



Warehouse Vision Study

Elevating Every Move

The Formula for High-Performance Warehousing

Executive Summary

Explore industry insights on balancing innovation with practicality to drive operational excellence and achieve peak operational efficiency.



Building a High-Performance Warehouse

The warehouse landscape is evolving rapidly and standing still is not an option. Decision-makers are driving modernization with strategies in automation, workforce enablement and data insights to meet rising demands. Those who act swiftly will not only keep pace but set the standard for next-generation warehousing.



Driving Innovation

(of Decision-Makers)

Modernization Mandate

70%

are under high pressure to modernize warehouse operations

Investing in Modernization

64%

plan to increase funding over the next five years for warehouse modernization

Tech is Essential

87%

agree that without investing in technology to improve warehouse operations, their organization will fail to meet business objectives



Enabling the Workforce

(of Associates)

Streamlining Tasks

74% +6pp YoY

report spending too much time on tasks that could be automated

Improving Safety

70% +5pp YoY

are concerned about injuries on the warehouse floor

Recognizing Value

89% +6pp YoY

feel more valued when provided with technology tools and automation



Boosting Performance

(of Decision-Makers)

Error Prevention

71%

cite mitigating errors as the top driver for warehouse automation

Data Drives Decisions

84%

agree improved operational visibility leads to smarter, automated decisions

Seeing Clearly

64%

plan to invest in supplier management within the next five years for faster, accurate data collection and retrieval



Building for the Future

(of Decision-Makers)

AR Enhances Engagement

63%

plan to implement augmented reality (AR) within five years

AI Powers Efficiency

63%

plan to implement artificial intelligence software within five years

Sustainability Stays in Focus

60%

are increasing investments in sustainable technologies within five years

Tech-Driven Strategies

Empowering Warehouse Excellence

Customer demands are evolving rapidly, placing warehouses under pressure to deliver.

Investments in machine learning, predictive analytics and generative AI are set to reshape how warehouses operate. These technologies help operators optimize workflows, improve accuracy and make smarter, real-time decisions. For example, AI on handheld devices can identify safety hazards, refine quality control by spotting anomalies and optimize inventory by forecasting demand and maximizing space.

While advanced tools like AI are on the rise, foundational solutions such as inventory and asset visibility remain essential for maintaining strong operations. By integrating innovative technologies with existing processes, you can address challenges like inefficiencies in sorting, picking and packing that may affect order accuracy. Combining these tools with clear business goals ensures your operations remain agile, efficient and ready to adapt to market demands.

AI and Analytics: The Next Big Moves in Warehousing

Decision-makers plan to implement software technology within 1 to 5 years



Machine Learning



Predictive Analytics



Generative AI

AI Device Applications: Where Decision-Makers See the Most Impact



1 Safety

Detect potential hazards, issue alerts for prevention



2 Quality Control

Detect issues or anomalies



3 Inventory Management

Forecast needs from past data, streamline stock levels and maximize space



Technology Adoption: The Key to Meeting Productivity Goals

85% ^{+4pp} YoY
of associates agree



82% ^{+2pp} YoY
of decision-makers agree

The increased use of technology and automation helps boost frontline productivity

Embracing Technology

Warehouse Workers See Tech as an Ally

Frontline workers' relationship with technology has transformed dramatically. With a growing affinity for technology, associates increasingly view it as a powerful tool to improve accuracy, safety and productivity—and many are actively advocating for its adoption. This shift underscores the deep integration of technology into daily life, reshaping workforce expectations and fostering enthusiasm for new advancements.

An impressive 93% of associates agree that new technologies are essential for attracting and retaining talent, signaling a major shift in workforce priorities. Modern devices like wearables, mobile computers and mobile robots have become essential for simplifying tasks, reducing physical strain and ensuring smooth integration with automated systems. This connectivity enables workers to make more informed and faster decisions. As a result, the demand for technology has become a defining factor in the labor market, with today's workforce viewing it as a valuable ally in creating a safer, more productive and satisfying work environment.

Decision-makers are seizing this opportunity by providing workers with cutting-edge technology and investing in training and upskilling programs.



Building a Bridge to Automation: Workers Champion Tech Adoption

90% ↑ +11pp YoY

of associates agree augmenting labor with technology and devices first is the best way to introduce automation into a warehouse operation

Empowering Voices: Decision-Makers Engage Associates in Shaping Decisions

91% ↑ +3pp YoY

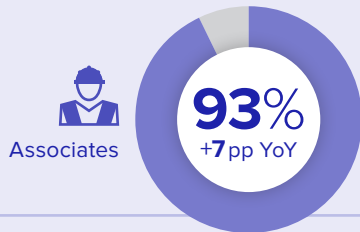
of decision-makers involve associates in decisions related to automating workflows to ensure acceptance

Modern Devices Matter: Associates Favor Tech-Savvy Employers

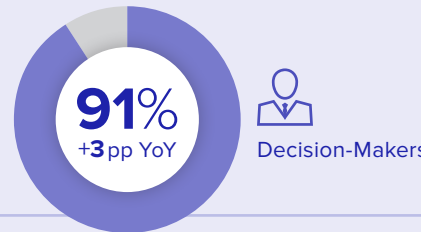


of associates prefer employers who provide modern devices over those with outdated or no devices

Global Consensus: Tech Investments Key to Attracting and Retaining Talent



Implementing warehouse technologies, robotics and devices would help attract and retain workers



Decision-Makers

By Region:

Asia Pacific	Europe	Latin America	North America
92%	93%	94%	93%

By Region:

Asia Pacific	Europe	Latin America	North America
89%	91%	87%	95%

From Vision to Action

Accelerating Warehouse Modernization

63% 

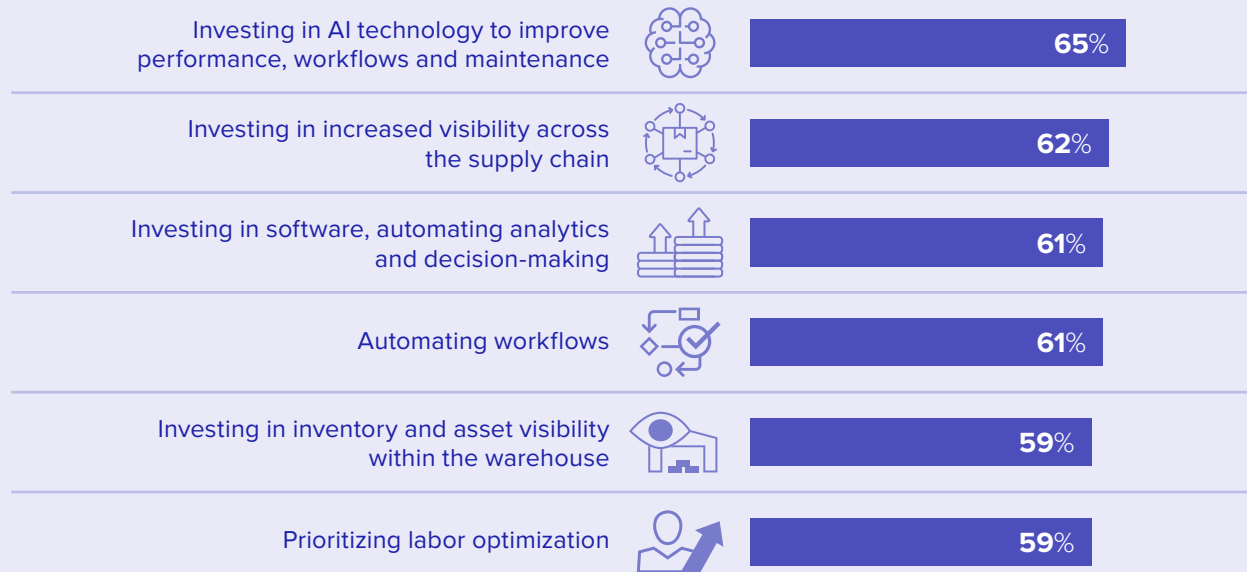
of decision-makers plan to accelerate timelines of modernization projects by 2029

Warehouse operations are undergoing a widespread transformation, making modernization a strategic imperative. With 63% of decision-makers planning to accelerate modernization initiatives in the next five years, investments in labor optimization, AI and workflow automation are set to transform operations. Companies are prioritizing visibility and streamlined processes, recognizing that aligning new technologies with clear business objectives is key to achieving efficiency and performance gains.

While these advancements promise enhanced visibility, cost savings and error reduction, modernization comes with challenges like team coordination, tech support and legacy system integration. By addressing these obstacles strategically, businesses can build a resilient foundation for sustained success.

Strategic Investments: From Labor Optimization to AI-Driven Decisions

Decision-makers plan to implement within 1 to 5 years



Tech Rollouts: Decision-Makers Break Down Barriers

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Determining ROI of new technology
- 

Service and support of new technology
- 

Ongoing management of new technologies
- 

Replacing legacy systems
- 

Difficulty in deploying/scaling new technology

Opportunity-Driven Warehousing Harnessing Change for Growth

Warehouse leaders may not control the pace of change, but they can turn it into a competitive advantage.

Strategically investing in technology can enhance decision-making, streamline workflows and build a foundation for sustainable growth. Success comes from combining innovative tools with a skilled workforce, where human-centric automation empowers your frontline workers to excel—tackling today’s challenges while preparing for future opportunities.

About the Study

Zebra Technologies commissioned a global research study to explore the trends and technologies shaping warehouse and distribution center operations. Conducted online by Azure Knowledge Corporation, the study gathered insights from over 1,700 associates and decision-makers across manufacturing, retail, transportation, logistics and wholesale distribution.

The series focuses on three key themes:



Unlocking Warehouse Precision
Where Data and Visibility Drive Peak Performance



The Rise of Collaborative Intelligence
Frontline Workers Growing Affinity for Tech



The Great Warehouse Convergence
Where Technology, Efficiency and Innovation Align

To view the entire Warehouse Vision Study series, visit zebra.com/warehousingvisionstudy

To learn how Zebra can help your warehouse performance reach new heights, visit zebra.com/warehouse

About Zebra Technologies

Zebra (NASDAQ: ZBRA) empowers organizations to thrive in the on-demand economy by making every front-line worker and asset at the edge visible, connected and fully optimized. With an ecosystem of more than 10,000 partners across more than 100 countries, Zebra serves customers of all sizes, including 94% of the Fortune 100, with an award-winning portfolio of hardware, software, services and solutions that digitize and automate workflows.



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