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**IndustryWeek**

## Manufacturing in the New Next

What an unprecedented time has taught us about how manufacturers can thrive in the future



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## Executive Summary

The pandemic, the effects of climate (both political and environmental), and changes in how we work and live have created a world, and marketplace, that is without precedent. And yet, according to this study, 50% of companies said business performance was not negatively impacted by the pandemic. Responding to events none of us have experienced before has not only challenged us, but forced incredible innovation. Of course, the manufacturing industry is among those impacted, but not necessarily at a detriment to performance.

The results of the research captured in this report show that the pandemic accelerated innovation, adaptation, and transformation. It validates what the industry knows to be true, including the idea that digital transformation (adoption of digital capabilities) and smart technology (adoption of technology and data-driven approaches to improve business performance) investments are essential for the success of the industry. It also suggests that the competitive gap is widening between those who are investing and those who are not. In fact, 35% of manufacturers are already getting a return on their investments digitizing their operations, and 40% more are actively implementing. In addition, 33% are realizing ROI integrating smart technologies designed to improve performance, while 30% more are at implementation phase.

The research also reinforced the fact that a commitment to manufacture more sustainable products in sustainable ways is not just the right thing to do, it's good business. Most manufacturing companies see sustainability as an opportunity, one that will impact their entire ecosystem and raise the bar for the industry at large, and that it is a central theme and a vital effort for those who want to succeed into the future.

Finally, this study highlights the importance of access to talent, which is more challenging than ever. With over 80% of manufacturing companies confident or very confident on their success in the "new next," this research provides a state-of-the-art glimpse into the manufacturing industry today and where it is headed, which will benefit us all.



## Why This Research Was Conducted

The intention of this report is to provide the manufacturing industry with an up-to-date glimpse of how the pandemic affected and will continue to impact the manufacturing industry, how this industry is performing and transforming, areas where manufacturers are investing now and areas where stakeholders will invest in the future, and to what degree current investments are making a difference. Specifically, this report was created to provide more clarity on:

- What manufacturers are being influenced by and how they are responding to the new normal
- What initiatives, technologies, or services manufacturers are investing in now and planning for in the future
- What manufacturers say is working, not working, or missing and needed in the new normal, and what's in the way of progress
- How big of a part sustainability is playing in their thinking, investments and actions

For you, the reader, our hope is that this report will inform, validate and reinforce your confidence in where to continue—or start—investing in the future of your organization.



# Part 1: Survey Respondent Details, Their State of Performance and Challenges to Growth

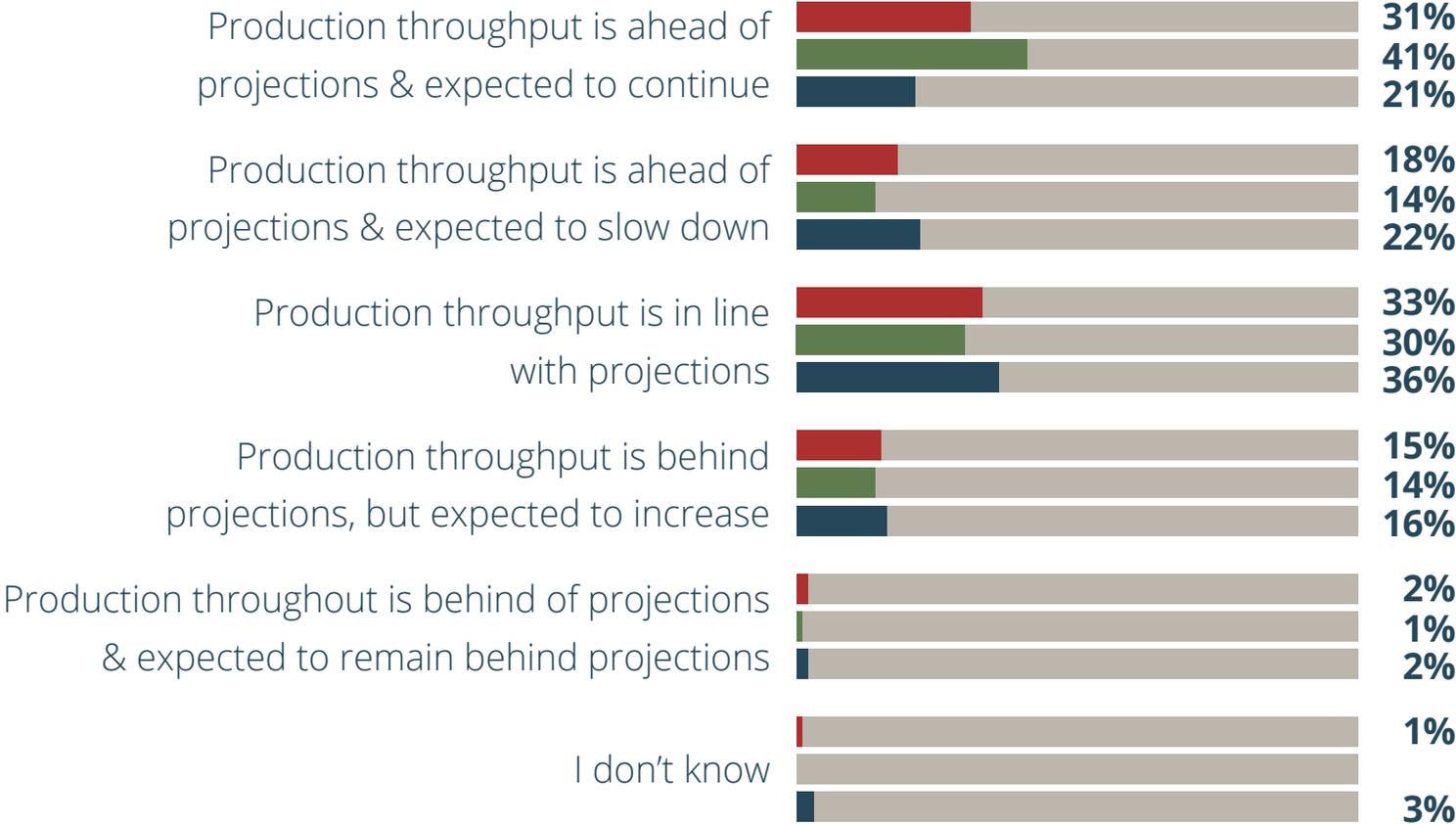
This report is a summary and interpretation of a research survey that was conducted in October 2021. The survey targeted leaders of large ((\$500M+ in annual revenue), multi-location manufacturers across a variety of industries and around the world resulting in 291 qualified respondents: 155 headquartered in North America, the remaining 136 headquartered outside of North America. Respondents were primarily made up of those in the industrial manufacturing (157), consumer products (44), high-tech (59), automotive (16) and oil and gas (11) industries.

As it relates to production performance, the results were encouraging overall with most respondents stating that they are within or ahead of projections, including 47% of those in consumer products. Most North American respondents state their production throughput is ahead of projections, 41% of which expect that performance to continue. However, 22% of those outside of North America expect that throughput to slow down. Sixteen percent of all respondents stated they are behind projections, but expect that performance to increase, and only 2% expected to stay behind expectations.

## PRODUCTION PERFORMANCE

**FIGURE 1** Question: How would you describe the current state of your company's production performance?

Base: All respondents (n=290).



- All respondents
- Respondents within North America
- Respondents outside of North America

The majority of North American respondents indicate their production throughput is ahead of projections. Forty-three percent of respondents from outside North America indicate production throughput is ahead of projections. Seventeen percent of all respondents indicate production throughput is behind projections.

When asked about external challenges to growth, most respondents indicated that economic challenges—such as supply chain disruptions, competitors, eroding margins, and changing markets and consumer demand—were at the top of the list. Health concerns, particularly about COVID-19, came in second, with

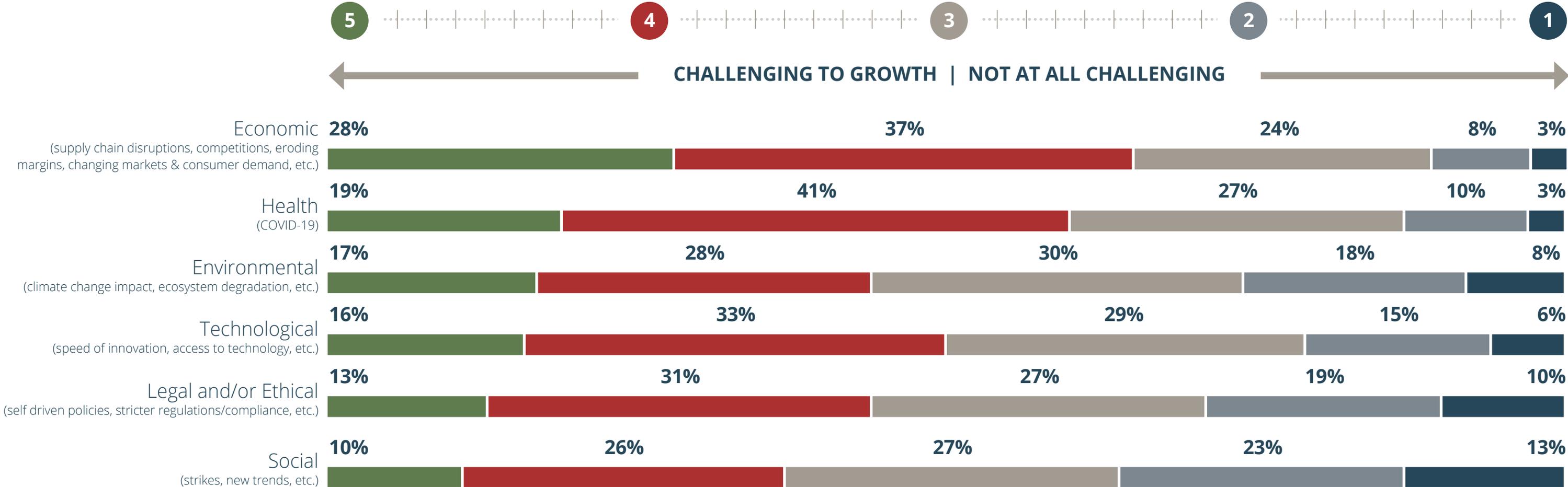
environmental concerns, such as climate change, coming in third. However, for those located outside of North America, health concerns ranked as number one, followed by economic, and then environmental.

## EXTERNAL CHALLENGES TO GROWTH

FIGURE 2

Question: What are the biggest external challenges to the growth of your company?

Base: All respondents (n varies from 283 to 290).



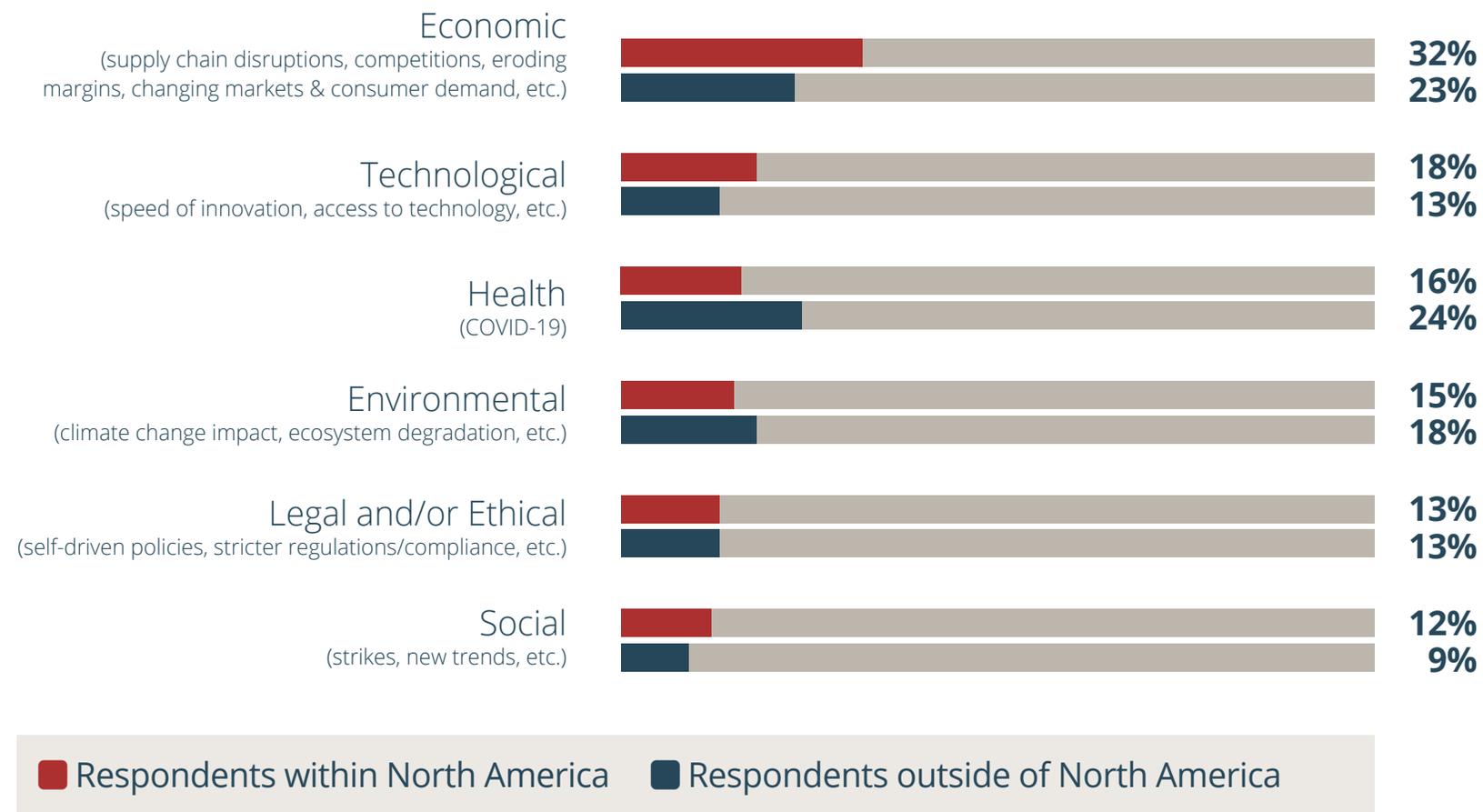
## EXTERNAL CHALLENGES TO GROWTH — COMPARISON BY LOCATION

FIGURE 3

Question: What are the biggest external challenges to the growth of your company?

All respondents (n varies from 283 to 290).

Percent indicating “The biggest challenge to growth = 5”



Challenges vary by location. Thirty-two percent of North American respondents indicate economic challenges, such as supply chain disruptions, competition, eroding margins, etc., are the biggest challenge to growth (rate 5 on a 5-point scale) compared to 23% of respondents from outside North America. Respondents from outside North America are more likely than those from North America to indicate health (COVID-19) as the biggest challenge (24% vs. 16%).



When asking specifically about the pandemic, 45% of respondents indicated being negatively impacted. Alternately, 44% experienced a positive impact on their business. When asked how long they felt that impact would last, most felt the impact would last at least one more year, with 40% estimating less than a year.

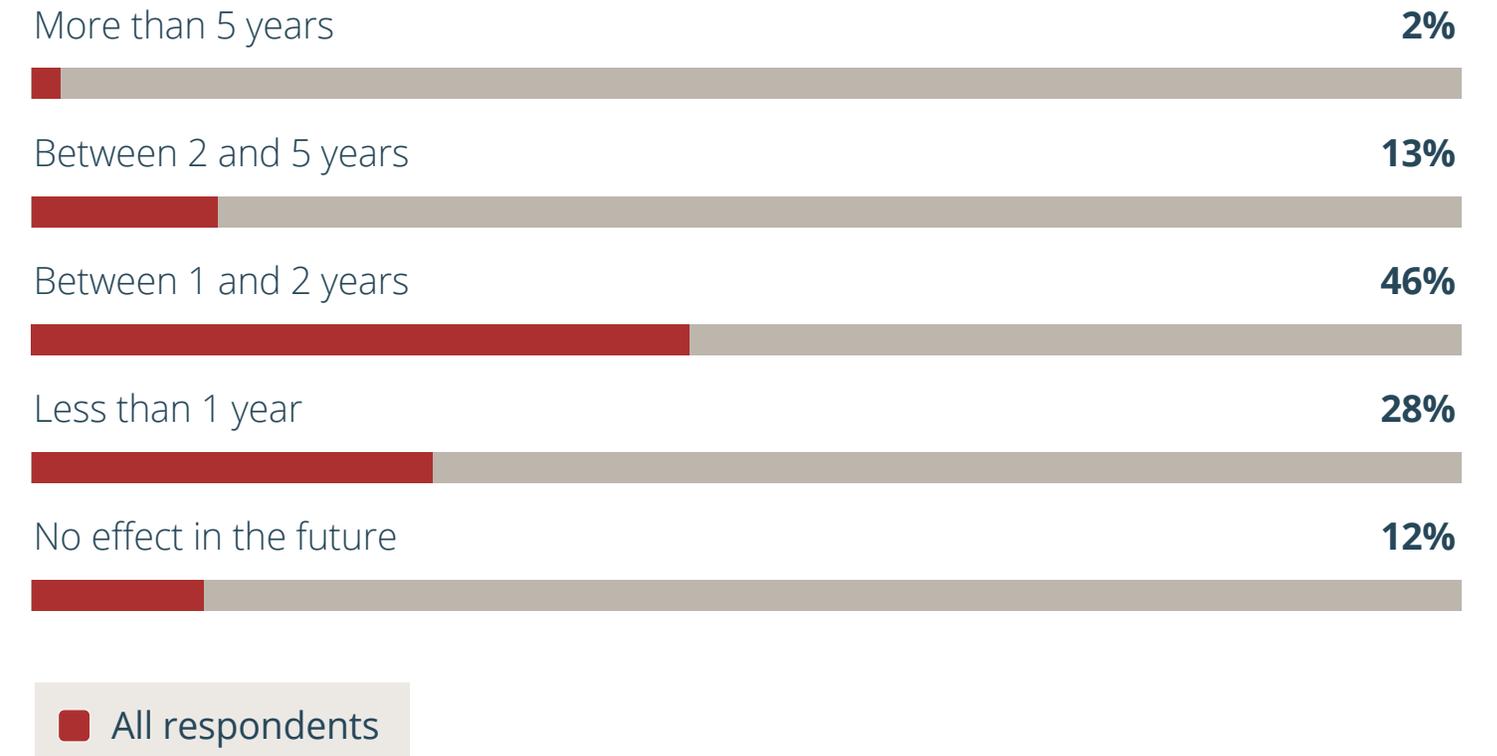


## TIMING OF THE PANDEMIC IMPACT

FIGURE 4

Question: For how long do you believe your industry will be affected by the pandemic?

Base: All respondents (n=285).



The majority of respondents expect their industry to be affected by the pandemic for at least one more year. Forty percent of respondents expect the impact to last for less than one more year.

As for internal challenges, 21% of respondents indicated access to workforce as their biggest challenge. Other top challenges include shrinking budgets, culture, and organizational silos. However, access to workforce seems to be a much bigger

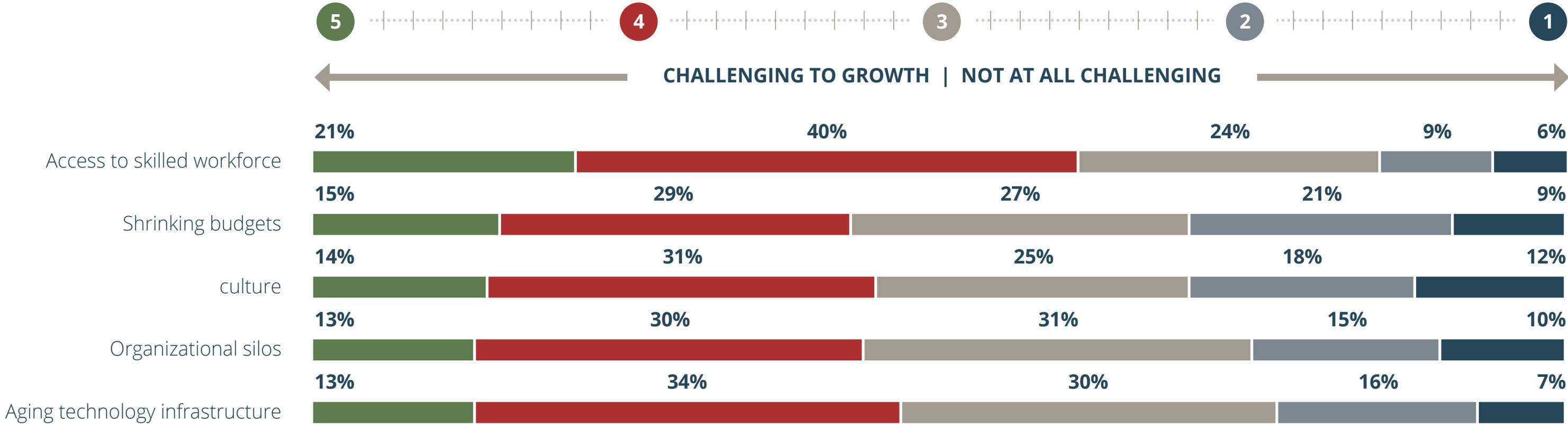
concern for manufacturers located in North America versus elsewhere. For those located outside of North America, shrinking budgets and organizational silos ranked higher.

### INTERNAL CHALLENGES TO GROWTH

FIGURE 5

Question: What are the biggest internal challenges to the growth of your company?

Base: All respondents (n varies from 278 to 289).



One in five respondents (21%) indicate access to skilled workforce is the biggest internal challenge to growth.

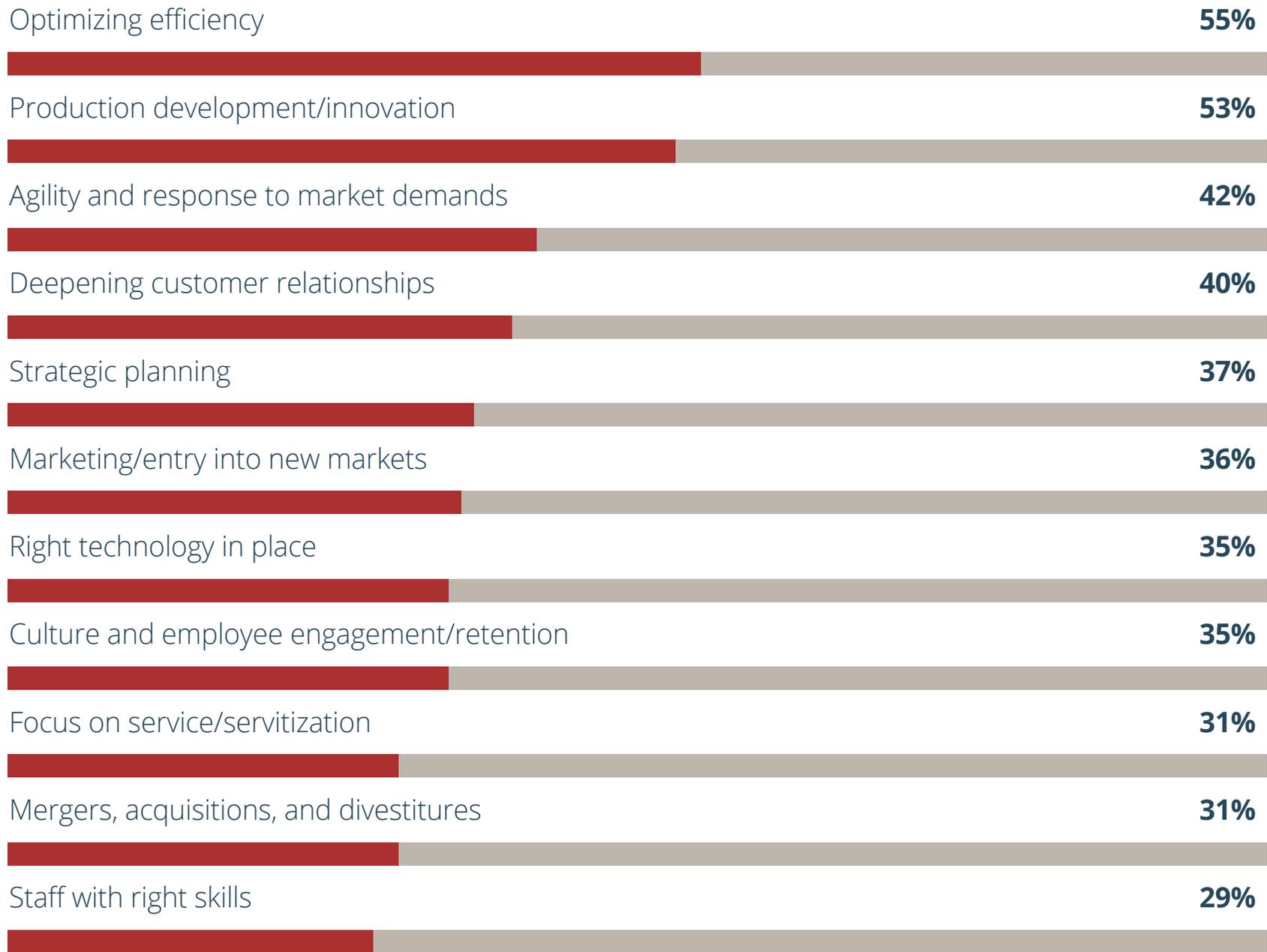
# Part 2: Responding to Challenges, and Key Investments Being Made for the Future

As a result of many challenges, respondents were asked what they were focusing on to generate revenue, and they agreed that optimizing efficiency, along with product development and innovation, stood out as the clear winners. To be successful in the future, respondents almost equally agreed they need to develop a more robust supply chain; focus on employee growth and retention; lessen the environmental impact of their operations and the products they produce; leverage digitization, automation, and autonomous operations; and build a more innovative partner ecosystem.



## FOCUS TO GENERATE REVENUE

**FIGURE 6** Question: What should your company focus on to generate revenue and profit growth? All respondents (n=286). Multiple answers allowed.



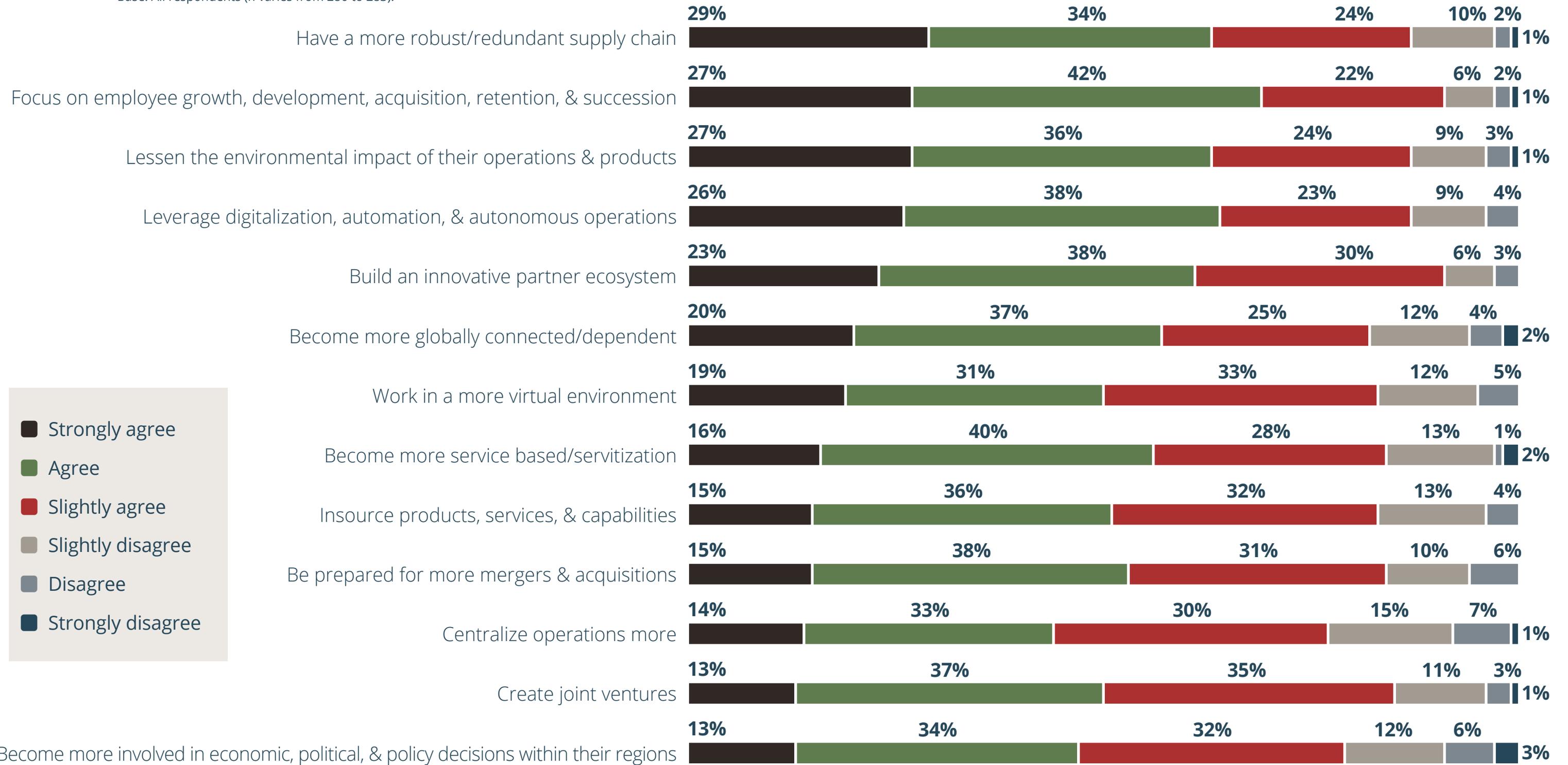
Respondents agree that companies should focus on optimizing efficiency to generate revenue and profit growth. Respondents from within North America are more likely than those from outside North America to indicate companies should focus on product development/innovation (58% versus 47%), while those from outside North America are more likely to focus on having the right technology in place (40% versus 31% of North American respondents).

■ All respondents

# FOCUS FOR FUTURE SUCCESS

**FIGURE 7** Question: To what extent do you agree or disagree with each of the following statements? In the future, I believe manufacturers will need to:

Base: All respondents (n varies from 280 to 283).



- Strongly agree
- Agree
- Slightly agree
- Slightly disagree
- Disagree
- Strongly disagree

The focus of the survey and the rest of this report narrows to take a deeper dive on four key areas:

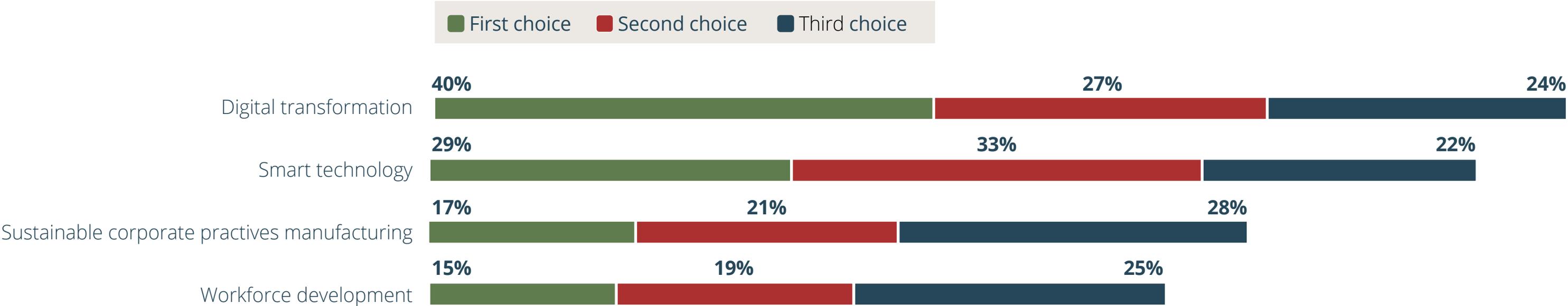
1. **Digital Transformation:** Adoption of digital technology by a company to improve business processes, value for customers, and innovation
2. **Smart Technology:** Technology-driven approach to find opportunities for automating operations and use of data analytics to improve manufacturing performance
3. **Sustainable Manufacturing:** Creation of manufactured products through economically sound processes that minimize negative environmental impacts while conserving energy and natural resources
4. **Workforce Development:** The ability to acquire, retain, and grow the talent needed for the future

Results clearly showed that digital transformation and smart technology are the most important areas of investment essential to be successful in the “new next,” regardless of industry or geography. But it is also important to note the significance of more sustainable business practices, as well as a focus on workforce development.

### FOCUS FOR ADAPTING TO THE “NEW NEXT”

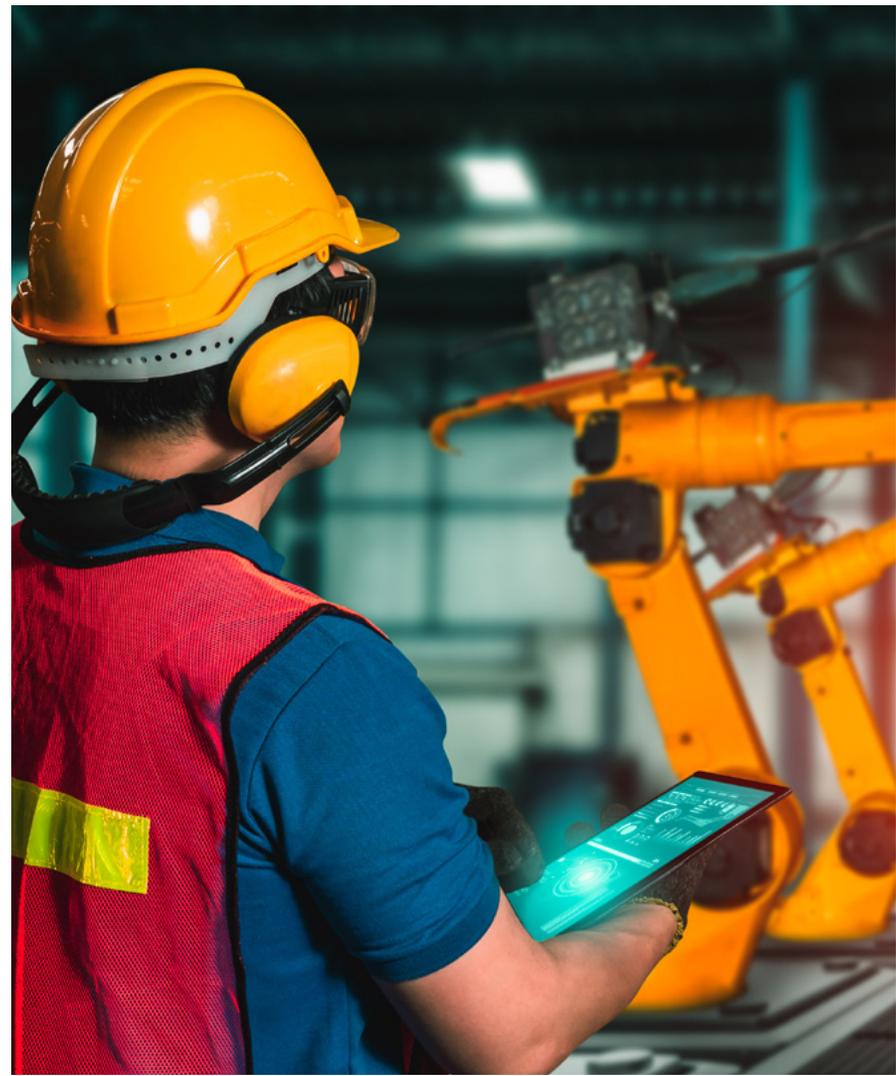
**FIGURE 8** Question: As it relates to adapting to the “new next,” please rank the following in the order of importance to your company.

All respondents (n=273).



Four in ten respondents consider a focus on digital transformation to be most important to adapting to the “new next.”

As for digital transformation, respondents were most likely to have invested in and/or be fully operational across many areas of their digital transformation including manufacturing and operations, supply chain, IT infrastructure, finance, marketing, and research and development. In addition, manufacturers located in North America rate their digitization progress as more advanced than those headquartered elsewhere.

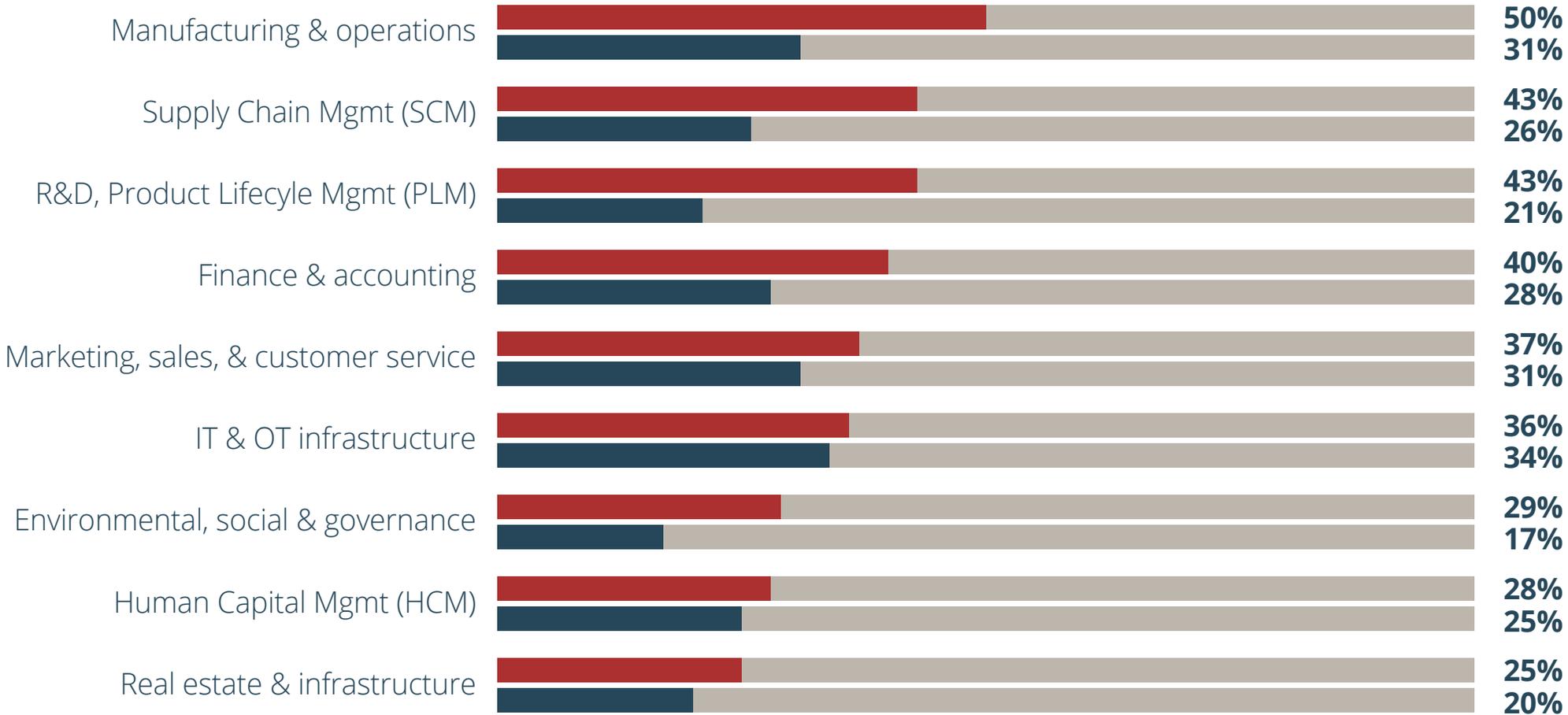


## FUNCTIONAL AREA INVESTMENTS — COMPARISON BY LOCATION

**FIGURE 9** Question: To what extent has your company invested in each of the following functional areas for your digital transformation journey?

All respondents (n varies from 275 to 279).

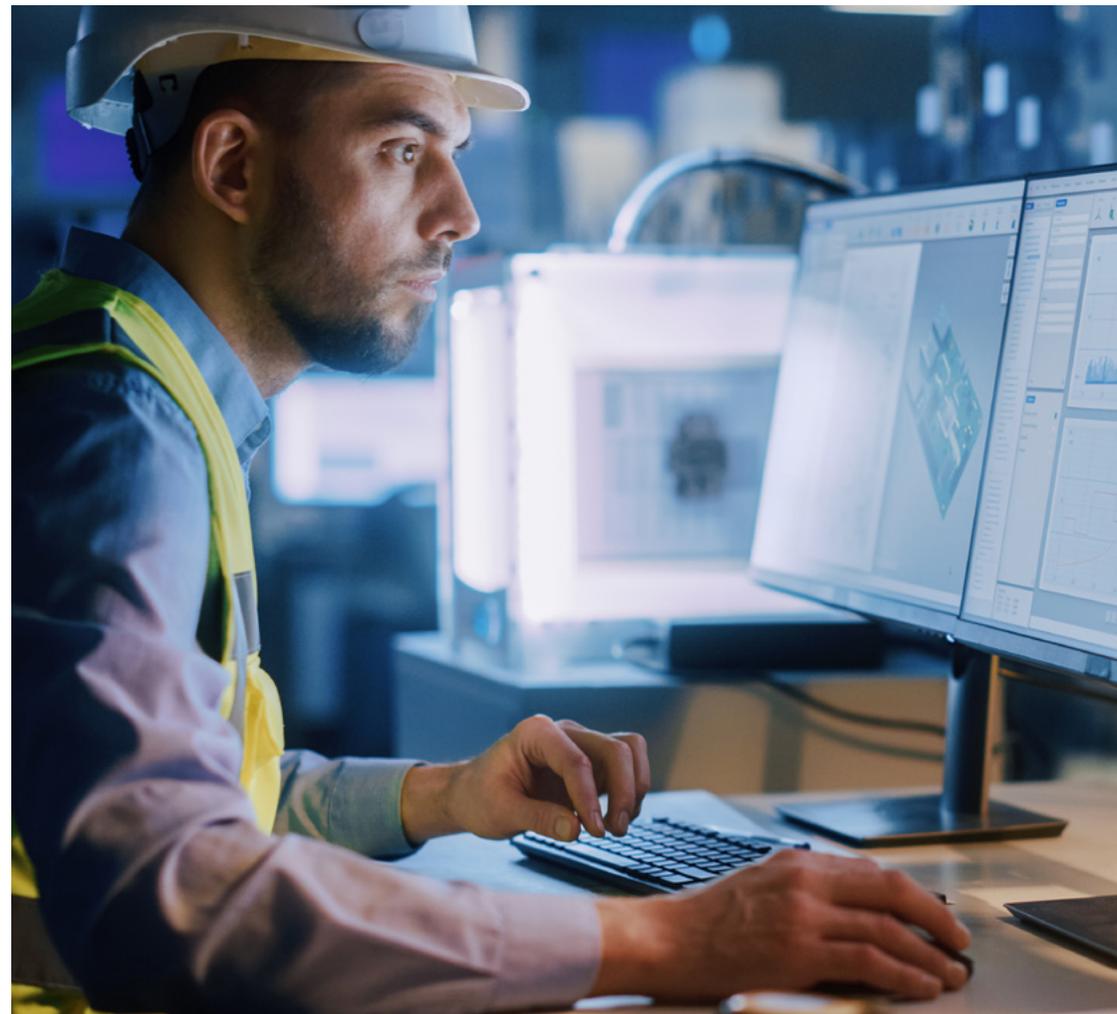
Percent Who Have Invested in and Are Fully Operational



■ Respondents within North America ■ Respondents outside of North America

This chart compares respondents who indicated “Have invested in and are fully operational” on the previous slide by region. Respondents within North America rate their progress as more advanced than those from outside of North America.

When it comes to smart technology investments, collaboration and simulation tools—along with big data and analytics—ranked highest. From there investments range widely, including additive manufacturing, robots/cobots, blockchain, AI, wearables and more. Again, respondents from North America rated their progress as more advanced, except as it related to robots and cobots, where they were equally advanced.

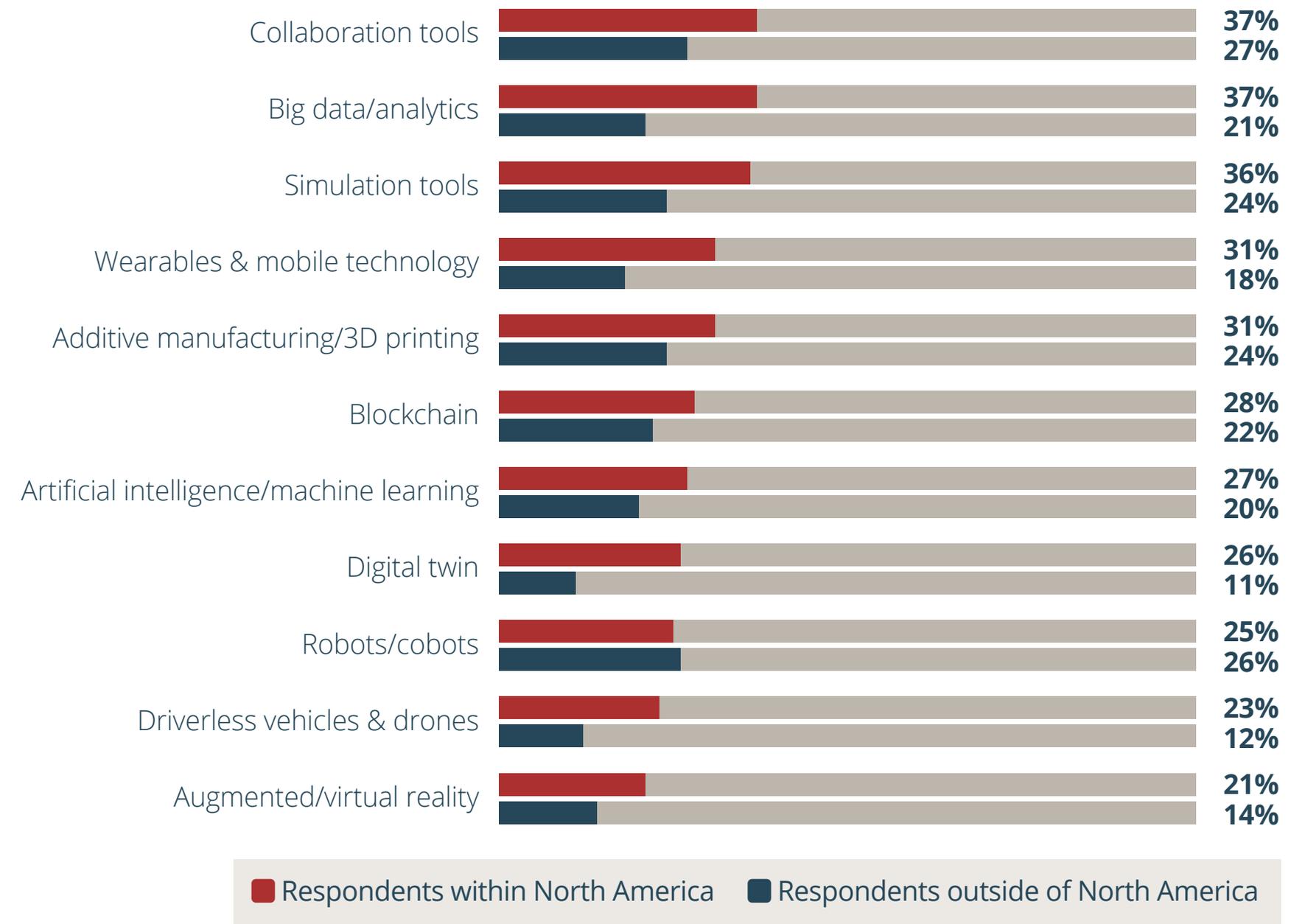


## SMART TECHNOLOGY INVESTMENTS — COMPARISON BY LOCATION

FIGURE 10

Question: To what extent has your company invested in each of the following smart technology initiatives? All respondents (n varies from 268 to 277).

Percent Who Have Invested in and Are Fully Operational



This chart compares respondents who indicated “Have invested in and are fully operational” on the previous slide by region. Respondents within North America rate their progress as more advanced than those from outside of North America in each initiative other than robots/cobots.

When asked about sustainability priorities, companies are currently investing in a variety of ways, including ensuring compliance with environmental laws, fair treatment of suppliers, and minimizing the use of hazardous substances. Companies headquartered outside of North America are showing that they are trailing significantly behind their peers headquartered in North America.

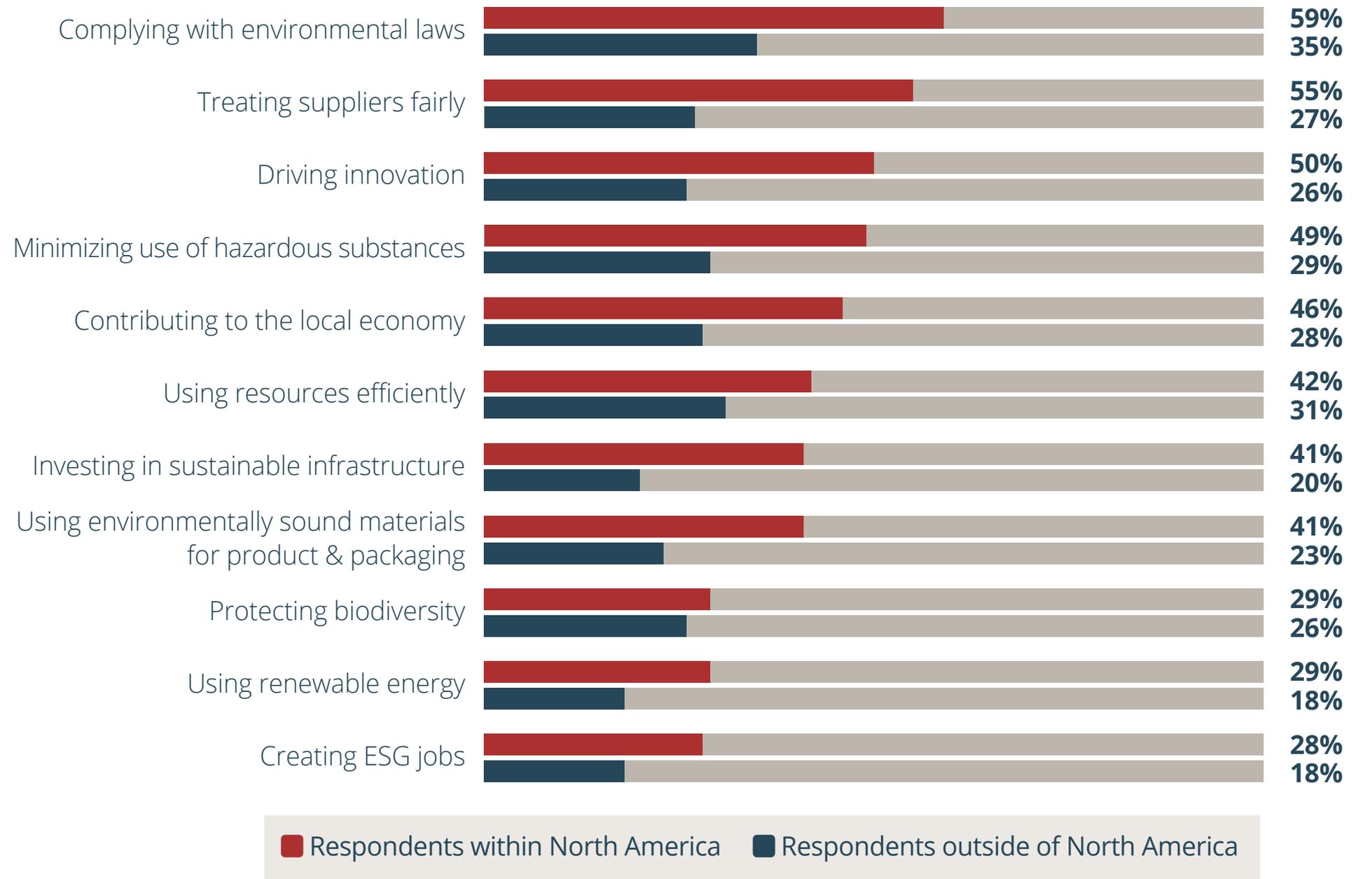


## SUSTAINABILITY INVESTMENT PRIORITIES — COMPARISON BY LOCATION

FIGURE 11

Question: To what extent is your company investing in each of the following sustainable corporate priorities? All respondents (n varies from 272 to 276).

### Percent Who Have Invested in and Are Fully Operational



This chart compares respondents who indicated “Have invested in and are fully operational” on the previous slide by region. Respondents within North America rate their progress as more advanced than those from outside of North America.

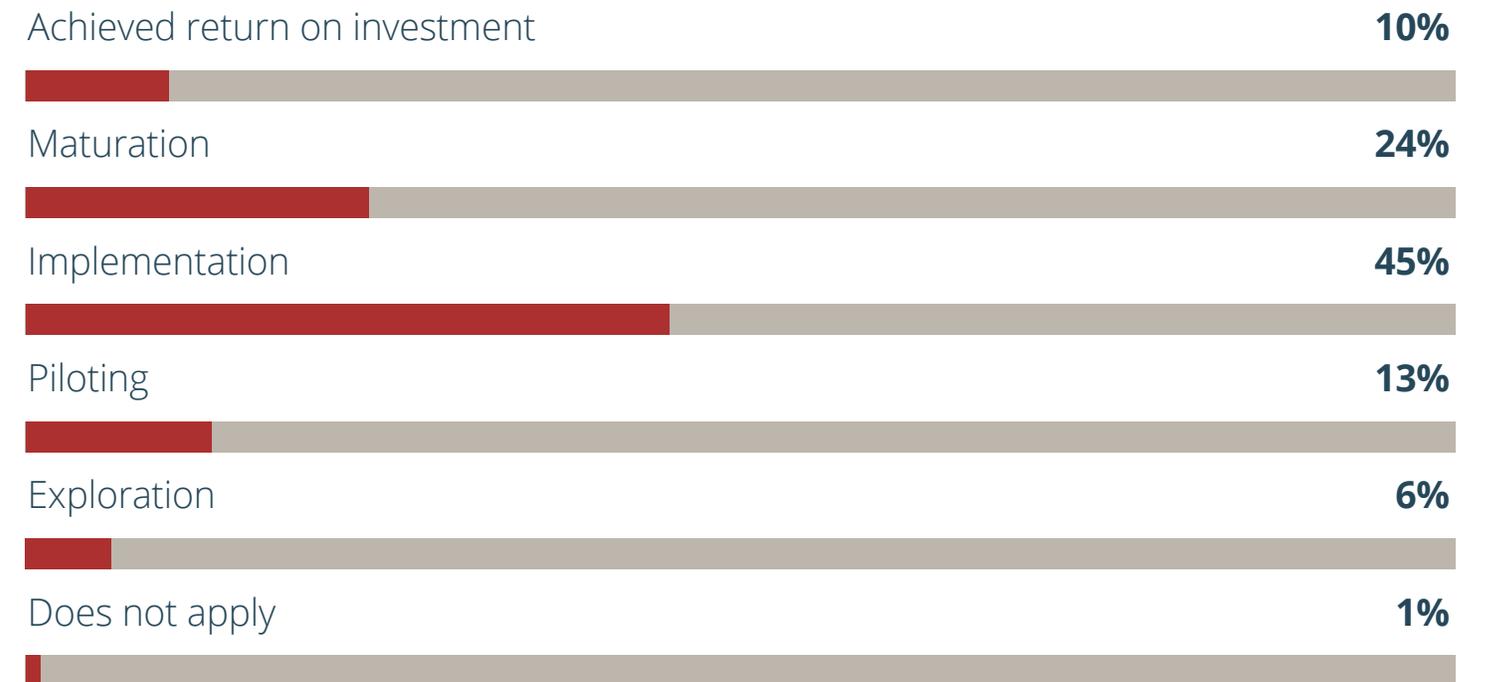
## Part 3: How Manufacturers Are Progressing on Their Journey, and How They Compare to Each Other

The survey results show that companies are advanced in their digital transformation progress, with almost 10% indicating they have received a return on investment, a further 24% are reaching maturity, and 45% in the implementation phase of their digital transformation. In fact, based on past surveys that showed many were just piloting even just 24-36 months ago, evidence supports the fact that the pace of digitization is accelerating. Additionally, 51% of respondents also feel that they are head of others in their same industry regardless of location, with 12% indicating they are far ahead, particularly those located in North America.



## DIGITAL TRANSFORMATION PROGRESS

**FIGURE 12** Question: Overall, which of the following categories best describes how far along your company is in your digital transformation initiatives? Base: All respondents (n=278).



Respondents are advanced in their digital transformation progress, as 10% indicate they have received a return on investments, 24% are in the maturation phase, and 45% are implementing digital transformation initiatives.

■ All respondents

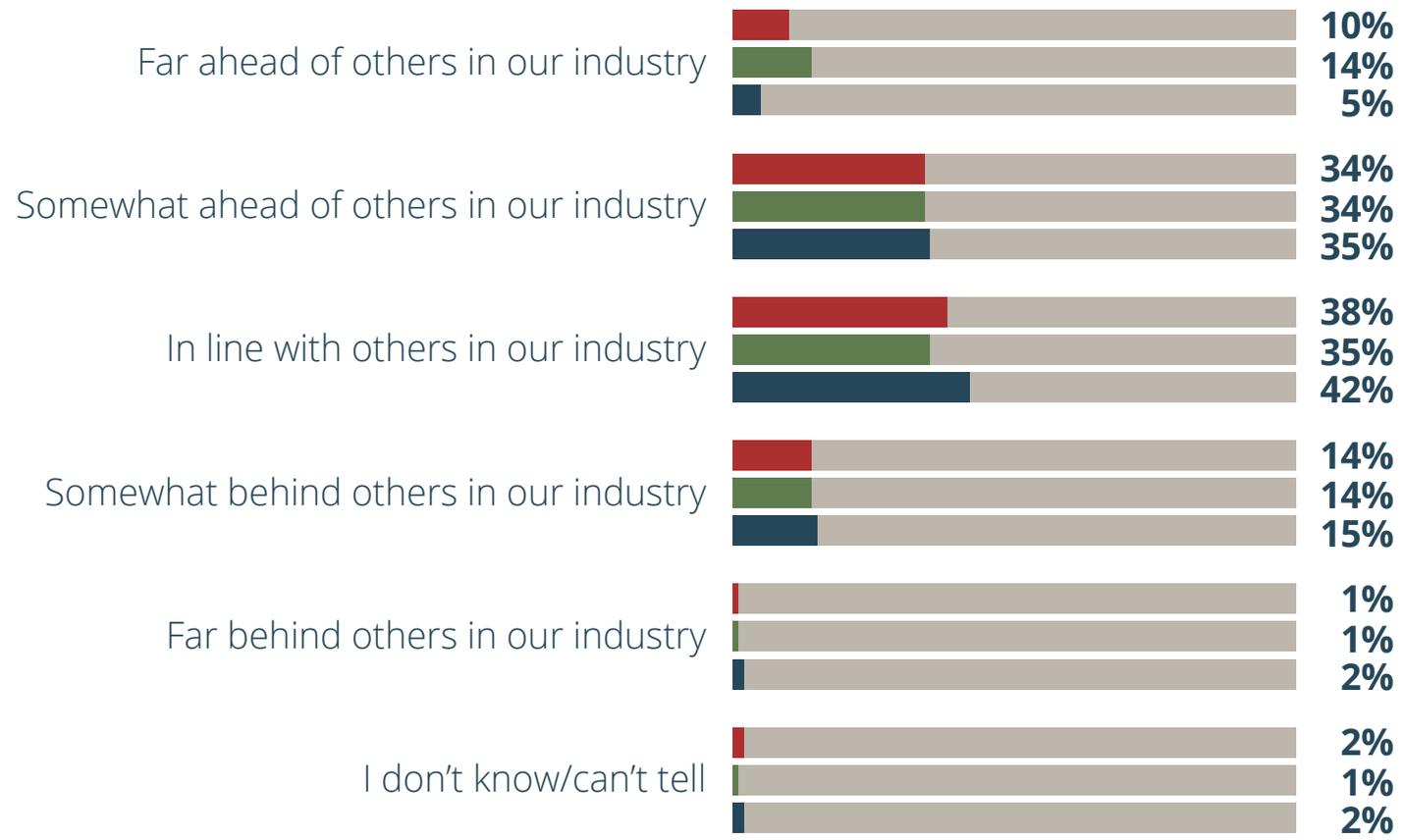
Respondents have likely made progress in their top smart technology investments, as 8% indicated they have realized ROI, 23% at maturity, and 38% implementing smart technologies. Overall, progress implementing smart technologies is just a bit behind digitization efforts. One standout is that 47% of respondents outside of North America are implementing smart technologies versus only 30% in North America. When asked to compare themselves to peers, 44% feel they are ahead of others, while an almost equal 42% say they are in line or slightly behind their peers regardless of location.



## SMART TECHNOLOGY COMPARISON

**FIGURE 13** Question: How would you compare the state of your company's smart technology journey?

Base: All respondents (n=276).



- All respondents
- Respondents within North America
- Respondents outside of North America

Forty-four percent of respondents are ahead of others in the industry in their smart technology journey. Thirty-eight percent report that they are in line with others in the industry.

And finally, as it relates to progress on sustainability, 38% of respondents rated their overall progress as mature or achieving ROI, where 40% indicated they are in implementation phase. However, when compared to their peers, 17% said they feel far ahead of others in their industry, while 71% feel they are slightly ahead or in line with their peers.

What's promising is that the data shows progress being made with digitization, smart, and sustainability initiatives, almost equally across all three areas and across almost all industries. In fact, it could be argued that those who are adopting quickly are also those who are realizing the benefits sooner. It also indicates that there is a clear relationship between digitization, smart, and sustainable investments that, taken on together, are the best recipe to adapt to the new next.

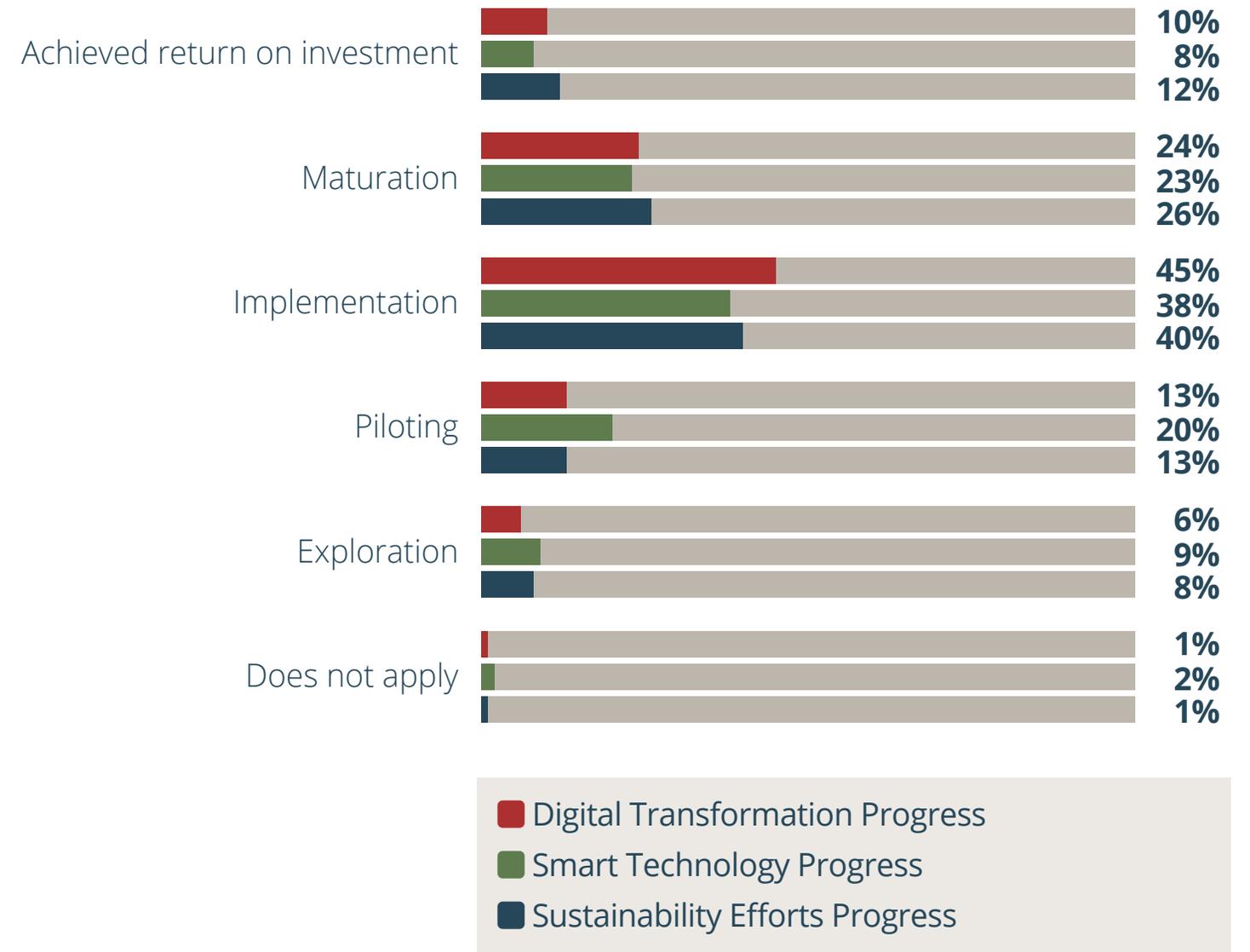
When it comes to adapting to the new next, respondents indicated that there are barriers that need to be overcome. Most noted by all respondents were access to technology, talent recruitment and retention, and the persistence of organizational silos. Respondents located in North America were more likely to consider access to workforce, materials, and resources as top barriers. Despite these barriers, respondents felt confident that both their industry and their company will succeed in the new next, particularly among those headquartered in North America. The automotive industry being significantly more confident of success, followed by industrial manufacturing.

## PROGRESS IN TERMS OF DIGITALIZATION, SMART TECHNOLOGY, AND SUSTAINABILITY

FIGURE 14

Question: Overall, which of the following categories best describes how far along your company is in your digital transformation/Smart Technology/Sustainability initiatives?

Base: All respondents (n=278).

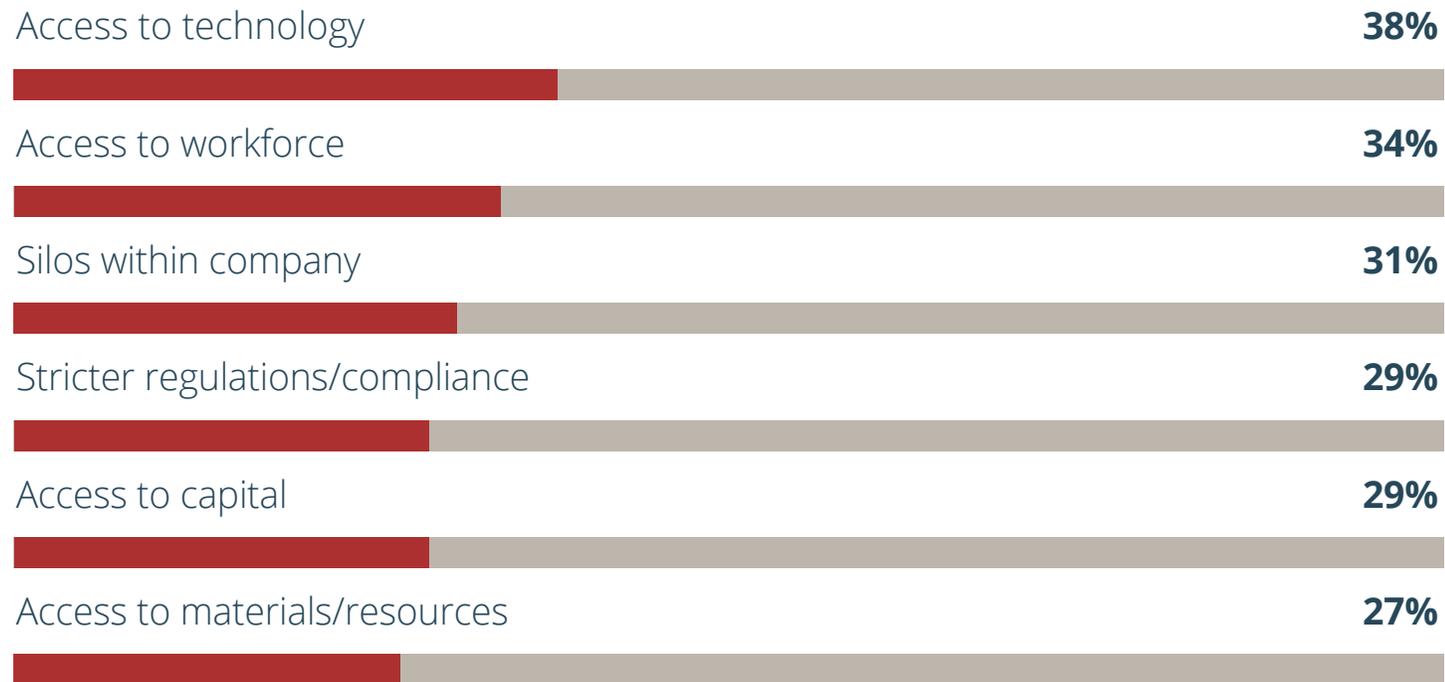


Respondents are making progress in each of the areas listed.

## BARRIERS TO ADAPTING TO THE NEW NEXT

**FIGURE 15** Question: What are the biggest barriers your company faces adapting to the new next?

Base: All respondents (n=277). Multiple answers allowed.



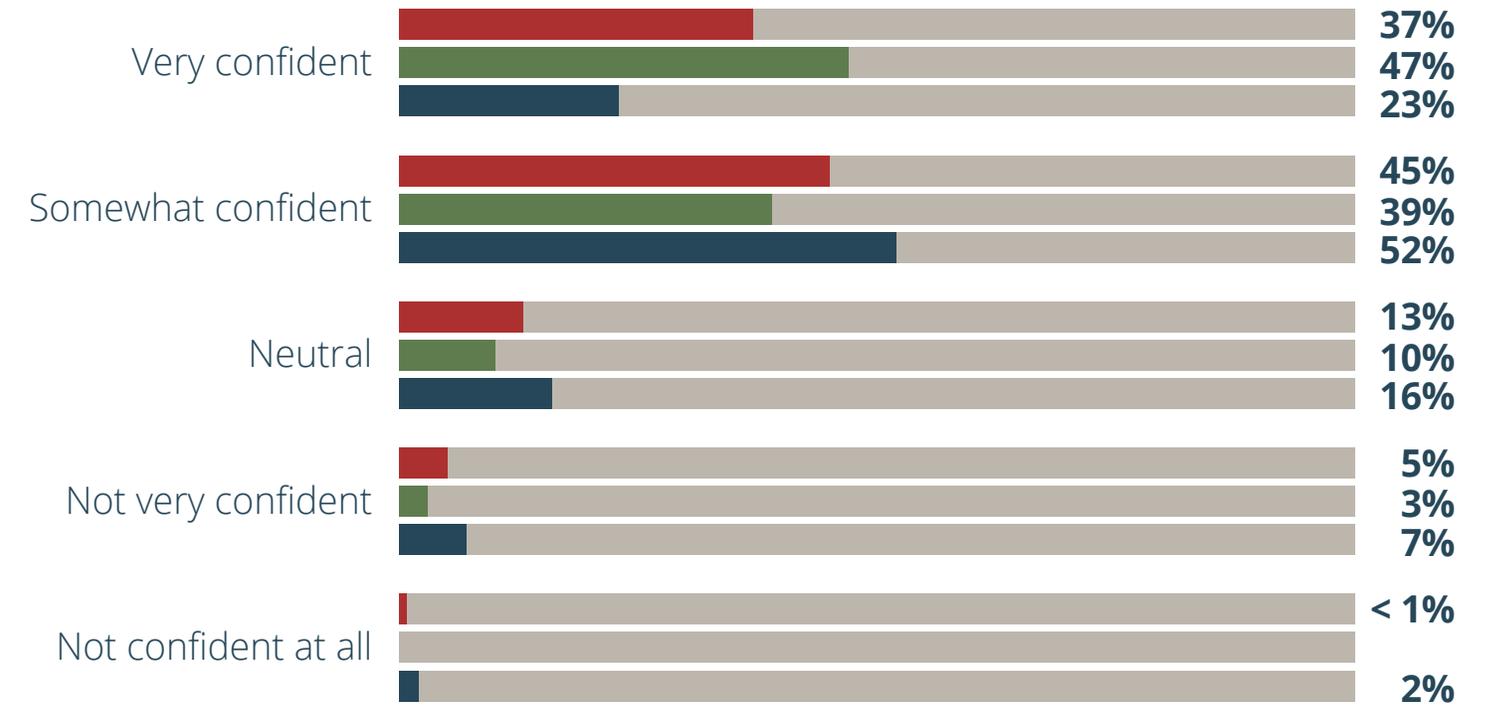
Access to technology, access to workforce, and silos within the company are considered the biggest barriers companies face when adapting to the new next. Respondents within North America are more likely to consider access to workforce and access to materials/resources barriers to success.

■ All respondents

## SUCCESS IN THE NEW NEXT

**FIGURE 16** Question: How confident are you that your company will succeed in the new next?

Base: All respondents (n=276).



■ All respondents  
 ■ Respondents within North America  
 ■ Respondents outside of North America

Respondents are confident that both their company and their industry will succeed in the new next. Respondents within North America are more likely to be very confident than those outside of North America.

## Part 4: Lessons Directly from the Field

As part of the survey, respondents were asked to share a lesson learned that could benefit others who are looking to become a more digitized, smart, and sustainable manufacturer. Below are some of the most relevant responses.

*“A new time is coming when everything will be in digital format, you need to prepare for this now and study so as not to be left without work.”*

*“Customers demand ever more convenience and personalization in their purchasing experiences, and they are far more conscious of the environmental impacts of their choices. Through techniques like lean manufacturing and technologies like predictive analytics, you can improve operational efficiencies, cut waste, and make decisions faster, helping your business become more resilient.”*

*“Be open to bringing in outside consultants to assist with your digital transformation. Be patient but be clear in objectives. Be prepared to invest now to support long-term sustainability.”*

*“Be sure to look at the entire workflow in detail. It is often the ‘minor’ thing that will stop a project in its tracks.”*

*“Executive sponsorship is critical to creating and implementing digitization, smart and sustainable initiatives. Sponsorship is proportional to knowledge and experience.”*

*“Fast fail—pilot new ideas continuously, apply what you learn in pilots, iterate continuously.”*

*“Implementing the ‘new next,’ a more digitized and smarter, sustainable manufacturing industry, requires vision of company executives to see the value this brings as more than a short turn return on investment that can be counted in dollars per unit of production. The value is the data and knowledge that can be gained and applied in the future to drive a safer, more reliable and sustainable company.”*

*“Be patient and collaborate.”*

*“Our first barrier was having the network capable of handling data out on the production floor.”*

*“It is important to keep your workforce up with technology. When your employees lack knowledge, it can hinder your ability to innovate and adapt to new technology.”*

*“People assume that digital transformation means fewer jobs in the workplace. What we’ve come to learn is that for every job ‘replaced’ by AI or machine learning solutions, there are three new positions needed to analyze, plan, and implement the solutions.”*

*“Plan strategically within the potential of the company and stick to a timeline.”*

*“Post the pandemic, manufacturers must shift from GDP +/- sales growth and constantly relying on expanding margins to create value to investing in digitized supply chains, smart analytics and focus on carbon elimination (not reduction) to succeed. The world is moving forward very fast in the tangible world, and manufacturers must shift to driving higher ROI and growth from software, data analytics, and IP rather than producing more widgets.”*

## Conclusion

*“Never let a good crisis go to waste,”* Winston Churchill famously said. Through all recorded history, times of disruption are also times of unprecedented innovation and value creation. The leaders that see the current circumstances not as a roadblock, but as a hotbed of opportunity, will find their organizations in a significance better position than those that don’t. The global disruption we are still experiencing has made visible the weaknesses of fundamental aspects of how the industry works, previously considered fixed or unchangeable. The companies that seize this moment to introduce new perspectives, structures, and processes to create a more resilient and sustainable industry will find themselves in the lead, and amongst the first to reap the talent and treasure that will inevitably come as a result of a new manufacturing paradigm waiting to be created.

Seventy-five percent of respondents stated they are either actively implementing, have reached maturity, or even realizing a return on their technology investments. However, technology is only one part of the equation. The real opportunity is to leverage these investments to truly embrace sustainability as a strategic imperative. Doing so will go a long way to attract and develop a workforce focused on creating new practices, processes, and products, which is integral to creating a manufacturing industry that is not just less harmful to the environment but is contributing to its recovery.

This report provides clear evidence that now is the time to invest big in digital, smart and sustainability initiatives. Every manufacturer’s journey is unique, and that journey is both complicated and nuanced. It’s time to take stock of where you are, and make meaningful steps forward.

## About the Sponsor

Oracle has been a trusted technology partner for manufacturers for decades and today is a leading vendor of enterprise cloud applications. Oracle’s integrated suite of applications brings innovations to market faster, makes supply chain more resilient, and redefines the customer experience. Oracle helps manufacturers design, plan, build, deliver and service products throughout the lifecycle. To learn more how Oracle can help you thrive in today’s fast-changing business environment, go to [oracle.com/industries/industrial-manufacturing/](https://oracle.com/industries/industrial-manufacturing/)