Rockwell Automation | PLEX

EIGHTH ANNUAL

# State of **Smart Manufacturing Report**

A global view of today's challenges and tomorrow's opportunities to harness technology for greater resiliency, agility, and sustainability

expanding **human possibility**™

# **SEIZE OPPORTUNITIES** FOR GROWTH

## "We've experienced 20 years of evolution in 2 years."

*This quote from our CEO, Blake Moret,* resonates throughout the findings of our 2023 State of Smart Manufacturing Report, which surveyed 1353 global manufacturers.

The world has changed, and manufacturing has changed with it, but there is more to do. Skilled labor – and labor of any kind – continues to be elusive across the globe. As manufacturers continue to seek opportunities for profitable growth, they're finding that uncertainty in workforce availability is impacting quality, along with their ability to meet their customers' needs and transform at pace. They are addressing this impact by using technology to extract data from their operations and assemble actionable insights. We are also seeing how technology is helping the industry accelerate their agility and competitive differentiation.

The clear message coming from this report is that manufacturers view technology as an advantage for improving quality, agility, innovation, and to attract the next generation of talent. Manufacturers expect to mitigate risk through technology tied to processes and people to build resiliency and drive future success.

I hope you find the report useful in benchmarking your organization against peers and as a catalyst for taking action to drive transformation that will deliver differentiated business outcomes in your industry. Before you dive into the results, here are some of my observations on the findings.

### 2x as many respondents say they lack the technology to outpace the competition, compared to last year's survey

Recent years have made a compelling business case for many newer technologies as disruption has demanded accelerated adoption. This unprecedented pace of change is creating competitive pressure across the industry.

### Sustainability and ESG are integral to Manufacturing

Over 95% of respondents noted some level of sustainability and/or ESG policy over the last two years, whether formal or informal. Regulations are now applying pressure across the value chain for all companies to address sustainability and ESG in their operations. Smart manufacturing technology solutions can help.

### Over 50% more manufacturers are using Machine Learning/Artificial Intelligence compared to last year

This number will continue to rise as manufacturers see the impact that accessible machine learning/artificial intelligence can have on their business. Improved quality, productivity, and engaging talent to use data driven insights for decision making are some of the benefits.

### A third of manufacturers are hampered by 'technology paralysis' – an inability to decide between solutions

Technology is demonstrated throughout the report as being crucial to mitigating risk and delivering growth, so manufacturers must overcome indecision by choosing a partner with relevant expertise and experience who can advise and guide them in implementing a fit-for-purpose solution.

### 97% of participants reported plans to use smart manufacturing technology

Smart manufacturing solutions enable and optimize more agile, resilient production processes, empower the workforce, manage risk, drive sustainability, and accelerate transformation.

While the landscape is not predictable, history is clear in showing that adversity ignites innovation and creates opportunity. Manufacturers with the right vision, strategy, bias for action, and partners will seize this moment to outpace their competitors and forge a bright future.

With best wishes for a productive and successful 2023,

***Veena Lakkundi***

Senior Vice President, Strategy and Corporate Development, Rockwell Automation

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# EXECUTIVE SUMMARY

## Manufacturers Embrace Technology

As manufacturers embrace smart manufacturing, they are collecting more and more potentially valuable data. However, if data is siloed in separate systems, or the requisite skills for analyzing insights are lacking, manufacturers can't fully capitalize on the data they hold.

- The #1 way manufacturers plan to **drive positive business outcomes** over the next five years is through better use of data analytics
- **40%** - the year-over-year increase in manufacturers who believe they lack the ability to use data to make decisions to outpace the competition
- **97%** of participants reported plans to use smart manufacturing technology

## Profitable growth without sacrificing quality

As we emerge from the pandemic, the renewed drive for growth and expansion is rising higher up the agenda. What comes through loud and clear from manufacturers, however, is that they are determined not to sacrifice quality in the pursuit of maximizing revenue and profit.

- According to respondents, the #1 internal obstacle they face in 2023 is **balancing profitable growth and quality**
- **45%** of respondents believe a push for higher quality is creating the need to accelerate digital transformation in their organizations
- When asked where **artificial intelligence** will have the most impact on manufacturing, quality (closed-loop control, in-line quality) topped the list ahead of automation, forecasting, and tracking & compliance

## Outpacing the Competition

There is a growing sense that manufacturers who can attract, retain, and upskill the right team will outperform competitors. Alongside workforce concerns, implementing the right processes and technology are recognized as competitive differentiators within the manufacturing industry.

- Skilled workforce remains a top concern and is the #1 reason why **manufacturers believe they can't outpace the competition in 2023**
- Almost **2x** as many respondents say they lack the technology to outpace the competition, compared to last year's survey
- **79%** of manufacturers lack a complete supply chain planning solution

**A global survey of over 1,350 manufacturers** reveals a focus on delivering profitable growth without sacrificing quality, an emphasis on accessing data's true potential, and increasing adoption of technology to build resilience, enable agility, and increase sustainability.

Rockwell Automation

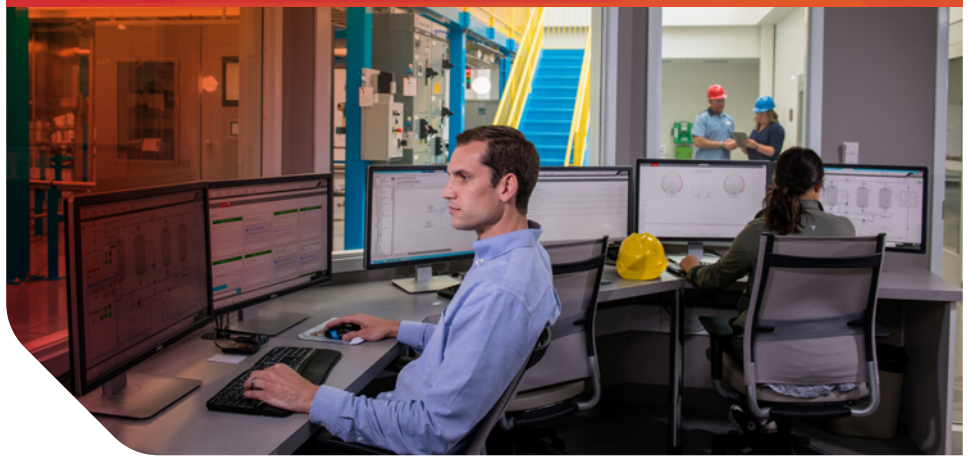
**The 8th annual edition of the State of Smart Manufacturing report surveys the broadest audience yet, probing deeply into global manufacturing.** This report has expanded in scope from previous years, with quadruple the number of respondents, across **13** of the top manufacturing countries; **25%** of whom work for firms with over **$1B** in revenue. Participants, who hold positions from management up to the C-suite, responded to questions that reveal the current state of technology in manufacturing, the biggest challenges, and the future of the industry.

This report from Rockwell Automation, in association with Sapio Research, includes a technology adoption plan alongside the research findings to help you turn insights into action.

## WHAT IS SMART MANUFACTURING?

Smart Manufacturing is the intelligent, real-time orchestration and optimization of business, physical, and digital processes within factories and across the entire value chain. Resources and processes are automated, integrated, monitored, and continuously evaluated based on all available information as close to real time as possible.

MESA International



# SECTION 1:

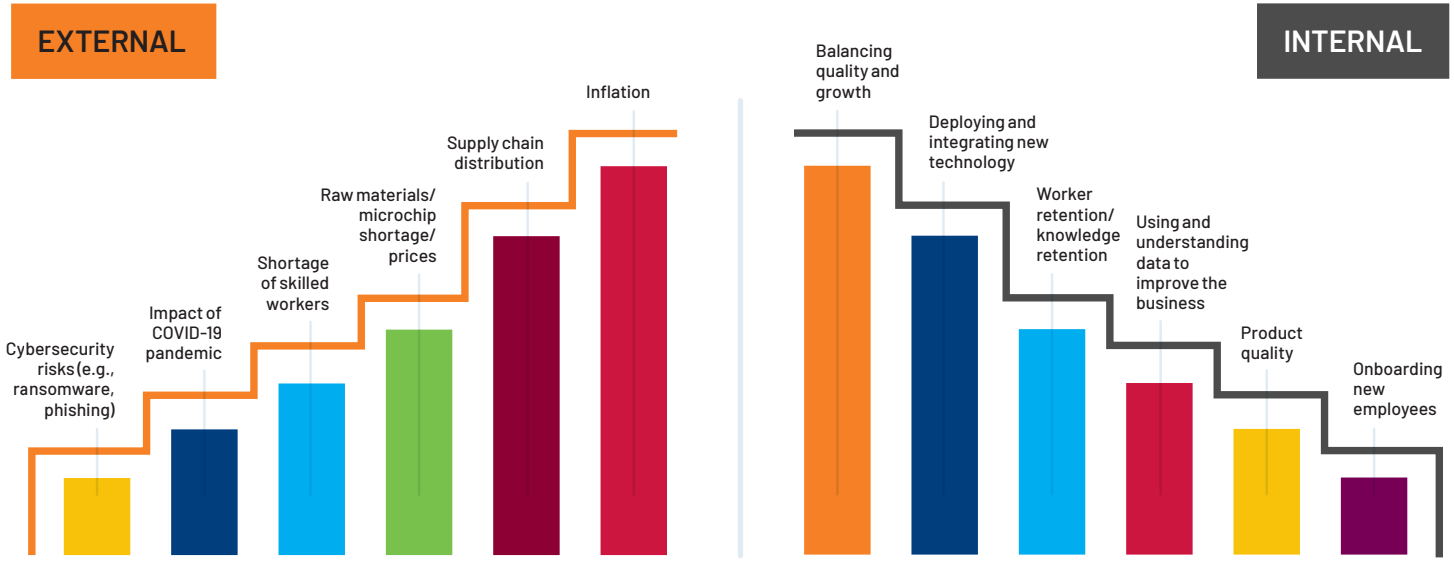
## THE CURRENT STATE OF **SMART MANUFACTURING**

Manufacturers are navigating a complex landscape: Aiming for profitable growth without sacrificing quality; building greater resiliency, agility, and sustainability both inside the organization and beyond; and tackling workforce and supply chain issues simultaneously. **One thread runs through it all: the need for technology to mitigate risks, open up new opportunities, and remain competitive.**

# **INDUSTRY OBSTACLES** AND OUTLOOK

Inflation, the pandemic, and supply chain disruption were named as the top three external forces to have dampened growth during 2022. Looking ahead to 2023, participants expect the impact of the pandemic to wane, while inflationary pressures are set to rise. This survey's findings point to the necessity of making strategic investments in technology to counter the economic squeeze.

## **Technology** Industry Obstacles and Outlook




**Q.** What do you see as the biggest external obstacle(s) to your organization's growth for calendar year 2023? Select top 5
**Q.** What do you see as the biggest internal obstacle(s) to your organization's growth for calendar year 2023? Select top 5

Base: 1353

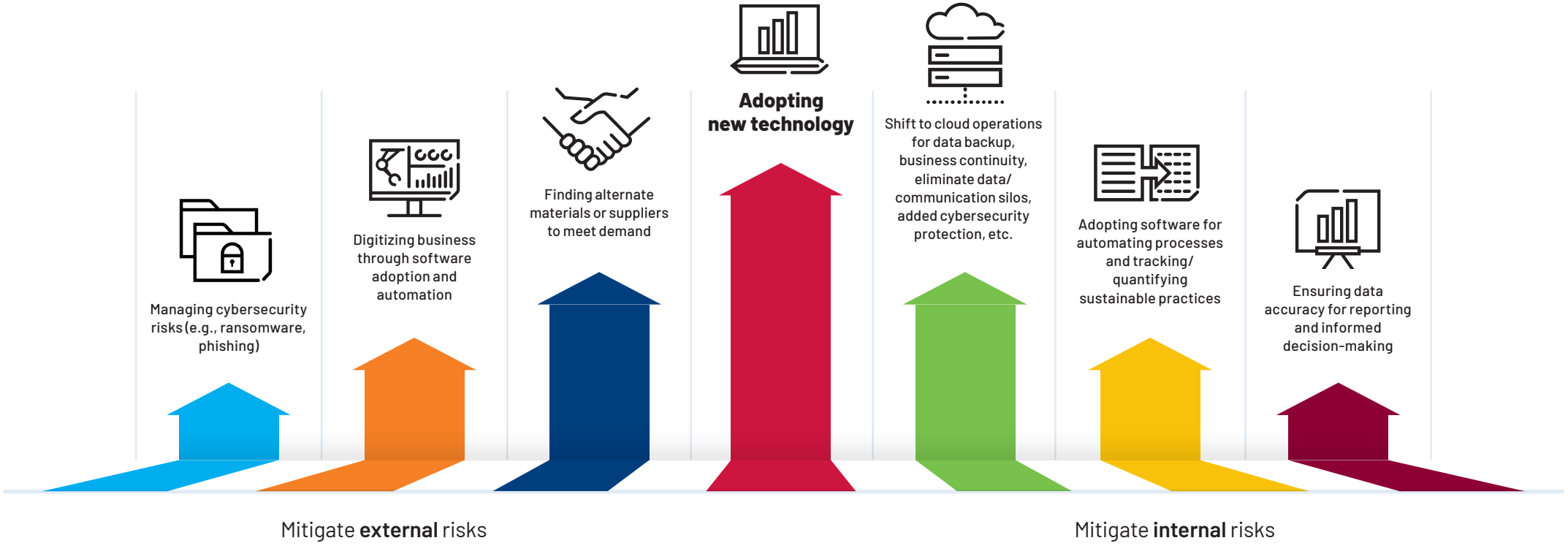
"The manufacturing industry has maintained its rapid pace of change and disruption, making the ability to adapt a premium. Manufacturers have encountered many challenges in their efforts to become more resilient while maintaining efficiency, but one of the most cited issues are outdated/legacy systems. While the predictions highlighted touch upon many areas of the business, the main theme that can be tied back to is having the proper digital infrastructure in place to serve as the foundation for transformation."

**Reid Paquin** – Research Director, IDC Manufacturing Insights

IDC FutureScape: Worldwide Manufacturing 2023 Predictions

# **TECHNOLOGY IS TOP RESPONSE** FOR RISK MITIGATION

Manufacturers are turning to technology to tackle the risks that exist both inside and outside the organization. The **top two ways** respondents are addressing internal risk are to adopt new technology aimed at minimizing disruption from workforce or supply issues (**53%**) and to shift their operations to the cloud for purposes including increased cybersecurity protection and business continuity (**50%**). When it comes to external risks like inflation, supply chain, and workforce shortages, the top-ranking mitigation tactic is adopting new technology (**44%**).




**Q.** How is your organization currently mitigating the internal risk mentioned in the previous questions? Select top 5

Base: 1353

**Q.** How is your organization currently mitigating the external risk mentioned in the previous questions? Select top 5

# **COMPLETE** SUPPLY CHAIN SOLUTIONS ARE LACKING

Despite being impacted by supply chain disruption in recent years, **4 out of 5 manufacturers lack end-to-end supply chain planning.** End-to-end software solutions are designed to address problems faced by manufacturers, such as keeping costs down while managing redundancy and resiliency in the supply chain – which they do by incorporating sales and operations planning, while also increasing visibility and control. Piecemeal solutions often don't contain enough inputs to accurately plan and forecast.

**50%** of participants are either not using a supply chain planning process or are using manual tools (i.e. spreadsheets) or homegrown solutions, placing a large IT burden on the company and introducing a risk of obsolescence.

The lack of visibility faced by those without end-to-end digital supply chain solutions will prove problematic, especially in the face of growing pressure from regulatory bodies, along with audit demands from large customers that now require tracking and traceability transparency.

**79% of manufacturers lack end-to-end supply chain planning software**

**Q.** To what extent does your organization currently perform supply chain planning? Select one  Base: 1353

"As automation of data and information flows expands beyond the factory, the need to manage supply chain convergence grows. Gartner defines supply chain convergence as the synchronization of processes, subprocesses and activities across the supply chain. It requires breaking down the departmental or functional barriers that exist between organizations. For smart manufacturing, this means evaluating the processes used in logistics, planning and sourcing, and customer service against those used in manufacturing operations, and designing cross-functional performance metrics to assess total value generated for the customer."

**Gartner® Ebook**, 'Elevate and Expand Your Smart Manufacturing Strategy', 2022.

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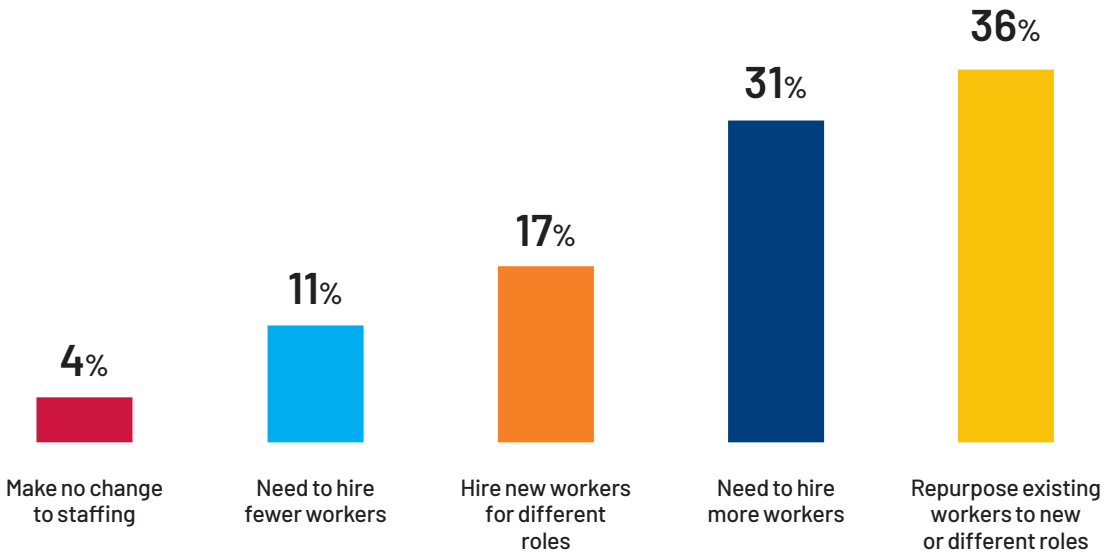
# ADDRESSING **WORKFORCE**

Complex issues such as dealing with a shortage of skilled workers and the need to train employees on new **processes at speed** require modern approaches. **More than two-thirds of manufacturers believe that technology can be very helpful, or extremely helpful, in addressing these types of workforce challenges.**

But technology cannot drive success without people and vice versa.

## **Technology's** Impact on the Workforce




**Q.** By increasing our use of technology in the next 12 months, my organization will: Select one

Base: 1353

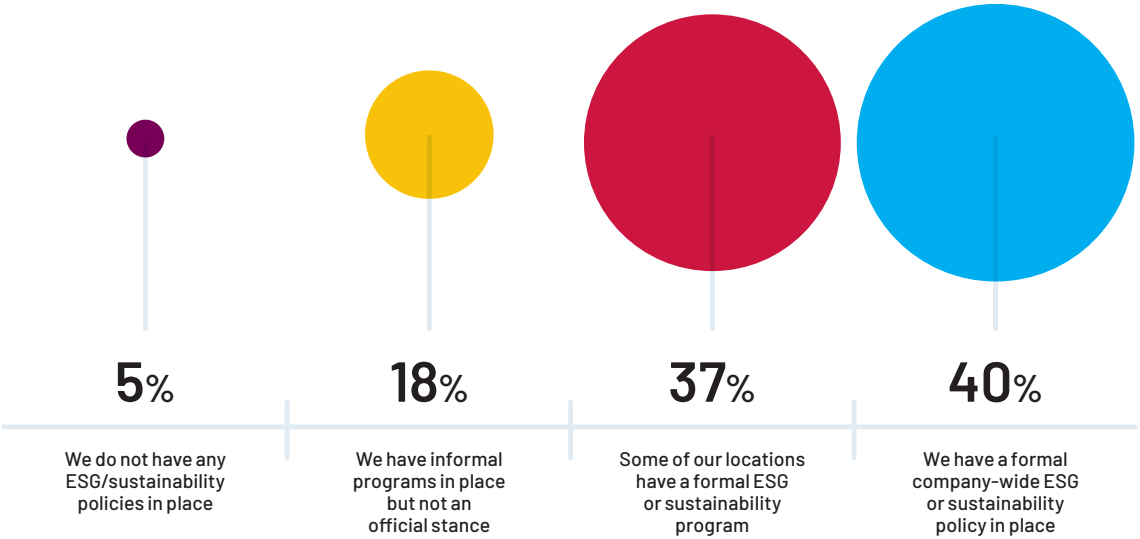
**89% of manufacturers expect to maintain or grow employment as a result of technology adoption**

# **SUSTAINABILITY** MOVES INTO THE MAINSTREAM

Sustainability and environmental, social, and governance practices (ESG) have moved into the spotlight in recent years. The proliferation of new or strengthened regulatory frameworks, such as the International Sustainability Standards Board (ISSB), the EU's Sustainable Finance Disclosure Regulation (SFDR), and Taxonomy Delegated Act is elevating the need for digitalization.

The manufacturing sector recognizes this along with increasing pressure from consumers to incorporate sustainability and ESG considerations into operations as **95%** of respondents reported the existence of policies or programs, whether formal or informal.

Companies with higher revenues are more likely to have formalized ESG or sustainability programs (**86%**) compared to their counterparts in the medium revenue (**80%**) or low revenue (**68%**) brackets, but trends indicate the increase in regulations and requirements from upstream and downstream suppliers will put pressure on all manufacturers, particularly when considering reporting demands around scope 1, 2, and 3 emissions.




**Q.** Which of the following best describes your organization's current efforts around ESG (Environmental, Social, and Governance)/Sustainability? Select one

Base: 1353

> "By 2026, Regulations and Sustainability-Linked Lending Will Drive Over 60% of Global Manufacturers to Adopt Product Carbon Footprint as a Key Metric to Operationalize Sustainability Beyond Reporting."
>
> **IDC FutureScape** – Worldwide Manufacturing 2023 Predictions, doc #US48630122, October 2022.

# **SMART MANUFACTURING** ADOPTED GLOBALLY

**Eighty-four percent** of respondents have adopted smart manufacturing or are actively evaluating solutions with the intention to invest in the coming year. Companies with higher revenues are more likely to have adopted smart manufacturing technology, with a **58%** adoption rate among respondents in the top third for revenue, compared to **40%** among the lower revenue bracket. This may indicate an opportunity for small and mid-size organizations to leverage an incremental, lower initial cost and resource approach to smart manufacturing with modular solutions that provide strong value and quick time to payback and ROI.

Adoption rates also vary by country, with the top three being China (**70%**), the US (**60%**) and India (**57%**).

**Q**. To what extent has your organization adopted smart manufacturing technology? Select one

Base: 1353

> "Smart manufacturing initiatives are changing the focus of manufacturers from internally focused, plant-specific functionality to more end-to-end solutions, changing MES from plant monitoring to a key data and intelligence source for the enterprise and supply chain."
>
> Gartner, 'Critical Capabilities for Manufacturing Execution Systems', May 31, 2022.

# SMART MANUFACTURING **SOLUTIONS**

**Smart devices** are self and system-aware assets that acquire and process operating data – and monitor and report on asset conditions such as self-diagnostics and energy usage.

**Manufacturing Execution Systems (MES)** track and document the transformation of raw materials into finished goods, providing real-time production management to drive enterprise-wide compliance, quality, and efficiency.

**Quality Management Systems (QMS)** standardize and automate quality documentation, processes, and measurements.

**Computerized Maintenance Management Systems (CMMS)** help organizations track and manage maintenance and repair activities for their facilities, equipment, and other assets in one place.

**Asset Performance Management (APM)** combines process, operational, and machine-level data through dashboards to monitor machine and plant health, ensuring optimal uptime, throughput, and maintenance needs.

**Production Monitoring** provides seamless connectivity to machines on the plant floor, delivering transparent, real-time operational KPIs like OEE and dashboards to drive continuous improvements.

**Distributed Control Systems (DCS)** use decentralized elements to control dispersed systems, such as automated industrial processes or large-scale infrastructure systems.

**Supply Chain Planning (SCP)** combines data from multiple departments across the business or from outside market resources to sync demand and supply forecasting to improve inventory accuracy and production management.

**Enterprise Resource Planning (ERP)** automates front- and back-office processes, including financial management, revenue management, human capital, order management, billing, and inventory.

**Analytics** that use data to solve manufacturing bottlenecks, optimize output and quality, and provide new insights.

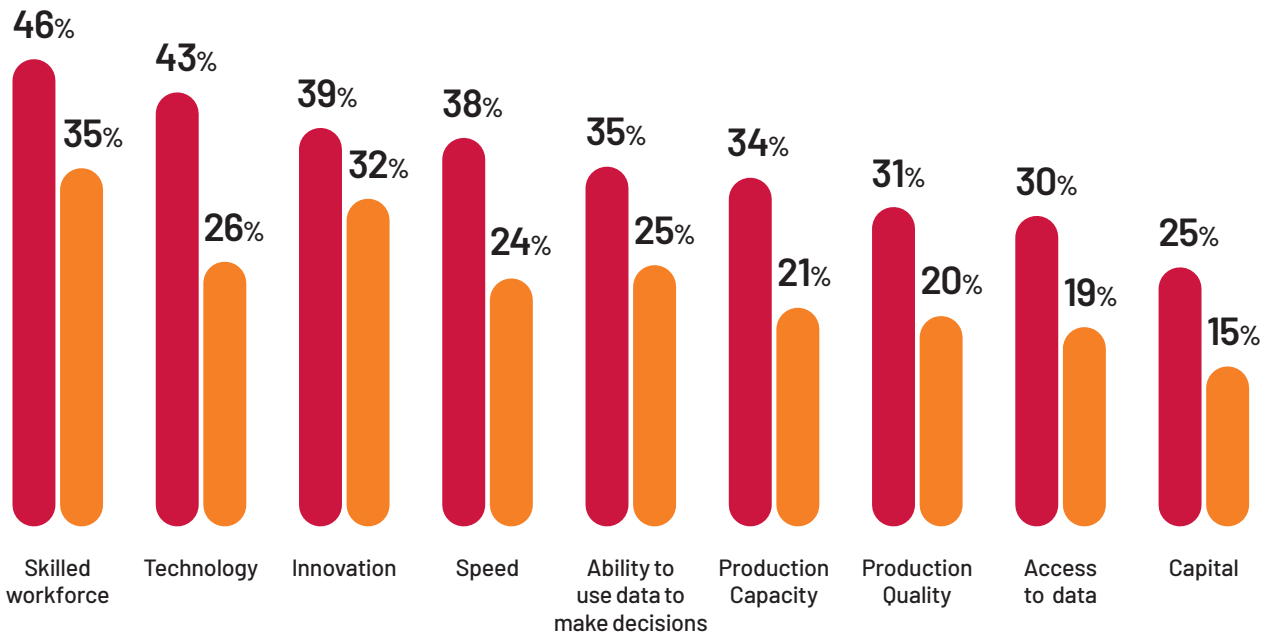
# SECTION 2:

## MANUFACTURERS' **BIGGEST CHALLENGES**

As the world righted itself from the sweeping impact of the COVID-19 pandemic, new issues surfaced in the form of economic uncertainty and continued supply chain disruption. Considering this, our participants identified **maximizing data, generating ROI from technology investment, tackling workforce shortages, and minimizing risks to supply chain, quality, and cybersecurity as their most pressing challenges.**

# **COMPETITIVE DIFFERENTIATORS** FOR MANUFACTURERS IN 2023

There is a growing sense that manufacturers who can attract, retain, and upskill the right team will outperform their competitors. In last year's survey, just **35%** of respondents reported that their organization lacked the skilled workforce to outpace the competition over the next 12 months. That figure has leapt to **46%** - and represents the top concern for manufacturers in relation to competitiveness.




**46% of manufacturers say that they lack the skilled workforce to outpace the competition over the next 12 months**

**Q.** Please read the statement below and select the top 5 answer options that apply to your organization

"My organization lacks the _____ to outpace the competition over the next 12 months." Select top 5

Base: 1353/321

2022 2021

# **LEADERSHIP** AND THE MODERN WORKFORCE

The biggest **leadership challenge** facing manufacturers in the next 12 months is effectively managing people and resources. Understanding how to manage next-generation workers is also a pressing concern, ranking third on the list of leadership obstacles.

## Biggest **Leadership Obstacles**

**Q.** Which of the following are the top 5 biggest leadership obstacle(s) your organization faces in the next 12 months? Select top 5

Base: 1353

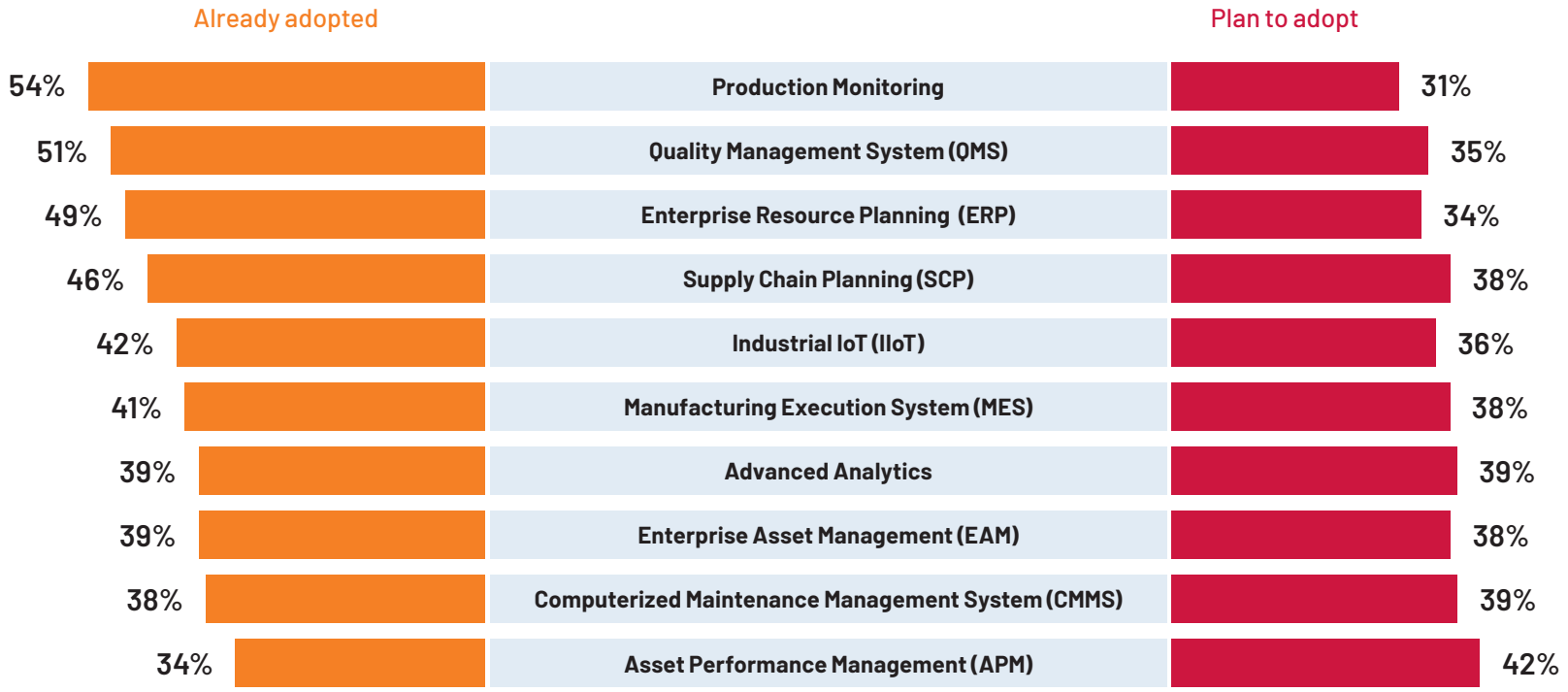
## Biggest **Workforce-Related Obstacles**

**Q.** Which of the following are the biggest workforce-related obstacle(s) your organization faces in the next 12 months? Select top 5

Base: 1353

# **INCREASING QUALITY** AND PROFITABLE GROWTH

Achieving profitable growth while maintaining quality is one of the most pressing concerns facing manufacturers today. Many are turning to technology to solve their production challenges, in order to gain efficiency while ensuring quality. Of those who have already adopted some elements of smart manufacturing, the top two systems were production monitoring (**54%**) and quality management systems (QMS) (**51%**). Only **10%** of respondents haven't yet adopted, and don't plan to adopt, a QMS. Overall, this chart shows that there is demand and growth in technology across all software solutions.




**Q.** Which of the following smart manufacturing initiatives / systems has your company adopted or plans to adopt? Select one per row

Base: 1353

# A SWITCH IN **SUSTAINABILITY FOCUS**

Last year, the driving factors for pursuing sustainability and ESG policies were fostering a collaborative environment and addressing social inequalities. Over the last year, manufacturers' priorities evolved, and the top reason cited was to improve efficiencies, a trend which suggests sustainability is now recognized for its operational improvement capabilities and impact on the bottom line along with the positive social impact.

| 42% | 41% | 38% | 35% | 35% | 32% | 30% | 23% |
|---|---|---|---|---|---|---|---|
| Improve efficiencies | A competitive differentiator (to win business from customers who have supplier requirements) | To address potential environmental issues before they arise | To build our presence in the community | Fosters a collaborative environment | It's good for the bottom line | To address social inequalities that may suppress talent in the workforce | Pressure from investors |

**Q.** Which of the following drives or motivates your organization to pursue ESG/sustainability? Select all that apply *Base note: Asked to those with at least an informal ESG program. Base: 1279

# CYBERSECURITY **AWARENESS AND PREPAREDNESS**

Manufacturing had the highest average ransom payments in 2022 at $2M[1]. Protecting against threats is a constant battle, with the potential for enormous damage in terms of supply chain disruption, safety risks, reputational hit and financial losses. Respondents called out this pressing concern by ranking cybersecurity risks as the top obstacle that smart manufacturing initiatives help to mitigate.

**Q.** Which of these obstacles have your current smart manufacturing initiatives helped to mitigate? Select all that apply

*Base note: Asked to those who have already adopted or plan to adopt smart manufacturing initiatives

Base: 1341

> "The ransom sums are just part of the story, and the impact of ransomware ranges much more widely than just the encrypted databases and devices. 90% of those hit by ransomware in the last year said the most significant attack impacted their ability to operate. Furthermore, among private sector organizations, 86% said it caused them to lose business/revenue."
>
> **Sophos** – The State of Ransomware 2022[1]

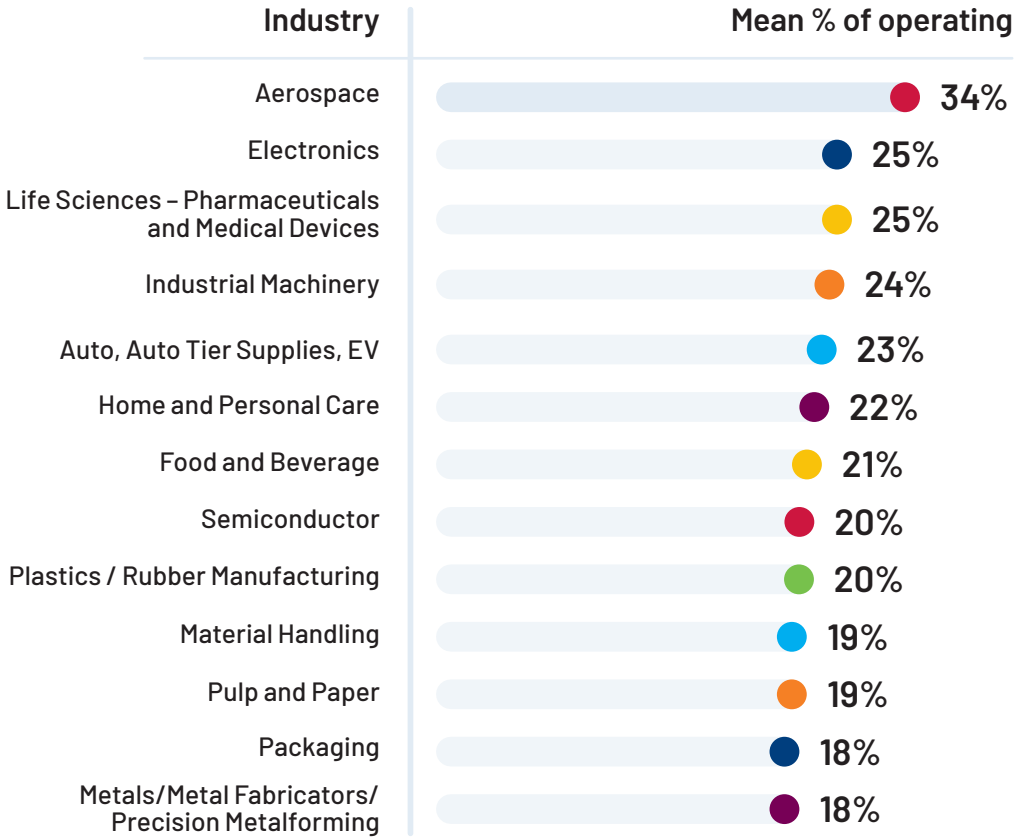
# **INVESTING** IN THE RIGHT TOOLS AND TECHNOLOGY

Our survey found that **23%** of the operating budget is spent on technology, though this investment varies across industries. Whatever the investment level, budgets must be set with an eye firmly on the future. Manufacturers will need to invest in areas that help to address the skills shortage, while increasing automation, machine learning, and artificial intelligence, in order to fully exploit the potential of technology and insights across the organization.

Differences emerge when we break the results down by industry. Highly regulated manufacturers invest around **2x** as much of their operating budget in technology (**34%**) vs. those in the Packaging (**18%**) and Metals/Metal Fabricators/Precision Metalforming (**18%**) sectors. Yet some of the lower invested industries are very margin-challenged and need to squeeze every type of cost out of their business. Smart manufacturing can help.

**23% of operating budget**
is spent on technology.

## Percent of Operating **Budget Invested in Technology**




**Q.** What percentage of your operating budget goes towards technology investment? Select one  Base: 1353

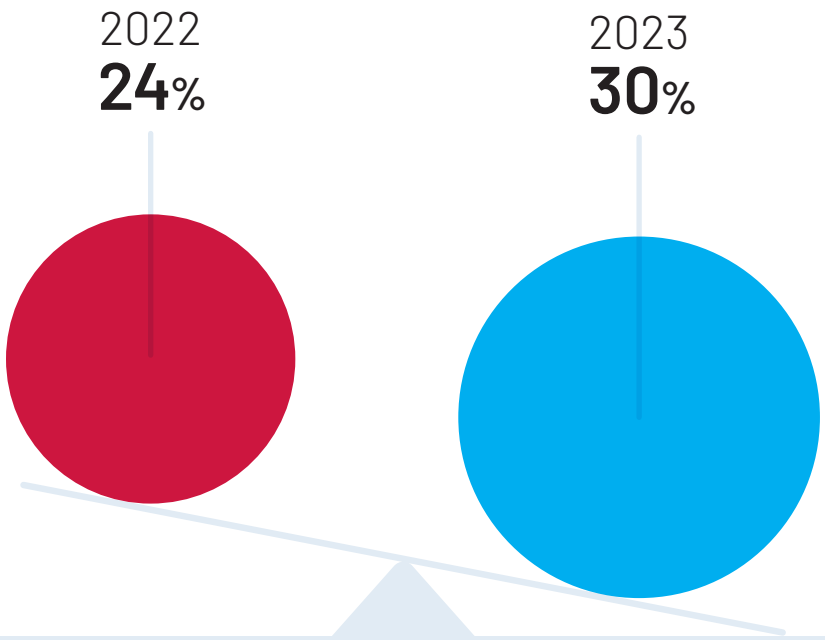
# OVERCOMING 'TECHNOLOGY PARALYSIS'

For many respondents, the range of available systems and platforms is leading to 'technology paralysis' – an inability to decide between solutions.

An organization which finds itself held back from investing in technology due to this type of decision paralysis is likely to see an impact on its ability to compete. Concern around this area is growing, with a:

**65% year-on-year increase** in the number of participants reporting that their organization lacks the technology to outpace the competition over the next twelve months.

**'Technology Paralysis'** is Increasing




**Q.** Which of the following are the biggest **internal** obstacle(s) to your organization's current growth for calendar year 2022? Select top 5 Base: 1353

# SECTION 3:

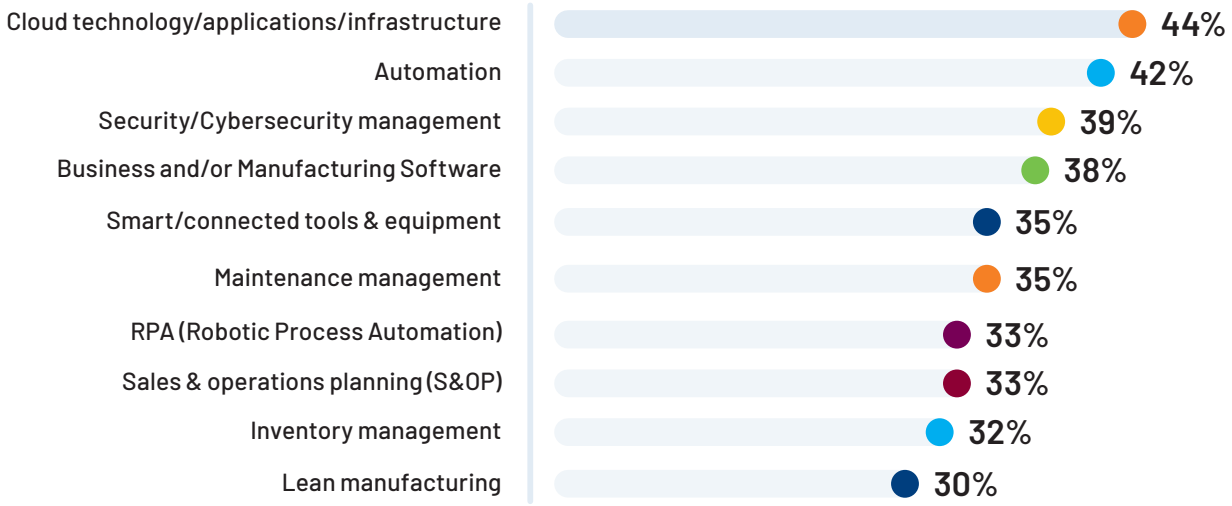
## THE FUTURE OF SMART MANUFACTURING

As we look ahead to the future, key trends begin to emerge. Manufacturers are investing in cloud, smart manufacturing solutions, and other technologies **to mitigate internal and external risks and to gain a competitive advantage.**

# **CLOUD** CONTINUES TO SOAR

The shift to the cloud continues, as manufacturers reap the benefits it offers including adaptability, security, speed to deployment, ROI, and cost. Over the next 12 months, **almost half (44%) of respondents are planning to increase investment in cloud technology**, applications, or infrastructure. Other key technology investments include automation and security/cybersecurity management.

## **Planned Areas** to Increase Investment




**Q.** Over the next 12 months, in which of the following technologies does your organization plan to increase investment(s) for manufacturing operations? Select all that apply

Base: 1353

> "We are in an exciting phase of manufacturing transformation right now. Technologies that were once considered out-of-reach are now seen as essential. By using advanced technologies and the power of the cloud, manufacturers can accelerate a strong digital foundation. This enables them to easily connect, streamline, and advance their operations to gain unprecedented levels of agility and visibility, particularly during uncertain times."
>
> – **Çağlayan Arkan** Vice President, Global Strategy and Sales Lead, Microsoft Corporation

# QUALITY IS DRIVING DIGITAL **TRANSFORMATION**

**45%** of respondents feel that improving quality is creating the need to accelerate digital transformation in their organization.

Quality is driving the future of digitalization. **This universal prioritization across the responses from 1,353 global manufacturers demonstrates how the industry plans to foster growth** despite disrupted supply chains and new regulations, while maintaining agility and top quality products.

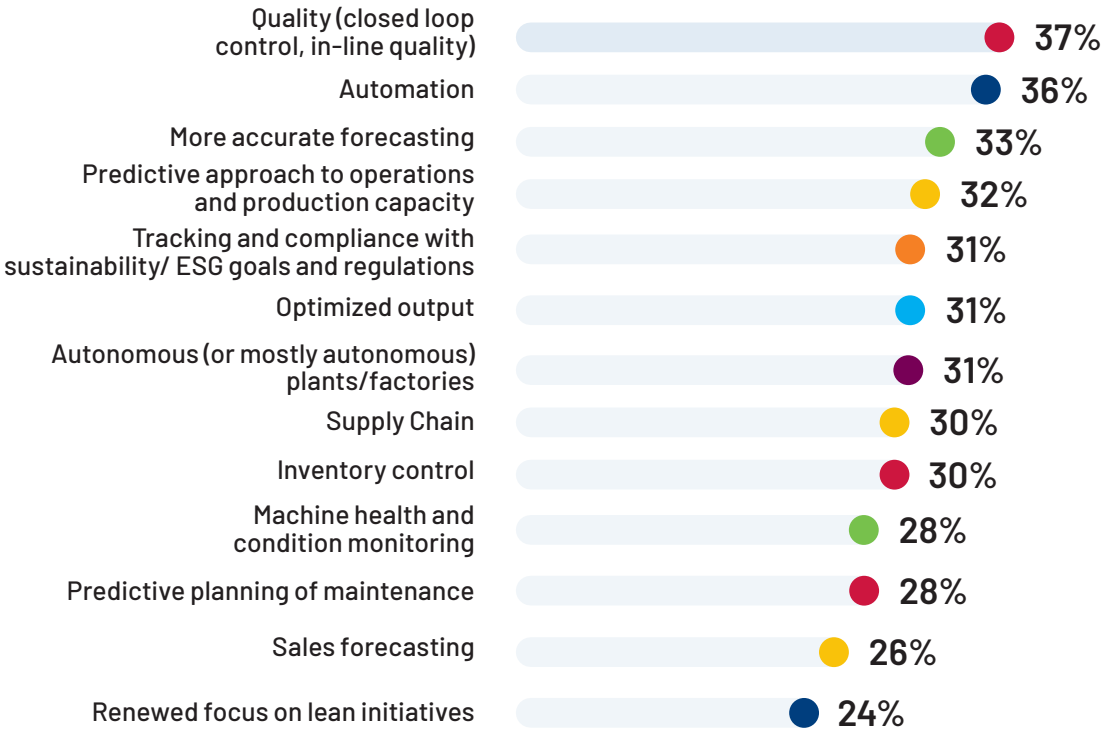
**Quality topped the responses in several categories, including:**

**#1 Accelerant**
for digital transformation **(minimizing costs came in 2nd)**

**#1 Area Impacted**
by artificial intelligence **(automation came in 2nd)**

**#1 Outcome**
from smart manufacturing adoption **(reducing cost came in 2nd)**

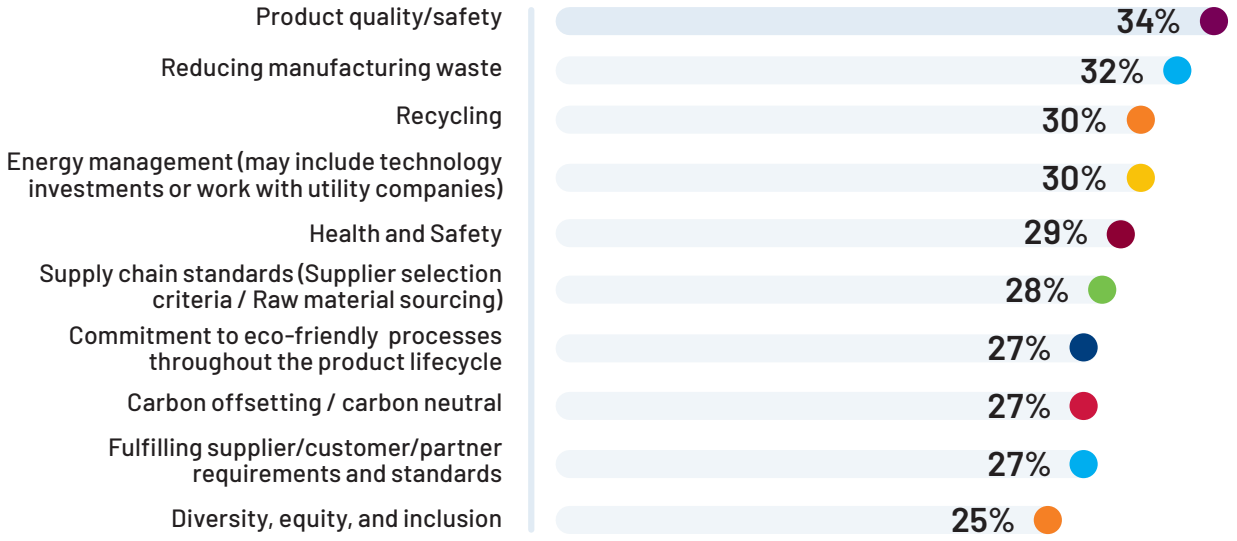
## **Top Areas** Impacted by Artificial Intelligence




**Q.** What areas will Artificial Intelligence (AI) most impact the manufacturing industry? Select top 5 Base: 1353

# QUALITY MATTERS MOST IN SUSTAINABILITY

The drive to maintain quality, seen elsewhere in this report, surfaced again when we asked participants about sustainability and ESG. Product quality or safety is the most important element in ESG and sustainability programs, followed by reducing manufacturing waste and recycling. All of the responses revealed the growing attention on the "**circular economy**," which is based on eliminating waste and pollution by designing products and processes to maximize efficiencies and extend product life with a particular focus on repair and reuse.




**Q.** What matters most to your organization's ESG/sustainability program? Select top 5 *Base note: Asked to those with at least an informal ESG program. Base: 1279

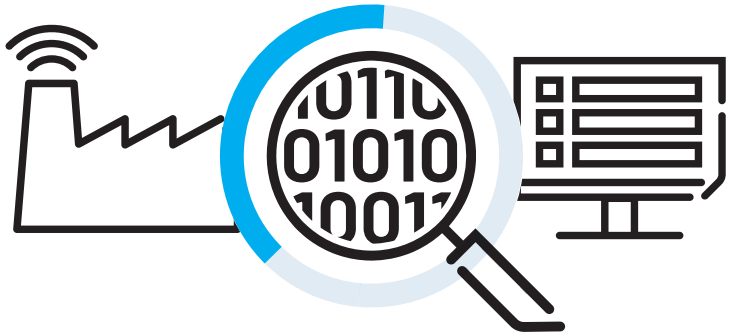
"A recent survey by Gartner, Inc. found that 74% of supply chain leaders expect profits to increase between now and 2025 as a result of applying circular economy principles. On average, supply chain organizations have been applying circular economy principles for three years to approximately 16% of their product portfolio."

**Gartner Press Release** – Survey Shows 74% of Supply Chain Leaders Expect Circular Economy to Increase Profits Through 2025, Sept, 28, 2022.

# DATA: **UNLOCKING A COMPETITIVE OPPORTUNITY**

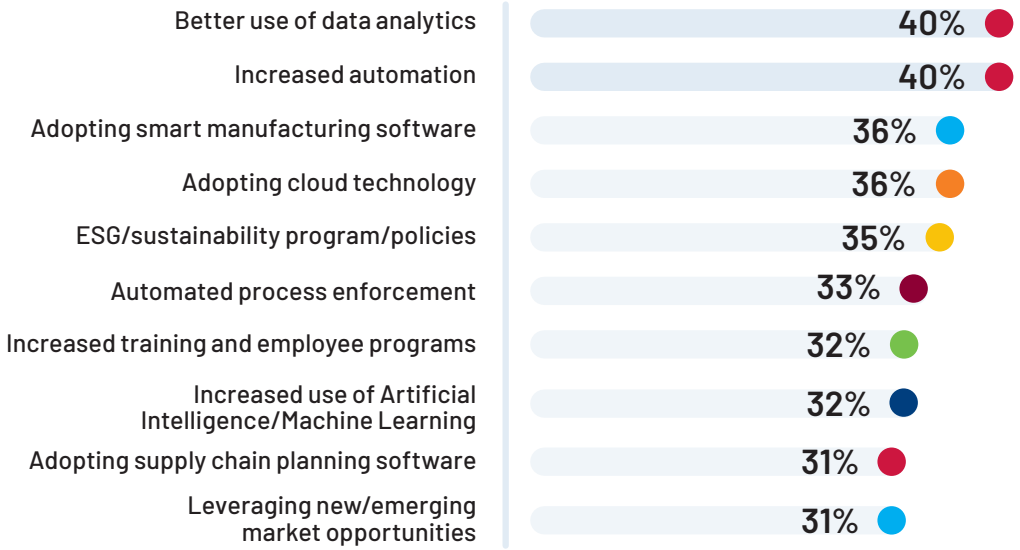
This survey shows that a third of data goes unused. Many manufacturers see that increased technology adoption creates vast amounts of data, which can be harnessed and analyzed to improve performance and increase profits.

Respondents stated a need for better data and analytics usage to drive positive business outcomes over the next five years, citing this as a competitive shortfall;




**40% more manufacturers say they lack the ability to use data to make decisions** to outpace the competition in 2023 compared to last year.

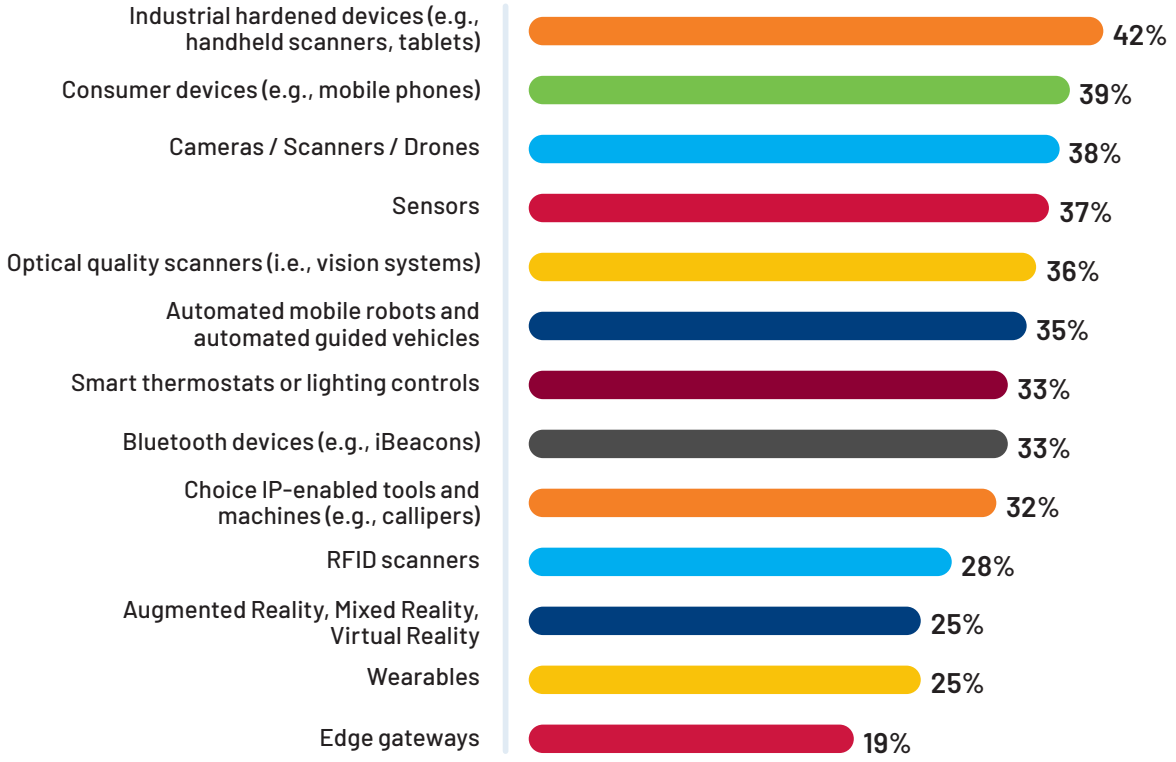
## **Driving Improvements** Over the Next 5 Years




**Q.** How do you plan to drive positive business outcomes over the next five years? Select top 5 Base: 1353

# THE FUTURE OF MANUFACTURING TECHNOLOGY

As manufacturers continue to digitize their operations, more are using connected devices to enhance operations. Below are some of the once thought "over-hyped" technologies that are gaining mainstream adoption today.




**Q.** Which of the following connected devices does your organization employ in its manufacturing operations today? Select all that apply

Base: 1353

> "The rapid advancement of technology, especially that of artificial intelligence and machine learning, is arguably at the center of all megatrends."
>
> **BlackRock** – Megatrends: A research study looking at structural shifts in the global economy and how they affect our investment thinking

# SECTION 4:

## TAKING **ACTION**

Smart manufacturing and the complementary hardware and software mentioned in this report, enable manufacturers to stay competitive, increase agility, and unlock long-term opportunities by connecting and automating business. **Use the information in this report to help your business — and your people — plan your technology adoption roadmap regardless of where you are currently in the process.**

# GETTING STARTED **GUIDE STEPS**

| | |
|---|---|
| **IDENTIFY** | key stakeholders, take action, and agree on your greatest need |
| **BUILD** | the business case for investment |
| **RESEARCH** | and select your solution(s) |
| **DESIGN** | and deploy the solution(s) |
| **MANAGE** | change, measure results, and drive adoption |

## 1.

### Identify key stakeholders, take action, and agree on your greatest need

Gather the people connected to this change – both decision-makers and system users. Diverse perspectives clarify the solutions needed, whether disconnected systems, people, processes, supply chains, unexpected downtime, poor quality, lack of visibility, control, and/or something else

#### Key Questions To Answer:

- Where are your information gaps?
- Have you assembled the key stakeholders?
- What are the operational challenges you're trying to solve?

## 2.

### Build the business case for investment

Develop your business case by highlighting increased control, efficiency, and savings gained. Gather requirements and include the importance of adaptability, security, and risk mitigation.

#### Key Questions To Answer:

- What ROI is expected in terms of core outcomes relevant to your business KPIs?
- What risks should be considered and mitigated?
- Which use cases offer the right balance of value creation and time-to-value?

## 3.

### Research and select your solution(s)

Do the work. There are many solutions available, and it is important to do your research. Narrow your potential solutions and review the following questions with the key stakeholders.

#### Key Questions To Answer:

- Does the solution meet your requirements and business objectives?
- Will it deliver the ROI that you outlined in your business case?
- Will it be able to support you in the future?

## 4.

### Design and deploy the solution(s)

Select an implementation partner and create the map that you will follow for a successful process. Once created and agreed on by your key stakeholders, begin deployment.

#### Key Questions To Answer:

- Does the design fit your needs?
- Is there a timeline and achievable ROI?
- Have the key stakeholders reviewed and agreed on the plan?

## 5.

### Manage change, measure results, and drive adoption

To effectively integrate the change that smart manufacturing will bring into your culture, you will need sponsorship, messaging, measurements, and accountability.

#### Key Questions To Answer:

- Who will be your adoption champion(s)?
- What measurements will you use to gauge success?
- How will you adapt your culture through change management?

To achieve positive, enduring change, be thoughtful about your approach. Set and track goals for continuous improvement and decide how you will best measure adoption and the impact of the change. Each organization is different, and the points laid out here will help to ask the right questions in pursuit of answers that will guide your mission.

# **TEN STEPS** TO TECHNOLOGY ADOPTION (CHECKLIST)

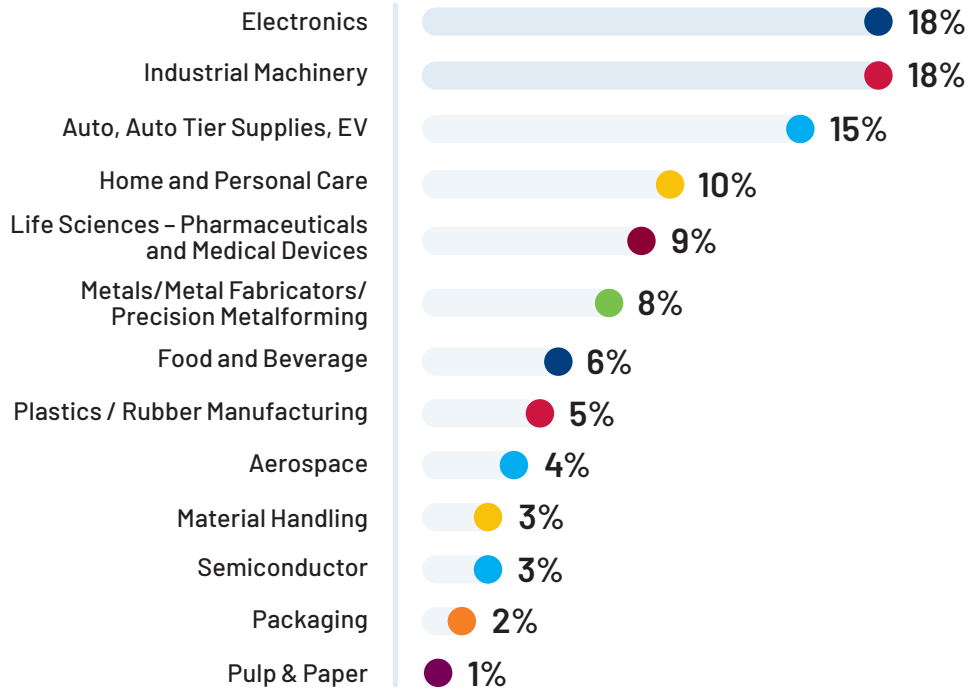
1. **IDENTIFY KEY STAKEHOLDERS** and agree on your greatest need.
2. **ESTABLISH EFFECTIVE GOVERNANCE** with key stakeholders.
3. **MAKE THE BUSINESS CASE FOR INVESTMENT** by aligning technology, strategy, and metrics/KPIs.
4. **CREATE A COMMUNICATIONS PLAN** that will sustain the vision for future desired outcomes.
5. **ASSESS YOUR CURRENT CAPABILITIES**, risks, and opportunities; benchmark yourself against your competitors.
6. **RESEARCH** and select your solution(s), it's not just about the solution but the solution provider. Do you have a strong partner you can count on?
7. **DESIGN AND DEPLOY** the solution(s).
8. **PRIORITIZE CHANGES THAT ADDRESS THE PROBLEM(S)** you are solving, have the best ROI, and/or eliminate the most risk.
9. **ESTABLISH AND IMPLEMENT AN ORGANIZATIONAL CHANGE** management program and drive adoption.
10. **ADOPT A CONTINUOUS IMPROVEMENT** mindset, establish success metrics and constantly measure, and provide messaging that highlights what you've learned, what can be more efficient, and how people drive change.

# SECTION 5:

# DEMOGRAPHICS/ FIRMOGRAPHICS

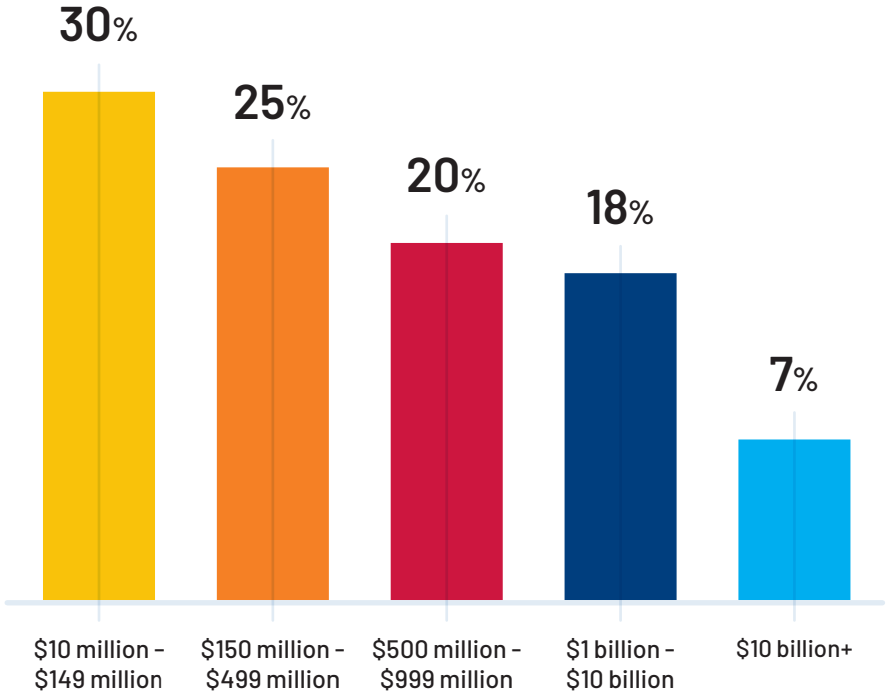
# DEMOGRAPHICS AND FIRMOGRAPHICS

## Industry




**Q.** What industry do you work in? Select one Base: 1353

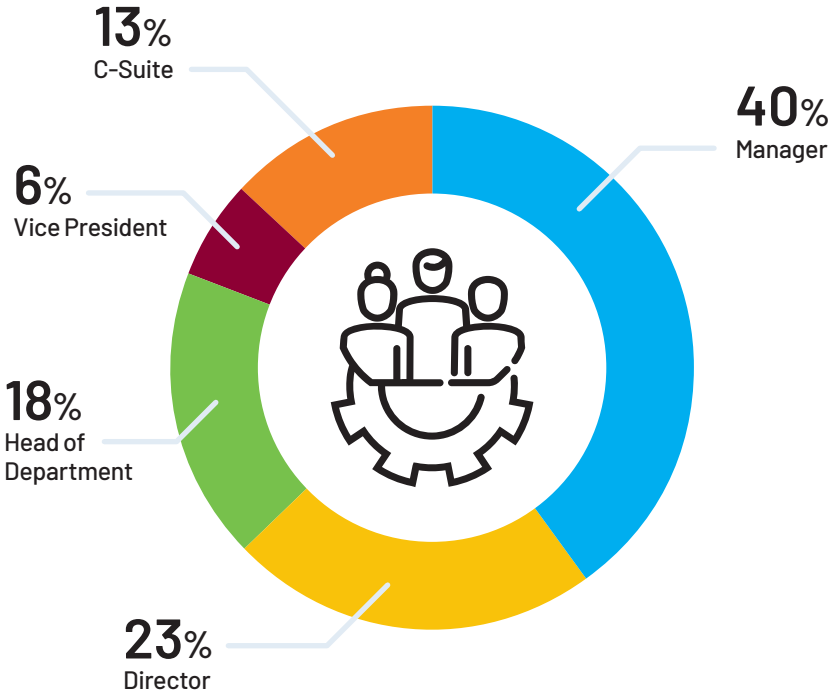
## Annual Revenue (US Dollars)




**Q.** What is your annual business revenue? (US Dollars) Select one Base: 1353

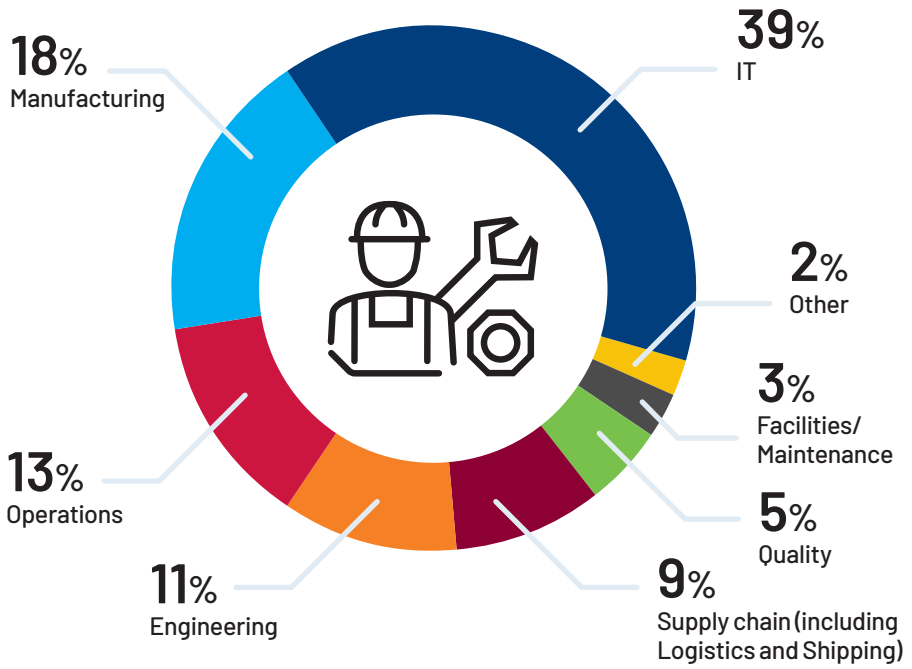
# DEMOGRAPHICS AND FIRMOGRAPHICS

## Seniority / Job Level




**Q.** Which of the following best describes your job position/seniority? Select one Base: 1353

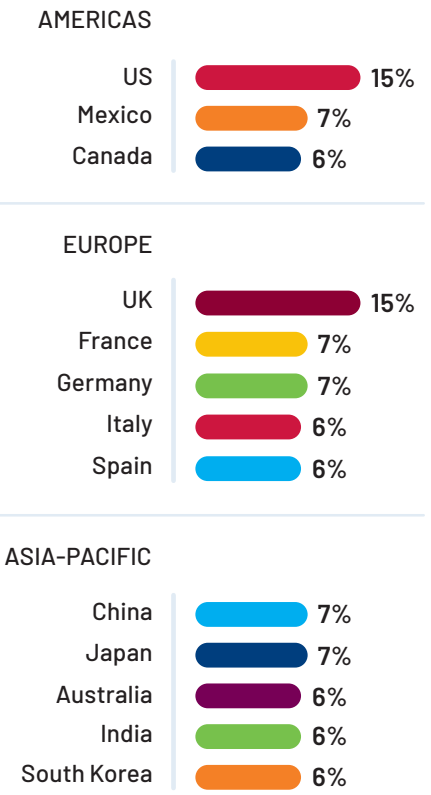
## Department / Job Function

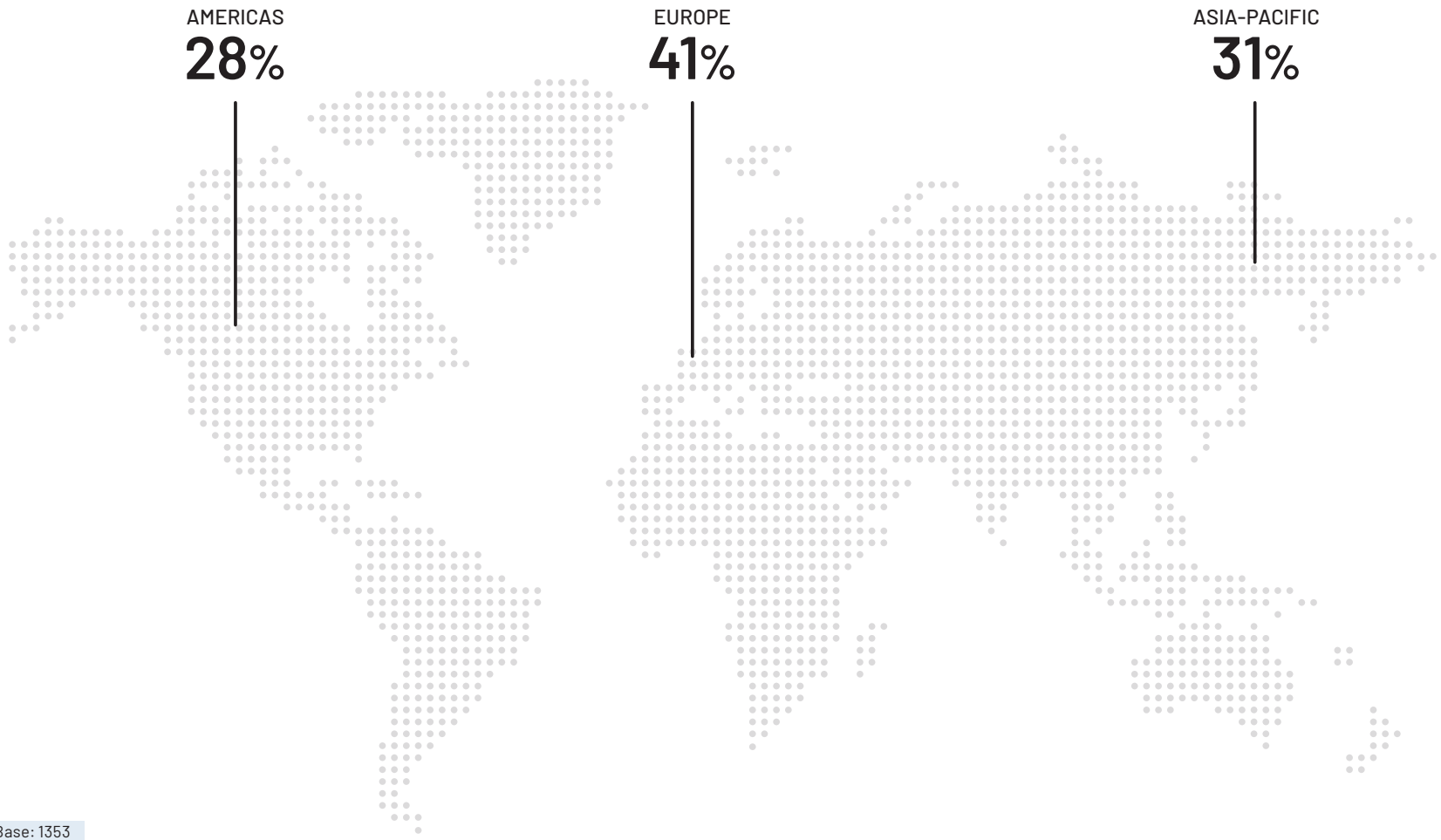



**Q.** In which of the following departments/functions do you work? Select one Base: 1353

# DEMOGRAPHICS AND FIRMOGRAPHICS

## **Worldwide** locations we serve




**Q.** In which country do you currently work? Select one

Base: 1353

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