IDC TECHNOLOGY SPOTLIGHT

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Competition has never been higher in manufacturing, and outside factors can cause major disruptions overnight. Succeeding in this challenging environment will require a foundation of digital infrastructure to enable true transformation.

Building the Digital Foundation to Drive Manufacturing Transformation

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Introduction

Customer and market expectations for more personalized products, deliveries, and services — as well as unanticipated events and sudden demand shocks such as COVID-19 — are driving change and creating opportunities for companies to transform how they keep their operations aligned with their markets. Lean and other types of continuous improvement philosophies used by operations teams in factories and plants will always be important. These methods have benefited companies as they pushed for operational excellence. However, the key to success moving forward will be to maintain efficiency while becoming more innovative, market driven, and customer focused. The rapid pace of change has led the industry to start defining its future success by how well it can react to market disruptions — which IDC calls operational resiliency. This resiliency is achieved by providing employees with near-real-time information, detailed insights on performance, and analytics to improve the decision-making process across the manufacturing value chain. It is important to keep in mind that becoming a data-driven organization does not mean the delivery of more reports, dashboards, or other human consumable indicators of past performance or status of operations. Rather, it means the ability to deliver actionable information in the context of its recipient. This is where true value can be derived and what will differentiate successful manufacturers from those that struggle to compete.

AT A GLANCE

KEY STATS

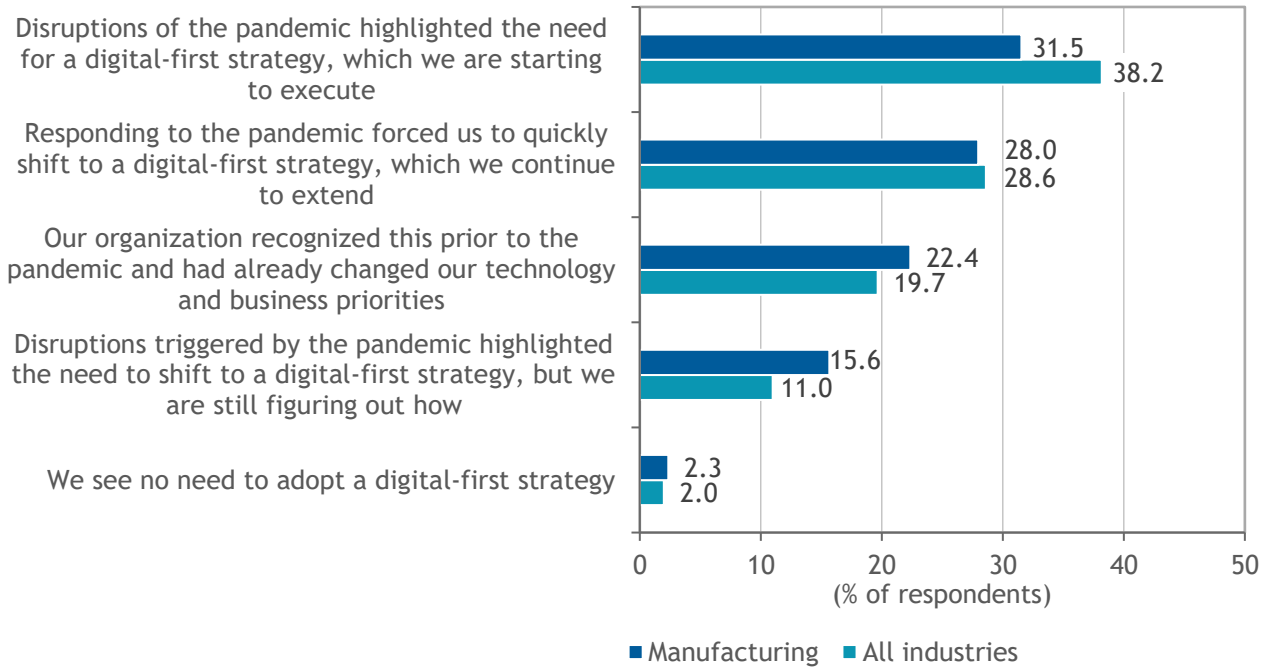
According to IDC research, digital manufacturers benefited from a 26% increase in their revenue performance index (RPI) and a 27% increase in their profit performance index (PPI).

KEY TAKEAWAYS

Connecting business processes to eliminate silos and apply analytics to newly expanded and contextualized data removes bottlenecks and empowers workers to make rapid and confident decisions.

Manufacturers have encountered many challenges in their efforts to become more resilient, but one of the most commonly cited issues is outdated/legacy infrastructure. Most manufacturers tend to rely upon a mix of plants, assets, and technology systems that are decades old and limited in functionality. This situation results in information being difficult to access and analyze, hindering the ability to make the most effective decisions in the necessary time frame. The legacy nature of the industry led to additional challenges when the disruption of COVID-19 occurred, and many companies lacked the foundation needed to adapt quickly. In response, the industry is now embracing a digital-first strategy to serve as the foundation for a resilient business (see Figure 1).

FIGURE 1: ***Digital-First Strategy in Response to Disruption***



n = 144

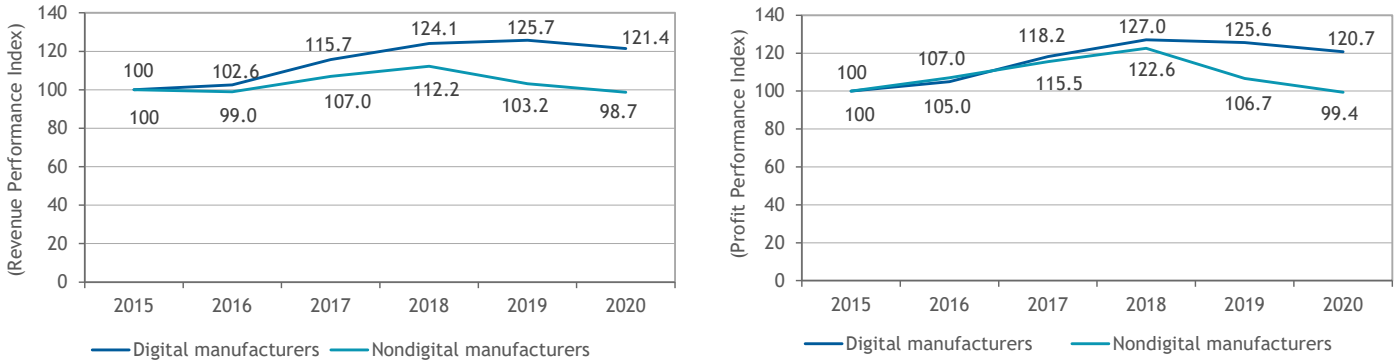
Source: IDC's Future Enterprise Resiliency and Spending Survey, September 2021

However, some manufacturers had already made investments in modernizing their operations and offerings, improving their ability to respond more effectively. As a result, a "digital divide" exists between early adopters and those just now modernizing, with digital manufacturers feeling less of an impact and further along in their recovery efforts. These manufacturers are now focused on innovating and trying to capture market share, while nondigital-enabled manufacturers are still focused on cost-cutting initiatives and selling off high-risk projects.

Benefits

Digitization has long been the backbone of operational effectiveness for manufacturers. IDC's recent *Digital Manufacturing Study* of 680 publicly traded manufacturers highlights the clear advantage that accrues over time for organizations that embrace digitization. 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 decreases of 9% in RPI and 2% in PPI. While it is no surprise that the manufacturing industry as a whole saw a dip throughout 2020, digital manufacturers were less impacted by COVID-19 than their nondigital counterparts. This highlights the important fact that digital technology inhibits the impact of disruption (see Figure 2), which is why there is such a large shift in thinking among manufacturers in terms of a digital-first mindset.

FIGURE 2: ***Digital Initiatives Impact the Top Line and the Bottom Line***



n = 668

Source: IDC's Digital Manufacturing Study, 2021

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. The question nondigital manufacturers need to ask themselves is, How much longer can we wait? The more time that passes without taking any action, 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.

While many manufacturers realize the importance of becoming digital and more data driven, many still lack the expertise to build out a road map and execute on it. Manufacturers have been combating a growing talent gap across their organizations for years. Many lack the necessary resources and knowledge around data architecture, data science, and cybersecurity to take advantage of the latest technology. Working with partners that can help with developing the digital road map and execution is an important step that the industry has started to embrace. However, even with a strong digital plan in place, there are significant external and internal challenges to becoming a resilient organization. Perhaps one of the most important aspects of the entire transformation process is setting priorities for digital initiatives. Manufacturers have consistently cited the following priorities as focus areas:

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- **Smart manufacturing/Industry 4.0.** Asset management is a core aspect of smart manufacturing, and transforming this process through remote monitoring, control, and predictive analytics can serve as the foundation for operational resiliency. For manufacturers that have proper data and artificial intelligence (AI) frameworks such as digital twins in place, transforming asset management can also lead to control and autonomous operations that support resilient decision making. Asset-intensive manufacturers in particular start here with their transformation efforts.

- **Supply chain planning and execution.** Disruptions in the supply chain have been a regular occurrence over the past 18 months. Supply chain resiliency will allow manufacturers to react more quickly to internal and external events and speed "time to recovery" for larger disruptions. By the end of 2021, more than half of all manufacturing supply chains had invested in supply chain resiliency and artificial intelligence, resulting in productivity improvements of up to 15%.
- **Product and service innovation.** The offerings that manufacturers can bring to market are transforming as well. A top focus for many companies is the incorporation of digital technology into products and the development of new value-add services. The driver behind this product/service focus is the fact that competition has never been higher, which in turn makes differentiation a challenge. By innovating the products and services being offered, manufacturers will grow market share through improved customer experience and allow for traditional business models to be transformed as well.

No matter where a manufacturer starts its digital transformation (DX) efforts, the importance of digital technology across all of these priorities is what will enable true transformation.

Considering HCL Technologies

HCL Technologies is a next-generation global technology company that helps enterprises reimagine their businesses for the digital age. HCL Technologies' products and services are built on four decades of innovation, with a world-renowned management philosophy, a strong culture of invention and risk-taking, and a relentless focus on customer relationships. HCL is headquartered in Noida, Uttar Pradesh, India. The company is a subsidiary of HCL Enterprise, and it was spun out as an independent company in 1991. HCL has over 197,000 employees with more than 215 delivery centers and 60 innovation labs globally. HCL Technologies has been working with manufacturing industry customers for over 40 years across all segments and regions. With over 40 years of experience in managing manufacturing organizations across the globe, HCL Technologies is focused on helping customers transform their traditional business processes into next-generation digital enterprises better prepared to respond to disruption. HCL Technologies recently announced its MVision framework, which is geared to help manufacturers better navigate today's rapidly changing business environment. MVision is built on an industry-led design thinking model, which helps manufacturers progressively think through new ways to reshape their products, digital journey, business, and operations. HCL's MVision framework is built for manufacturers preparing to become hyper-connected enterprises by helping organizations transform across four pillars (Business, Digital, Operations, Engineering) powered by HCL's MVision Nucleus framework:

- **MVision for Business.** Given the significant shift in thinking among manufacturers in terms of a digital-first mindset, HCL, through its MVision for Business, provides a platform to institutionalize changes focused on productivity and competitiveness. Innovation-led business strategy consulting drives transformation at the grassroots level through advisory services for digital adoption and literacy. MVision for Business ensures that transformation comes with experience-driven business processes, allowing manufacturers to achieve their goals while controlling costs.

- **MVision for Digital.** The important fact that every manufacturing organization is evolving through digital technology inhibits the impact of disruption, which is why there is such a large shift in thinking among manufacturers in terms of a digital-first mindset. HCL's MVision for Digital focuses on transforming manufacturers into insight-driven and customer-centric organizations. This is accomplished by defining the digital strategy and road map; adapting and responding to security risks; executing, monitoring, and controlling digital initiatives; and providing ongoing assessment review programs to ensure that results are being achieved. MVision for Digital powered by HCL's Fenix 2.0 framework helps manufacturers develop and execute on their digital strategy road map through innovative solutions.
- **MVision for Operations.** While the manufacturing industry builds on its digital strategy, it's important that a pragmatic approach to capital and operational spend control is followed. HCL's MVision for Operations powered by the ASM 2.0 framework allows businesses to converge process, people, and technology to provide better enterprise insights while ensuring all the levers are employed to automate business and IT processes through catalog-based technologies to reduce cost. A converged operating model helps organizations create context-aware operations in transforming to "as a service" models, which reduce operating costs, improve efficiency, and enhance quality. HCL's MVision for Operations is focused on infrastructure modernization, continuous improvement, and delivering more predictive operations by utilizing varying levels of automation, end-to-end observability, and AI-driven decision-making.
- **MVision for Engineering.** The manufacturing industry is not new to change, as manufacturers' top focus is the incorporation of digital technology into products and the development of new value-add services. But with the hyper-converged economy, consumers are driving innovation for new products, resulting in personalized and social media driven products. Through MVision for Engineering, HCL Technologies is helping manufacturing organizations adopt digital practices and trends across businesses and divisions, bringing together control monitoring and physical systems through technologies such as IoT, 3D printing, 5G, sustainability, worker safety, and track and trace built on Industry 4.0 principles. HCL Technologies understands the importance of product engineering, R&D, and IIoT, and therefore Industry 4.0 becomes a necessity to its customers. Product engineering, scalability, and agility can be improved by working with HCL Technologies' R&D centers of excellence. The company helps its customers accelerate product development by leveraging the latest technologies, monetizing product services, and providing immersive customer experiences. Through MVision for Engineering, HCL Technologies helps customers hyper-automate operations in design, manufacturing, supply chain, and the aftermarket with a vision for autonomous factories and a connected ecosystem.

MVision Nucleus, which is the heartbeat of the transformation, creates a hyper-connected environment through the HCL Technologies Industry 4.0 framework, helping manufacturers establish a road map to develop and adopt strategies for smart products, smart manufacturing, smart supply chains, smart aftermarket experiences, smart services, smart facilities, smart operations, and smart workforces to create a converged intelligent value chain.

Challenges

As industry complexity continues to increase, manufacturing organizations will be under tremendous pressure to become more innovative, market driven, and agile. As with any digital transformation project that can start within a manufacturer, being caught in "pilot purgatory" is always a challenge to consider. HCL MVision helps customers manage this complexity while delivering value and support to numerous functional groups/stakeholders across manufacturing. HCL Technologies continues to expand its partnerships and relationships outside of the IT organization, as the line of business is involved or

taking the lead in a larger share of these transformation projects. Operations in particular will be an important area for HCL Technologies to target as IT/OT convergence and Industry 4.0 will serve as the foundation for operational resiliency. Executing on a framework such as MVision will require both technical expertise and industry expertise, which are in limited supply. HCL Technologies must continue to focus on talent acquisition to achieve its industry goals.

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. The improvements that can be realized through data-driven decision-making are too important to overlook. However, using data to make decisions requires that the proper digital foundation be in place, something many manufacturers currently lack. Given the complexities of managing the increasing amounts of data from products, operations, and ecosystems, manufacturers should consider working with a partner that can help them modernize their business and turn their DX pilots into full-scale deployments.

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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