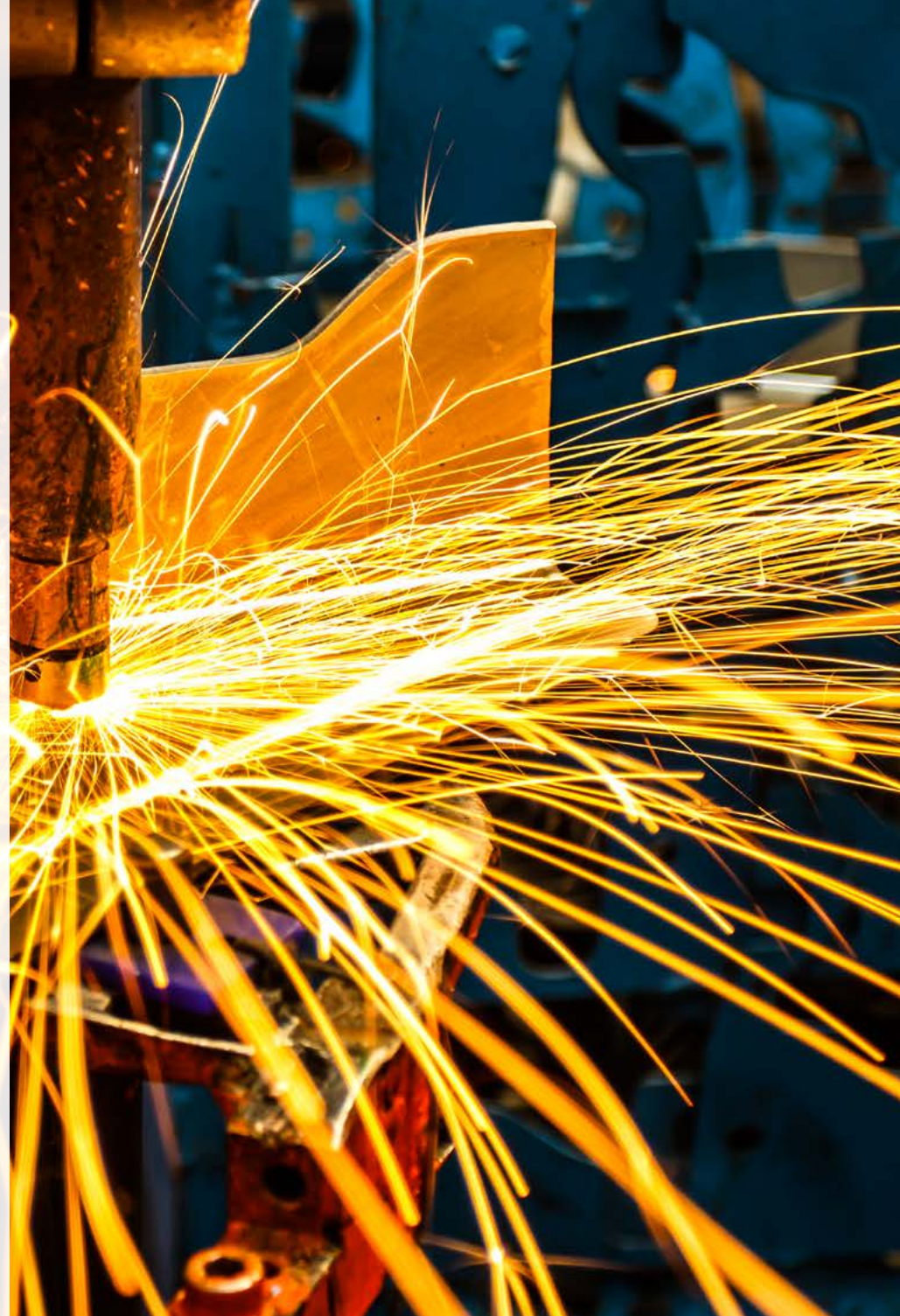


A photograph of two Black men in a factory or industrial setting. They are both wearing blue short-sleeved shirts. The man on the left is wearing glasses and has his right hand raised, gesturing towards a large, curved metallic surface that appears to be part of a machine or a large container. The man on the right is holding a white tablet computer and looking at it. The background is slightly blurred, showing industrial structures and a window. The overall tone is professional and focused on technology in industry.

2021 Industry 4.0 Survey

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The Next Stage of Industry 4.0 Is Here

American manufacturers are entering a new stage of the Industry 4.0 era where their digital investments are beginning to pay dividends. Not all manufacturers have embraced Industry 4.0 equally, however. Those that adopted Industry 4.0 strategies prior to the pandemic were better equipped to navigate its disruptive impacts and are now positioned to reenter growth mode ahead of their less digitally advanced peers.

Over the course of the next six to 12 months, manufacturers' Industry 4.0 priorities will shift from mitigating COVID-19 disruptions to business model innovation and growth. Fifty percent of manufacturers anticipate their digital investments will lead to revenue increases in the next 12 months, according to BDO's **2021 Industry 4.0 Survey**, and nearly half (49%) are planning to add new digital revenue streams.

In its third year, the survey polled 100 C-suite executives at manufacturing organizations across the U.S. about their current Industry 4.0 efforts and future ambitions. The survey found that manufacturers' top Industry 4.0 priority this year is boosting operational efficiencies in their supply chains, followed by improving customer experience. They are also focused on breaking down information silos to increase connectivity in their own organization and with their customers and suppliers.

The survey also revealed that as use of digital tools and solutions accelerated during the pandemic, early Industry 4.0 adopters have begun to achieve breakaway performance. These organizations are more agile, connected and resilient than their less digitally advanced peers, who will be challenged to keep up.

50% of manufacturers anticipate their digital investments will lead to revenue increases in the next 12 months

“

In this new stage of the Industry 4.0 paradigm, success will be determined by manufacturers' ability to continue making bold moves and creating value for themselves and their customers. The organizations that are best positioned to achieve these goals are those that have either kept up with the pace of digital innovation over the last decade, or were born into it. Looking ahead, we are going to see the performance split grow between this group and those that are still skeptical of Industry 4.0's benefits.



ESKANDER YAVAR

Manufacturing National Practice Leader,
BDO USA and National Association of
Manufacturers Board Member

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Industry 4.0 Trends to Watch

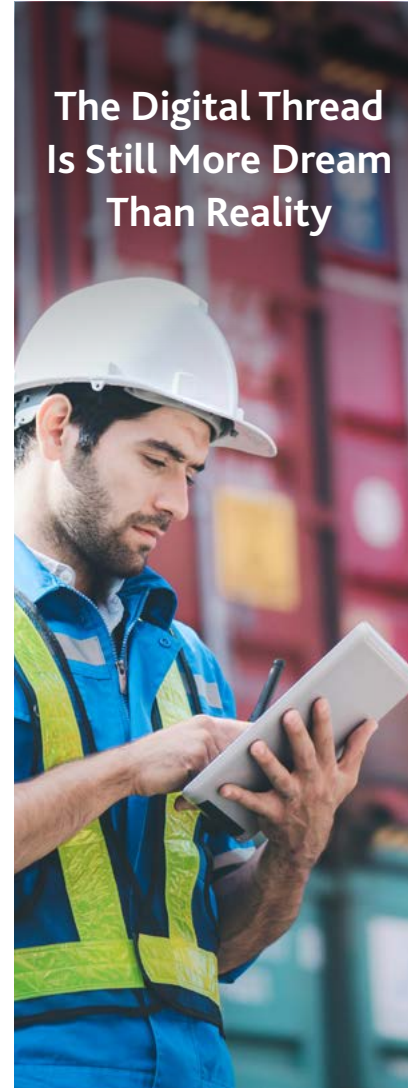
The Digital Divergence Is Growing



Supply Chain: Digitizing but Not Yet Fully Digital



The Digital Thread Is Still More Dream Than Reality



Manufacturers Focus on Customer Experience to Fuel Success



The Digital Divergence Is Growing

The gulf in Industry 4.0 maturity and overall business performance is widening between manufacturers who embraced Industry 4.0 prior to the pandemic and those who have either just begun to implement an Industry 4.0 strategy or are still skeptical of its benefits.

The most digitally advanced manufacturers comprised one group: “**(Re)Born in Digital**” manufacturers, which are either newer companies that integrated Industry 4.0 technologies throughout their operations from their founding or incumbent organizations that have embraced Industry 4.0.

Whether startups or incumbent organizations, the group of less digitally advanced manufacturers are largely “**Legacy**” manufacturers—as fewer of them are implementing an Industry 4.0 strategy and are planning to spend less on their digital investments than (Re)Born in Digital manufacturers. They also have not had as much success to date with their digital investments as (Re)Born in Digital manufacturers.

PROFILE OF (RE)BORN IN DIGITAL MANUFACTURERS VS LEGACY MANUFACTURERS

Percentage of overall respondent pool



24%

(Re)Born in Digital manufacturers
(Implementing against an Industry 4.0 strategy)

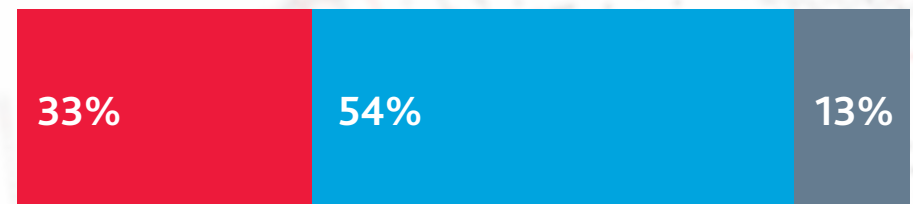


76%

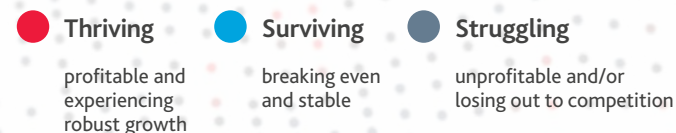
Legacy manufacturers
(Developed an Industry 4.0 strategy but not yet implementing, in the process of developing one, have not started developing one or no plans to develop one)

CURRENT BUSINESS STATUS

(Re)Born in Digital manufacturers



Legacy manufacturers

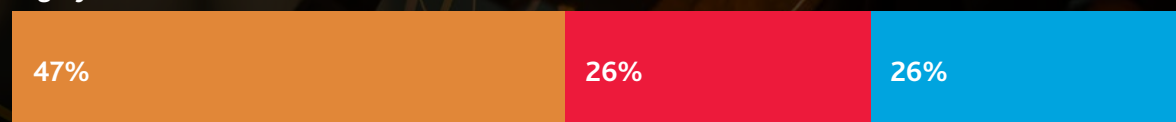


DIGITAL SPENDING PLANS IN NEXT 12 MONTHS

(Re)Born in Digital manufacturers



Legacy manufacturers



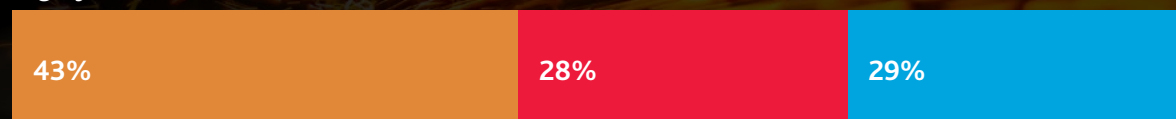
● Increase spending ● Decrease spending ● No change

PROJECTED IMPACT OF DIGITAL INVESTMENTS TO REVENUES IN NEXT 12 MONTHS

(Re)Born in Digital manufacturers



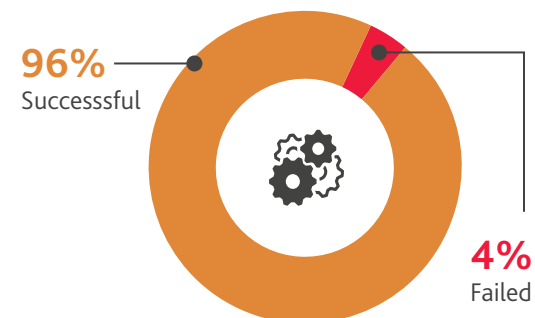
Legacy manufacturers



● Increase revenues ● Decrease revenues ● No impact

SUCCESS OF DIGITAL INITIATIVES TO DATE

(Re)Born in Digital manufacturers



Legacy manufacturers



BDO INSIGHT

Looking ahead, Legacy manufacturers that continue to ignore Industry 4.0 will be challenged to keep up with (Re)Born in Digital manufacturers. It is imperative that Legacy manufacturers reassess their outlook about Industry 4.0 to ensure their future growth. If their issue is a lack of success with previous Industry 4.0 initiatives, new leadership or a third party that has proven Industry 4.0 expertise should be brought in to ideate and implement an Industry 4.0 strategy. If the problem is a lack of buy-in from company leadership, a successful pilot project may help convince them to commit to a long-term initiative.

(Re)Born in Digital manufacturers will continue to improve their responsiveness to shifting customer demand patterns, speed in detecting and adapting to disruption and ability to identify and seize emerging opportunities for their businesses. Competition among this group for market share will intensify, and the winners will be determined by a combination of overall agility, quality, speed and cost of customer service. We may even start to see consolidation among the winners who want to leverage scale to improve efficiencies and reduce costs while eliminating sources of competition.

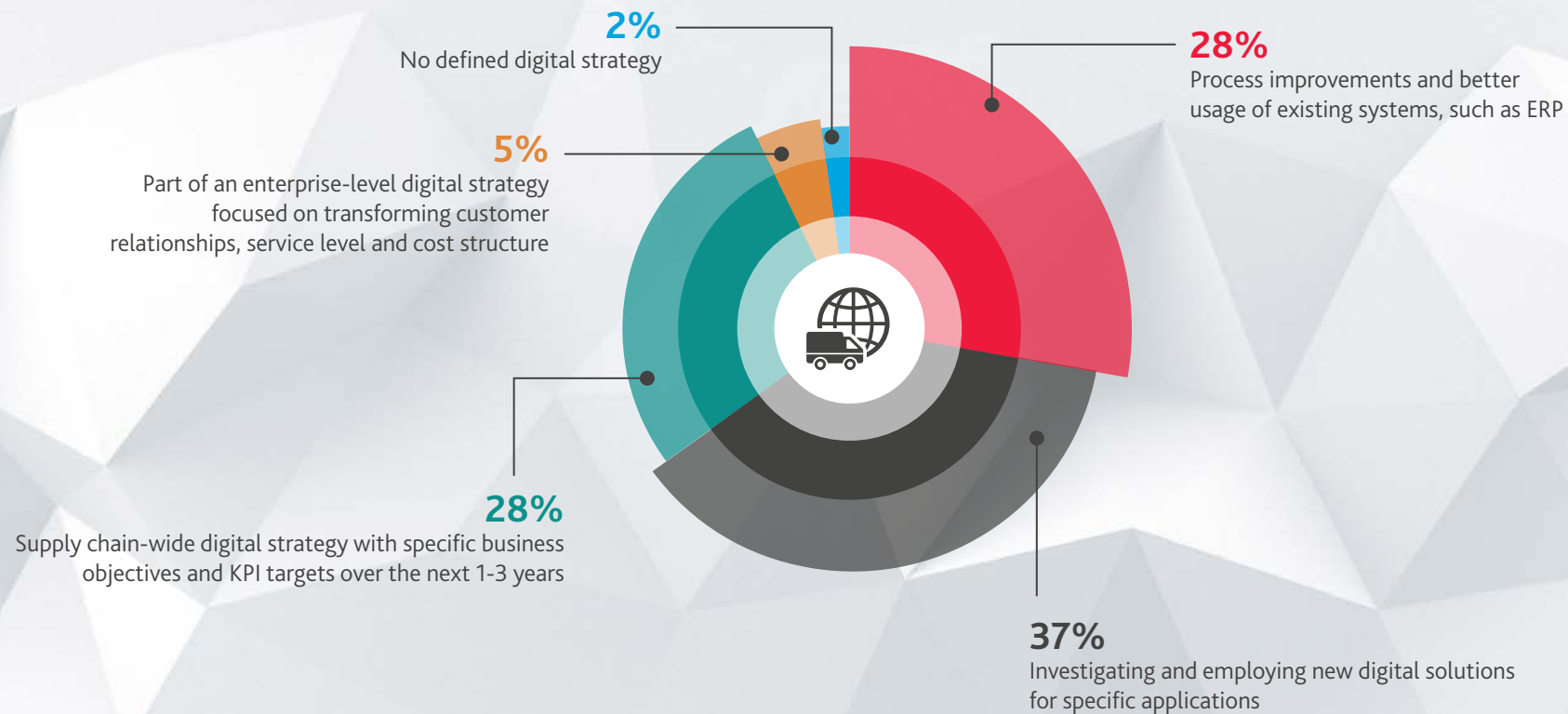


Supply Chain: Digitizing but Not Yet Fully Digital

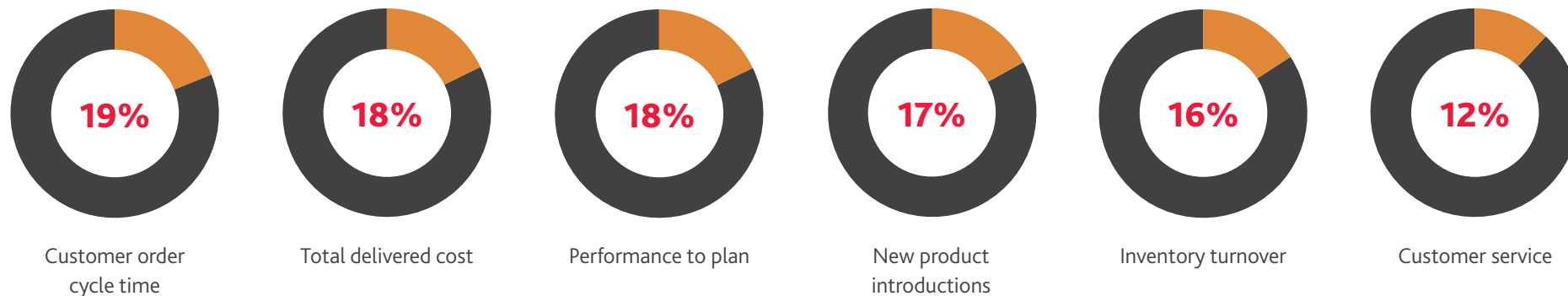
Manufacturers' top overall digital priority this year is improving efficiencies within their supply chains. When it comes to the specific metrics that they're improving, however, manufacturers' focuses are split. This may reflect the continued impact of the Amazon Effect, which is forcing all companies to increase speed and quality of service to get their products into their customers' hands no matter the cost.

Additionally, most manufacturers define supply chain strategy by the number of specific technologies they adopt versus as part of a business-wide digital transformation strategy. If those in the former group believe they have finished digitizing their supply chains because they deployed a certain number of Industry 4.0 technologies, they need to rethink their approaches.

HOW DO YOU DEFINE DIGITAL STRATEGY FOR SUPPLY CHAIN?



TOP TARGET FOR IMPROVEMENT IN SUPPLY CHAIN



BDO INSIGHT

Manufacturers who define digital strategy for supply chain as part of an enterprise-level Industry 4.0 initiative will ultimately come out ahead, as their investments are part of a coordinated plan to produce specific ROI versus sporadic adoption of technology throughout the business. Additionally, the focus on improving agility, quality, speed and cost of customer service will remain top supply chain priorities as manufacturers strive to outcompete each other and industry disruptors like Amazon continue to set new standards for customer service.

The manufacturers that will be most successful, however, are those that can go beyond just getting products to their customers quickly. Manufacturers that can use every node in the supply chain to improve profitability and create new value will reap the greatest rewards and be the most competitive in the long term.

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The next era of supply chain management will be defined by value creation. Manufacturers that can both satisfy demand while creating new value for their own businesses and customers will have an advantage over their competition.



CHAD FLEEGER

BDO USA's Supply Chain Practice

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The Digital Thread Is Still More Dream Than Reality

Since 2019, manufacturers have not made much progress on building a digital thread—a communication framework for connecting data flows across the supply chain ecosystem, providing an integrated view of an asset throughout the product lifecycle.

Most manufacturers still have not broken down data silos within their own organizations, let alone achieved information transparency with their suppliers and customers. There is some upside: most manufacturers are deploying or have plans to deploy the foundational technologies that enable the digital thread; however, they still have a long way to go before the digital thread is a reality.











CURRENT LEVEL OF INFORMATION SHARING AND TRANSPARENCY

	2019	2020	2021
Data in silos	7%	5%	14%
Data in a centralized location	30%	38%	29%
Data shared with some external vendors	26%	15%	20%
Data shared upstream and downstream within organization	31%	36%	35%
Information transparency across entire business ecosystem	6%	6%	2%





DIGITAL THREAD ENABLERS

	Currently Deploying	Plan to Deploy	No Plans
 Data analytics	71%	25%	4%
 Cloud computing	64%	35%	1%
 ERP software	58%	34%	8%
 Robotic process automation (RPA)	43%	43%	14%
 Internet of Things	40%	47%	13%
 Artificial intelligence (AI)/machine learning	38%	51%	11%
 3D printing	34%	28%	38%
 Blockchain/digital ledger technology	31%	43%	26%
 Virtual/augmented reality	25%	43%	32%
 5G	19%	61%	20%

BDO INSIGHT

The goal of the digital thread is to generate collective intelligence and solutions that extend beyond the limited view of a single person, function or entity. Lack of digital thread maturity is a critical hurdle that manufacturers will need to overcome to increase supply chain resilience and agility. Truly agile supply chains require end-to-end visibility across the entire business and supplier ecosystem, which enables manufacturers to react in real time to shifts in demand, disruption and other external forces. Sharing data with customers and vendors will allow for new opportunities for collaboration and potentially even co-creation—where new products and/or services are developed in conjunction with vendors or customers. Data sharing and co-creation can both increase revenues and deepen customer relationships for the long term.

Manufacturers Focus on Customer Experience to Fuel Success

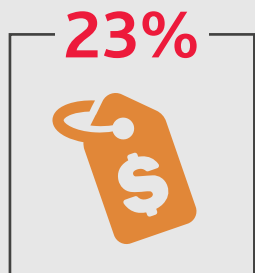
Manufacturers view the quality of their customer service as a value driver for their businesses and are making investments to continue improving it. Improving customer experience is manufacturers' second most-cited overall digital priority, and 20% say it's their competitive differentiator, just behind better products/services (28%). Some of their strategies are in direct response to changing customer expectations due to COVID-19. For example, the pandemic has made it a necessity for manufacturers to be able to interact with all their customers digitally, and as a result, more manufacturers are planning to develop conversational AI/chatbots.



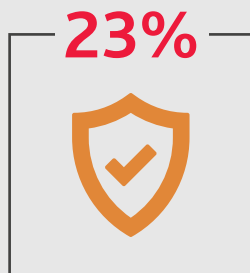
81%

of manufacturers say the digitization of customer experience will have some impact on their business in the next year

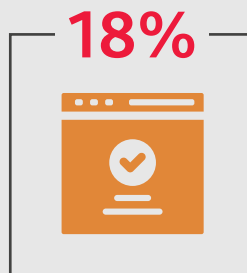
TOP PRIORITIES FOR IMPROVING CUSTOMER EXPERIENCE



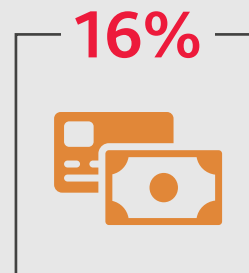
New
Products / Services



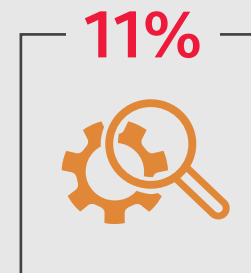
Quality



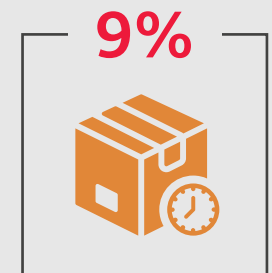
Product
Enhancements



Cost

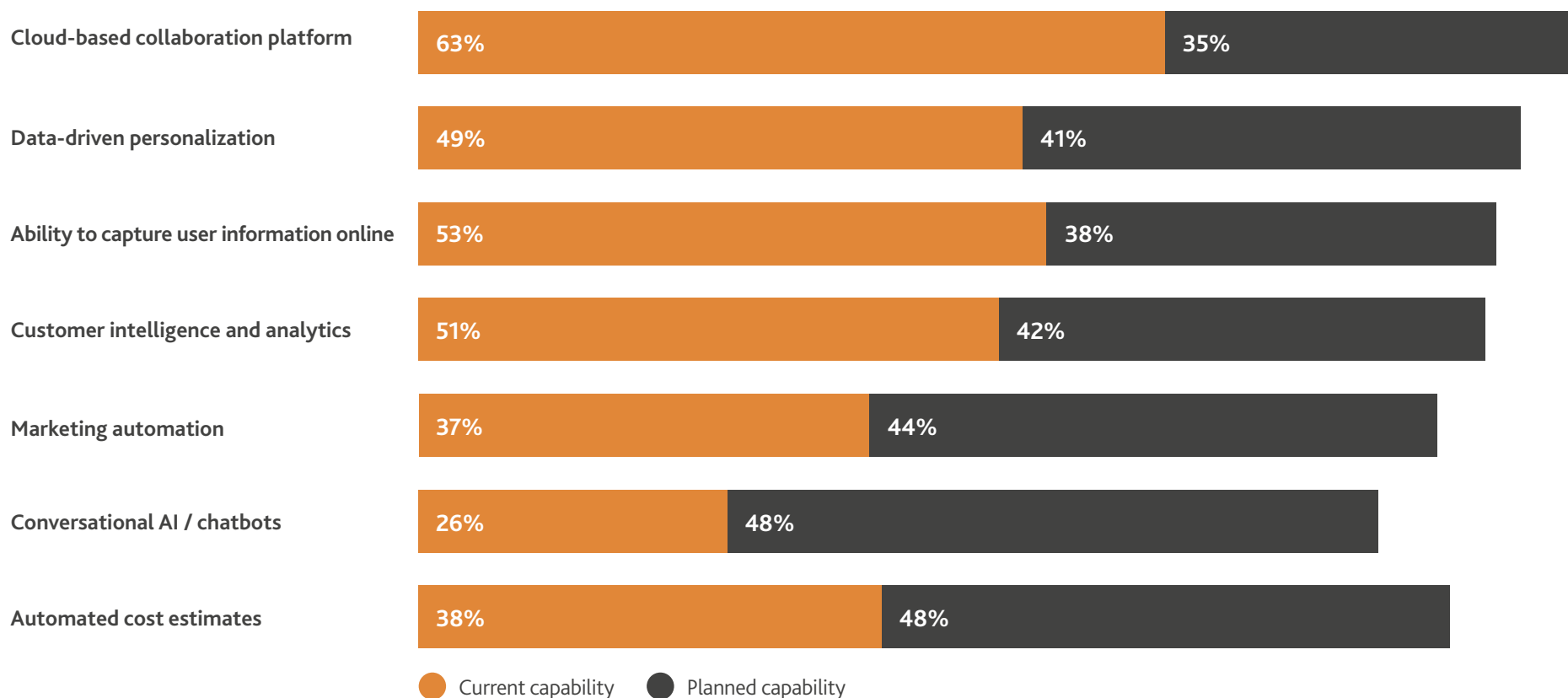


Customization



Faster Delivery

PLANS TO IMPLEMENT CUSTOMER EXPERIENCE CAPABILITIES



BDO INSIGHT

As sophisticated digital customer service capabilities become more widely adopted, and as customers' expectations continue to rise, focus on bolstering products and services will have greater importance. Adding or enhancing products and services can create new revenue streams, deepen relationships with existing customers, improve retention and reduce churn. Additionally, the rise of digitally native customers means that manufacturers may need to discontinue some legacy products or services that are no longer a fit in the marketplace. The winners will be those that can leverage intelligence gathered from their customers to inform how they evolve their products and/or service offerings to anticipate and address all of their customers' needs.

Winning the Industry 4.0 Marathon

Although early winners in the Industry 4.0 race have begun to emerge, manufacturers can't afford to rest on their laurels. Technology is constantly improving as new and better ways of doing things are invented. Manufacturers that recognize that Industry 4.0 is about continuous improvement will be most successful in the long run.

To benchmark your digital maturity and transformation readiness against your peers, explore our [2021 Industry 4.0 Survey Benchmarking Report](#) ►

ABOUT BDO'S MANUFACTURING PRACTICE

BDO has been a valued business advisor to privately-held, private equity-owned and publicly-held manufacturing and distribution companies for more than 100 years. We work with a variety of companies from all industrial sectors, ranging from global distributors to startup and niche manufacturing corporations, on a myriad of accounting, consulting, tax and other financial issues.

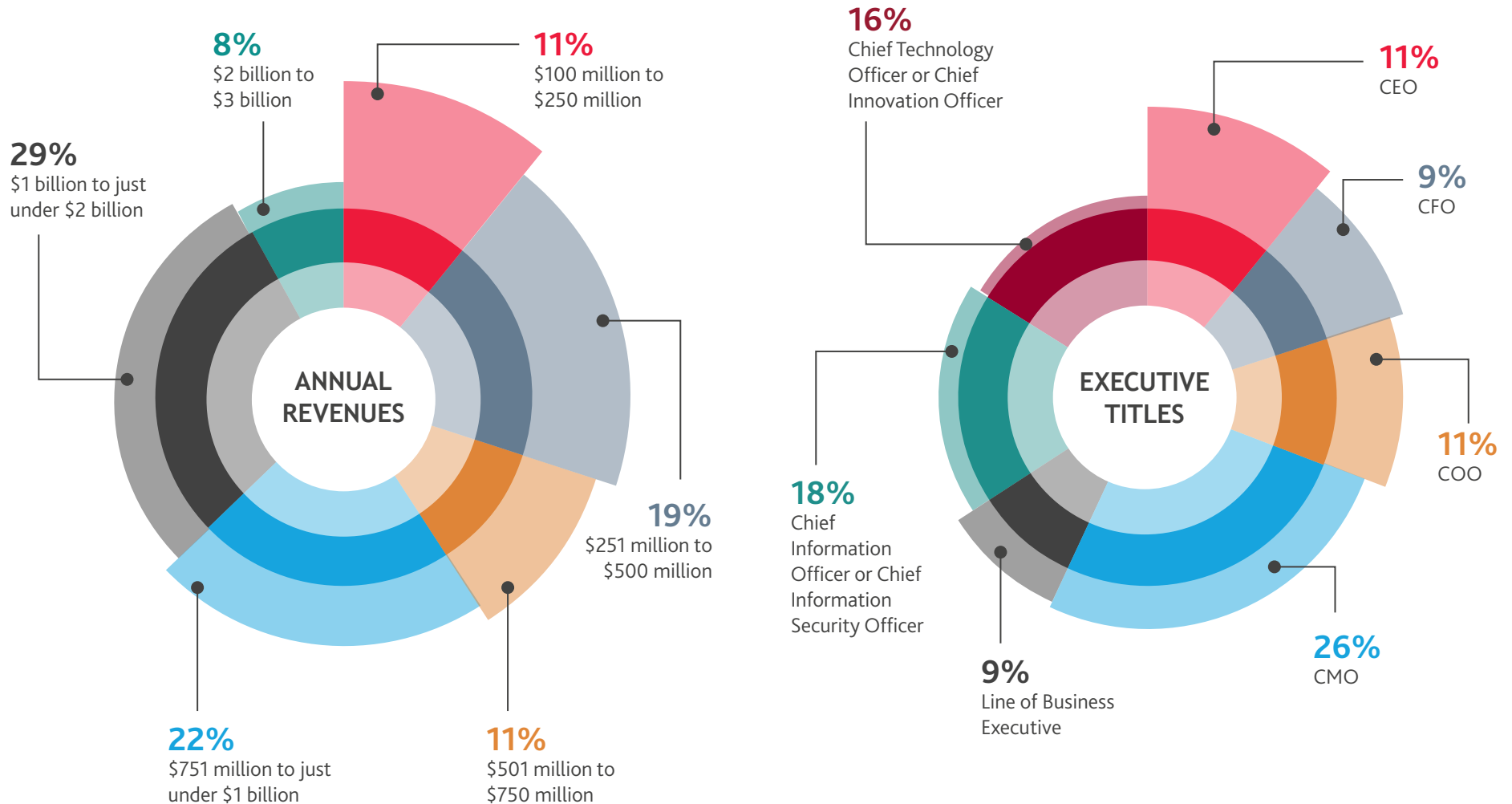
For a personalized evaluation of your organization's maturity level and opportunities, sign up to receive our Digital Performance Indicator.

SIGN UP NOW ►

About the 2021 Industry 4.0 Survey

The *2021 Industry 4.0 Survey* was conducted by Rabin Research Company, an independent marketing research firm, in January 2021. The survey included 100 C-level executives, in a wide range of capacities, for manufacturing organizations with annual revenues between \$100 million and \$3 billion.

WHO WE SURVEYED



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