

MANUFACTURERS DISRUPTING THEMSELVES

Increased competitiveness
and resiliency through

**NEXT
GENERATION
MANUFACTURING**

Manufacturers
ALLIANCE
FOUNDATION

Roland
Berger



Survey methodology

Roland Berger and Manufacturers Alliance conducted C-level interviews and an online survey, from January 19th to February 17th 2023, with 155 respondents from dozens of manufacturing companies, primarily headquartered in North America. The largest share of our sample (49%) came from companies with 1,000–10,000 employees. Companies with 10,001–20,000 represented 27% and companies with more than 20,000 employees represented 15%. In terms of revenue, 44% were companies with annual revenues greater than USD 3.01 billion, and 34% were companies with revenues of USD 1.01–3.0 billion. The remainder (23%) were less than USD 1 billion.

Our C-level interviews were conducted by Roland Berger and Manufacturers Alliance from February 16th to March 20th, 2023, with subject matter experts in finance, strategy, and manufacturing operations. Experts were selected from both inside and outside the Manufacturers Alliance membership community.

Key findings

Business model innovation has come to manufacturing

Digitalization is table stakes for competitiveness and a prerequisite for sustainability

Reshoring and localization are gaining traction

Technology leaders are much more likely to pursue lot-size-one or individualized manufacturing

- **Following in the footsteps of other sectors, manufacturing is increasingly looking at business model innovation instead of strictly focusing on product innovation. Additional sources of growth include new solutions, differentiation through software, and novel services.**
- **Manufacturers rank digitalization and sustainability as the most relevant and important trends. They are investing and making progress in both areas with long-term goals in mind. The daunting nature of handling these two massive trends has been replaced by the realization that, when done right, they solve each other.**
- **More manufacturers are pursuing localization and reshoring to the Americas to increase customer intimacy, reduce geopolitical risk, and shorten supply chains. Not only are they investing in the Americas, but they are also investing in greenfield sites. Localization also spurs progress in the customization of products to meet the needs of individual customers, including presenting regional offerings.**
- **The faster manufacturers embrace digitalization and adopt new technologies, the greater their appetite to deliver individualized and/or customized products to their customers.**

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Executive summary

A time of exponential change has come to US manufacturing and companies are future-proofing their operations as well as their products. They are investing for the long haul, regardless of current economic and geopolitical disruptions. To gain a better understanding of shifting priorities, Manufacturers Alliance and Roland Berger recently partnered to look at six key trends affecting manufacturing today.

Our survey and interviews identified an appetite for investment and change. Companies are harnessing the natural synergy between digitalization and sustainability to speed up progress in both areas. They are taking a hard look at what they make, how they make it, and why. Business model innovation is becoming more important in a sector that has traditionally focused on product innovation for competitive differentiation. Manufacturers are also reconsidering the value of location, placing operations closer to customers and suppliers. Customization is more important than ever, with many manufacturers aspiring to achieve lot-size-one or individualized products. They are bullish on the US as a manufacturing location and — after decades of outsourcing — have a heightened appreciation for the role of the manufacturing process itself and its ability to deliver long-term competitive advantage.

Opening the aperture

Manufacturing executives must be agile at the best of times. But with today's hypersonic speed of change, the hallmark of successful leaders might sooner be their ability to perceive an array of trends affecting their business, and then to combine them into a cohesive strategy and a pragmatic set of solutions.

The global and US manufacturing sector is still reeling from system-wide failures in supply chains, logistics challenges, ongoing talent shortages, and mercurial consumer demand. Add to that the new US industrial policy which blends sustainability, strategic sourcing, and manufacturing competitiveness goals into an unprecedented package of incentives for manufacturing in the US. Forty-year highs in inflation, the strong dollar, and the threat of an economic downturn are also part of the macroeconomic mix. Suddenly, Industry 4.0 looks easy in isolation.

To better understand how manufacturers are making sense of it all, we looked specifically at six interlocking trends of most relevance to manufacturing today. They include sustainability, digitalization, geopolitical risk, localization of production and/or supply chains, customization of products, and industry disruption (including new business models, technology disruption, talent shortages). It is key to note that respondents indicated each of the six trends will all play pivotal roles in the future of manufacturing and are intrinsically linked and interconnected.

Our research surveyed over 150 US-based mid-Cap to large-Cap manufacturing companies, as well as interviews with executives representing a variety of company sizes and industries. Our top-level findings reveal an appetite to invest in strategic change among manufacturers.

More companies are embracing digitalization and sustainability as a cornerstone of their strategy and arriving at business model innovations to unlock growth. Reshoring to the Americas is back on the table, with a surprisingly high number of companies planning to break ground on new factories. When combined with digitalization, localization builds customer and supplier intimacy, enables customization, and feeds the R&D pipeline. With this powerful ecosystem at work, innovation fuels the competitiveness of the entire sector and nation.

The purpose of this research is to share how manufacturers are prioritizing each topic in their operations as well as in their go-forward strategy. Questions that were top of mind at the outset included:

- **Which trends have most resonance today?**
- **Where has the most progress been made?**
- **Where have manufacturers successfully blended solutions?**
- **Where are they stalled?**

The answers were surprising in some cases, especially in terms of the appetite for change, impatience with the rate of progress, and the commitment to staying the course for the long term.

Manufacturers making the most progress are the ones that have figured out how to weave the opportunities, surprises, and exigencies of the day into a coherent strategy. Therein lies a competitive advantage that might mean the difference between muddling through and being an industry leader. —

Six key next generation manufacturing trends



**Industry
disruption at
the forefront**



**Importance of
localization**



**Transformation
to mass
customization**



**Sustainability
is here to stay**



**Digitalize
to win**



**Rising
geopolitical
risk**

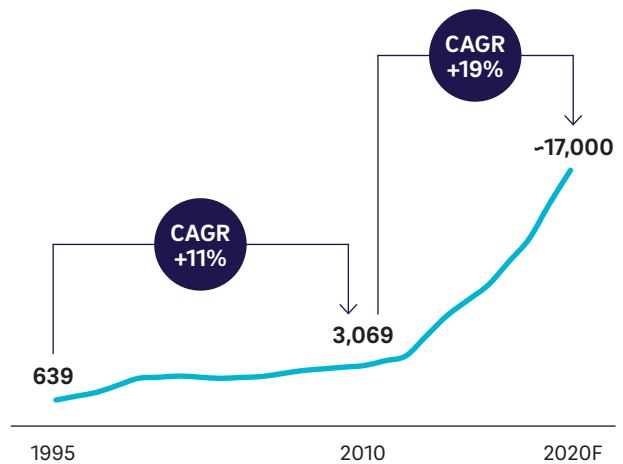
Digitalization and sustainability are targets of significant investments and show substantial progress



There has been a considerable investment uptick in both digitalization and sustainability over the last two years. According to *The Wall Street Journal*, more than 70% of companies are planning to increase their sustainability investment in 2023. And those investments are paying off in terms of increasing productivity, reducing waste, and innovating new business models. Of all the six next generation manufacturing (NGM) trends, manufacturing executives said digitalization and sustainability are the areas where they have made the most progress, identifying these as a significant piece if not cornerstones of their strategy and actions. → A

Several companies mentioned sustainability milestones such as replacing coal-fired boilers with alternative fuels, adding solar, and making net-zero carbon emissions commitments for the first time. Reducing carbon emissions, material selection, and waste and water management were identified as important or very important by 78% of respondents as well. In fact, new technologies to address sustainability cannot get here soon enough. As Dan Krawczyk, President and Board Member of Huber Engineered Materials told us, “Just getting technology to catch up with the sustainability aspirations is key. Hydrogen fuel and gas recapture are [powerful solutions], but the technology is too immature for practical application in commercial settings. In other words, it’s not a lack of will, I think it’s a lack of technology.” → B ▶

A Boost in sustainable and responsible investing
Assets under management in the US [USD bn]



Source: BlackRock, Roland Berger

In many cases, the pace can be quickened as manufacturers tap into the natural synergy between digitalization and sustainability. Digitally-driven “cradle-to-cradle” product innovation dovetails nicely with an emphasis on circular economy. Likewise, the transparency that companies gain by deploying digital solutions gives them a baseline for setting sustainability goals and making better business decisions. One diversified industrials leader talked about taking advantage of the “overlap between digital and sustainability to automate processes and remove steps — steps that were based on old ways of doing things (having a human look at something versus a computer). Cutting out waste is a great thing for the environment and it’s also great for the bottom line.”

Companies are increasingly linking incentive compensation to sustainability performance and ESG metrics as a whole. Raymond Boufford, Vice President of Minority Supplier Development and Business Transformation at Forvia told us, “Forvia is all in on sustainability. A portion of every senior leader’s bonus is based on our carbon neutrality results. We have created a leadership team in each region that has a

strict carbon neutrality purpose. Furthermore we have best in class plants that are leading in sustainability practices and they are teaching the other plants what to do and how to do it.”

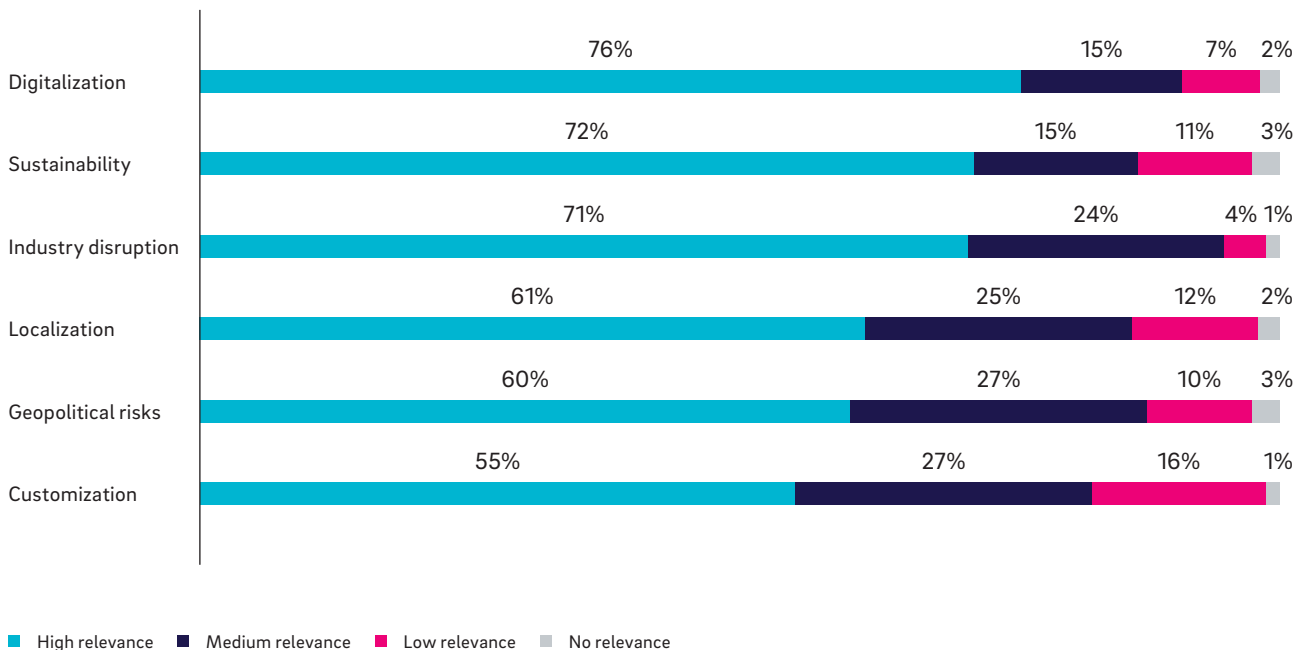
Structuring management incentives around sustainability could be a strong path forward for some companies. However, getting the correct balance of tracking and incentivization can be tricky. There is not a one-size-fits-all solution. The companies’ current performance and timeline for target achievement should be taken into account and clear, measurable, individual actions should align with corporate goals.

Digitalization has become table stakes for competitiveness

After many years of taking a wait-and-see approach, investing in digitalization is now considered table stakes. If you want to succeed in manufacturing, you need to embrace digitalization; and even traditionally low-tech industries are doing just that. As Dan ▶

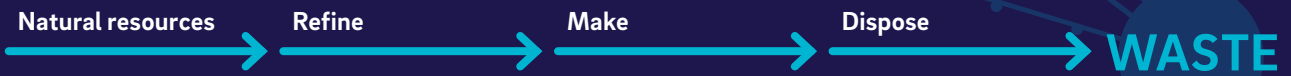
B Manufacturers indicate all six of our NGM trends are highly relevant to their business

For each of the following manufacturing trends, how do you rate the relevance for your manufacturing operations and/or network? [%]



Source: Manufacturing Trends Enhancing Competitiveness survey — Manufacturers Alliance, Roland Berger

From a linear chain ...



Benefits from transforming to a circular approach

COMPLY WITH REGULATIONS

- Proactive approach to address and anticipate major areas of environmental regulations
- Avoidance of penalties related to unfulfilling of requirements

LEVERAGE OPPORTUNITIES

- Flexibility to transform the business model to changing external factors (e.g., sell services rather than a product)

STRENGTHEN DIGITALIZATION

- Digitalization as a catalyst of circular flows leading to improved end-to-end operational processes (e.g., productivity increase)

MITIGATE OPERATIONAL RISKS

- Circular supply approach results in certainty in the material supply as resource markets are highly volatile (availability and prices)
- Bottom-line improvement through improved operations (re-usage, reduced scrap, etc.)

IMPROVE BRAND ATTRACTIVENESS

- Competitive advantage by addressing focus topics of the society reaching a wider range of customers (e.g., eco-friendly consumers and/or investors)

Source: Roland Berger

Krawczyk put it: “We run large crushing and grinding operations that have typically not been instrumented. The product itself sometimes sells for USD 25 per ton, so it has been difficult to justify digitalization.”

Now that is changing. “As we continue to shift toward specialty products, digitalization is becoming more and more important, especially on our high volume, capacity constrained products,” Krawczyk continued.

And for those companies that started pioneering digitalization projects more than a decade ago, the results speak for themselves. A great example is the Siemens factory in Amberg, Germany. It opened in 1990 on a relatively small footprint (10,000 square meters) with a workforce of about 1,300. Since then, thanks to digitalization, the plant has increased its productivity 14-fold with roughly the same footprint and staffing. “The key is designing and ▶

manufacturing a product on a common backbone,” said Raj Batra, President of Siemens Digital Industries US. “This plant is producing one product every second — 17 million per year — with a quality standard of 99.999%,” Batra added. It has been recognized by the World Economic Forum as a global lighthouse factory, as has its clone in Chengdu, China, which Siemens opened in 2013.

Digitalization makes stories like this possible, which is why so many companies are embracing digital solutions. When presented with a list of digital sub-trends of importance to their operations, there was resounding agreement that almost everything is important. In most cases, there was very little variation by industry, company size, or revenue with one notable exception — companies that consider themselves innovation leaders view enterprise cloud development as significantly more important to their business than their less cutting-edge peers. → C

By investing in digital technologies, industrial companies are placing more emphasis on creating new business models. They are putting digital investments to work by monetizing new solutions and services. It is both a growth strategy and a risk mitigation strategy

"The commitments we are making today reflect our conviction that all investors [...] must seriously consider sustainability in their investments."

LARRY FINK, CEO BLACKROCK

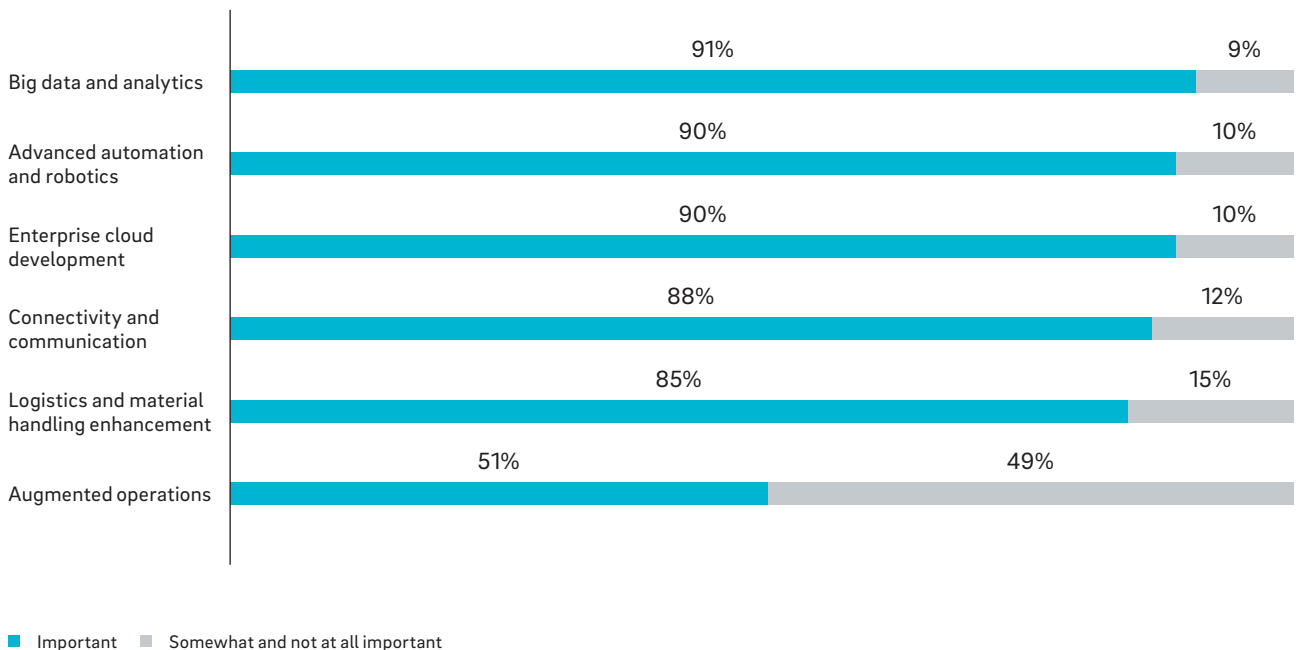
Excerpt from Sustainability as BlackRock's New Standard for Investing

whereby they are inoculating themselves against the next calamity by having stable revenue streams and less customer churn.

In most cases, it's not a matter of replacing one business model with another, but rather adding new offerings in adjacent or completely new markets. A great example of business model innovation is the work being done by Sealed Air, a leader in automated packaging solutions. One of their flagship innovations, prismaiq™, enables companies to label their ▶

C Manufacturers see digitalization important to their success

How important is each bucket/sub-trend to your organization? [%]



Source: Manufacturing Trends Enhancing Competitiveness survey — Manufacturers Alliance, Roland Berger

products with a digital code. But this isn't your grandfather's QR code, which typically takes consumers to a generic website. This smart packaging solution provides full track and trace capability including authenticating each individual package.

The code is linked to the product's digital twin residing in the cloud. It can provide different information for each scan depending on the time, the day of the week, and the scan location. For example, a food and beverage company using this solution could send personalized information to a consumer in Florida while sending a different set of information to a consumer in Idaho. It's a dynamic mix that can include everything from recipes and coupons to product recalls and authentication.

Smart packaging is bringing digital value to physical products, driving new levels of consumer engagement, and providing access to valuable data and analytics about what matters most to the shopper. For Sealed Air, this new business model involves designing, printing, connecting to the cloud, and enabling big data analytics from each individual package scan which can be the basis for insights and informed decisions. This brings Sealed Air that much closer to its customers' business whether they're in the food and beverage space, retail, or something else.

The pace of progress is astounding but it cannot go fast enough according to some manufacturers. Will Durfee, Senior Vice President of Global Operations at Hexagon said, "We want to do it as fast as we can, but we also have a business to run, so it's a balancing act between progress and what the business can handle without slowing us down too much in the marketplace." It is less a matter of exogenous constraints and more a matter of giving customers the digital solutions that they want without throwing internal process into disarray.

The internal aspect also came up in our conversation with a manufacturing executive we spoke with. With more than 100 manufacturing sites around the world, the executive is looking for ways to pace an investment of this magnitude. Even for a nearly USD 30 billion company the idea of a rip and replace modernization simply does not make sense. Next generation manufacturers show strong business cases and clear returns on investment are key elements for successful digital transformations. —

TECHNOLOGY ENABLERS



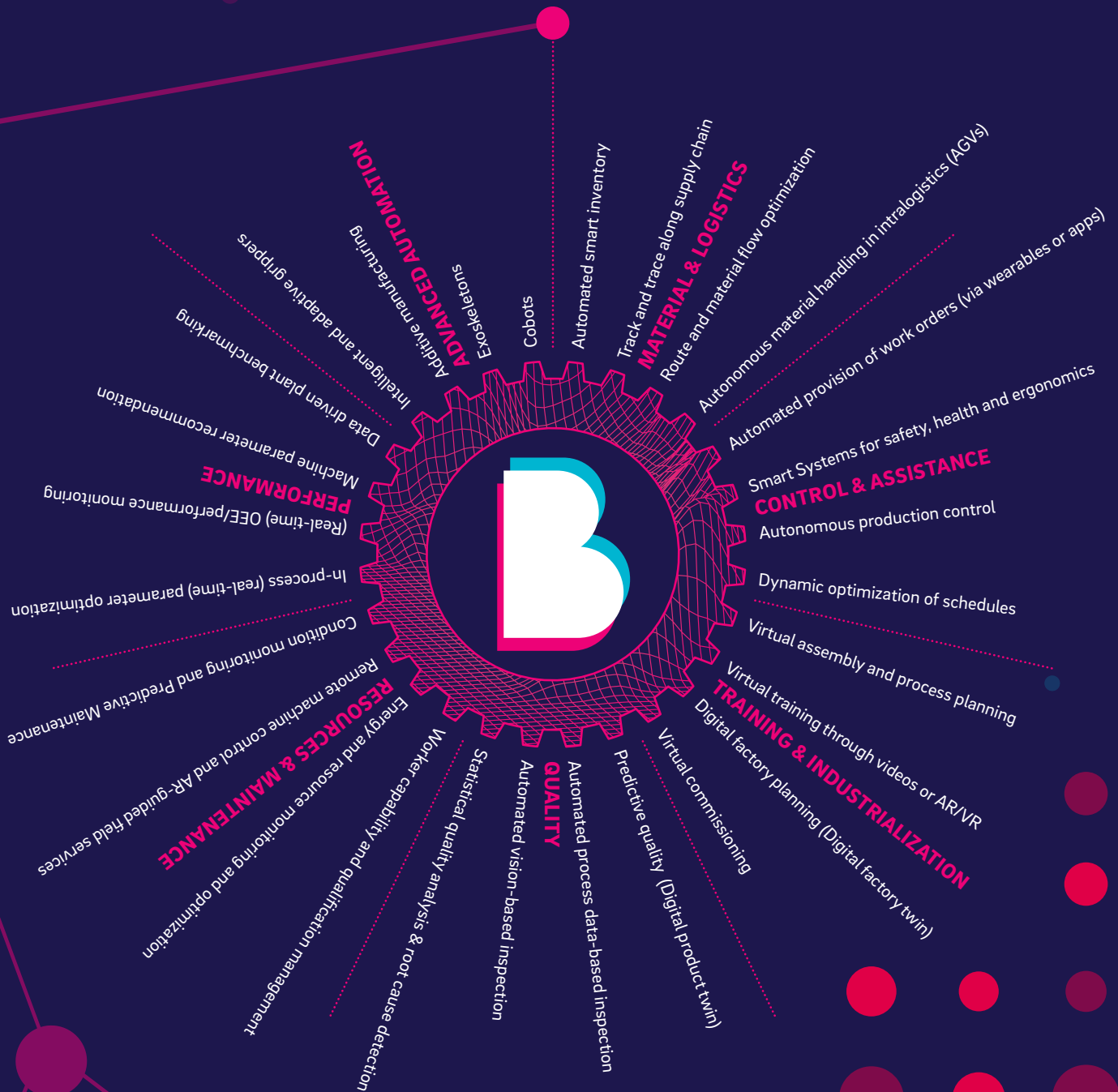
INDUSTRY 4.0 USE CASE LANDSCAPE



ORGANIZATIONAL ENABLERS



HOLISTIC VIEW OF DIGITAL PRODUCTION



Manufacturers are embracing localization to increase customer intimacy, reduce risk



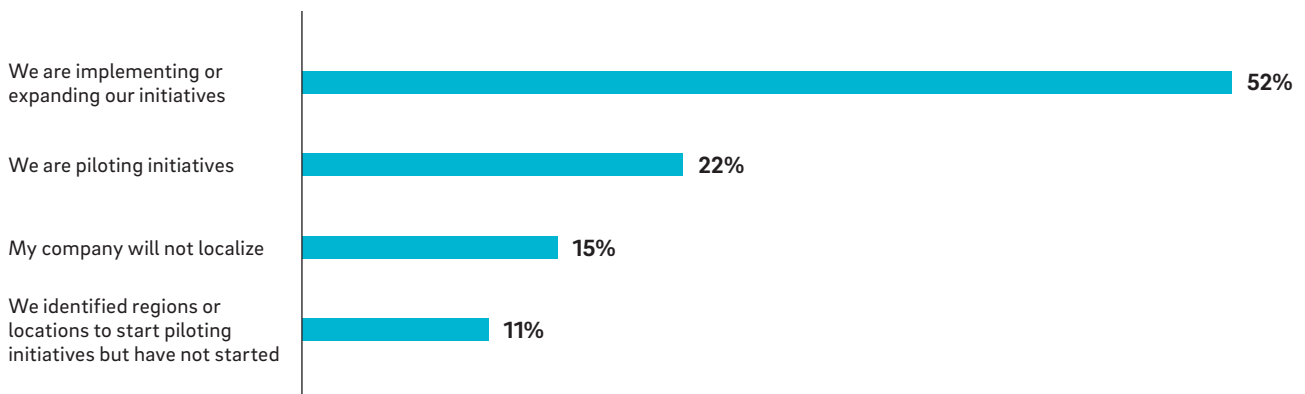
regionalization of supply chains and/or production, product origin importance for customers, availability of critical input factors,” is a trend on which manufacturers have increased focus. A full 52% told us that they are implementing or expanding localization initiatives, while an additional 22% said they were piloting initiatives. Many are limiting relocation to specific functions or products. → **D**

The idea of locating manufacturing within the market it serves is taking on new importance in the wake of surging transportation costs, trade wars, accelerated pace of climate events, and broken supply chains. Localization, which the survey defined as “the

When we asked those moving forward with localization about the chief factors driving their decision making, respondents identified closeness to market, customers, and suppliers as top concerns. This might seem obvious but for the fact it was ►

D Manufacturers are actively localizing their production and/or supply chain

Rate the level of progress your organization has made with its plans to localize manufacturing and/or supply chain [%]



Source: Manufacturing Trends Enhancing Competitiveness survey — Manufacturers Alliance, Roland Berger

not a concern during three decades of offshoring to low-cost locations far away from customers and suppliers. The economic and political climate of the manufacturing host country also figures increasingly into the equation, reflecting the desire for stability, security, and predictability.

Ribbon cuttings and shiny new factories

When asked where they are localizing, a little over a third identified the US, Canada, and Mexico as their destination. A surprising 52% plan to build new facilities as part of their relocation strategy — a trend that is borne out by the frequency of new factory and factory expansion announcements over the last two years. We saw a direct correlation between revenue and interest in greenfield investments, with high revenue companies more likely to invest than those lower on the revenue spectrum. → E

In the US, the federal government is offering tax breaks and other incentives for building things like EVs, pharmaceuticals, and semiconductors as part of its new industrial policy. In addition to federal incentives we have witnessed a surge in state subsidy packages going to manufacturers. Those are the carrots. But there is also the stick of “Buy American” policies whereby the US government flexes its vast purchasing power through stricter made-in-USA content requirements for manufacturers selling to the federal government. Additional legislation is moving through Congress in the form of the “Invent Here, Make Here for Homeland Security Act” which addresses where products invented as a result of Department of Homeland Security Science and Technology Directorate funding can be made.

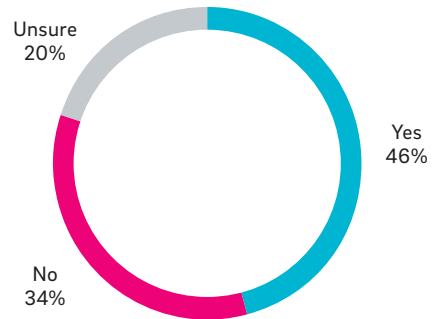
“When it comes to investments, we closed some manufacturing plants outside of the United States and we opened more there. America is definitely a big topic right now, especially in light of the infrastructure bill and the government’s policies,” an executive from a German smart mobility company told us. “When it comes to specific assets, we prefer them to be in the US at the moment.”

As Raj Batra of Siemens put it, “We never had the notion in the US that manufacturing is a competitive weapon. The basis for being a good business leader

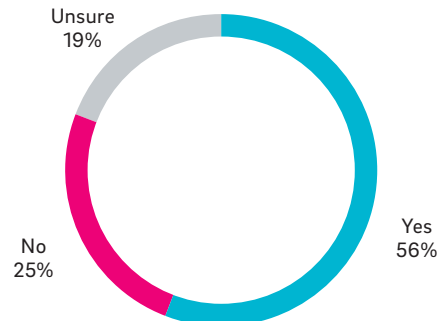
E Over half of manufacturers indicate greenfield sites are a critical component of their footprint strategy

Is your organization planning to build new facilities as part of their relocation strategy? [%]

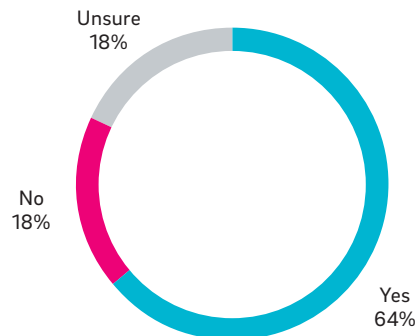
Less than USD 3 bn



USD 3.01 bn to USD 10 bn



Greater than USD 10 bn



Source: Manufacturing Trends Enhancing Competitiveness survey – Manufacturers Alliance, Roland Berger

back 20 or 30 years ago was the number of low-cost countries you produce in. And if it wasn't enough, your board was probably asking you, 'Well, how come you don't produce in low-cost countries?'" But times change and so do priorities. Now manufacturing is a company- and country-level imperative — with many starting to view manufacturing capabilities as a strategic weapon.

Skilled talent and labor costs — past may not be prologue

Historically, the shortage of skilled talent and relatively high labor costs have impeded localization to North America, but those concerns are receding as well. Access to talent was relatively low on the list of factors being considered either for or against localization. The price of labor and other costs such as duties and taxes did not figure prominently in the equation among those moving forward with localization

This data point aligns with rising Chinese wages and with theories that the recent surge in CapEx might mean localization replaces overseas labor with advanced technologies rather than an

"We never had the notion in the US that manufacturing is a competitive weapon. The basis for being a good business leader back 20 or 30 years ago was the number of low-cost countries you produce in."

**RAJ BATRA, PRESIDENT OF
DIGITAL INDUSTRIES, SIEMENS**

"We've always had a 'build where you use' or 'local-for-local' strategy."

HEAD OF MANUFACTURING

equivalent number of local employees. Our survey bore this out. When asked about the impact of rising geopolitical risk on manufacturing, respondents identified reshoring and pressure to automate as two salient trends. Local-for-local strategy is gaining traction based on the interviews we conducted. "We've always had a 'build where you use' or 'local-for-local' strategy," a manufacturing executive told us. "Obviously, I'm not going to make a large machine in all five regions of the world. But then again, I don't really want to ship a large machine all around the world either. So, we do make it in more than one place," they added.

At Hexagon, the selection of manufacturing location is a matter of product size, specialization, and volume. "In Europe, we have some specialty factories that make a niche product and serve the world," Will Durfee told us. For products that are large in size and/or high volume, such as Hexagon's CMM metrology solutions, having regional manufacturing locations makes the most sense.

Hexagon's supply chain strategy has relied on dual sourcing for some time, which served them well during the recent supply chain disruptions. "We've had a strategy well before the problems between US and China or the problems with Ukraine and Russia. Our strategy has been — if it is a critical part to us — it is dual sourced in two separate regions and two separate currencies," Durfee said. ■



Customization and the holy grail of lot-size-one manufacturing

Many manufacturers are pursuing a local-for-local strategy based not only on the difficulty and cost of shipping a large product, but also because of local market preferences and demand for specific functionalities. Customization comes into play to meet specific customer requirements.

Customization initiatives and pilots are already being planned, underway, or expanding at 78% of companies. Only 8% have evaluated and rejected options for customization, in many cases because of the lack of a compelling business case. → F

Modularization is the most common form of customization with 43% of survey respondents currently taking this approach. A smaller but still substantial number, 34%, are pursuing fully individualized manufacturing approaches, with the goal of “lot-size-one” (producing a single item), the exact opposite of traditional mass production. Significantly, among companies that consider themselves early adopters, that figure jumps to 54% pursuing individualized manufacturing.

Digitalization is playing an important role in progress toward mass customization. It opens possibilities for new products, solutions, and services that never existed before, while also making

them easier to deploy. A great example is the work being done by Hexagon. As Will Durfee told us, “I think every manufacturer would love just producing the black Model T every single time. But each customer is different, and we do not build much that you would consider a standard product.” Much of what Hexagon currently builds is based on a product configurator with hundreds of parameters defining the final functionality of the machine.

The future, however, lies in the software, which is driving business model innovation. “We’re trying to build more customization within the firmware and software so that we can turn off and on specific features and functionality. For instance, if a customer wants a certain accuracy level, we don’t have to build a separate machine. We can turn on certain features within the firmware of the machine’s controller that allow it to deliver more accuracy. For us, that’s the future for our customization.”

To achieve this goal, Hexagon has become a software engineer-heavy organization. “There are many more engineers on the software and firmware side than there are on the hardware side. And it will continue to evolve in that direction,” according to Durfee. The feeling is, the frontiers for breakthroughs on the ▶

hardware platform have been explored and largely conquered, but the sky's the limit when it comes to new software functionality.

At the heart of the customization question is a deeper understanding of customer needs. When we asked how manufacturers are adapting their portfolios to meet customer needs, being more attentive to customers popped up several times. Listening to customers more closely and conducting formal 'Voice of the Customer' research with their top customers help manufacturers understand what forces are impacting their customer's business and how to fill any gaps with products, solutions, or services.

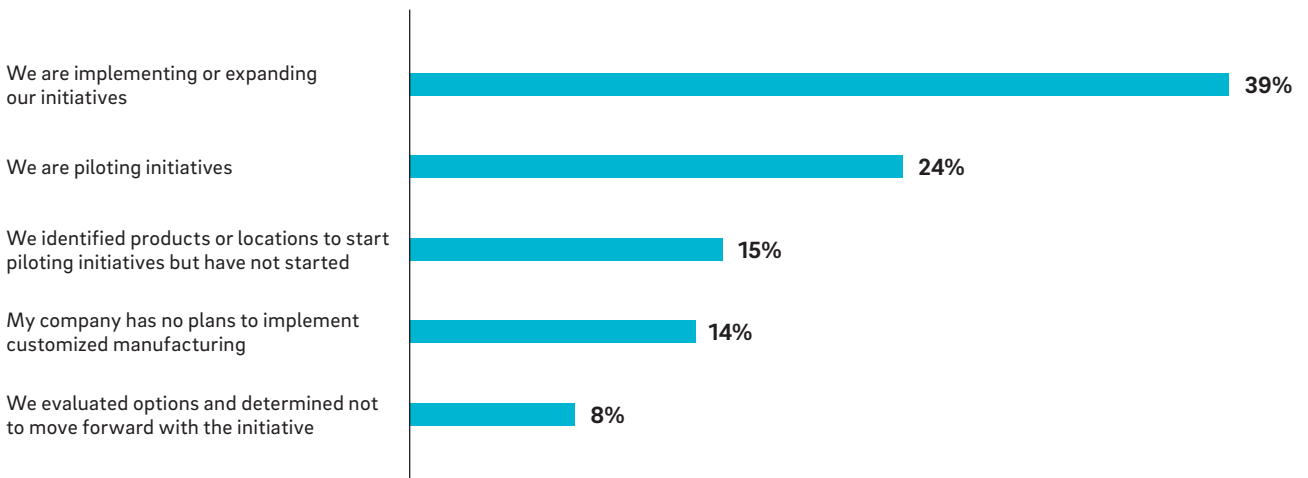
Customization and localization are overlapping and reinforcing trends. Being local fosters more collaboration between manufacturer and customer, with proven spillover effects for innovation, especially when the manufacturer's R&D department can be part of the conversation. Chatting around the watercooler about how a product is performing (or not performing) and/or learning about surprising ways a customer may be using it delivers priceless insight for the manufacturer. One manufacturer told us about sharing innovations with early adopters and encouraging them to provide

input and further refinement. The result can be not only better products, but entirely new offerings and even new business models, as we saw in the case of Sealed Air's smart packaging solution and Hexagon's software-defined features.

Things come full circle when manufacturers can customize their products based on analysis of actual usage data. Indeed, some are harnessing customer data to develop entirely new products and services. Digitalization makes this possible because of the inherent circularity of cradle-to-cradle product development. The data tsunami makes the possibilities endless. —

F Manufacturers are already shifting towards customized manufacturing (with customer intimacy and demand driving investment)

Rate the level of progress your organization has with its plans to implement customized (individualized) manufacturing (i.e., modular design, pricing strategy, SKU management) [%]



Source: Manufacturing Trends Enhancing Competitiveness survey — Manufacturers Alliance, Roland Berger

New levels of geopolitical uncertainty — balancing risk against opportunity



Looking out over the geopolitical landscape and the potential impacts on their companies or the industry as a whole, manufacturers are evaluating their existing footprint and considering strategic moves. They are mapping risks and opportunities while simultaneously developing proactive scenarios and contingency plans in the event of supply chain disruptions, conflicts, tariffs, or changing labor laws. Scenario planning is making a comeback.

The most frequently mentioned hot spots were the Russian aggression against Ukraine and the tensions between the West and China including the US-China trade war that started in 2018 with most tariffs still in place. Some have exited Russia, others

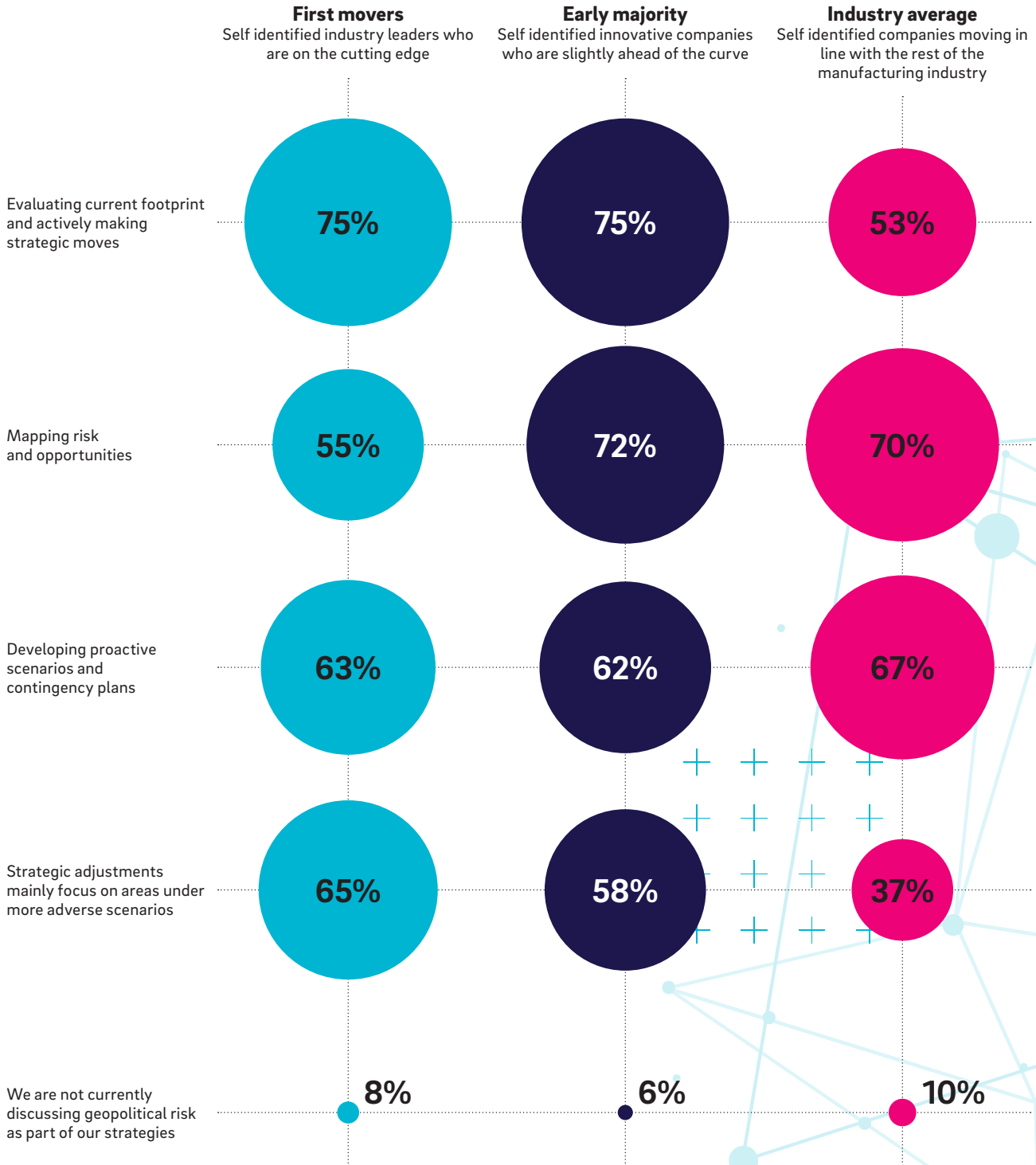
have remained, and still others are using profits from Russian operations to support Ukraine. A manufacturing executive mentioned the challenges of making sure that products, aftermarket orders, and part flows do not go to Russia: “It is a complex task to ensure that we do not support Russia, so we’ve done a lot of work around that.”

Companies have much more exposure in China because of both its manufacturing prowess and its market size. For large multinationals, China represents a significant share of sales. Manufacturers are watching the situation in China closely. While most consider China one of the most competitive manufacturing locations in the world currently and expect it to continue to be among the leading manufacturing nations through 2030, it is also considered the country with by far the highest level of geopolitical risk.

The US, on the other hand, is expected to overtake China by 2030 as the leading manufacturing nation globally, according to our survey. This represents the confluence of factors ranging from desire for more proximity to customers in the Americas, shorter supply chains, more political-economic stability, and changing state/federal government incentives. ►

G Manufacturers are implementing wargaming to plan around geopolitical risk

How is your company addressing the impact of geopolitical changes affecting operations? [%]



Source: Manufacturing Trends Enhancing Competitiveness survey – Manufacturers Alliance, Roland Berger

As one manufacturing leader told us, “We have quite a bit of exposure to China, both as an outlet for sale but also in terms of operational footprint. We’re undertaking strategic planning workshops around China to study a range of scenarios so that if something were to happen, there’s already a playbook in place.”

Plan for the worst, hope for the best may be an accurate portrayal. As a manufacturing executive summarized it, “We have numerous manufacturing sites in China, most of them JVs, and some wholly owned. We definitely want to be able to continue working there as long as the political atmosphere allows, but we’re also looking at dual sourcing in terms of supply chains to ensure that if something happens in that market we have other supply chain avenues to be successful.”

For some, the shifting attitudes toward China also represent a tremendous opportunity: “We have seen quite a few customers exiting China and moving their operations to Taiwan, Malaysia, and other APAC countries where we also have a presence. We view this as an opportunity to grow our market share in those places,” Chris Stephens, Senior Vice President and Chief Financial Officer of Sealed Air said.

Being able to take a proactive approach and look for the silver lining in adverse situations is not an option available to all, however. We found that those companies that are looking for opportunities right now tend to also be the ones that have already priced an economic downturn into their forecasts for 2023. Similarly, those that have put plans on hold until after economic conditions stabilize tend to be in fire-fighting mode. This points to a proactive, future-proofing resiliency that leaders are already building into their strategy and operating approach. → G —

Playbook for next generation manufacturers

to increase competitiveness and resiliency





06 Conclusion

Manufacturing leaders are moving exponentially faster and juggling more priorities than ever before. As our interviews made clear, there is a palpable desire, even with this rapid pace, to do even more, sooner. The exponential pace of disruption has become the new benchmark for change within the manufacturing industry. That is why we see leading edge manufacturers strategically investing and plowing ahead.

A key insight from the study is that digitalization is considered a prerequisite for progress in other areas, whether it is sustainability, customization, the creation of new business models, or even resiliency during global shocks (digital twins are indifferent to earthquakes, wars, and pandemics). This enables agility and resiliency in organizations. But to be in that position means not only investing but staying close to customers and suppliers. It is also key to note that respondents indicated each of the six trends (digitalization, sustainability, localization, customization, geopolitical risk, and industry disruption) will all play pivotal roles in the future of manufacturing and are intrinsically linked and interconnected. There is no singular approach or silver bullet. Each company and leader needs to proactively assess the potential challenges and opportunities across each of these areas.

As companies look to become leaders within Next Generation Manufacturing, we see them looking to address **eight key questions**.

It is worth noting there is no singular correct answer to the above questions and no single path forward, but rather each company and sector will face unique challenges in their future and therefore individual playbooks must be developed. In order to best prepare for the future, companies should take a pragmatic look at their long-term strategy, define their overall North Star, and then focus on pivotal steps to move the needle and capitalize on the trends that impact their operations most directly and significantly. And with the muscle memory of living through the pandemic and its aftermath still with us, there is a clear desire to be prepared for the next black swan event now, whether it is a geopolitical catastrophe, a disruptive start-up, or a natural disaster. That means being proactive and agile in approach while investing with long term goals in mind. As we look to the future, these trends will continue to shape and transform the industry as well as the broader ecosystem. It is more important than ever for companies to be strategic about their investment of time, energy, and capital, or run the risk of being overtaken by more visionary competitors. —

1. Do you have a clear view on the key industry drivers and their overall implications to your business? Have you developed and aligned potential future state scenarios?
2. How can your company systematically embed sustainability requirements throughout the entire operation, and can sustainability be used as a strategic tool to customize products and services?
3. Has your company future-proofed your manufacturing footprint? As customers and supply chains look to shift more local, what is the optimal mix and answer for your manufacturing network?
4. Within your organization, does your company have a clear and aligned understanding of potential geopolitical and economic risks? Has your company developed enterprise as well as functional mitigation measures?
5. Is your company leveraging digital technologies to their fullest? Does your company have a comprehensive plan to integrate your IT and OT systems? Is there sufficient buy-in at all levels for an incremental pathway or total transformation?
6. How can your company re-engineer its supplier network to be more resilient, more local, and more sustainable?
7. What new production technologies can manufacturers leverage to boost efficiency and/or extract the most value?
8. How can you use the uncertain world of today to define strategic guardrails? Can this enable new partnerships and/or business model innovation?

About us

ROLAND BERGER is a global management consultancy with offices in all major international markets. Driven by our values of entrepreneurship, excellence, and empathy, we at Roland Berger believe the world needs a new sustainable paradigm that takes the entire value cycle into account. As an independent firm solely owned by our partners, Roland Berger's employees work in cross-competence teams across all relevant industries and business functions, providing the analytic approach and expertise to meet the profound challenges facing our clients and the world.

MANUFACTURERS ALLIANCE FOUNDATION is the 501(c)(3) partner of Manufacturers Alliance. The Alliance Foundation provides educational opportunities for the manufacturing community and its stakeholders through insights, events, and tools for today's most critical business decisions. The Alliance Foundation focuses on talent, technology, digital transformation, and competitiveness. Learn more about the Alliance Foundation: manufacturersalliance.org/foundation

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Cover Illustration: KrulUA / iStock

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