



Manufacturing Vision Study

The Rise of the Connected Factory

Charting Manufacturing's Digital Transformation

75%

Executive Summary

Discover how connected factories drive unprecedented efficiency, innovation and scalability, infusing the industry with newfound agility. Unearth insights from global industry leaders in C-suite, Information Technology (IT) and Operational Technology (OT) who are reshaping the factory floor.

Dive into the details to leverage these pivotal findings for a strategic advantage.

Aligning Tech Visions: The Drive for Agile Manufacturing

As manufacturers increasingly embrace digital transformation, they confront the resource-heavy path it frequently demands. The quest for strategic harmony is critical, especially as they navigate digital agility to meet ever-changing market demands, cultivate a new workforce and bolster sustainability. Progress hinges on breaking down data silos and fostering collaboration between the C-suite, IT and OT, paving the way for an adaptive manufacturing future.

Manufacturers Embrace Digital Transformation Despite Cost and Time Concerns

Percentage of respondents agree

92%

Digital transformation is a strategic priority for the organization

90%

Current and projected market conditions are accelerating digitalization priorities

89%

Digitization projects are time, cost and labor-intensive upfront with a long window to realize ROI

Divided Priorities: C-Suite's Strategic Visions vs. IT/OT's Operational Realities

Challenges faced by C-suite, IT and OT in manufacturing



C-Suite

- 1** Increase in cost of raw materials
Accommodating sustainability in the manufacturing process
- 2** Fluctuating or weakening demand
- 3** Consumer price inflation
Digitalization of operations
Needing more immersive technologies to support workflows and assembly lines



IT

- 1** Digitalization of operations
- 2** Investment in technology to improve supply chain visibility and traceability to support production
Needing more immersive technologies to support workflows and assembly lines
- 3** Accommodating sustainability in the manufacturing process



OT

- 1** Digitalization of operations
- 2** Investment in technology to improve supply chain visibility and traceability to support production
- 3** Integration of advanced technologies to increase automation of manufacturing

Breaking Down Silos: Uniting IT and OT for Smarter Manufacturing

Percentage of respondents agree

89%

IT/OT convergence helps organizations save money and resources by using data to improve machine and factory operations

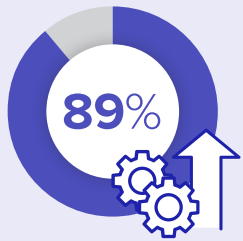
90%

IT and OT need to work together more on strategic and development plans for digital transformation and automation

79%

IT is focused on data and communication, OT is focused on behaviors and outcomes **resulting in data silos**

Giving Assets a Digital Voice: Enhancing Actionable Visibility and Innovation



of manufacturing decision-makers plan to increase technology investments in 2024

Increase 10+%	Increase 6% – 10%
22%	38%

In the face of persistent market disruptions and economic uncertainties, today's manufacturers recognize the critical role of digital transformation in securing future prosperity. Despite surging investments in technology solutions, the full promise of Industry 4.0 remains elusive for many. A significant visibility gap persists, with only a fraction of manufacturers engaged in real-time monitoring and tracing of products across their production lines.

For C-suite executives, prioritizing technology that yields swift returns is imperative. By embedding digital capabilities in assets, manufacturers can transform their production lines into dynamic ecosystems rich with actionable data. This granular insight into the manufacturing process facilitates groundbreaking advancements in innovation and visibility but also highlights the stark regional disparities in technology adoption.

Comprehensive digital technologies effectively bolster supply chain flexibility, enabling manufacturers to rapidly adapt to changing market trends and consumer demands. Despite these gains, the struggle for full integration and utilization of these technologies to close the visibility gap remains a critical focus for industry leaders, setting a benchmark for future investments and operational strategies.



Transforming Manufacturing: Productivity, Profit and Competitive Power

Top Benefits of Digital Transformation

- 1 Optimize the workforce by enhancing productivity and adding automation
- 2 Improve throughput to increase yield and revenue
Improve competitiveness in marketplace
Enhance supply chain and demand resiliency and agility
- 3 Improve inventory management and material movement

Seeing the Unseen: The Visibility Gap in Modern Manufacturing



of respondents report that they have **real-time monitoring across the entire manufacturing process**



By Region

Asia

25%

Europe

15%

Latin America

4%

North America

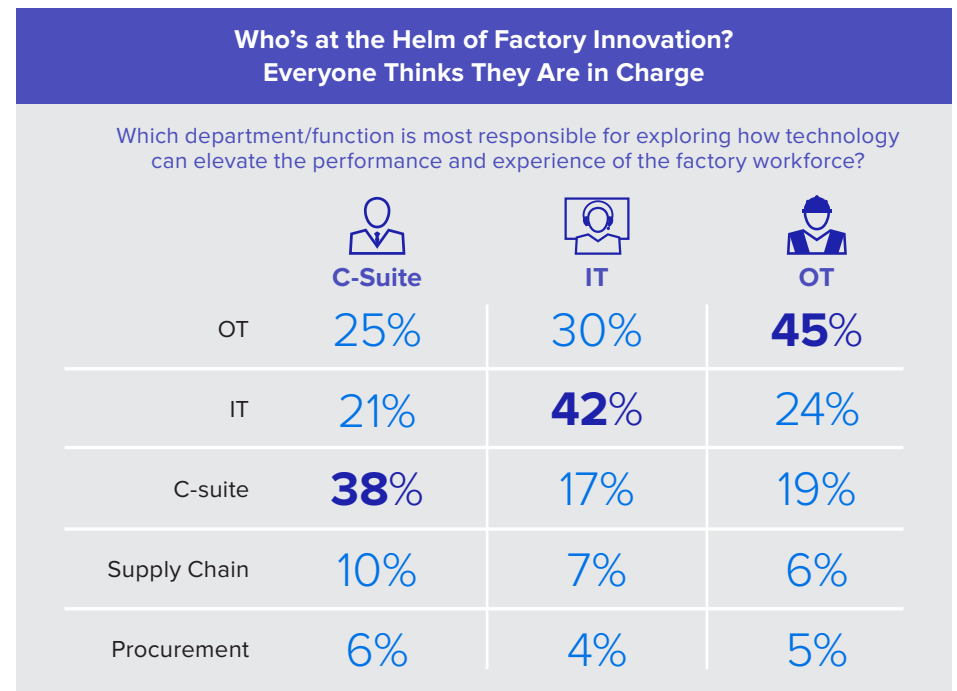
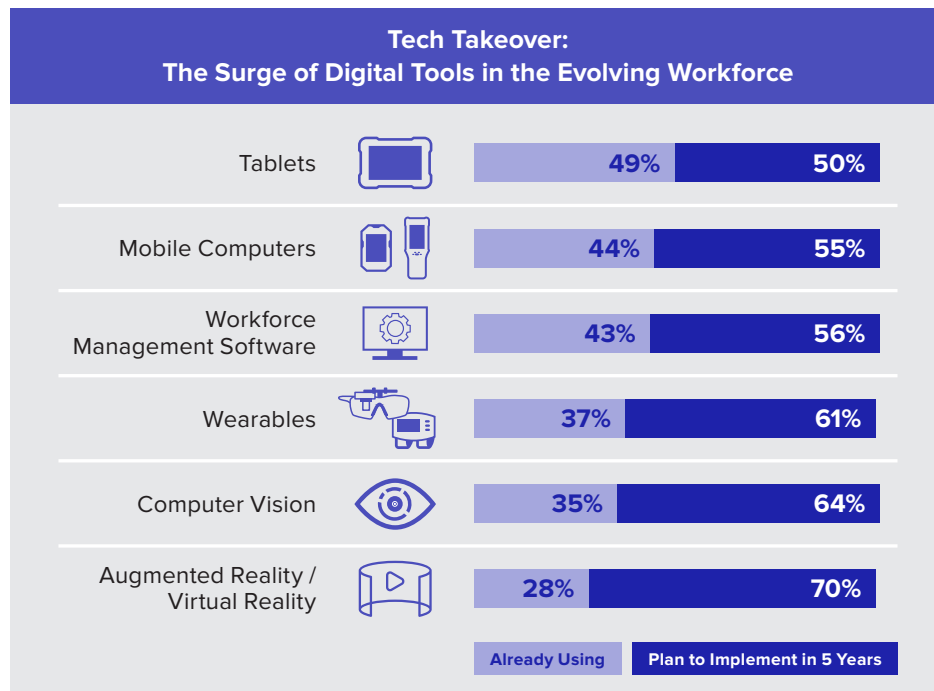
14%

Empowering the Augmented Workforce: Steering Manufacturing's Digital Future

As manufacturing strides into the future, the integration of digital tools is reshaping the essence of the workforce. Tablets and mobile computers are becoming as commonplace as wrenches and drills, while workforce management software emerges as the new standard. Meanwhile, the adoption curve for wearables, computer vision and augmented reality technologies is rapidly climbing, signifying a profound shift in how tasks are performed and managed.

Navigating this digital transformation raises the question of stewardship. The lines of responsibility for harnessing technology to boost factory floor performance and worker experience are blurred. While OT often takes the lead, IT and the C-suite are significant players in decision-making. Each faction brings a unique perspective, aiming to elevate the interplay between human skill and digital innovation.

Such a dynamic, however, transcends traditional departmental boundaries, underscoring the need for a unified strategy. As each group endeavors to steer the course of innovation, the industry's collective wisdom points toward collaboration. The goal is clear: to forge a workforce as advanced as the technology it wields, adept and ready for an ever-evolving industrial landscape.



Optimizing Quality: Advancing Precision with Automation

On the modern manufacturing floor, digital transformation drives an increased focus on quality error-proofing.

The rise of advanced automation increases not only the potential for success but also the pressure to produce and deliver as quickly and accurately as possible. What's more, in an increasingly competitive global landscape, manufacturers are under pressure to do more with fewer resources.

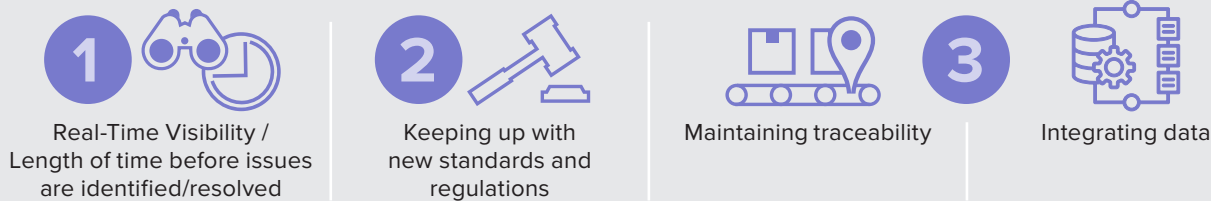
Manufacturers pinpoint real-time visibility and rapid response as pivotal in maintaining high standards. Automated systems, equipped with sensors and real-time data analytics, are vital for decision-makers looking to increase precision and control on the plant floor. The integration of cobots promises to streamline workflows, bringing flexibility and reducing human errors that yesterday's automation could not achieve.

Furthermore, the data collected by these intelligent systems is expected to be an invaluable resource for ongoing continuous improvement. Organizations with the tools and capabilities to make the most of their data will be empowered to make informed strategic moves, improve product quality, ensure compliance with regulatory standards and surpass customer expectations.



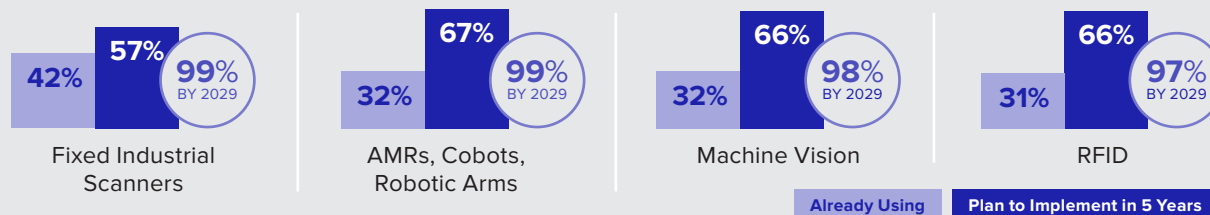
Quality Quandaries: Managing Real-Time Challenges and Regulatory Shifts

Manufacturers pinpoint today's most significant quality management issues



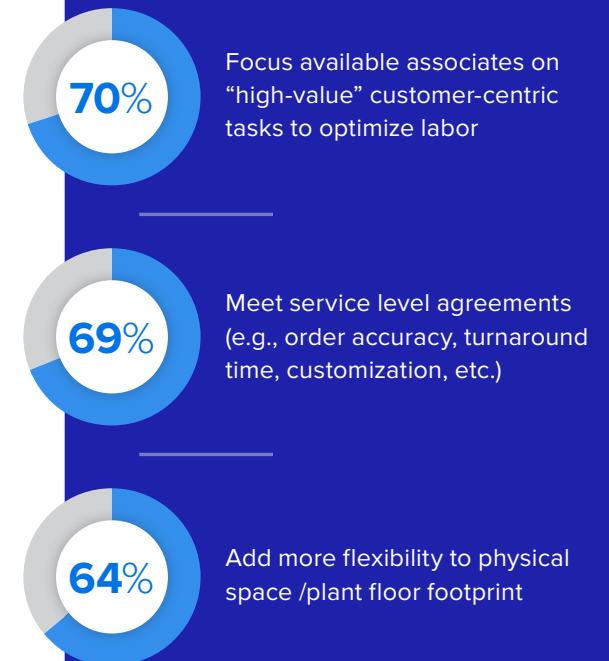
Envisioning Excellence: Next-Gen Automation Elevates Quality and Efficiency

Manufacturers highlight technology implementation plans



Strategic Shifts: What's Driving Automation in Today's Factories?

Top Drivers



Manufacturing's New Era

The age of Industry 4.0 is ushering in a new era where smart factories, equipped with modern systems that drive connections across the plant, promise unprecedented efficiency and flexibility. By augmenting workers and harnessing the power of flexible solutions that improve collaboration between C-suite, IT and OT, manufacturers will experience enhanced connectivity, informed decision-making and improved sustainability. With a unified approach to innovation, they're adapting and leading the charge toward industry excellence, setting new standards in a rapidly evolving global marketplace. These innovations are set to redefine manufacturing excellence, driving competitive advantage and signaling a transformative progression in the industry.

About the Study

Zebra commissioned Azure Knowledge Corporation to conduct 1,200 online surveys among C-suite executives as well as IT and OT decision-makers across various manufacturing sectors. Respondents were surveyed in Asia, Europe, Latin America and North America.

Introduction to Series

Zebra's 2024 Manufacturing Vision Study addresses enterprise trends, challenges and priorities industry executives face in transforming the plant floor while gauging their outlook on technology drivers for deployment and spending as they work to digitally evolve their organizations. The results are summarized in a three-part series:



The Power of Actionable Visibility
Transforming Manufacturing for the Digital Age



The Future Workforce
Where Innovation Meets Productivity



In Pursuit of Excellence
Intelligent Automation for Superior Quality and Efficiency

To view the Manufacturing Vision Study series, visit zebra.com/manufacturing-vision-study

About Zebra Technologies

Zebra (NASDAQ: ZBRA) helps organizations monitor, anticipate and accelerate workflows by empowering their frontline and ensuring that everyone and everything is visible, connected and fully optimized. Our award-winning portfolio spans software to innovations in robotics, machine vision, automation and digital decisioning, all backed by a +50-year legacy in scanning, track-and-trace and mobile computing solutions. With an ecosystem of 10,000 partners across more than 100 countries, Zebra's customers include over 80% of the Fortune 500.

Explore how Zebra can revolutionize your manufacturing operations, enhancing efficiency, productivity and competitive edge. Visit zebra.com/manufacturing



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