



POWERING UP THE CONNECTED FACTORY

The 2019 MPI Internet
of Things Study

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Introduction

The Internet of Things, the Industrial Internet of Things, Industry 4.0—some will argue they're all the same thing.

There is, however, an important distinction: While the Internet of Things is a critical enabler of the connectivity that underpins Industry 4.0, it is one of multiple disruptive technologies powering the next revolution in manufacturing. Industry 4.0 refers more broadly to the blurring of the line between the digital and physical worlds, bringing together plants, processes, products and people in entirely new ways.

Though this survey focuses primarily on IoT enablement, you cannot talk about IoT without Industry 4.0. Embedding sensors in machines opens up a whole new world of information—but that information is only as valuable as the ability to use it. Applying analytics to extract insights is just the start—which is where the broader universe of Industry 4.0 comes into play.

Manufacturers that build out their IoT strategy in the context of Industry 4.0 potential will ultimately be better equipped to compete in manufacturing's digitized future.

Read on to learn how the industry is taking on the IoT and gearing up for the Industry 4.0 opportunity.

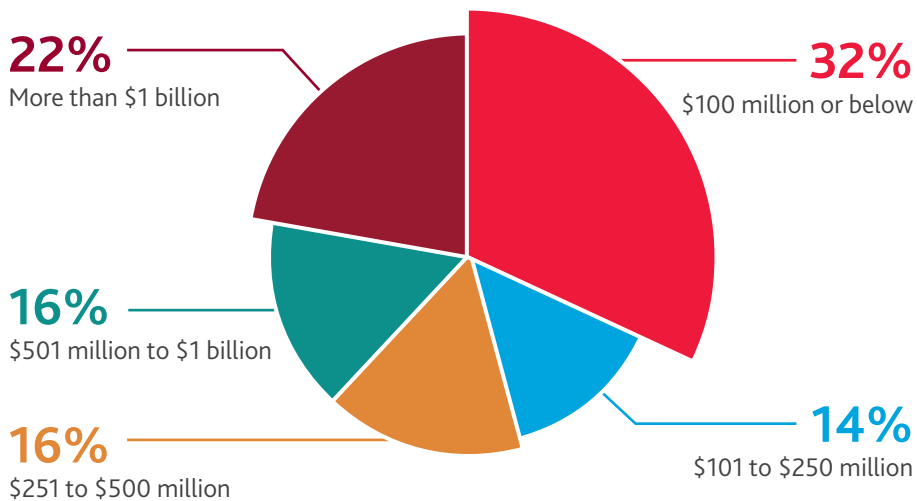


Methodology

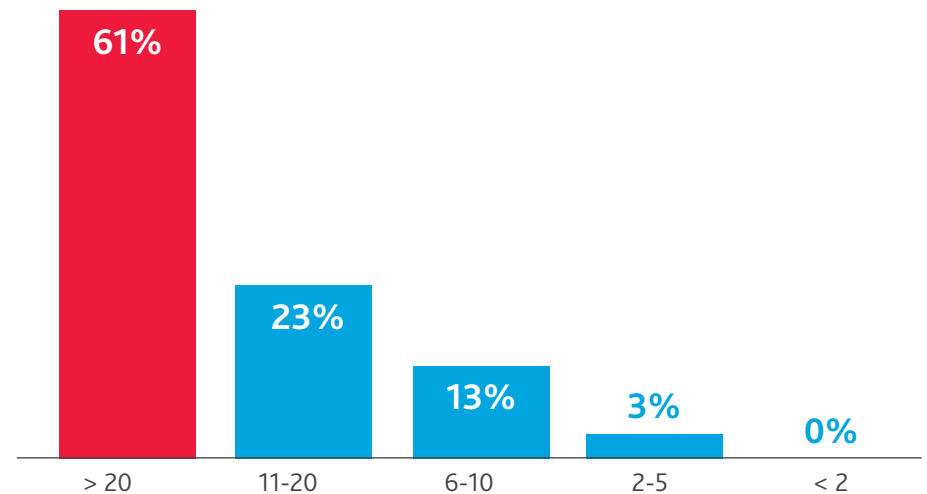
The MPI Internet of Things Study, conducted by The MPI Group and sponsored by BDO, evaluated the readiness of global manufacturers to incorporate smart devices and embedded intelligence within their plants and into their companies' products. In September and October 2018, 368 manufacturers participated in the study. This report focuses on IoT enablement in manufacturing operations in the broader context of Industry 4.0 adoption.

Who we surveyed

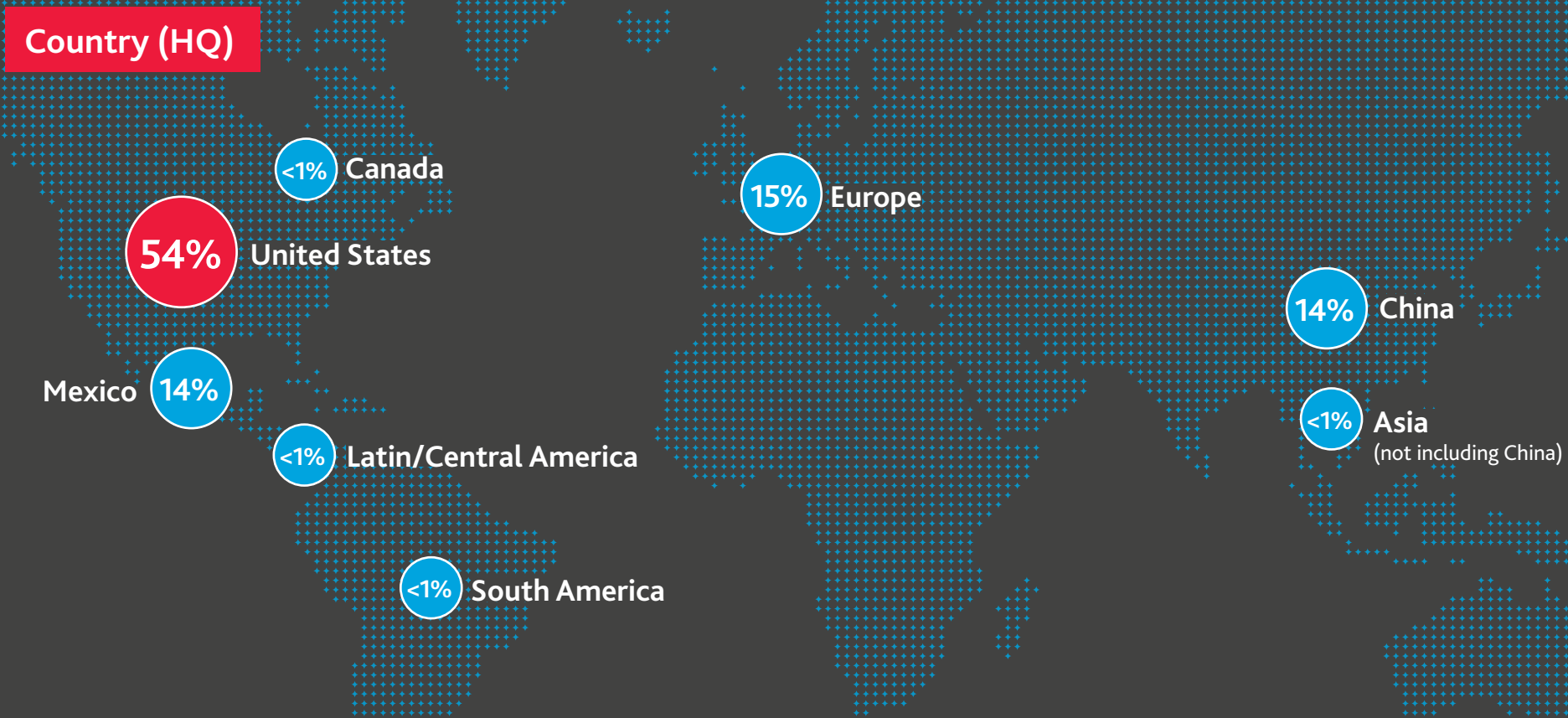
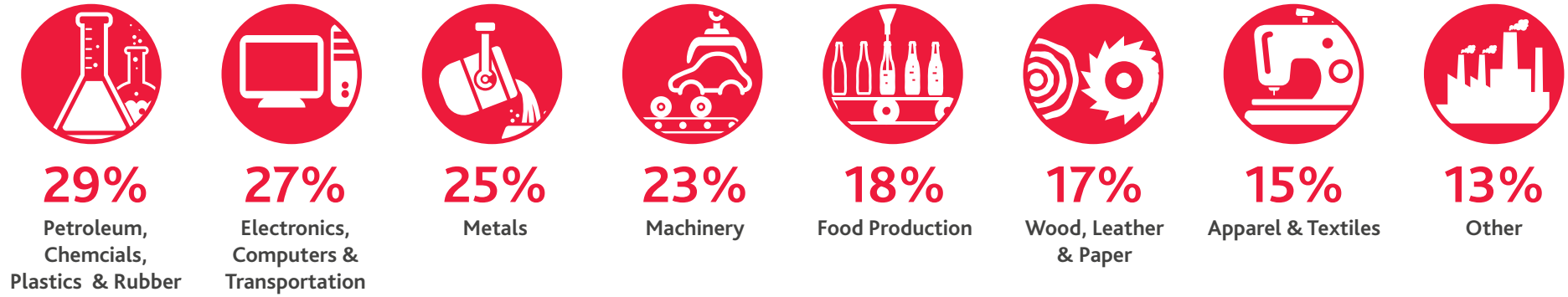
Annual Revenues



Years in Operation



Category



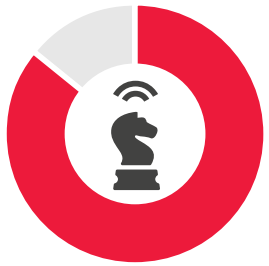
Strategy & Goals

**It's (almost) universal:
Manufacturers are embracing
the IoT.**

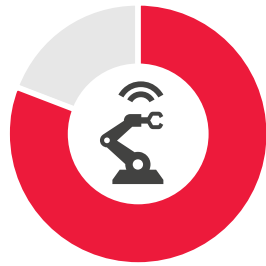
"You've got to eat while you dream. You've got to deliver on short-range commitments, while you develop a long-range strategy and vision and implement it. The success of doing both. Walking and chewing gum if you will."

– Jack Welch

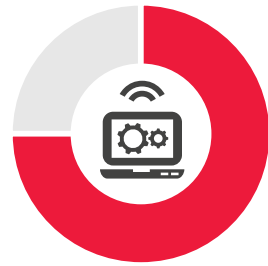




86% have developed or are planning to develop a **strategy to apply IoT technologies to production equipment and processes.**



81% plan to increase IoT enablement in **production processes and equipment** in the next two years.

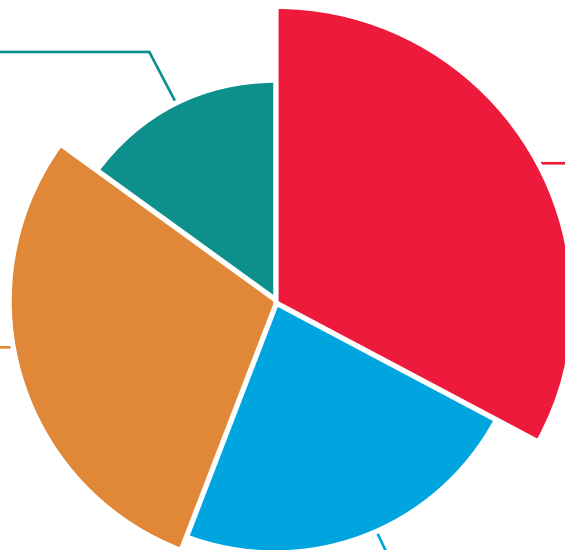


75% plan to increase IoT enablement in **non-production processes and equipment** in the next two years.

APPLYING IoT TECHNOLOGIES TO PROCESSES

15%
No plans to develop strategy

29%
Plan to develop strategy



33%
Strategy in place – implemented

23%
Strategy in place – not yet implemented

Globally, manufacturers are focusing their IoT efforts on quality and efficiency.

Top 5 Goals:



Improve product quality



Increase speed of operations



Decrease manufacturing costs



Improve safety



Improve maintenance/uptime

(But goals vary significantly by country)

Need to kick your Industry 4.0 strategy into gear?
[The Middle Market Manufacturer's Roadmap to Industry 4.0](#)



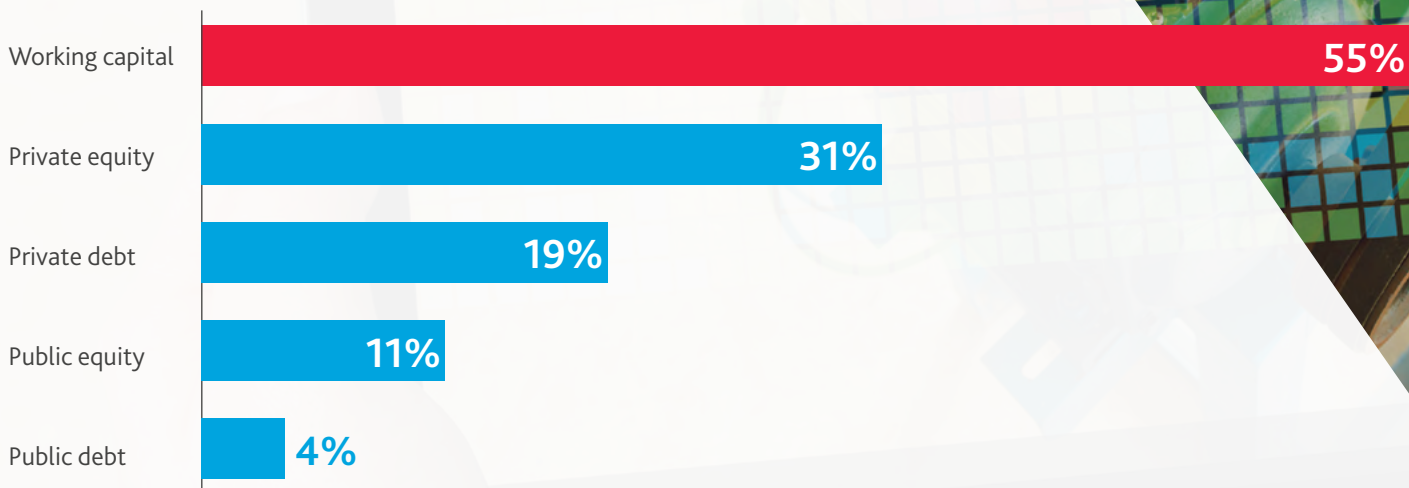
Budgeting & Project Management

Temp Min 15,56 C
Temp Max 33,94 C
Temp Ambient 32,13 C

Date XX-XX-XXXX
Time XX:XX
Job WW25D76

Customer World Wide
Status Working
Scale MAX

HOW THEY'RE PLANNING TO FINANCE FUTURE IoT INVESTMENTS:

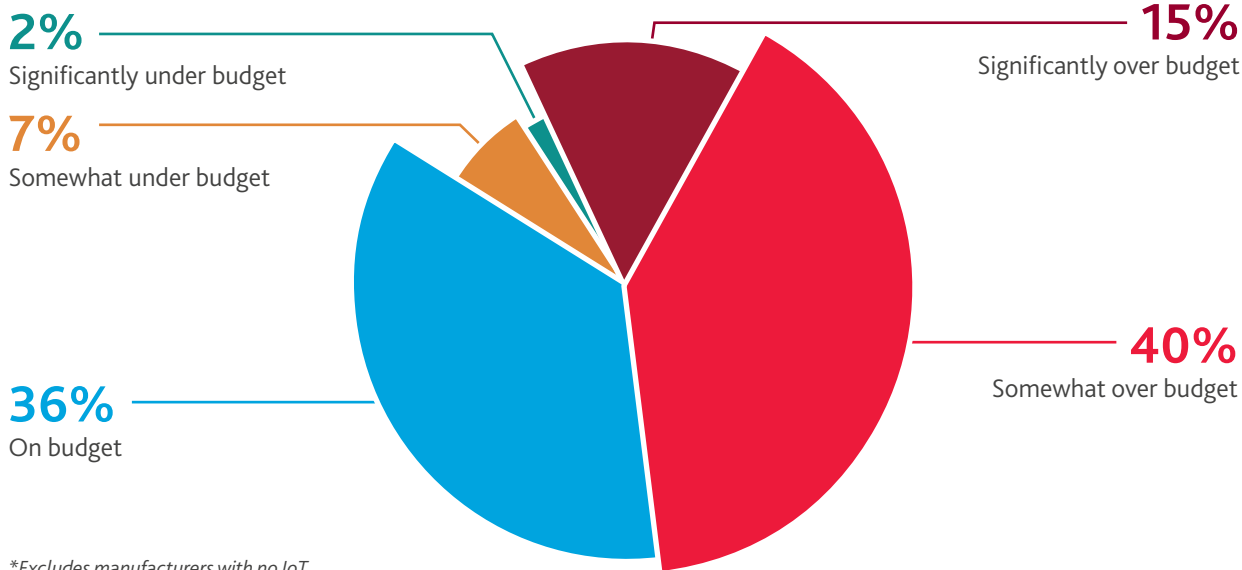


28% are using tax savings from U.S. federal tax reform to increase IoT investments.

83% plan to increase IoT investments in the next two years.

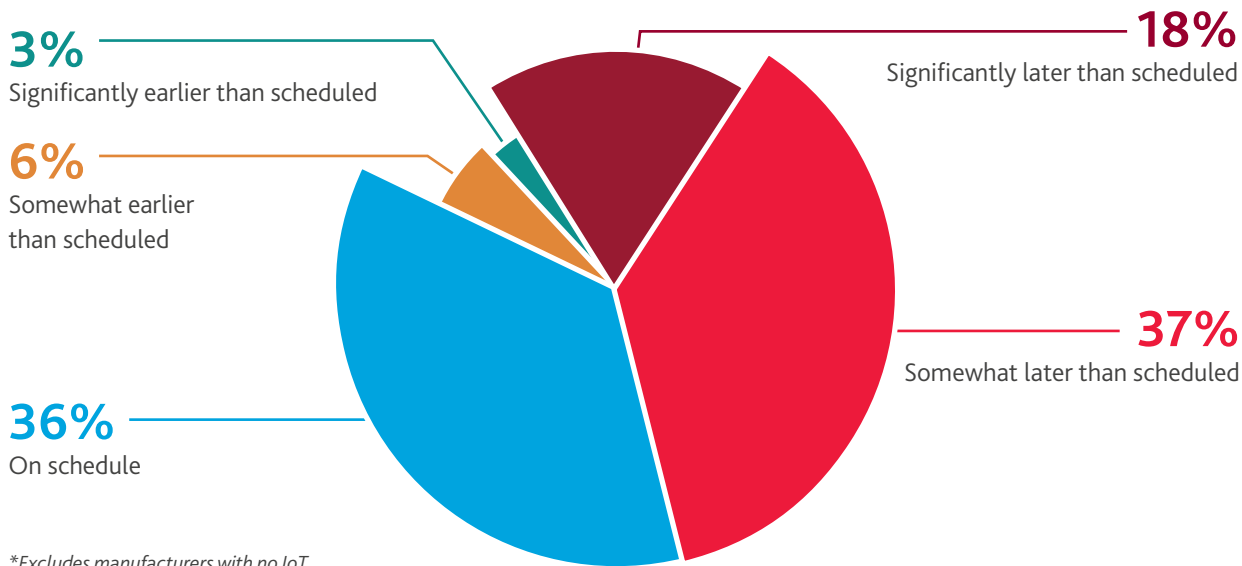


HOW WELL THEY'RE STICKING TO THEIR CURRENT IoT BUDGETS:



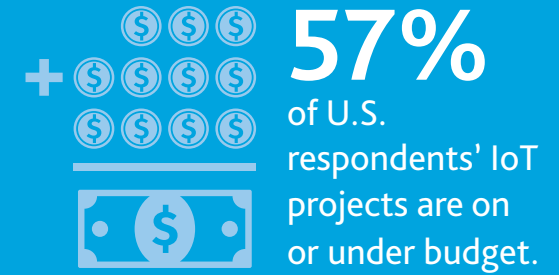
*Excludes manufacturers with no IoT

...AND KEEPING IoT DEVELOPMENTS ON SCHEDULE:

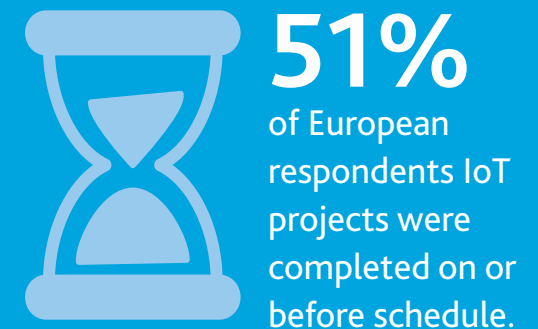


*Excludes manufacturers with no IoT

U.S. manufacturers fare better at accurate budgeting:



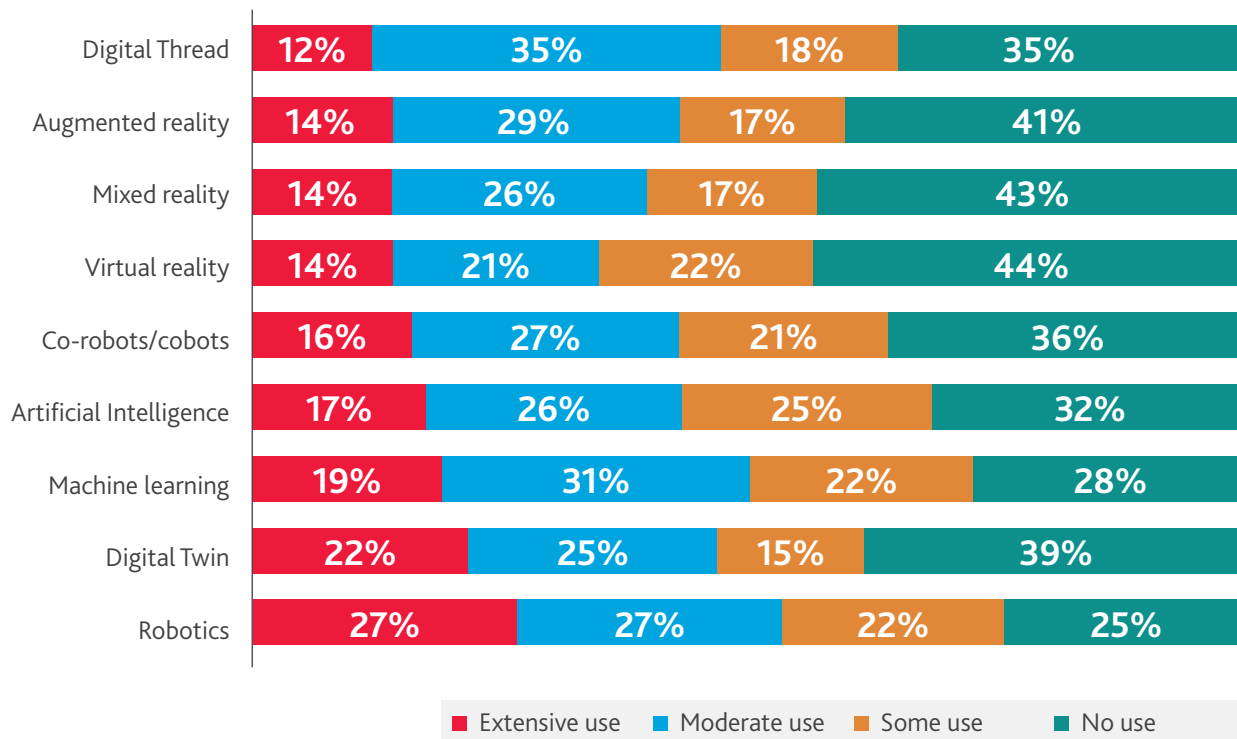
Europe takes the prize for effective time management.



Technology

By layering on technologies like artificial intelligence, automation or augmented reality, IoT insights become actions and outcomes.

INVESTMENT IN INDUSTRY 4.0 ENABLERS



DIGITAL ENABLERS DEFINED

Digital Thread: The digital thread provides a formal communication framework for the flow of information throughout the product lifecycle, across organizational boundaries.

Digital Twin: A digital twin is a virtual replica of a physical asset used to test, monitor and optimize performance in the real world.

Virtual Reality: Virtual reality is a full immersion into a computer-generated environment.

Augmented Reality: Augmented reality overlays virtual elements, such as computer-generated graphics or simulations, on top of the real-world environment.

Mixed Reality: Mixed reality is an advanced form of augmented reality, integrating the virtual and physical worlds to create an immersive interface.

Artificial Intelligence: Artificial Intelligence is a broad concept to describe machines trained to think like humans.

Machine Learning: A subset of AI, machine learning aims to mirror human intelligence by equipping algorithms with the ability to "learn" on their own without human intervention based on experience and new inputs.

Robotics: Robotics is the interdisciplinary field related to studying, designing and building robots. Robots are programmable machines capable of acting autonomously or semi-autonomously.

Co-Robots/Cobots: Cobots, short for "collaborative robots," are designed to work alongside humans rather than autonomously.



Challenges

TOP 5 CHALLENGES:

The road to Industry 4.0 isn't without obstacles.



Identifying opportunities/benefits of IoT



Incorporating smart devices/embedded intelligence



Adapting existing technologies



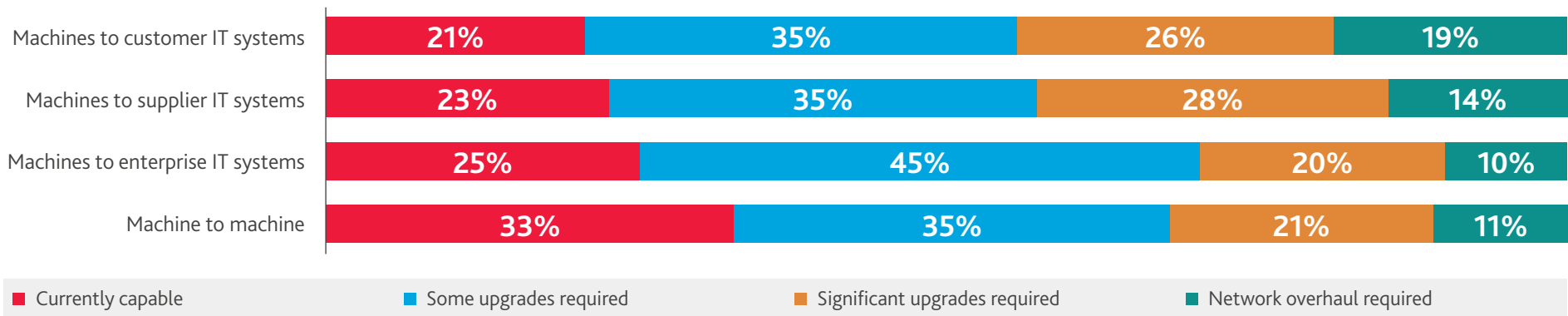
Network capabilities to handle IoT



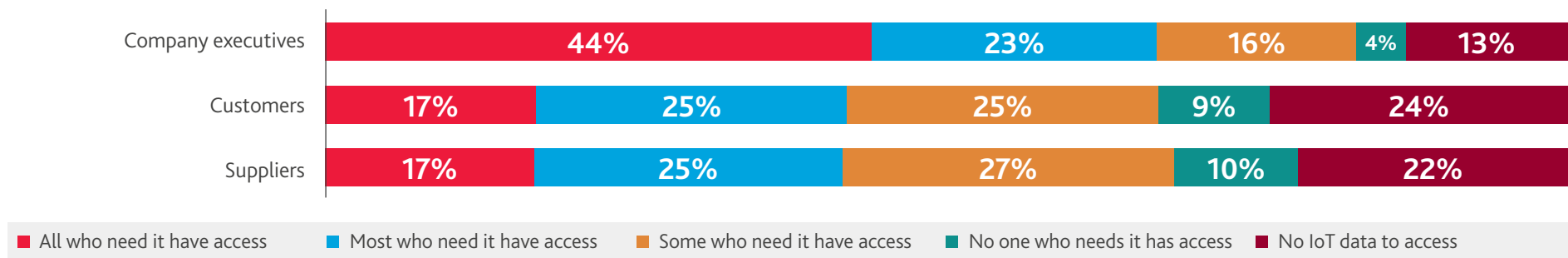
Security of corporate devices, network and data

End-to-end connectivity across the supply chain is still an unrealized goal.

NETWORK INFRASTRUCTURE ABILITY TO SUPPORT IoT COMMUNICATION

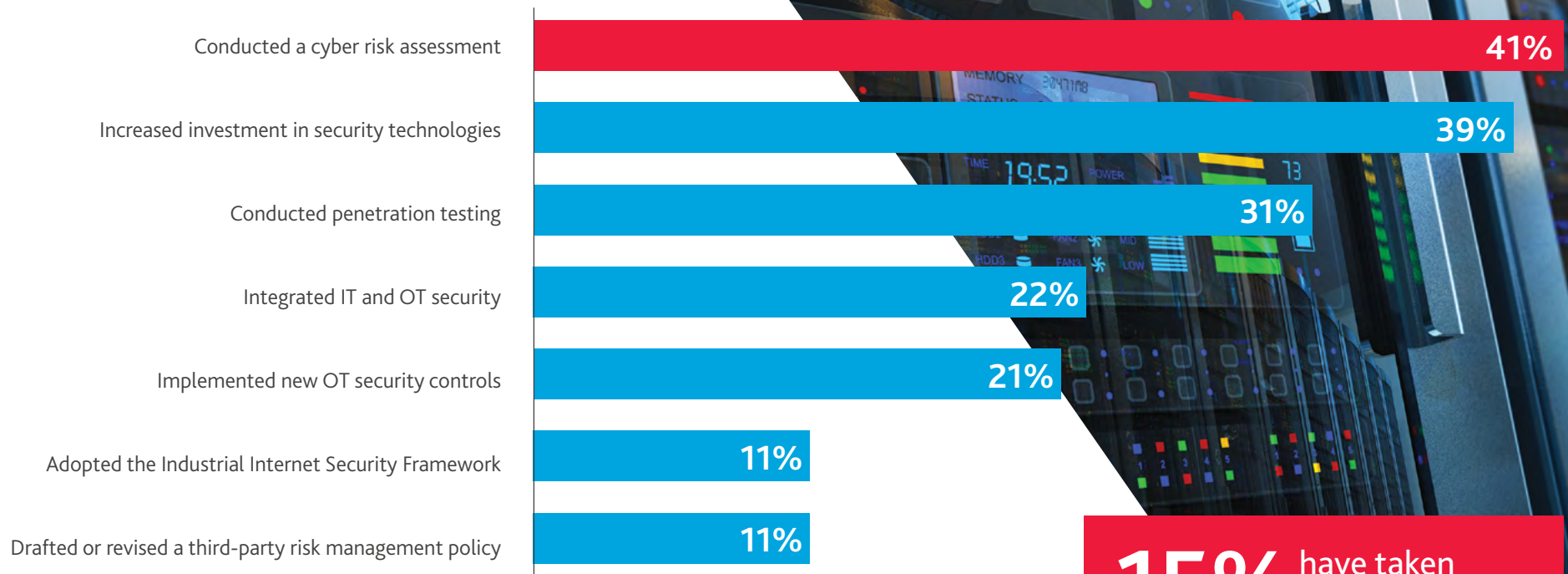


GAPS IN INFORMATION SHARING



Few manufacturers have adopted security controls designed specifically for the IoT environment.

STEPS TAKEN TO ADDRESS SECURITY CONCERNS



15% have taken no steps to improve their security for the IoT environment.

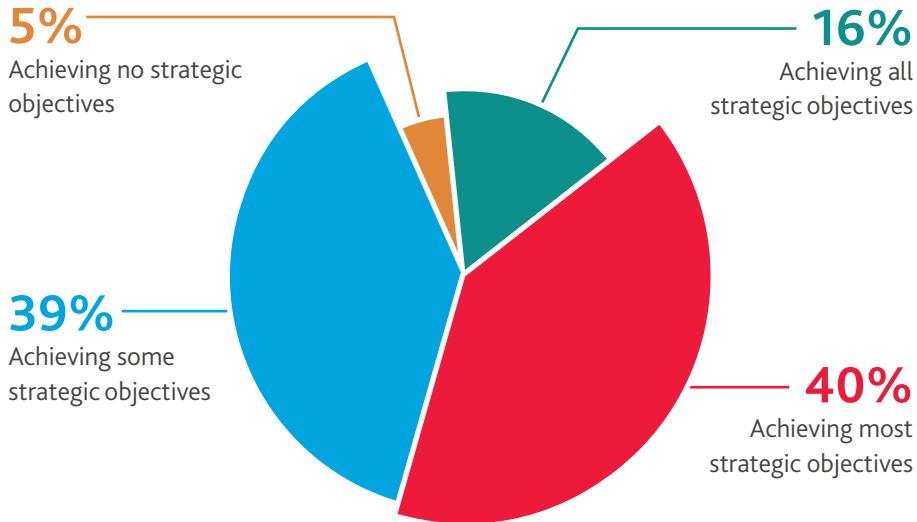


ROI

Investments in the IoT and Industry 4.0 pay off...big time.



IoT DEVELOPMENTS ACHIEVING THE STRATEGIC OBJECTIVES SET FORTH PRIOR TO IMPLEMENTATION

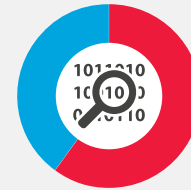


**Based on those manufacturers who set strategic objectives prior to implementation*

95% of manufacturers are achieving at least some of their strategic objectives.

KEY BENEFITS:

BUSINESS INSIGHT



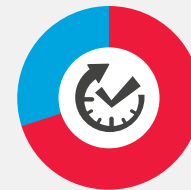
60% have seen improvement in their **company's ability to leverage big data**

SECURITY

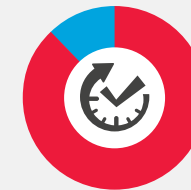


56% have seen an **increase in security** from applying IoT technologies to operations

PRODUCTIVITY



LAST YEAR:
70% saw increases in **productivity**

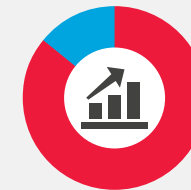


NEXT 5 YEARS:
88% **anticipate** increases in productivity

PROFITABILITY



LAST YEAR:
68% saw increases in **profitability**



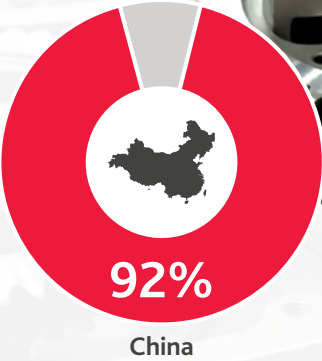
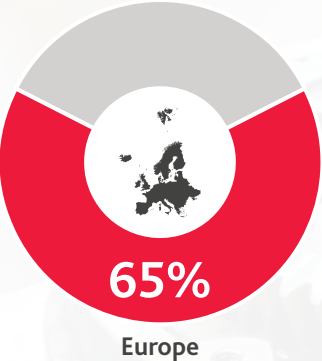
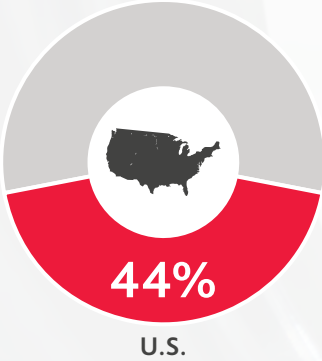
NEXT 5 YEARS:
86% **anticipate** increases in profitability



Global Manufacturing Competitiveness

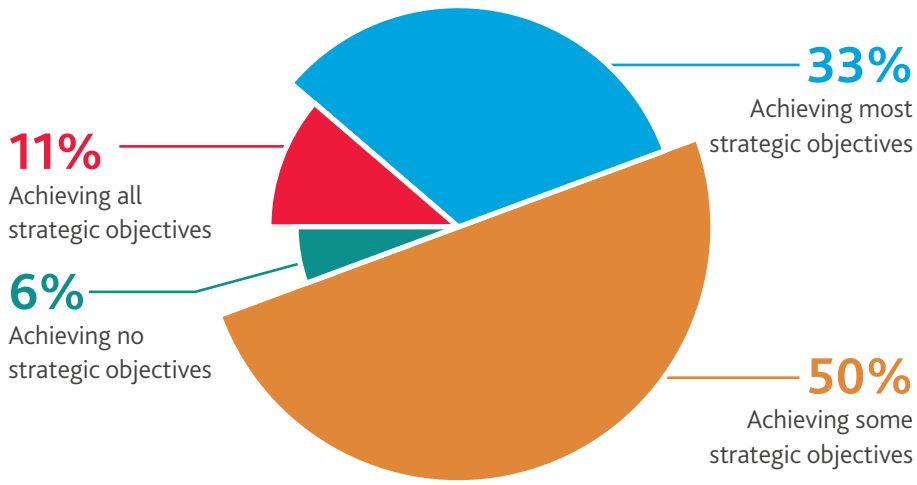
The U.S. lags significantly behind Europe and China in Industry 4.0 strategic readiness—and that's reflected in their business outcomes.

PERCENTAGE OF MANUFACTURERS IMPLEMENTING AGAINST A STRATEGIC PLAN:

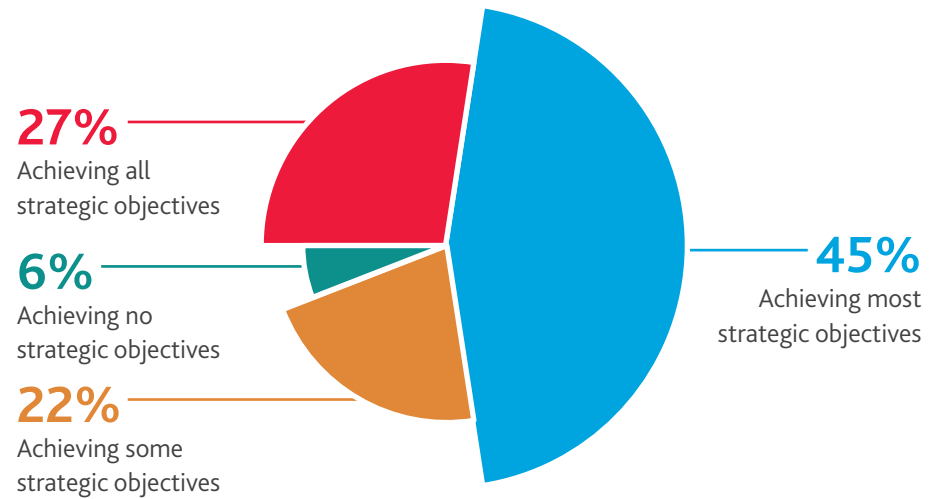


Here's how those strategies have panned out...

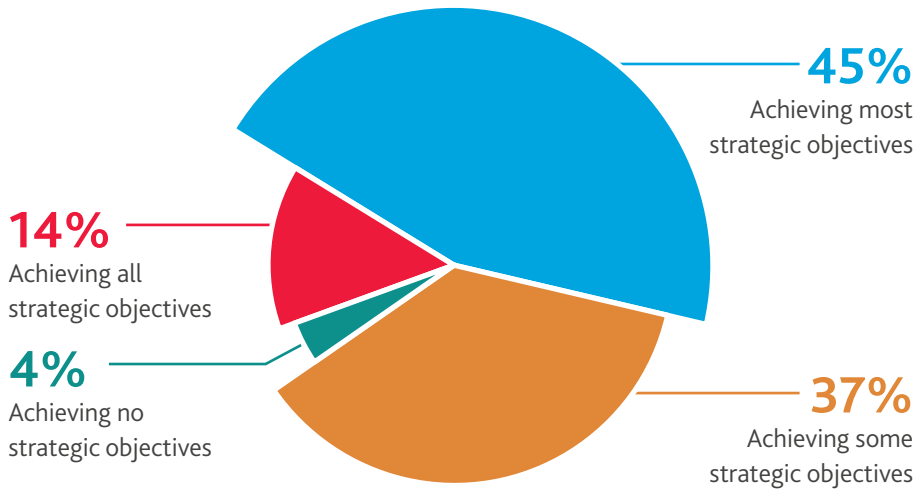
U.S.



EUROPE



CHINA



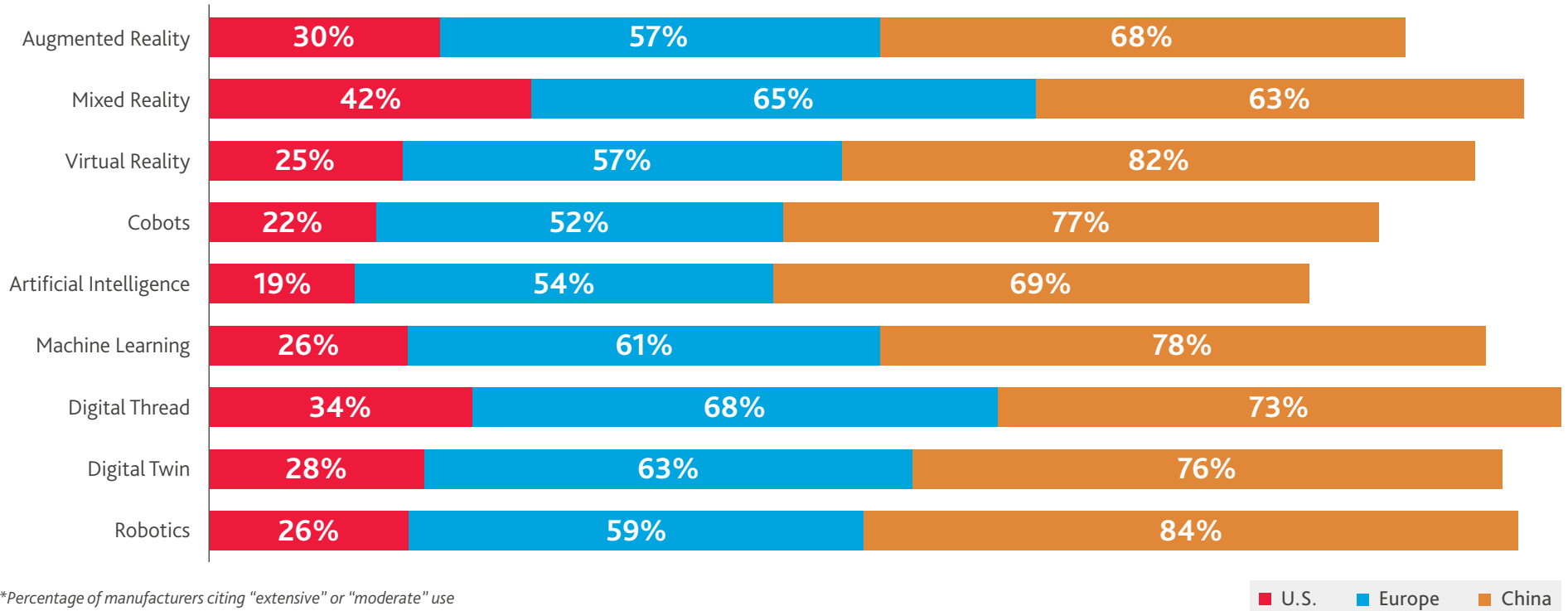
Chinese manufacturers have been most successful in achieving their strategic objectives.

**Excludes organizations with no IoT as well as those that did not set strategic objectives prior to implementation*



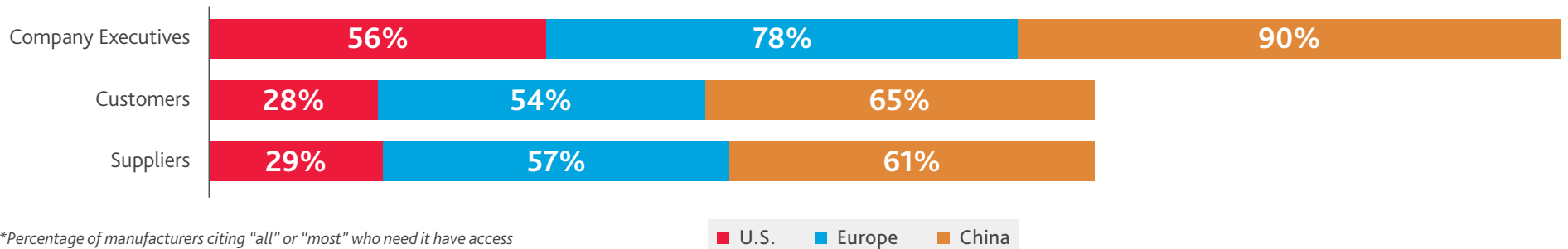
China and Europe outpace the U.S. in adoption of Industry 4.0 enabling technologies:

ADOPTION OF INDUSTRY 4.0 ENABLING TECHNOLOGIES



China leads the charge on sharing IoT data outside traditional boundaries:

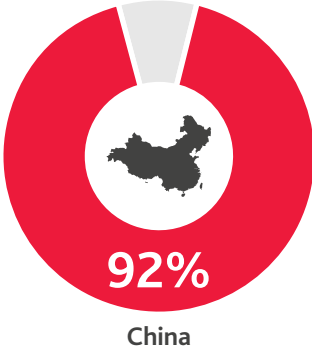
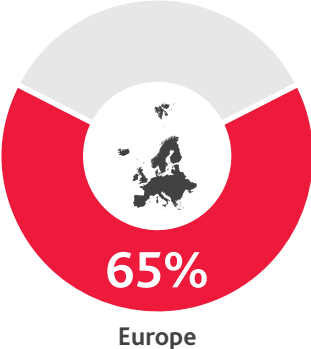
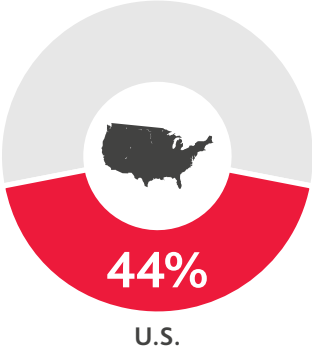
ACCESS TO DATA



Comparing Results Across Borders

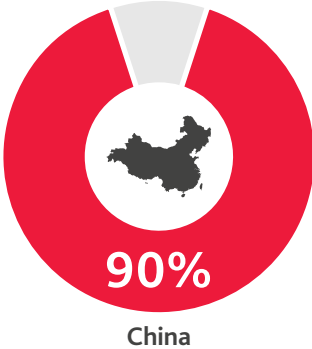
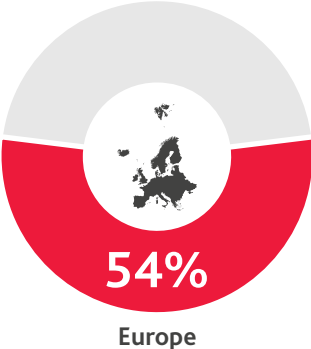
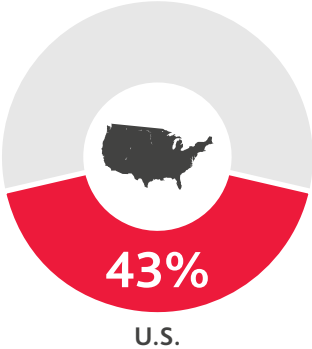
BUSINESS INSIGHT

Percentage of manufacturers seeing improvements in ability to leverage big data



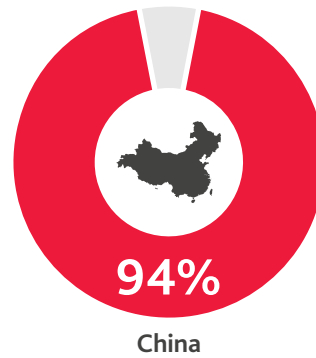
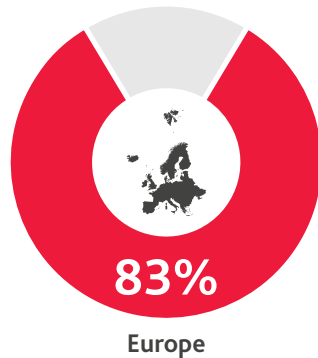
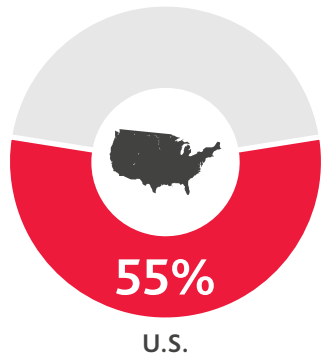
SECURITY

Percentage of manufacturers seeing improvements in security



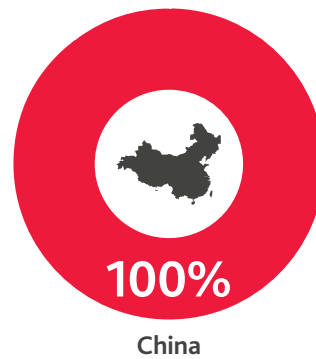
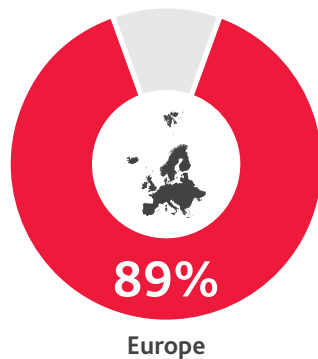
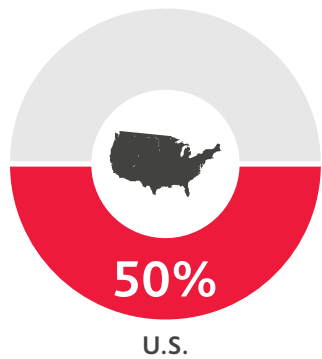
PRODUCTIVITY

Percentage of manufacturers seeing increases in productivity in the last 12 months



PROFITABILITY

Percentage of manufacturers seeing increases in profitability in the last 12 months



Whether you want to focus on enhancing your customer interaction, increasing speed and profitability through operational excellence, mitigating risk and increasing flexibility across the supply chain, or monetizing your data, BDO can help you achieve your goals.

[Learn more](#)





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