

Life Sciences
Edition

2025 State of Smart Manufacturing Report

10TH ANNUAL

Welcome

Discover how the life sciences industry is **harnessing smart manufacturing** and **emergent technology** to drive long-term business impact, facilitate expansion and increased capacity, navigate supply chain and economic disruption, and overcome workforce challenges.

The life sciences industry has never faced greater pressure to deliver safe, effective and affordable products to patients worldwide.

- Global economic crises and rising inflation and concerns pose major challenges to financial results
- Evolving regulations, workforce constraints and unpredictable global supply chain disruptions continue to strain operations, limiting access to essential raw materials and delaying production timelines
- Escalating cybersecurity risks make the protection of sensitive data and operational systems a top priority

This report offers comprehensive insights into trends, challenges and plans for global life sciences manufacturers. With the latest shifts in global trade policies and tariffs, many life sciences manufacturers are rethinking sourcing strategies, investing in nearshoring or regional manufacturing hubs to reduce exposure to international disruptions and ensure greater control over global supply chains. Recent events will likely increase both the regulatory and market imperatives for advanced manufacturing and emergent technologies, making the key insights and findings in this survey even more significant.

About the Research

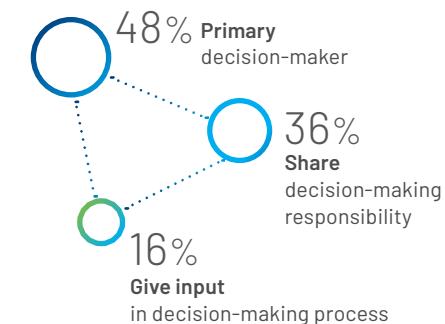
This report is based on responses from 143 decision makers from life sciences manufacturers, original equipment manufacturers (OEMs), engineering procurement companies (EPCs), and system integrators across 15 countries.

It is part of [Rockwell Automation's 10th annual State of Smart Manufacturing report](#), which surveyed more than 1,500 decision makers across various industries.

Geographic split



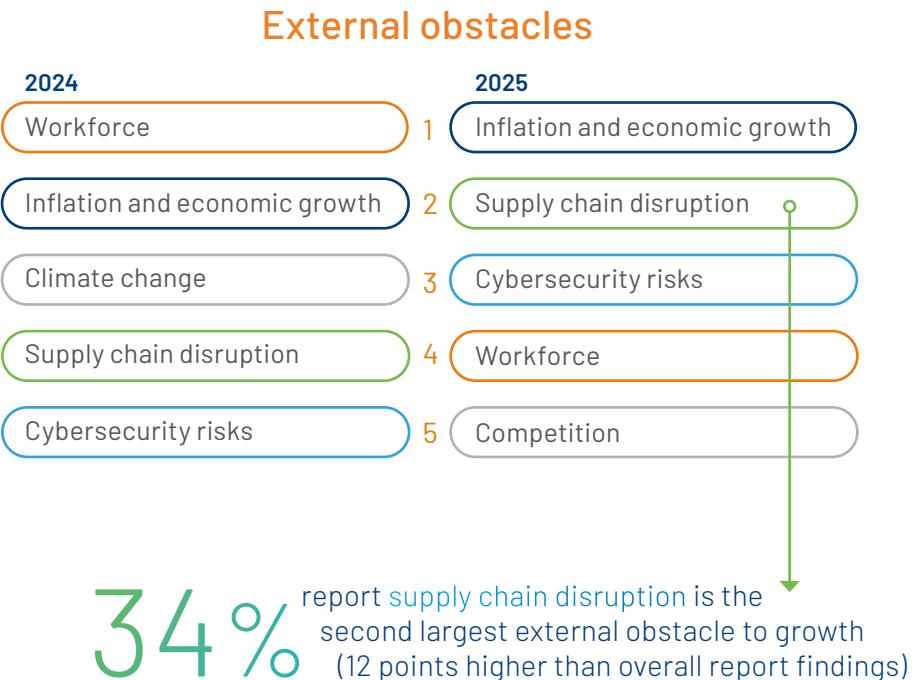
Respondent roles



Obstacles and outlook for the life sciences industry

Inflation, economic growth and supply chain disruption are the main external barriers to growth for life sciences manufacturers, followed by cybersecurity risks.

Two notable shifts have occurred since last year's life sciences report: supply chain disruptions are seen as a bigger risk than in 2024, while workforce challenges are seen as slightly less of an external challenge.



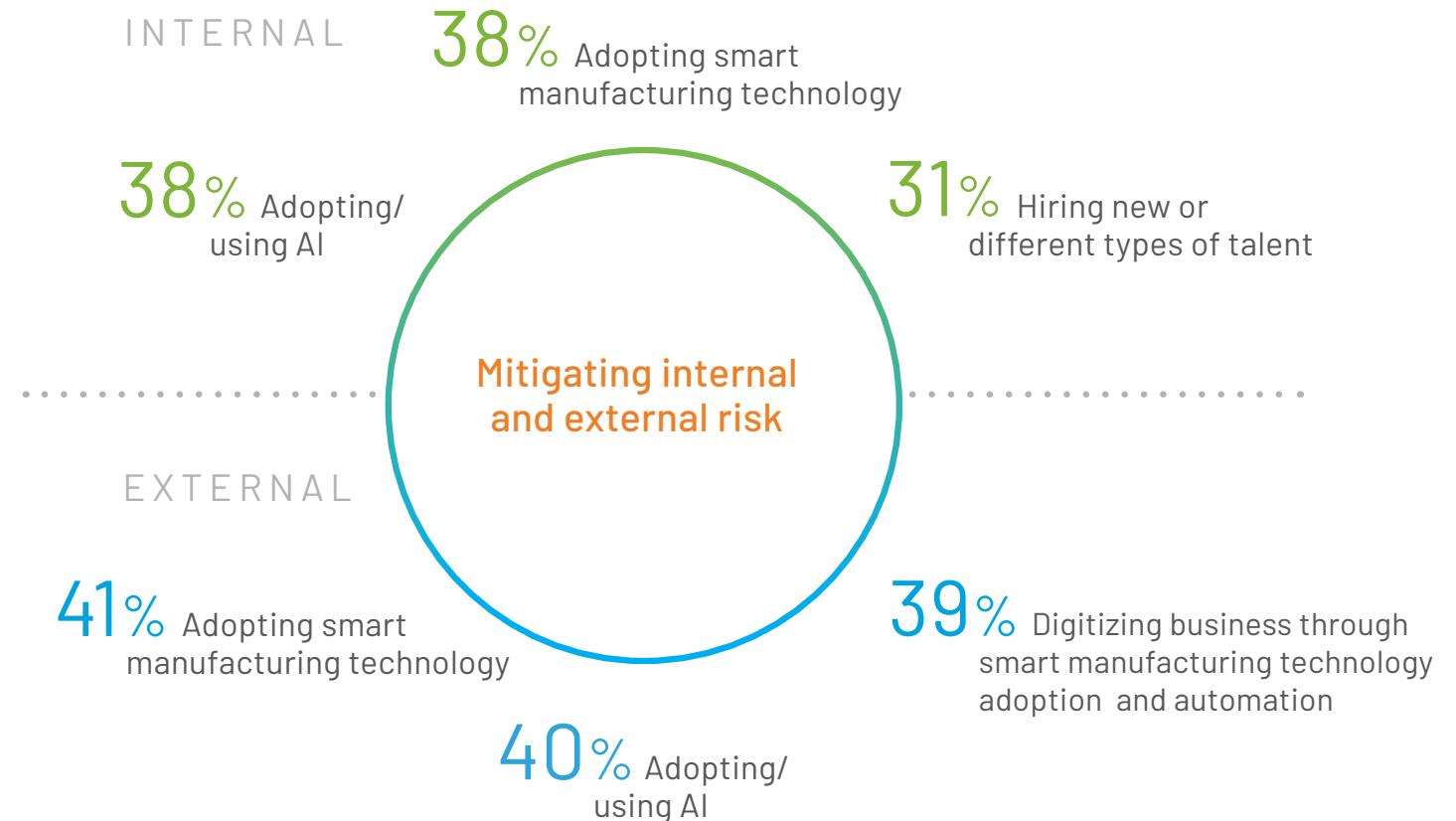
Internally, multiple challenges will impact the growth of life sciences manufacturers over the next 12 months.

- While geopolitical, economic, and supply chain challenges are top of mind, attracting employees with the desired skillsets (26%) is a greater concern for life sciences leaders than the overall report average, and strengthening the right workforce skills remains a priority
- Growing cybersecurity risks are a concern, explaining why cybersecurity will become a top Artificial Intelligence (AI) use case for life sciences manufacturers

Reducing risk in life sciences manufacturing

As life sciences manufacturers face rising internal pressures and unpredictable external threats, many are making a strategic shift that **blends smart technology, AI and future-focused talent to build resilience.**

These investments are not just about innovation. Rather, these are a calculated response to mitigate risks, streamline operations and generate create stability in an increasingly volatile global environment.



Tech investments reflect a shift toward resiliency and efficiency

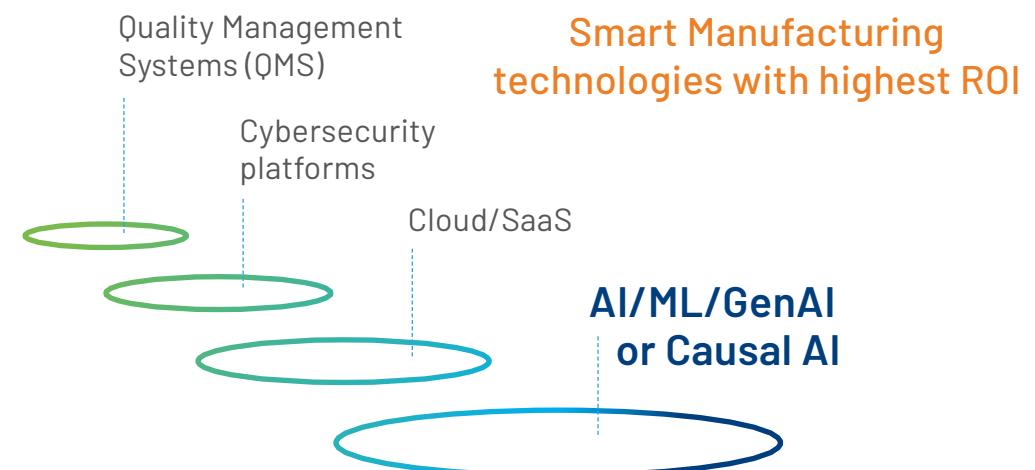
Life sciences manufacturers are **prioritizing advanced technologies like generative AI and digital twins to improve operational resilience and agility**, indicating a broader mindset change in the industry.

While the average investment in technology remained consistent to those reported in 2024, how and where that money is invested is changing.

Two-thirds (66%) of life sciences manufacturers are investing in technology for long-term stability and growth, with almost the same number (62%) investing for increased capacity.

- 36% plan to invest in generative AI or causal AI, while 35% are focusing on digital twins, simulation, and emulation – technologies known for reducing time-to-market and enhancing product quality
- 41% are adopting smart technology and 40% are leveraging AI to mitigate external risks

66% cited long-term business impact as the primary driver for tech investment



AI-powered cybersecurity on the rise in life sciences

Life sciences manufacturers are **increasingly turning to AI and Machine Learning (ML) for cybersecurity**, reflecting a shift from viewing these technologies as purely efficiency-focused tools to essential components of digital risk management.

48% plan to leverage AI/ML for cybersecurity in next 12 months

38% cite cybersecurity as a top smart manufacturing capability that will drive the biggest business outcomes

50% cite securing operational technology (OT) assets as the main driver of their technology investments in 2025

29% believe cybersecurity risk is the biggest external obstacle to growth in 2025



By 2027, organizations across the life sciences industry expect AI to play a more critical role in transforming operations. Nearly half of life sciences manufacturers are turning to AI/ML for cybersecurity, making cybersecurity a top AI use case.

Cybersecurity (48%) is joined by quality control (53%) and process optimization (50%) as the top applications for AI/ML technology to reduce errors, production anomalies, downtime, operating costs and risks, and improve efficiency and production flexibility.

AI becomes a must-have for quality control

AI is emerging as a **critical tool for enhancing quality control, ensuring product safety and consistency, and maintaining compliance** in increasingly complex production environments.

95% of life sciences manufacturers are using or evaluating smart technology

Most life sciences manufacturers believe it will help them **improve quality, operate more cost-efficientially and generate growth**.

- 50% of respondents see improving quality as the primary business outcome from smart manufacturing technology
- 38% of manufacturers are using data collected from connected devices to monitor and improve product quality

Top uses for AI/ML over next 12 months



Better data, better results

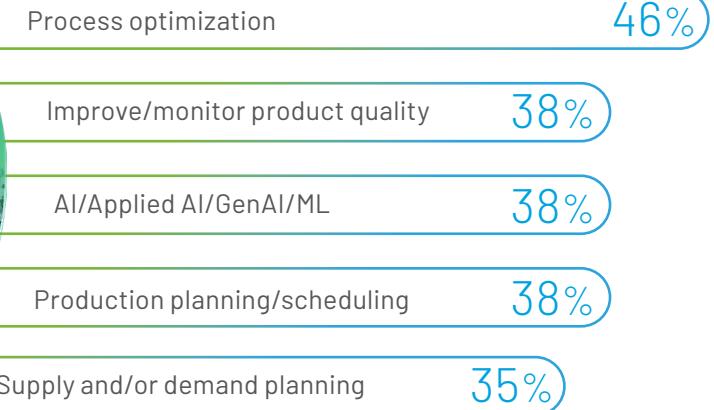
The life sciences industry top uses for the data collected from current technologies, process, and connected devices include apps for **process optimization with quality control, production planning and AI/ML**.

There is notable inefficiency in the utilization of data, with less than half (46%) of respondents noting data collected is being used effectively. These findings suggest a gap in the ability of life sciences manufacturers to use that data for real-time decision making and meaningful, measurable operational improvements.

46% state data collected is used effectively



How the data collected is being used



Bridging the skills gap with automation and AI

Life sciences manufacturers face **mounting pressure to find, train, and retain skilled talent** as they accelerate their digital transformation.

By 2030* it's projected that we'll have 7.9 million fewer workers than we'll need

*Korn Ferry Study

Nearly half of life sciences manufacturers are doubling down on AI/ML and automation technologies to navigate the growing labor shortage, and repurposing their existing workforce to address evolving skill demands.

- 48% are introducing AI/ML technologies, while 46% are increasing automation
- Attracting employees with the desired skill sets remains the top internal obstacle (26%) in 2025
- 47% of manufacturers plan to repurpose existing workers to new or different roles as they increase the use of smart manufacturing technology



Manufacturers today are navigating a perfect storm of global disruption and regulatory complexity. To stay competitive, they must invest in a workforce that is not only technically skilled but also agile, innovative, and ready to adapt to whatever challenge comes next.

Craig Resnick, Vice President, Consulting, ARC Advisory Group

Capabilities life sciences employers are looking for in their workforce

86%	Adaptability & flexibility
84%	Analytical thinking
83%	STEM

What the future may bring

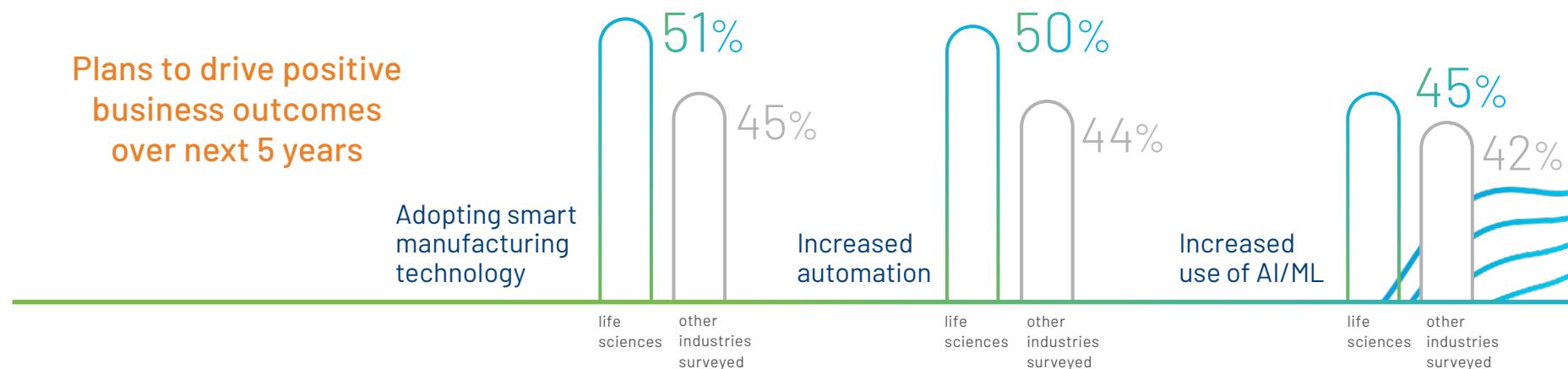
Looking ahead, the industry is targeting strategies that will help navigate supply chain disruption, economic uncertainty and an evolving regulatory landscape to achieve positive business outcomes.

Technologies that enhance the innovation, agility and critical thinking capabilities of people, such as smart manufacturing technology, AI/ML and automation, are where life sciences industry leaders see the most value and quickest ROI.

When it comes to mitigating risks, improving quality, bridging the skills gap and becoming more resilient and efficient, manufacturers in life sciences are prioritizing:

- Smart manufacturing technology, including generative design (38%), generative/causal AI (36%), digital thread (36%) and autonomous mobile robots (36%)
- Hiring new/different types of talent
- Upskilling existing talent

These findings reinforce that smart manufacturing and workforce investment go hand-in-hand.





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AMERICAS: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000

EUROPE/MIDDLE EAST/AFRICA: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2663 0600

ASIA PACIFIC: Rockwell Automation SEA Pte Ltd, 2 Corporation Road, #04-05, Main Lobby, Corporation Place, Singapore 618494, Tel: (65) 6510 6608

UNITED KINGDOM: Rockwell Automation Ltd., Pitfield, Kiln Farm, Milton Keynes, MK11 3DR, United Kingdom, Tel: (44)(1908)838-800

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