Logistics MANAGEMENT

RESEARCH BRIEF

2024 Warehouse Automation & Order Fulfillment Study

New report provides an in-depth look at how companies are selecting, implementing and using advanced warehouse automation to run their growing operations.

HAI ROBOTICS

INTRODUCTION

To say that automation and robotics have made their mark on the modern warehouse would be a major understatement. Safe to say, advanced innovations are now firmly entrenched in many fulfillment environments, where the labor shortage, changing customer expectations and the ongoing e-commerce boom are all driving more organizations to invest in automation and robotics.

The persistent labor shortage is one underlying factor that can't be overlooked. A shortage of permanent workers continues to plague the warehousing sector even as broader unemployment rates level off. The fact is, there are often multiple job openings for every candidate in the warehousing sector, which isn't generally viewed as a desirable career path for younger generations.

And when younger generations of workers do sign up for jobs in the warehousing or logistics sector, they expect to be equipped with updated technology solutions that help them do their jobs quickly, safely and efficiently. Raised in the digital age, these workers expect a contemporary experience on the job, with tools that align with the world they're accustomed to.

There's also been a significant shift in how companies buy and lease real estate to house their growing distribution operations. In many pockets of the U.S., the red-hot market is squeezing companies from all sides and forcing them to rethink their approach to buying and managing warehouse space. Inflation, high interest rates and rising business costs are also forcing organizations to scrutinize their existing resources and use automation and robotics to eke even more productivity out of their real estate.

These are just some of the trends that are driving more organizations to elevate their automation adoption, where autonomous mobile robots (AMRs) are assisting order pickers; robotic arms are picking orders; and Automated Storage and Retrieval Systems (ASRS) are condensing storage footprints, eliminating operational touch points, and delivering goods for orders directly to picking stations.

Ready to learn more about how companies decide when it's time to automate, select the right automation for their operations and then put those advanced solutions to work, Hai Robotics and Peerless Media Research recently conducted a survey of Logistics Management readers. The *2024 Logistics Management Warehouse Automation & Order Fulfillment Study*, provides a peek into the warehouse transformation that's now well underway and delves into the current state of automation and robotics in the modern warehouse, DC or fulfillment center.

ABOUT WHO WAS INVOLVED IN THIS STUDY

For this year's survey, the majority of respondents are either logistics/distribution managers, operations managers, corporate/divisions managers or warehouse managers/supervisors. 30% of them work in the manufacturing and industrial sector, with others heading up warehousing operations for e-commerce distribution centers (DCs); retailers; or grocery, food or beverage companies.

Most survey respondents handle either operations (29%) or logistics (17%) functions for their organizations, with some working in supply chain, distribution or information technology (IT). Revenue ranges for these companies started at under $50 million (for 26% of respondents) and went as high as $2.5 billion or more (12%). Nearly half (46%) of the survey participants are employed by companies with fewer than 100 employees, with 23% working for organizations with 1,000 to 5,000+ associates.

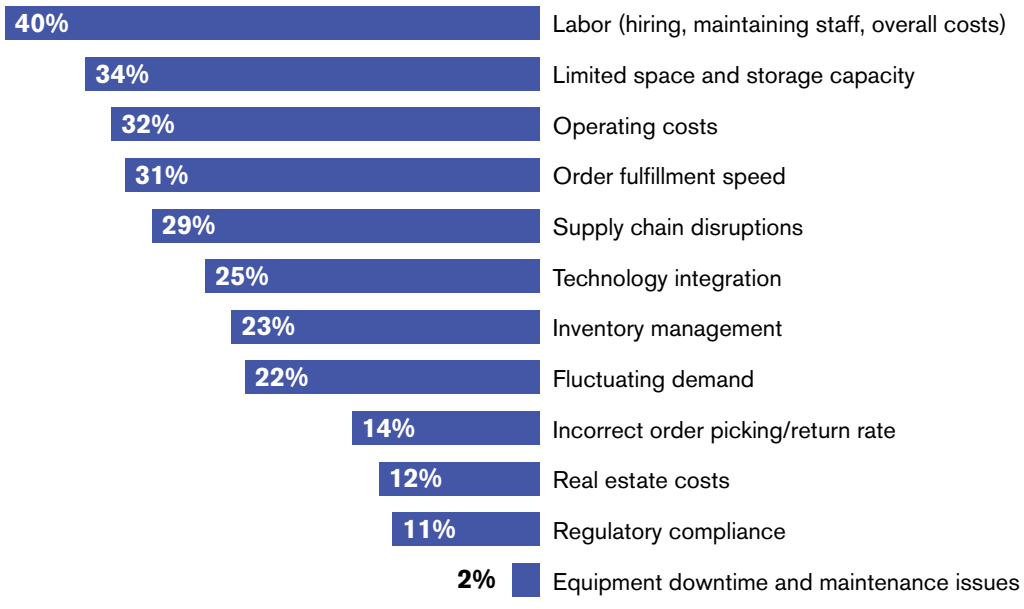
When it comes to facility size, 29% of respondents work for companies with warehouse operations spanning 100,000 to 500,000 square feet, followed by 25% who say their facilities are anywhere from 50,000 to 500,000 square feet. 31% work for very large facilities (500,000+ square feet), while 18% operate smaller facilities that are under 50,000 square feet in size.

TODAY'S TOP CHALLENGES AND PREPARING FOR TOMORROW

Warehouse facilities face a multitude of issues today, with labor (including hiring, maintaining staff and overall labor costs) being the biggest problem for 40% of respondents. Other key challenges include a lack of space and storage capacity (34%), rising operating costs (32%) and the need for faster order fulfillment speeds (31%). Others point to supply chain disruptions (29%), technology integration (25%), inventory management (23%) and fluctuating demand (22%) as the biggest issues that are keeping them up at night right now.

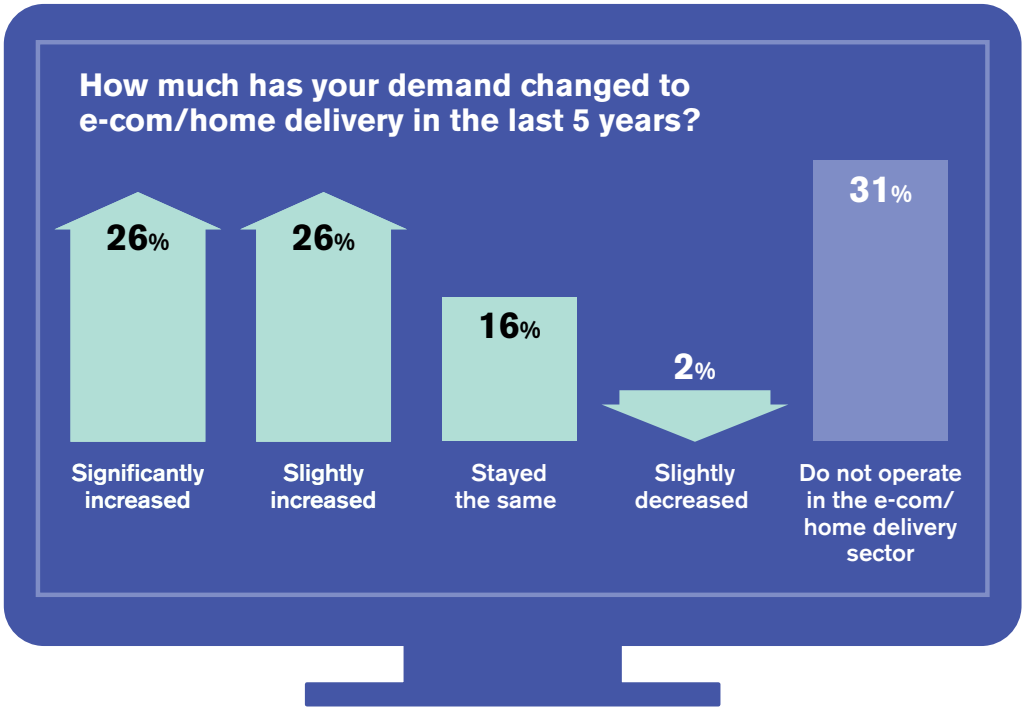
FIGURE 1

What are the top 3 problems your warehousing facility is facing today?



E-commerce and home delivery have both had significant impacts on demand over the last five years. In fact, most respondents (52%) have seen demand either significantly or slightly increase as a result of these factors. Just 16% say demand has stayed the same and only 2% have seen decreases in demand over the last few years.

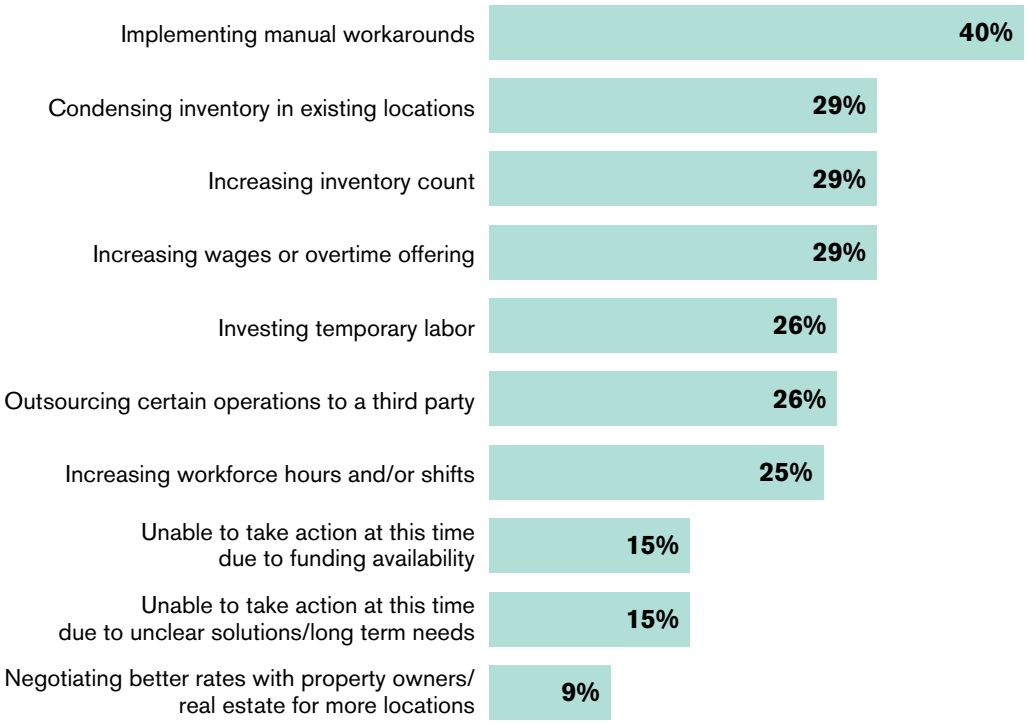
FIGURE 2



To more immediately manage the problems in their warehouse, 40% of companies are implementing manual workarounds, 29% are increasing wages or overtime offerings and 29% are condensing inventory in existing locations. Other solutions include increasing inventory count (29%), using temporary labor (26%), increasing workforce hours and/or shifts (25%) and negotiating better rates with property owners (9%).

FIGURE 3

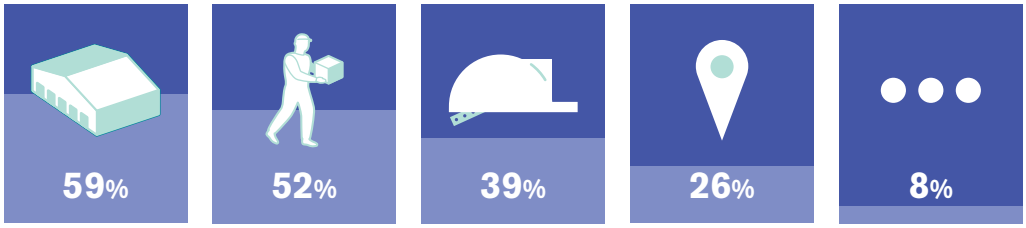
How are you currently managing the problems that your warehouse is facing today?



In the next five years, the majority of respondents (59%) plan to tackle their challenges by expanding capabilities within existing facilities, 52% will enhance workforce training and skills, 39% plan on expanding facilities to accommodate growth, and 26% will partner with third-party logistics providers. Automation and robotics will surely play starring roles at the 59% of companies that have set their sights on extracting more productivity and efficiency out of their existing facilities.

FIGURE 4

How do you plan to manage these problems in the next 5 years?



Expand capabilities within existing facilities

Enhancing workforce training and skills

Expanding facilities/add facilities to accommodate growth

Partnering with third-party logistics providers

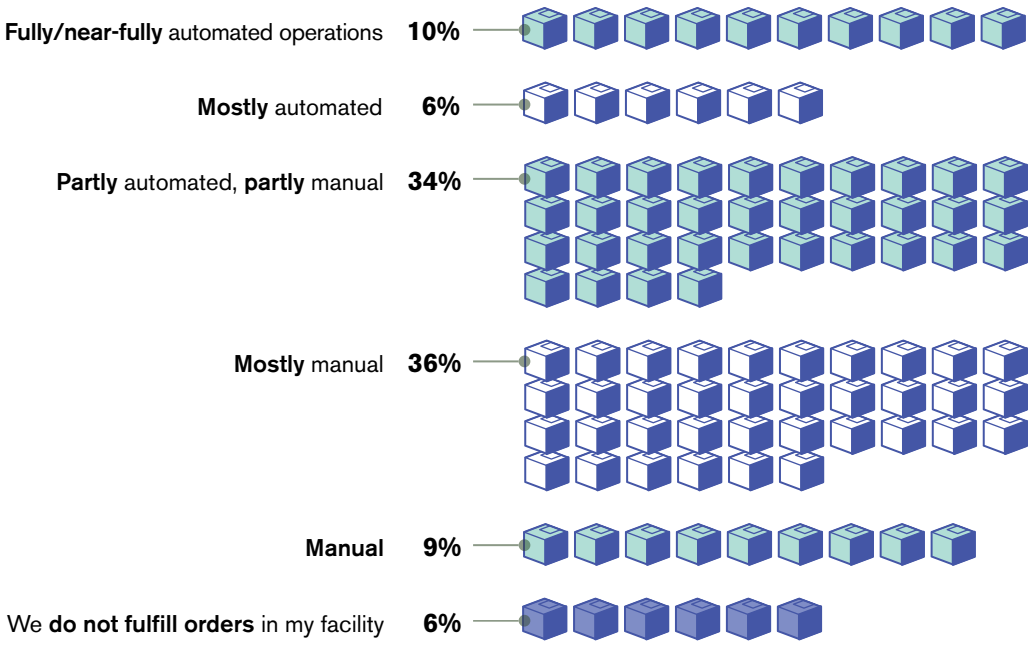
Other

HOW AND WHY COMPANIES ARE AUTOMATING

Asked about their companies' use of warehouse automation for order fulfillment, 10% of respondents have either fully or near-fully automated their operations and 6% have operations that are mostly automated. Another 36% say their processes are mostly manual; 34% are using a part-automated/ part-manual approach; and 9% still rely primarily on manual processes to run their operations.

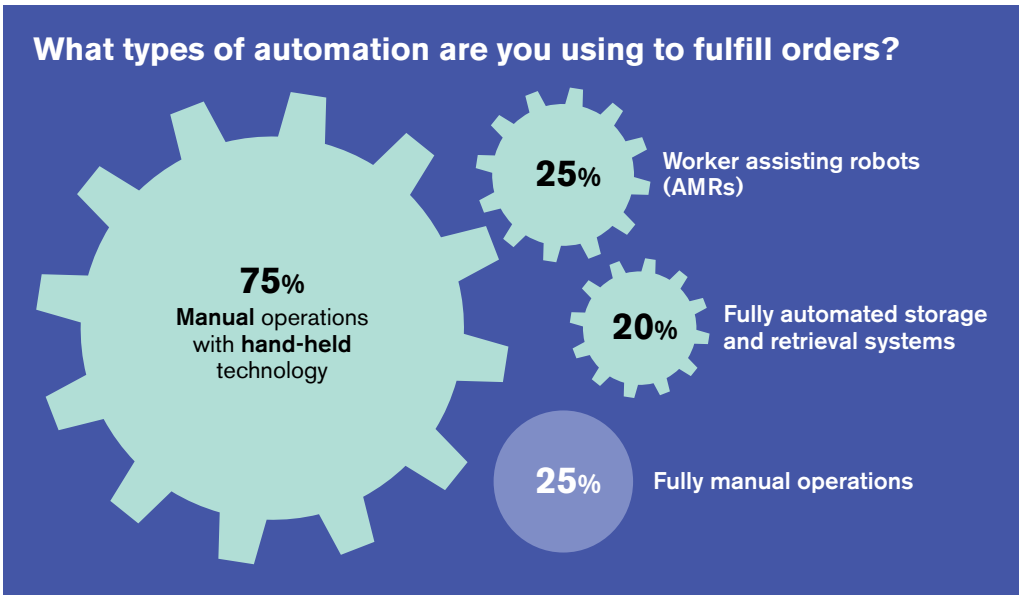
FIGURE 5

Which best describes the level of warehouse automation for order fulfillment you are currently using?



Among the current automation users, 75% say they combine manual operations with handheld technology while others (25%) have deployed worker-assisting robots like AMRs or fully automated storage and retrieval systems (20%) to fulfill orders.

FIGURE 6

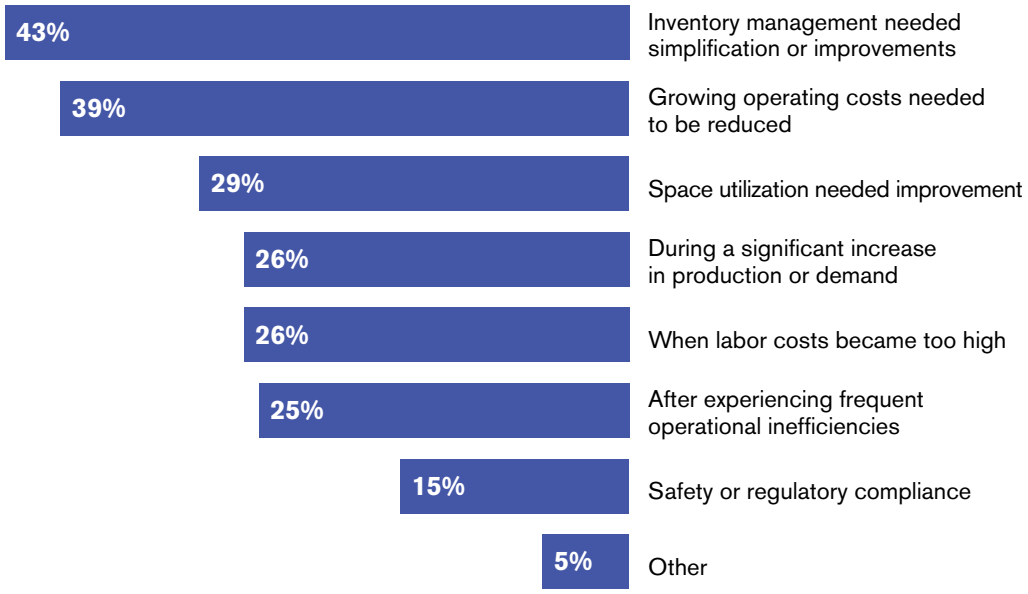


Companies invest in automation for different reasons, with different "tipping points" compelling them to make the move, with the e-commerce boom, ongoing labor shortage, need to optimize existing space and potential cost savings being some of the more common drivers. According to the survey, 43% of companies knew it was time to automate when more simplification and/or improvements were in order.

39% of respondents adopted automation because they wanted to reduce rising operating costs, 29% needed better warehouse space utilization and 26% say they were grappling with significant production or demand increases. Other reasons given included high labor costs (26%), frequent operational inefficiencies (25%) or the need to address safety or regulatory compliance requirements (15%).

FIGURE 7

When did you determine it was time to automate your facility?

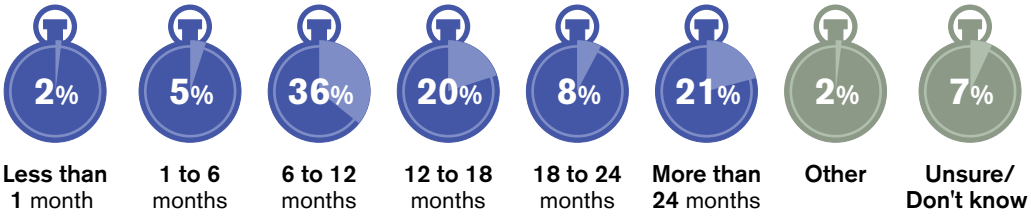


FINDING THE RIGHT FIT

Effective warehouse automation and robotics investments don't just happen overnight. In fact, 36% of respondents say it took 6-12 months to select the right automation solution after identifying a need, while 21% say it took more than 24 months. 20% of respondents spent 12-18 months on this stage of the process and 8% say it took 18-24 months. Just 2% of companies chose a solution in less than a month.

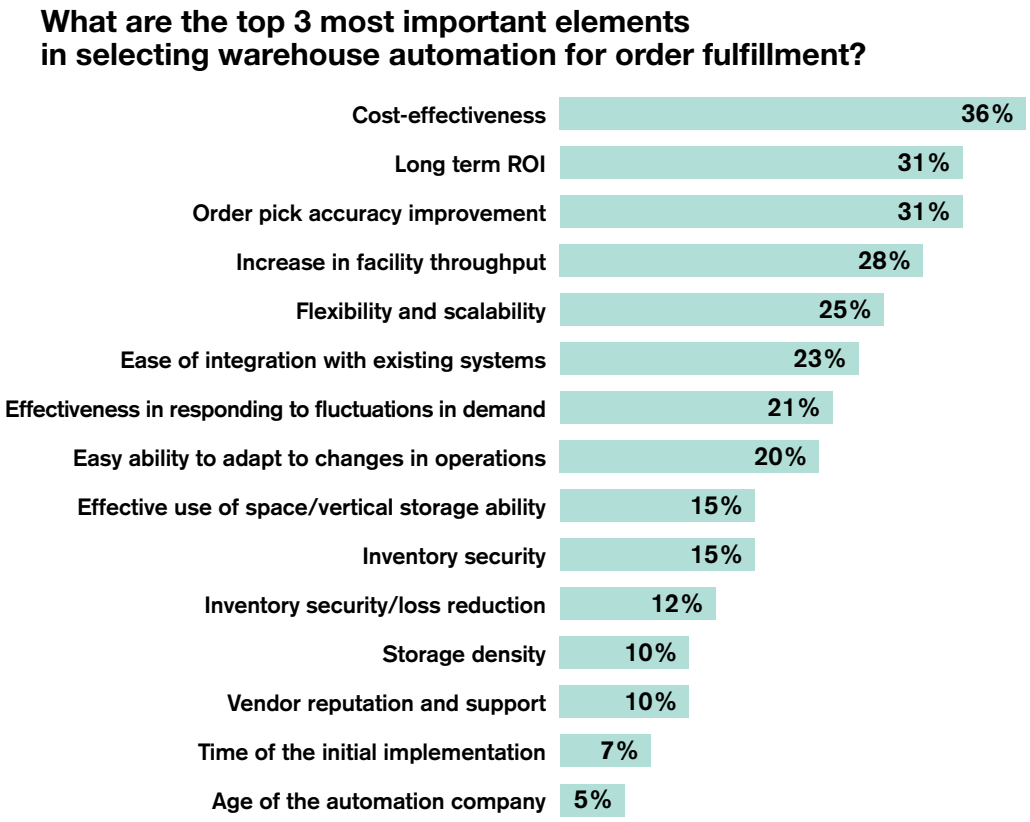
FIGURE 8

From when you identified a need to automate your warehouse, to selecting an automation solution, how long did it take?



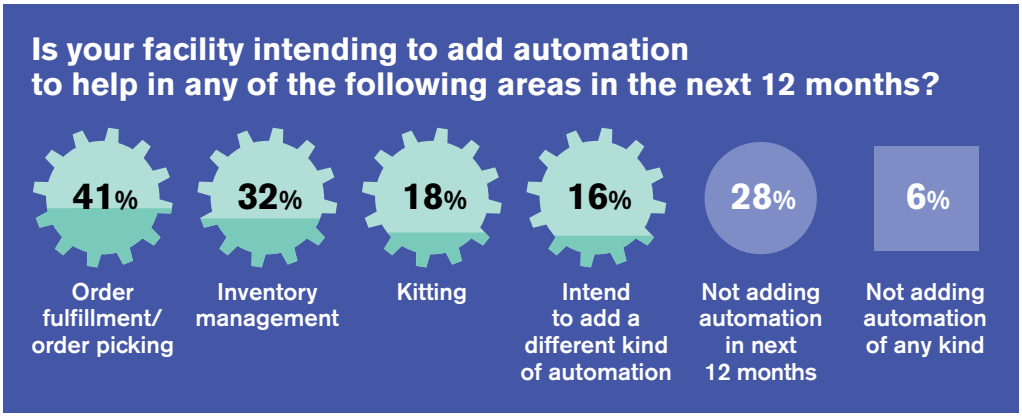
When selecting warehouse automation for order fulfillment, 36% see cost-effectiveness as an important factor, 31% consider the long-term return on investment (ROI) of the solution and 31% view order pick accuracy improvement as a top deciding factor. Other important selection criteria include increased facility throughput (28%), flexibility and scalability (25%) and ease of integration with existing systems (23%).

FIGURE 9



Over the next 12 months, 41% of companies want to infuse more automation into their facilities to address order fulfillment or order picking; help with inventory management (32%); and manage the kitting process (18%). Roughly one-third of survey respondents (28%) have no plans to add more automation to their warehouse and DC facilities within the next year.

FIGURE 10



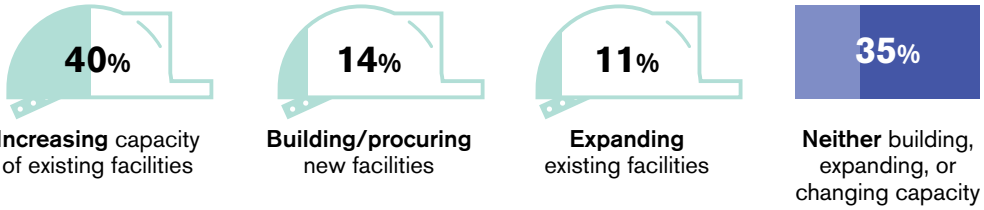
THE STATE OF WAREHOUSE FACILITIES

When expanding their operations, 72% of survey participants say a warehouse's available capacity is of utmost importance while 28% view location as the most important factor. The majority (73%) say having fewer facilities with greater capacity is more cost-effective while 27% prefer to have smaller facilities positioned within close proximity of their customers.

Companies have different visions for the future of their warehousing and fulfillment operations. For example, 40% are currently increasing the capacity of their existing facilities; 25% aren't building, expanding, or changing capacity; 14% are building or procuring new facilities; and 11% are expanding existing facilities. According to the survey, 32% of companies are currently centralizing into fewer larger facilities while 17% are developing more, smaller locations.

FIGURE 11

Is your organization currently...



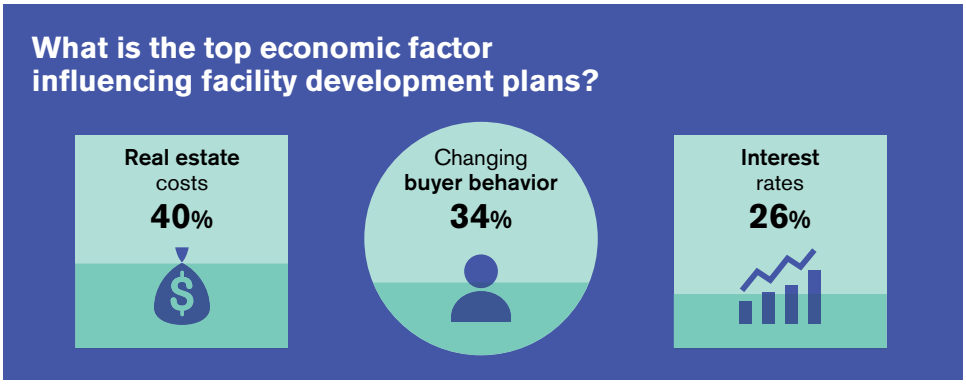
The write-in portion of the survey unveiled some additional information about companies' future expansion plans. "Since there are two acres of land behind our building now, we're in the process of adding to our existing location and adding more production and warehouse area," one respondent said. Another says the focus is on determining "new and different ways to improve upon our existing capacity to be more efficient, reduce SKU count and reduce costs throughout the facility."

USING AUTOMATION TO COMBAT RISING REAL ESTATE COSTS

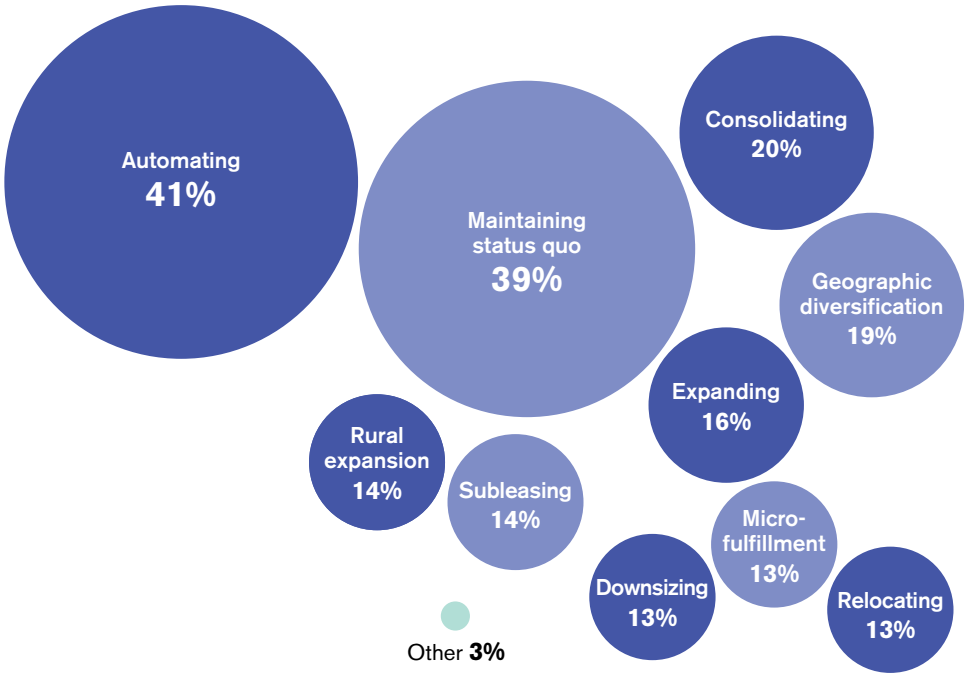
Right now, the top economic factor influencing facility development plans include real estate costs (40%), changing buyer behaviors (34%) and interest rates (26%). With real estate costs as a core area of concern, 41% of respondents say their current distribution network real estate strategy focuses on investing in technology and automation that maximizes the efficiency of existing space and reduces the need for additional real estate.

39% of companies plan to keep their current real estate holdings without making any significant changes to their portfolios while 20% want to streamline their operations by combining multiple, smaller DCs into larger, centralized facilities. Geographic diversification (19%), building new properties (16%), subleasing excess space (14%) and investing in rural expansion (14%) are some of the other strategies that companies are using right now.

FIGURE 12

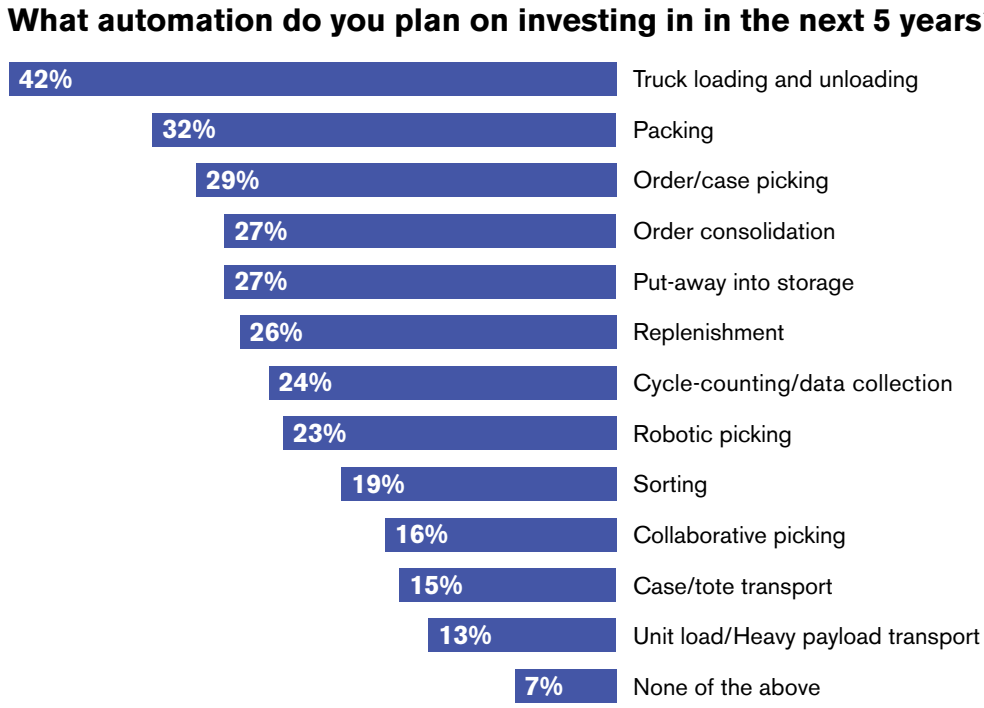


Considering changes in real estate costs, what is your current real estate strategy for your distribution network?



The survey also delved into companies' future plans, effectively serving as a "crystal ball" for all things related to warehouse and DC automation. Over the next five years, for example, 42% of companies will invest in automation for truck loading and unloading; 32% for packing; 29% for order/case picking; and 27% for put-away into storage. Others want to implement automation for order consolidation (27%), replenishment (26%), cycle-counting/data collection (24%), robotic picking (23%) or sorting (19%).

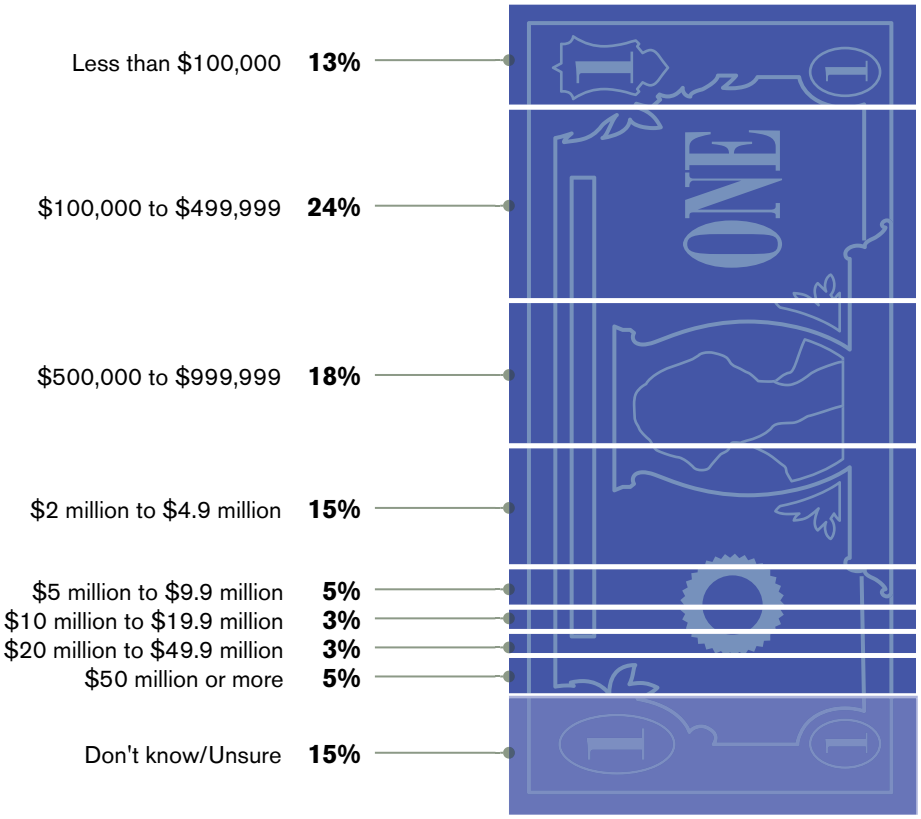
FIGURE 13



Most companies understand both the initial investment and long-term benefits that automation provides, and they're willing to allocate budgets to these projects. Within the next five years, 42% of companies have allocated between $100,000 and $999,999 to warehouse automation; 15% plan to spend $2 million to $4.9 million; and 5% will spend more than $50 million.

FIGURE 14

Approximately, how much will your company spend on warehouse automation in the next 5 years?



THE WAREHOUSE ROBOTIC REVOLUTION CONTINUES

There's no end in the sight to the warehouse robotic revolution, which has found more organizations leveraging the power of automation and robotics to navigate the complexities of the modern fulfillment environment. The labor crunch, cost pressures, e-commerce boom and real estate squeeze are just some of the core factors that are driving—and will likely continue to drive—the push to automate.

With the business use cases for warehouse automation clearly delineated, and with robotics becoming increasingly "democratized" and put within reach of warehouses of all sizes, expect to see an even broader range of solutions accelerating its adoption rate in global warehouses, DCs and fulfillment centers. Automation helps these operations solve their key pain points while also contributing to improved supply chain scalability, efficiency, accuracy and reliability.

ABOUT HAI ROBOTICS

A leading global provider of automated storage and retrieval systems (ASRS), Hai Robotics has developed a modular approach to automation called HaiPick Systems. With its catalogue of advanced robotic equipment and software packages, and the inclusion of almost any industry standard racking and storage materials, Hai Robotics provides facilities tailored automated solutions for maximum results without the complexity and cost of a fully customized solution.
The HaiPick System's modular warehouse automation approach introduced unprecedented flexibility and adaptability into robotic solution offerings and changed the scope of what industrial automation is capable of. Offered with both robotic and non-robotics system elements, HaiPick Systems can be easily changed, reformatted and expanded as needs change. The unprecedented ease in which HaiPick Systems are altered or expanded better ensures long-term operational success and creates long-term value for facilities.

Facilities that rely on HaiPick Systems have seen 4x operational efficiency improvement, condensed inventory with up to 75% reduction in storage footprints, 67% labor cost reduction, 99.9% order pick accuracy, and travel for order picking eliminated. Founded in 2016, Hai Robotics makes solutions that are used on over 1,300 projects, in over 30 countries and supported by eight global offices. The company's products support facilities across most industries, most notably e-commerce, 3PL, apparel, healthcare, food and beverage, grocery, manufacturing and automotive.

To learn more about Hai Robotics, visit HaiRobotics.com.