS ON, LET'S GET GOING

Overall, the pace of smarter manufacturing adoption remains uneven across industries, with most respondents benchmarking their progress at 56 percent of services automated—roughly halfway. In industries such as shipbuilding (67 percent) and industrial and commercial machinery (65 percent), this was substantially higher, while respondents in the medical, dental, and surgical industries reported just 45 percent progress.

Encouragingly, senior leaders at manufacturing companies across a variety of sectors have expressed strong interest in accelerating their transition toward smarter manufacturing. This survey identified distinct pain points and opportunities that the right partnerships can help address so industry can make continued progress toward an innovative digital future.

Accelerate your smarter manufacturing future. Team up and create manageable, executable milestones with clear ROI and Drive American Manufacturing Into the Future.

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