

THE STATE OF TECHNOLOGY IN THE MANUFACTURING INDUSTRY



The State of Technology in the Manufacturing Industry

Attitudes, adoption rates, and insights from an international survey of manufacturing professionals.



Innovation is the cornerstone of success in the manufacturing industry, making a robust technology strategy essential. ABI Research's semiannual Manufacturers' Technology Adoption & Attitudes Survey can be part of that strategy.

The survey was conducted in June 2024 and included 461 manufacturing decision-makers, with participants from the **United States** (155), **Malaysia** (153), and **Germany** (153).

Scroll for key takeaways.

GOT QUESTIONS OF YOUR OWN?

ABI Research invites you to become a sponsor of our next Manufacturers' Technology Adoption & Attitudes Survey. As a sponsor, you'll have the unique opportunity to include your own questions and gain access to tailored, actionable knowledge that will inform your decision-making and strategic planning. It's a unique way to gain a competitive edge in the rapidly evolving industrial and manufacturing landscape.





THE BIG PICTURE

KEY TAKEAWAY

Manufacturing professionals expect to make more use of technology to support their operations in the coming years.

DO YOU BELIEVE THAT THE NEXT 5 YEARS WILL WITNESS MORE TECHNOLOGICAL CHANGE IN MANUFACTURING THAN THE PAST 10 YEARS?



MEDIUM (5K- 25K Employees)



CLOUD COMPUTING OPINIONS

KEY TAKEAWAY

Cloud solutions and real-time collaboration go hand-in-hand.

CLOUD COMPUTING OPINIONS, ACCORDING TO MANUFACTURERS





CLOUD COMPUTING OPINIONS



surveyed agree that the cloud can foster real-time collaboration with key stakeholders to streamline supply chain coordination.

KEY TAKEAWAY

U.S. manufacturers are less enthused about cloud computing's ability to improve efficiency via scalability.



Less than half (49%) of U.S.-based manufacturers agreed or strongly agreed that cloud solutions boost manufacturing efficiency with scalable resources for seamless production adjustments.

German and Malaysian manufacturers are more confident in cloud's ability to augment operational efficiency, with about 6 in 10 respondents in these countries agreeing with the statement.





Private 5G is still nascent in the manufacturing space.

ROLLOUT PLANS FOR PRIVATE 4G AND 5G BY MANUFACTURING VERTICAL

are in the initial rollout of enterprise		are either devising implementa	ation	
44% OF MANUFACTURERS		75% OF MANUFACTU	RERS	(Source: ABI Research)
ans		no plans		
ars 🛛		Consideration within the next 5 years	4% 3%	Process Manufacturing
ears <mark>3%3%</mark>		Consideration within the next 2 years	7% 10%	Discrete Manufacturing
nths 5% 6%		Consideration within the next 12 months	5% 9%	
cept 8% 9%		Proof of Concept	14%	11%
liers 11% 1	11%	Evalutating suppliers	17%	13%
tion 18%	20%	Devising implementation	21%	25%
lout 22%	22%	Initial rollout	19%	16%
lout 18%	18%	Scaling rollout	10% 10%	
nted 10% 7%		Fully implemented		
tion 5% 3%		5G Evalution	1	
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KEY TAKEAWAY

U.S.-based manufacturers see enhanced security as a key benefit of private wireless.

or evaluating suppliers.



4G, making it the largest proportion.

More than two-thirds of U.S.

manufacturers agree that private cellular technology offers robust security measures, safeguarding manufacturing data and ensuring a secure production environment.

For German and Malaysian counterparts, the number was **59%** and **61%**, respectively.





Manufacturers appreciate the reliability, security, and efficiency of private cellular.

PERCEPTION TOWARD PRIVATE CELLULAR NETWORKS

74% 17% Private cellular ensures reliable, secure communication for streamlined manufacturing. 67% Private cellular boosts efficiency and productivity, optimizing processes. 66% Private cellular ensures reliability and minimizes disruptions. 62% 26% Private cellular provides robust security for sensitive manufacturing data. 60% Private cellular enables scalable growth in manufacturing. 59% 12% Private cellular saves costs by optimizing resources & minimizing downtime 52% 17% Private cellular saves costs by eliminating factory cabling. 48% 32% 20% Private cellular enhances team collaboration and communication. 42% Sufficient industrial devices exist to scale a private cellular network. Neither agree, nor disagree (Strongly) Agree (Strongly) Disagree Don't know (Source: ABI Research)



agree/strongly agree that private cellular provides the reliability and security needed for streamlining manufacturing operations.



show their appreciation for the efficiency and productivity boosts afforded with a private cellular network.



CYBERSECURITY

KEY TAKEAWAY

In the event of a cybersecurity attack, all three countries are concerned about losing data, but U.S. manufacturers are more concerned about staff safety after an attack.



(Source: ABI Research)

While U.S. and Malaysian firms

rank new tech vulnerabilities

(e.g., cloud, AI, etc.) as the top

organization, German firms

ranked data breach/theft #1.

cyber risk facing their

Close to 35% of U.S. and

most worried about new

German manufacturers,

that number is just 25%.

technology risks. For

Malaysian respondents are



TOP CYBER RISKS FACING YOUR ORGANIZATION

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GENERATIVE AI

KEY TAKEAWAY

Identifying production issues is the top generative AI use case.

TOP GEN AI USE CASES, ACCORDING TO MANUFACTURERS



KEY TAKEAWAY

German manufacturers are more skeptical of generative AI's ability to fix coding issues than American companies.

UNITED STATES

52% of U.S.-based manufacturers agree or strongly agree that generative AI can help them fix bugged software code more quickly than currently possible. This is a much higher number than the 37% of German-based firms who agree.

(Source: ABI Research)

GERMANY







INDUSTRIAL METAVERSE

KEY TAKEAWAY

Manufacturers turn to the industrial metaverse for experimenting with new product designs.

PERCENTAGE WHO AGREE THE INDUSTRIAL METAVERSE CAN AID IN NEW PRODUCT DEVELOPMENT



(Source: ABI Research)

New product design was the top use case of the industrial metaverse for **GERMAN** and **MALAYSIAN** manufacturers. In the **U.S.**, the top use case was staff training and upskilling. **79**%

OF RESPONDENTS

agree that the industrial metaverse could help experiment with new product designs.



IT/OT COLLABORATION & OPERATIONS

KEY TAKEAWAY

IT and OT departments need to work together to tackle manufacturing challenges, but...



... JUST 39% OF RESPONDENTS STATED THAT THEIR IT AND OT TEAMS COLLABORATE TO SOLVE ISSUES.

UNITED STATES



66% of U.S.-based manufacturers have the capability to collect and analyze data in near real time.

GERMANY



62% of German manufacturers have the capability to collect and analyze data in near real time.

MALAYSIA



72% of Malaysian firms have the capability to collect and analyze data in near real time.



PRODUCTIVITY AND QUALITY IMPROVEMENT

KEY TAKEAWAY

Improving quality levels was the top operational/business challenge, and QMS software seems to be the solution.

THE MOST IMPORTANT INVESTMENT AREAS IN THE NEXT YEAR TO IMPROVE QUALITY LEVELS



of Malaysian manufacturers consider QMS an important investment area

UNITED STATES



of U.S. manufacturers consider QMS an important investment area





PRODUCTIVITY AND QUALITY IMPROVEMENT

KEY TAKEAWAY

Technology investments that boost productivity by country.



Close to 4 in 10 Malaysian manufacturers said ERP software is an important focus for improving productivity, compared to 32% of U.S.-based manufacturers and only 27% of German manufacturers. Manufacturing Execution Systems (MESs) and Manufacturing Operations Management (MOM) software are both in the top five investment priorities to improve productivity for manufacturers.

KEY TAKEAWAY

Different roles seek out different technology solutions to boost productivity.





ROBOTICS

KEY TAKEAWAY

Drones are gaining traction in the manufacturing space.

AUGMENTING EXISTING PROCESSES WITH ROBOTICS





OF MANUFACTURERS

are considering commercial drone deployments in the next 12 months, indicating significant interest in the robotics technology. Manufacturers are also evaluating Proofs of Concept (PoCs) (18%), evaluating suppliers (23%), or devising implementation programs (9%).





U.S.-based manufacturers have greater drone maturity for safety and inspection use cases than German manufacturers.



U.S.-BASED MANUFACTURERS

are scaling safety/inspection drones across their factories, plants, or facilities. That is double the 5% of German and Malaysian manufacturers who are doing so.





Decarbonization and ESG reporting is generally more important to German manufacturers, but U.S. and Malaysian manufacturers are more likely to see sustainability as an important challenge.

PERCENTAGE WHO SAY ENVIRONMENTAL, SOCIAL, & GOVERNANCE (ESG) REPORTING IS A KEY CHALLENGE





WORKFORCE CHALLENGES

KEY TAKEAWAY

Some of the biggest challenges facing manufacturers involve people, not technology.





say a lack of expertise prevents digitalization

(Source: ABI Research)

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SHAPE THE SURVEY. SHARPEN YOUR STRATEGY.

ABI Research is now inviting a small set of participants to join our survey efforts as we launch a semiannual survey targeting respondents in industrial and manufacturing companies. This semiannual survey will offer invaluable insights into industry trends, market sentiment, and emerging opportunities, enabling informed decisionmaking and strategic planning for sustained growth and competitive advantage.

LEARN MORE





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