

The need to be more resilient and adaptive has never been more important for manufacturers. To achieve resiliency and adaptability, manufacturers are pushing for remote monitoring and diagnostics of their operations.

The Rising Importance of Remote Monitoring and Diagnostics for Operational Resiliency

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Introduction

While disruption has impacted all industries, manufacturing has been among the hardest hit. Manufacturers have had no choice but to respond to supply chain disruption, evolving government/regulatory requirements, and shifting production capabilities to meet public demand for their goods and services. This response is driving change across the industry and creating opportunities for companies to transform how their operations stay aligned with the market. In response, manufacturers are beginning to define their future success by how well they react to market disruptions. The growing complexity of delivering tailored customer experiences and the ability to address unforeseen events have created a need for operational resiliency. Manufacturers are achieving such operational resiliency through a process IDC calls resilient decision making. This process is the combination of ongoing efficiency measures by manufacturers and a new focus on providing employees with near-real-time information, detailed insights on performance, and analytics to improve the decision-making process.

Smart manufacturing/Industry 4.0 has been a concept for years, and manufacturing is continuing to progress from a maturity standpoint. But most of the industry is still in the early stages of digitizing assets and utilizing real-time visibility to monitor asset performance. While there are benefits that can be gained by just possessing real-time visibility into performance, the value that can be gained increases sharply the further along a manufacturer progresses in its asset management approach. Instead of responding to events as they occur, manufacturers need to strive for diagnosing issues before they arise, especially considering that the average cost per hour of unscheduled downtime is over \$110,000 in manufacturing.

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Becoming more proactive can drive improvements across the entire manufacturing value chain. Assets can be monitored in real time and shut down if thresholds are exceeded, without the need for human intervention. The good news is that

AT A GLANCE

KEY STAT

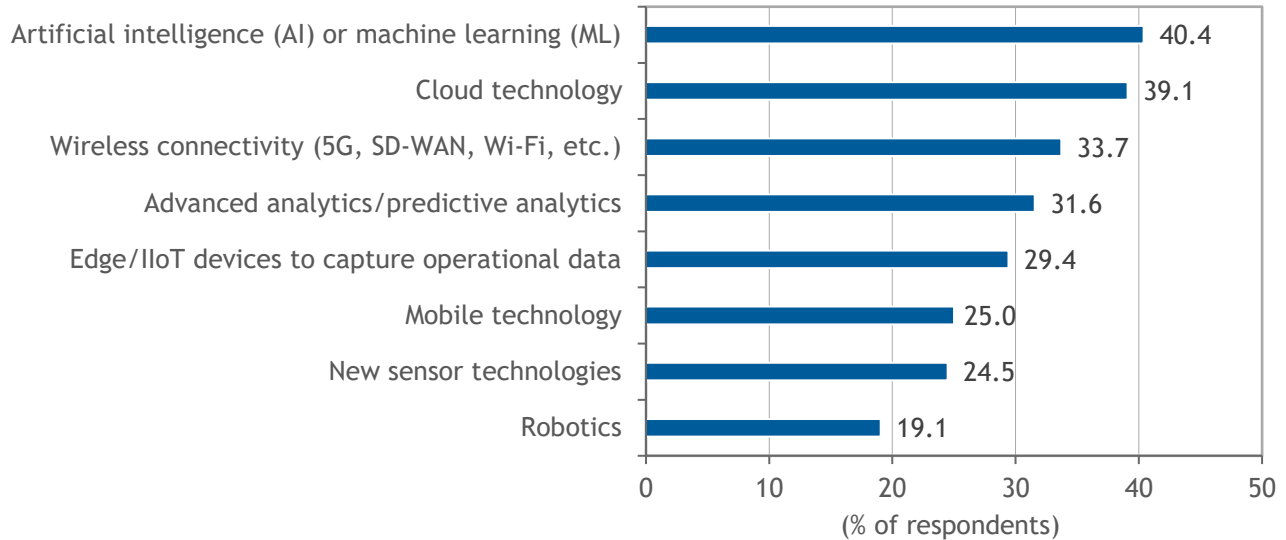
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WHAT'S IMPORTANT

A more predictive asset management approach generates true value and serves as the foundation for resilient manufacturing operations. Achieving resilient manufacturing requires remote monitoring and diagnostics of assets.

the industry realizes the importance of this approach, which is reflected in long-term operational investment priorities, where artificial intelligence/machine learning (AI/ML) is the top focus (see Figure 1).

FIGURE 1: **Top Operational Investment Priorities over the Next Five Years**



n = 397

Source: IDC's Future of Operations Survey, July 2021

Benefits

Asset management is a core aspect of smart manufacturing, and transforming this process through remote monitoring, diagnostics, control, and predictive analytics can serve as the foundation for operational resiliency. Many manufacturers still rely on aging infrastructure that makes managing assets more proactively a challenge; connecting these assets is a critical first step. Traditional preventive maintenance processes are slow and generally ineffective, but strategic asset management will put an emphasis on condition-based monitoring and predictive analytics to raise the availability of critical factory assets. IDC has been working closely with a large pulp and paper company that is moving down the path to resilient decision making and operational transformation. The manufacturer has begun moving from a silo-based asset management strategy to a collaborative asset management center, like a call center with levels of service:

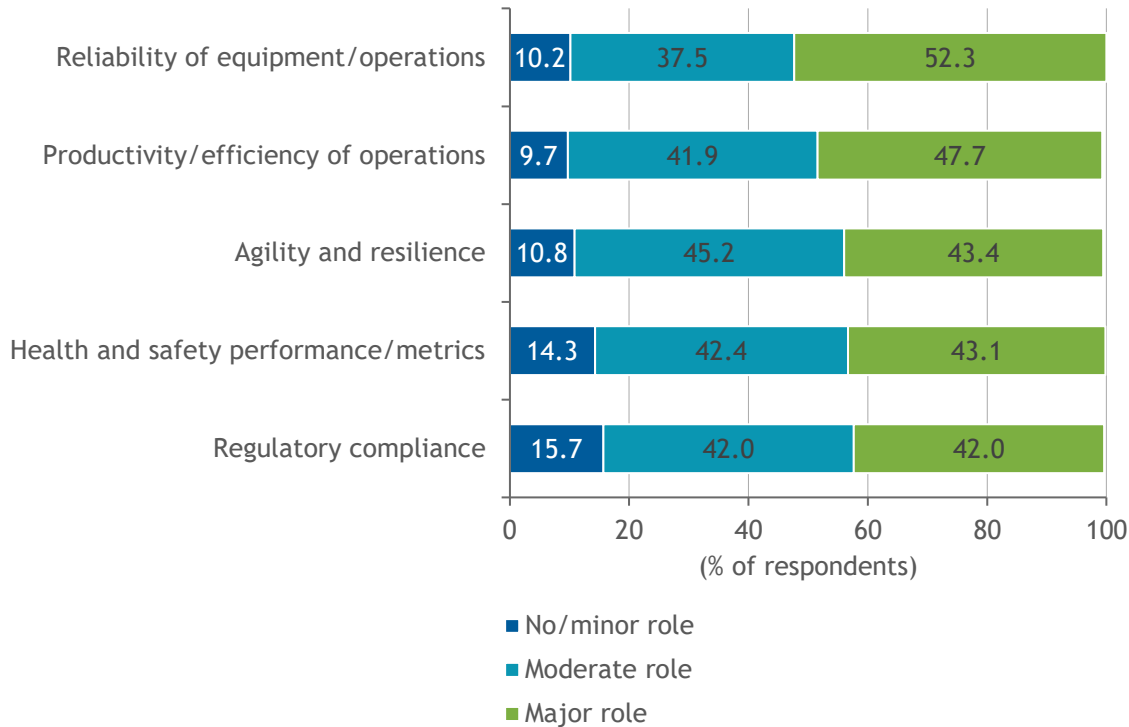
- » Asset, Ops, IT generalists as the first line with defined workflows
- » Ops and Ops IT specialists with a large knowledge base
- » Traveling resources who go onsite and who are very specialized

As this pulp and paper manufacturer has worked to implement its centralized asset management center, the critical need has been consistent and reliable remote data. According to surveys that IDC has conducted with IDC manufacturing clients, around 7% of asset-intensive manufacturers have established a remote monitoring and diagnostics center, with

another 25% in the process of standing up centers. However, the expected benefits of taking this approach highlight why it is such a high priority for the company, with the pulp and paper manufacturer estimating that response times will be improved up to 50% and in-plant resources will be reduced by up to 75%.

While manufacturers are much more automated today than they were five years ago, significant opportunities to better leverage technology remain. Resilient decision making through automation not only speeds decisions through decision support but also potentially limits dependency on human involvement in more repetitive decision-making tasks. However, it is not sufficient to just have data and insights. Manufacturers also need agile decision making and flexible business processes to translate these insights into proactive and automated actions. Because of the need for agility and flexibility, it is no surprise to see that manufacturers view the reliability, productivity, and efficiency of their operations as the areas most impacted by digital technology (see Figure 2).

FIGURE 2: *Role of Digital Technology for Operational Improvements*



n = 397

Source: IDC's Future of Operations Survey, July 2021

Digitalization has long been the backbone of operational effectiveness for manufacturers. IDC's *Digital Manufacturing Study* of 680 publicly traded manufacturers highlights the clear advantage that occurs over time for organizations that embrace modernization efforts. Over the study's six-year period, digital manufacturers benefited from a 26% increase in their revenue performance index (RPI) and a 27% increase in their profit performance index (PPI). During this same time, nondigital manufacturers experienced a decrease of 9% in RPI and a decrease of 2% in PPI.

However, the biggest takeaway from the study is how the gap between the two groups increases over time. Many companies have already acted, using digital technology to make better decisions, and they are reaping the benefits. This gap has only increased as a result of COVID-19 as manufacturers with digital investments already in place were able to adapt much faster than those without investments. The question nondigital manufacturers need to ask themselves is, How much longer can we wait? The more time that passes without taking any actions, the more of an advantage their peers experience. In today's highly competitive manufacturing environment, where disruption can occur at any moment, companies cannot risk inaction.

Considerations

Manufacturers face many challenges when building and executing a remote monitoring and diagnostics approach, which often results in pilots that fail to scale and a lack of return on investment for these initiatives. Common pitfalls holding manufacturers back include the following:

- » **Legacy/siloed systems.** One of the most frequently cited roadblocks to becoming a data-driven enterprise is the use of legacy or siloed systems. The issue of silos has existed for years but is becoming worse in today's data-rich world. Modernizing these systems is a crucial first step for any manufacturer because it serves as the foundation for actions and insights. A "digital divide" is forming, with digitally enabled manufacturers more focused on innovating and trying to capture market share, while nondigital manufacturers are still focused on cost cutting and selling off high-risk projects.
- » **Reliance on outdated information.** Manufacturers tend to focus most efforts on information capture and delivery of reports that highlight past performance rather than supporting all the steps in a decision-making process that involves a range of descriptive, diagnostic, predictive, and prescriptive analysis methods. The ability to make decisions based off the most relevant information is essential to becoming a data-driven manufacturing organization.
- » **Lack of talent.** Talent is a hot-button issue for most companies, but manufacturing organizations are feeling the pressure more than most. The manufacturing workforce skews older, and as these experienced employees retire, they leave gaps that are hard to fill. Many manufacturers are understaffed in their high-skill positions, and many of the workers who are relied upon lack the knowledge/skills needed to perform effectively and safely. However, the use of technology can help lessen the pressure felt as a result of talent issues because technology can provide employees who are less experienced with prescriptive actions to take based upon historical and real-time asset performance.

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Conclusion

The manufacturing environment is changing faster than ever before. As the industry comes to terms with this shift, organizations that embrace resiliency will become the most successful. Operations play a critical role in enabling this resiliency. Manufacturers that continue to take a reactive approach to asset management put their entire business at risk. By enabling remote monitoring and diagnostics of assets and operations, manufacturers can deliver measurable business value and safeguard against future disruption. Given the complexities of implementing a remote monitoring and diagnostics center, manufacturers should consider working with a technology partner that can help them modernize their asset management approach and utilize technology to maximize the performance of the limited talent that is available.

About the Analyst



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Reid Paquin is Research Director for IDC Manufacturing Insights responsible for the IT Priorities and Strategies (ITP&S) practice. Mr. Paquin's core research coverage includes IT investments made across the manufacturing industry and manufacturers' progress with digital transformation. Based on his background covering the manufacturing space, Mr. Paquin's research also includes an emphasis on the technology enablers that help manufacturing executives make better-informed operational decisions.

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