LOCUS

RESEARCH BRIEF

Using Warehouse Robotics to Succeed During Times of Disruption

A major jump in e-commerce sales, ongoing supply chain disruptions, and the need for social distancing on the plant or warehouse floor are all pushing more companies to add robotics to their technology stables. A trend that was already underway pre-COVID due to a persistent labor shortage and the need to minimize redundant tasks and wasted steps in the fulfillment environment, automation rose to the top of all logistics managers' wish lists in 2020.

If the global pandemic was the spark for this uptick in interest, new concerns about human health, the move to more remote work, and new social distancing requirements are the additional catalysts for change. Worldwide supply chain disruptions were visible at the individual consumer level, with shortages of essentials like toilet paper, cleaning supplies, and personal protective equipment (PPE) all putting a white hot spotlight on the fragility of those networks.

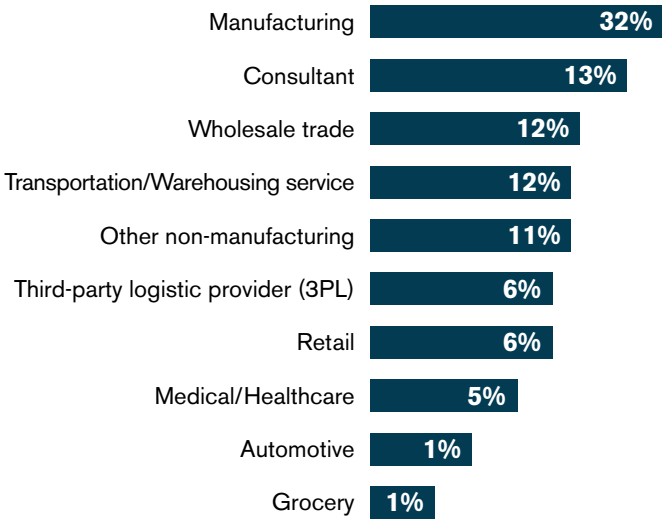
As organizations continue to emerge from this crisis and reset their operations for the "new normal," more of them are looking to robotics as the solution to some or all of these challenges. By adding even a small dose of robotic automation to an existing operation, for example, organizations can effectively scale their teams up or down to meet demand, keep their human workers physically distanced from one another, and allocate valuable labor to more important work.

To learn more about current supply chain disruptions and the role that robotics is playing in helping companies overcome these issues, Peerless Research Group conducted a reader survey on behalf of Logistics Management for Locus Robotics. This study was executed in July/August 2020, and was administered via e-mail to Logistics Management subscribers.

Respondents were prequalified by being involved in decision-making for their companies' warehouse or distribution center operations. The survey is based on input from individuals working in a variety of industries, including manufacturing, consulting, wholesale trade, and transportation and warehousing services.

FIGURE 1

What industry segment best describes your company?



Manufacturing breakout: In which industry do you manufacture goods?

- Aerospace and defense **7%**
- Apparel/Textiles **3%**
- Chemical/Pharmaceutical/Bio-Tech/Healthcare/Medical Devices **10%**
- Fabricated metals **13%**
- Food/Beverage **13%**
- Furniture/Wood **3%**
- High-tech/Electronics **16%**
- Industrial machinery **13%**
- Plastics/Rubber **3%**
- Other manufacturing **19%**

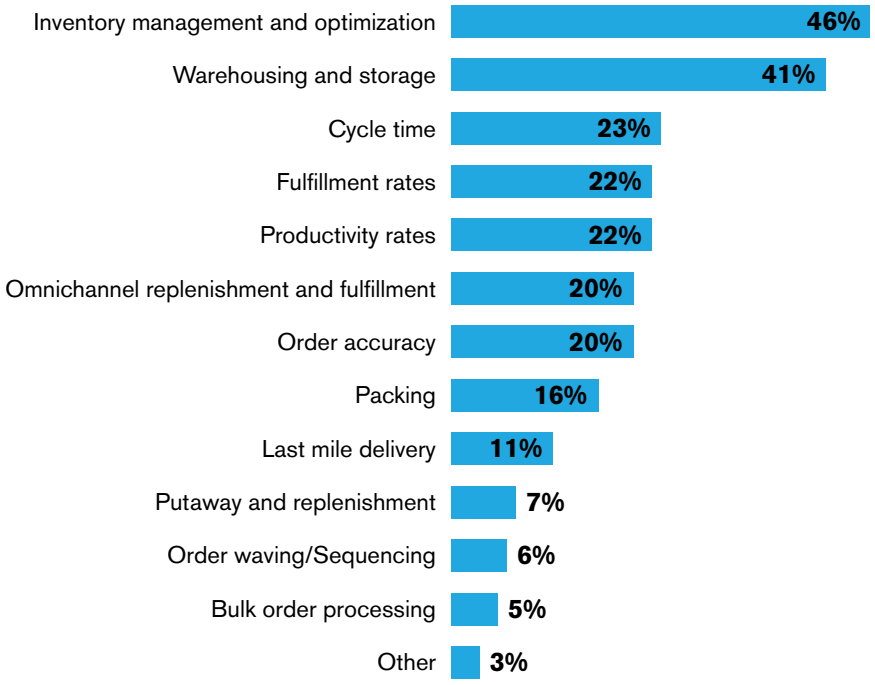
Nearly one-third (32%) of respondents work in the manufacturing industry, while others work in consulting (13%), wholesale trade (12%), or transportation and warehousing services (12%). Of those respondents who are in manufacturing, 16% work with high-tech or electronics, 13% work with industrial machinery, 13% work in food and beverage, and 13% work in the fabricated metals industry. Another 10% are involved in pharmaceuticals, biotech, healthcare, or medical devices, and 7% manufacture aerospace and defense equipment.

From this survey, Locus Robotics wanted to gain a better understand of fulfillment practices and the important role that autonomous mobile robots (AMRs) play in these operations during times of disruption.

Emerging Trends in Manufacturing and Warehousing

FIGURE 2

What aspects of your order fulfillment and distribution operations do you need to improve to meet recent business changes and challenges?



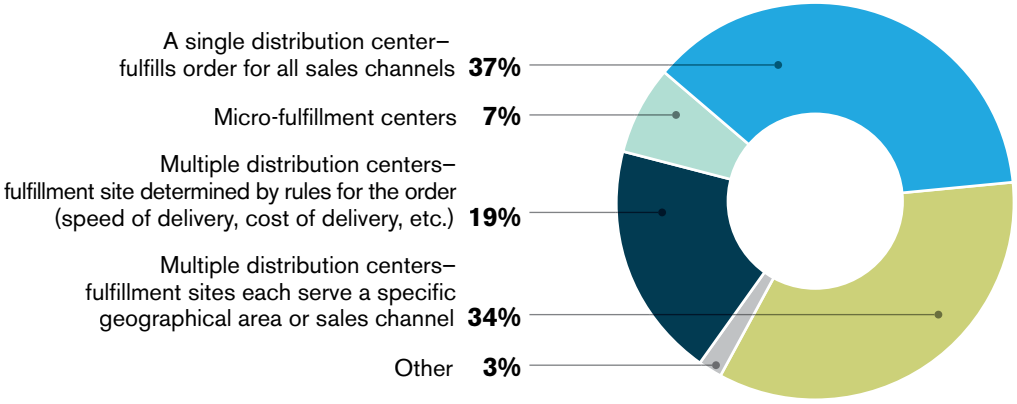
It's no secret that the events of 2020 threw a sizable wrench into most manufacturing and warehousing operations. And while the subsequent uptick in e-commerce sales helped offset some of COVID-19's earliest impacts, most companies were then left scrambling to fulfill that spike in demand using their existing systems and solutions.

The situation proved challenging, to say the least. Nearly half (46%) of survey respondents say they need better inventory management and optimization strategies right now, while 41% want to improve their warehousing and storage systems. Twenty-three percent want better cycle times, 22% are focused on fulfillment times, and 22% need to improve productivity rates in order to keep up with current challenges.

Finally, 20% of respondents say their companies need better omnichannel replenishment and fulfillment strategies, and 20% says poor order accuracy is keeping them awake at night.

FIGURE 3

Which best describes your current order fulfillment model?



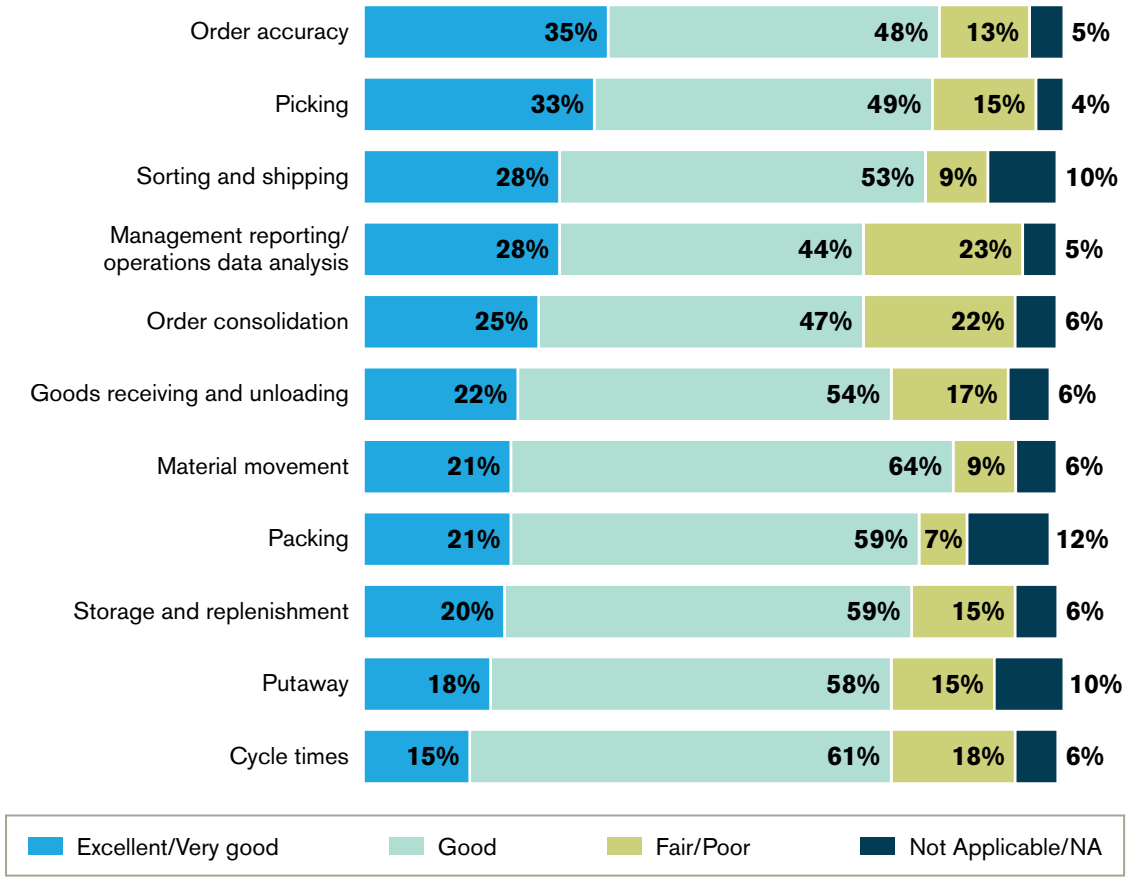
Underperforming Operational Areas

Most of the manufacturers (37%) surveyed for this report operate a single distribution center that fulfills orders for all sales channels. Thirty-four percent have multiple distribution centers, with each serving a specific geographical area or sales channel, and 19% say they operate multiple distribution centers.

For the latter, each fulfillment site is determined by rules for the order (e.g., speed of delivery, cost of delivery, etc.). Just 7% of respondents are currently operating micro-fulfillment centers, or those small, compact centers placed near the customer and equipped with the robotics and automation needed to fulfill orders quickly.

FIGURE 4

How would you currently rate your operations on the following functions?



As they continue to shake off the impacts of the global pandemic, respondents admit that there are certain areas of their operations that are underperforming (specifically due to the current circumstances). Most of these challenges could be at least in part—if not in full—overcome with robotics and automation.

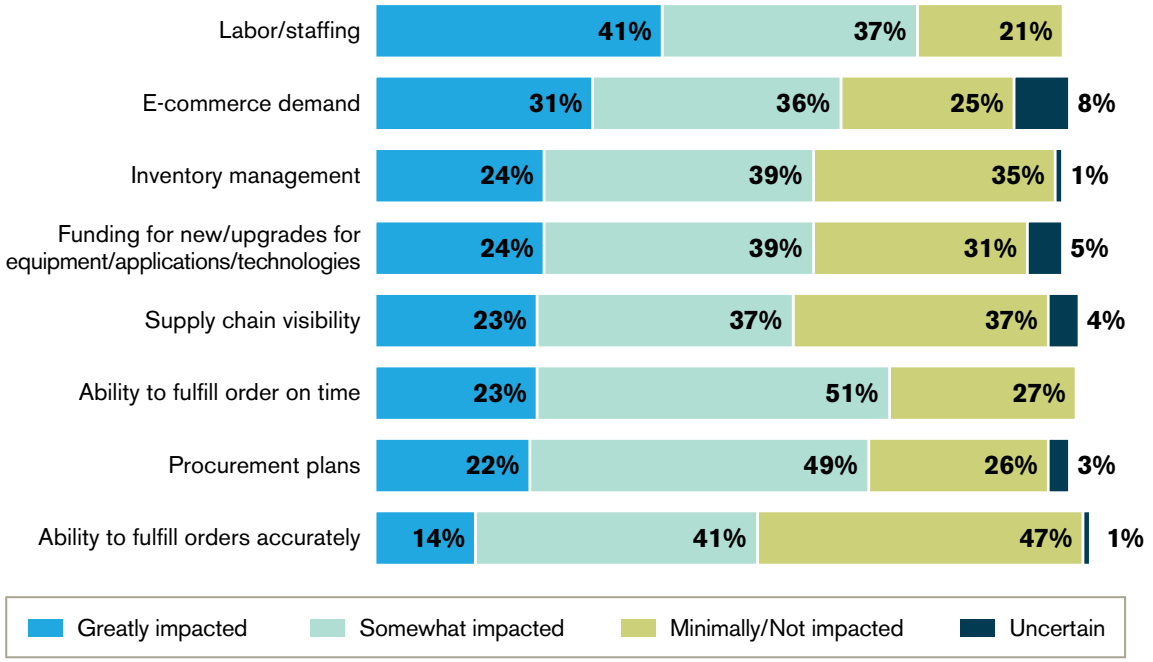
When asked to rate their current operations, just 15% of logistics professionals consider theirs excellent in terms of cycle times, while 61% describe themselves as good in this area, and 18% say they are fair or poor. Just 18% say they are excellent at putaway, while 58% say they are good, and 15% say they are doing fair or poor.

Other areas of concern include management reporting and operations data analysis, where 23% say they're doing fair or poor. On a positive note, 67% of companies feel they have this aspect of their operations under control. The same goes for order consolidation, where 22% lack confidence in their current setups and 72% either rank their systems as good or excellent.

When it comes to storage and replenishment, 15% of companies say they're doing either fair or poor in this area, while 79% are handling the processes well. Similarly, 22% say they are excellent at receiving and unloading goods, while 54% say they are good, but 17% still say they are only fair or poor. Finally, 15% companies would like to see their picking processes improved, while 82% say they're either good or excellent at handling this aspect of their businesses.

FIGURE 5

How would you rate the impact of the pandemic outbreak on each of the following?



The Pandemic's Impacts on Distribution

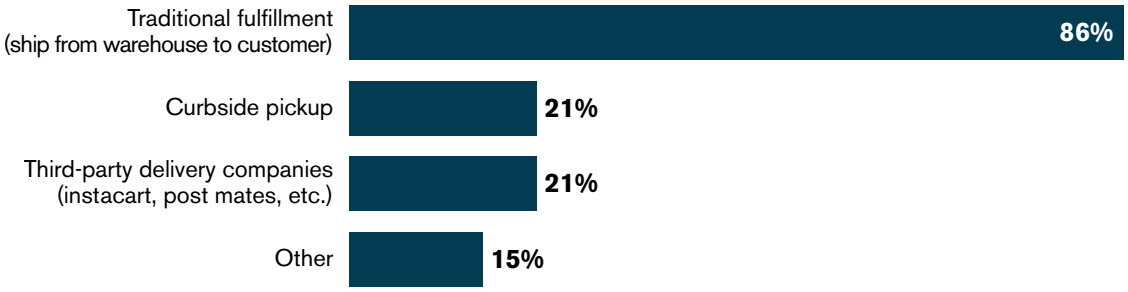
In assessing the impacts of the pandemic, 78% of respondents say their labor and staffing strategies have either been greatly or somewhat impacted by the outbreak. Just 21% of respondents say their labor and staffing was unimpacted by COVID-19. E-commerce demand has also been disrupted, with 67% either being greatly or somewhat impacted in this area. Just 25% of companies say they haven't really been impacted by the massive increase in e-commerce in 2020.

Inventory management has also become more difficult this year, with 63% of companies either being greatly or somewhat impacted in this area. Thirty-five percent of respondents said their inventory management operations were unimpacted by COVID-19. The pandemic has also pushed companies to reevaluate their funding for new or upgraded equipment, applications, and technologies, with 63% saying they are greatly or somewhat impacted in this area. Thirty-one percent have been able to effectively avoid such impacts.

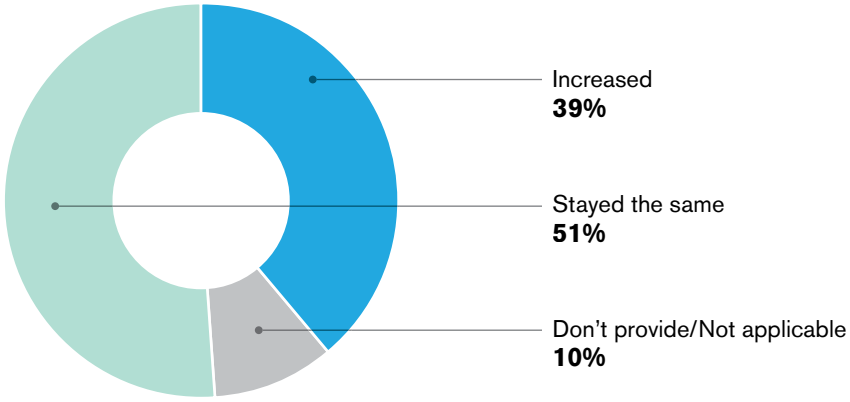
Some organizations are struggling with the ability to fulfill orders on time, with 74% either being greatly or somewhat impacted, and 27% not really being impacted. For the most part, companies are still able to fulfill orders accurately, with just 14% of companies seeing this as a challenging point right now (88% feel they have this aspect of their businesses under control).

FIGURE 6

Which e-commerce fulfillment services do you deploy?



As a result of COVID-19, have order fulfillment costs increased, decreased or stayed the same?

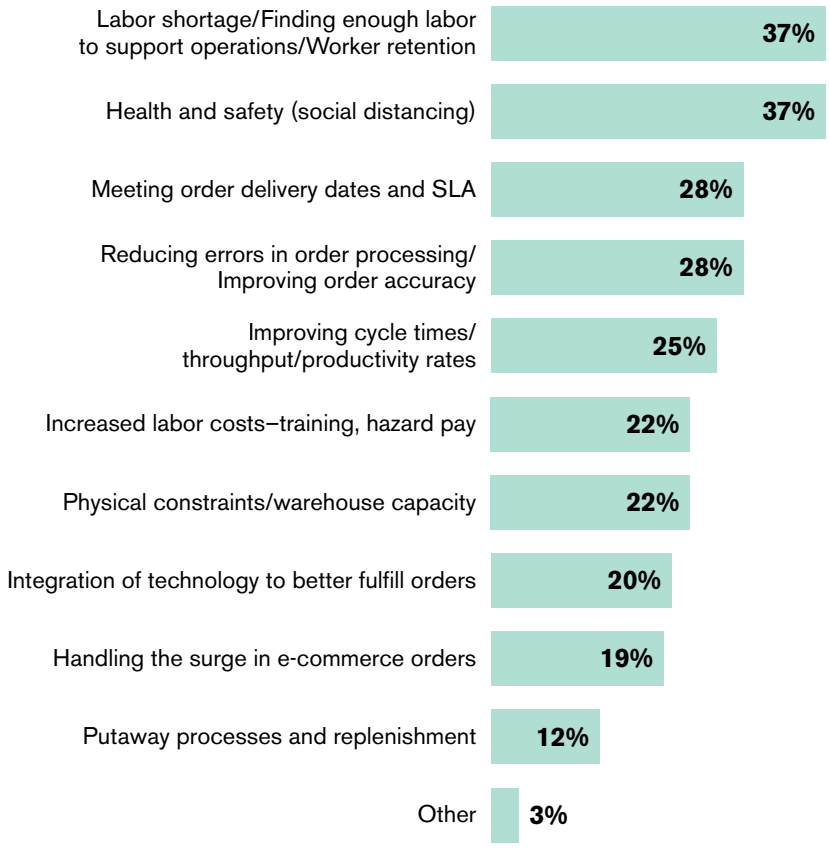


Fulfillment Strategies

When asked which e-commerce fulfillment services they currently deploy, most respondents (86%) use a traditional fulfillment strategy, meaning they ship directly from warehouse to customer. Other companies are taking non-traditional routes, including the 21% that utilize curbside pickup and 21% that rely on third-party delivery companies (e.g., Instacart and Postmates). As a result of COVID-19, 39% of respondents say their order fulfillment costs have increased, while 51% say they have stayed the same. No companies have seen a decrease in these costs.

FIGURE 7

As a result of COVID-19, what would you say are your operation's top challenges related to order management, fulfillment and distribution?

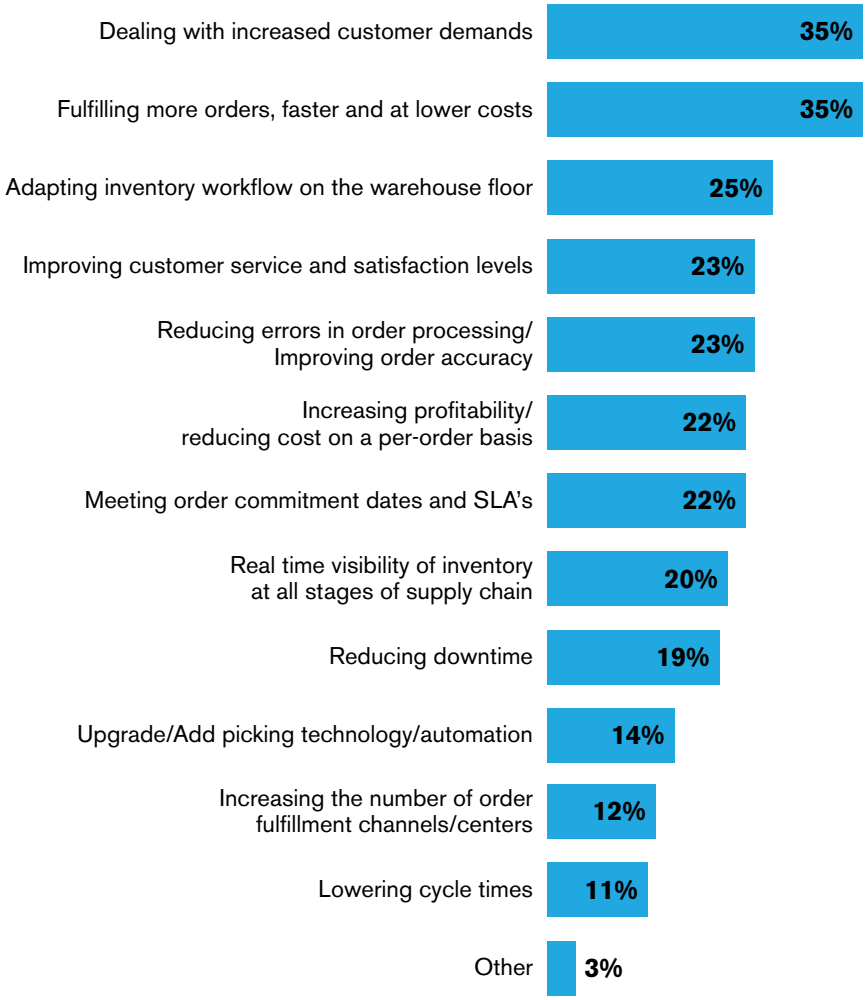


For today's logistics managers, the top pandemic-related order management, fulfillment, and distribution challenges include labor shortages, finding enough labor to support operations, or work retention (for 37% of companies) and maintaining the health and safety of employees and customers (37%). Other challenges include meeting order delivery dates and SLA (28%), reducing errors in order processing and improving order accuracy (28%), and improving cycle times, throughput, or productivity rates (25%).

Twenty-two percent of companies are struggling with increased labor costs, mostly in the form of training and hazard pay; 22% are facing challenges due to physical constraints and not enough warehouse capacity; and 20% are trying to integrate technology that will help them fulfill orders more efficiently. And, with the currently surge of online orders, 19% of companies are having a difficult time managing this uptick.

FIGURE 8

As a result of COVID-19, what will be your top priorities in your order management, fulfillment and distribution operations during the next 12 months?



Challenges Abound

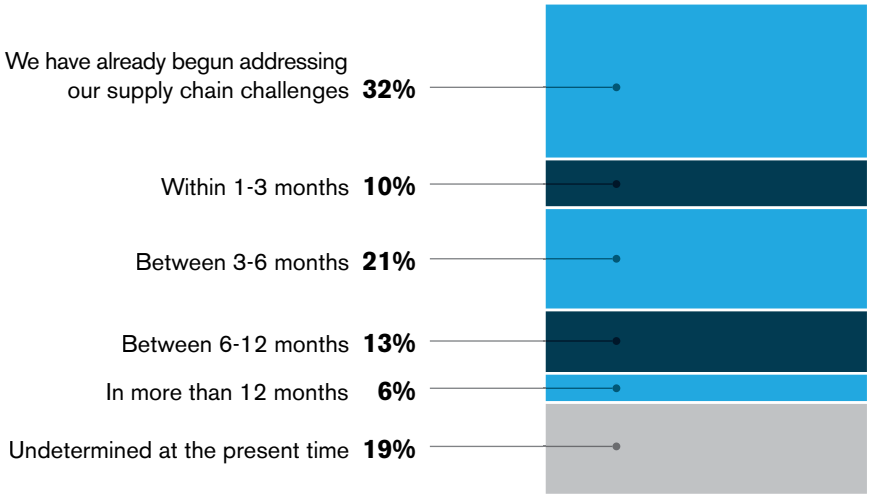
Due to COVID-19, companies' top order management, fulfillment, and distribution priorities over the next year will include dealing with increased customer demands (for 35% of respondents) and fulfilling more orders, faster and at lower costs (35%). Automation and robotics can help companies achieve these goals without the need for additional employees, physical space, or IT infrastructure.

Twenty-five percent of firms say adapting inventory workflows on the warehouse floor is another top priority; 23% want to improve customer service and satisfaction levels; and 23% are focusing on reducing errors in order processing and/or improving order accuracy. Increasing profitability and reducing costs on a per-order basis is important to 22% of respondents, the same number of which are focused on meeting order commitment dates and service level agreements (SLAs).

Additionally, 20% of companies are prioritizing real-time visibility of inventory at all stages of the supply chain and 14% would like to upgrade or add picking technology or automation to their operations.

FIGURE 9

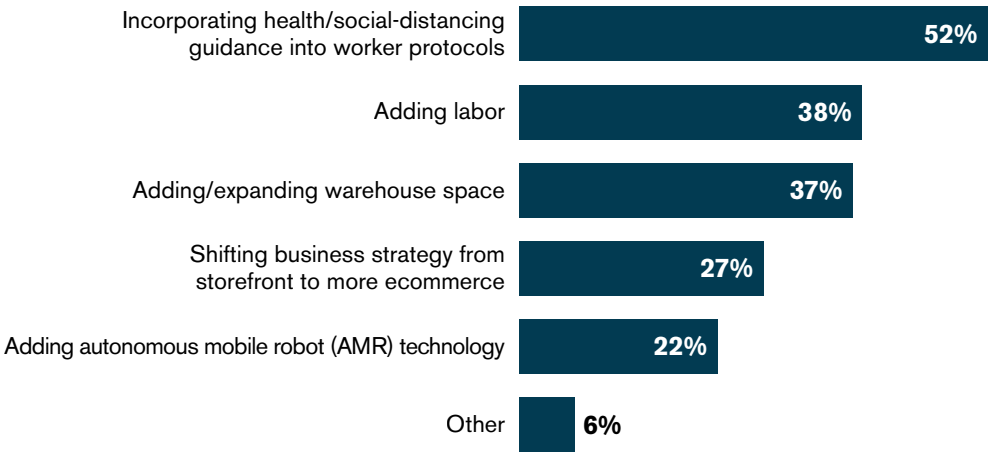
When are you planning to address your supply chain operations challenges?



When asked whether all of these challenges and priorities will be addressed immediately, 32% of companies say they have already started the process. Another 21% want to address these challenges in the next three to six months, while 13% plan to do so in the next six to 12 months. Nineteen percent have no planned starting date, 10% have an ambitious goal of kicking off their initiatives within the next one to three months, and just 6% are going to wait for more than 12 months to implement their plans.

FIGURE 10

What actions are being planned/considered for your post-pandemic order management, fulfillment and distribution operations?

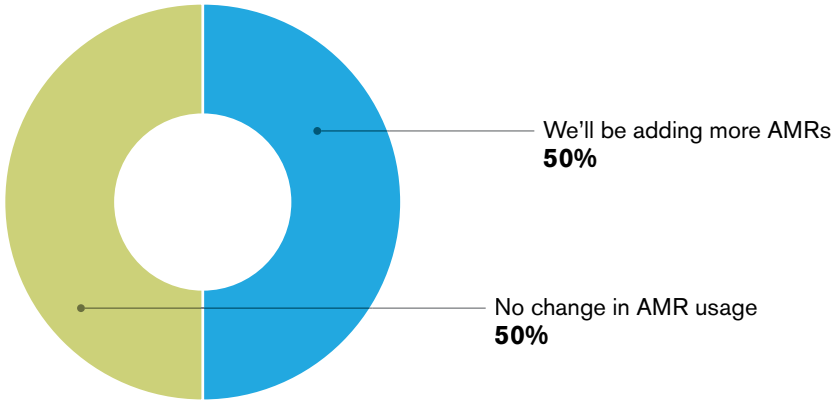


Automated Robots Come on the Scene

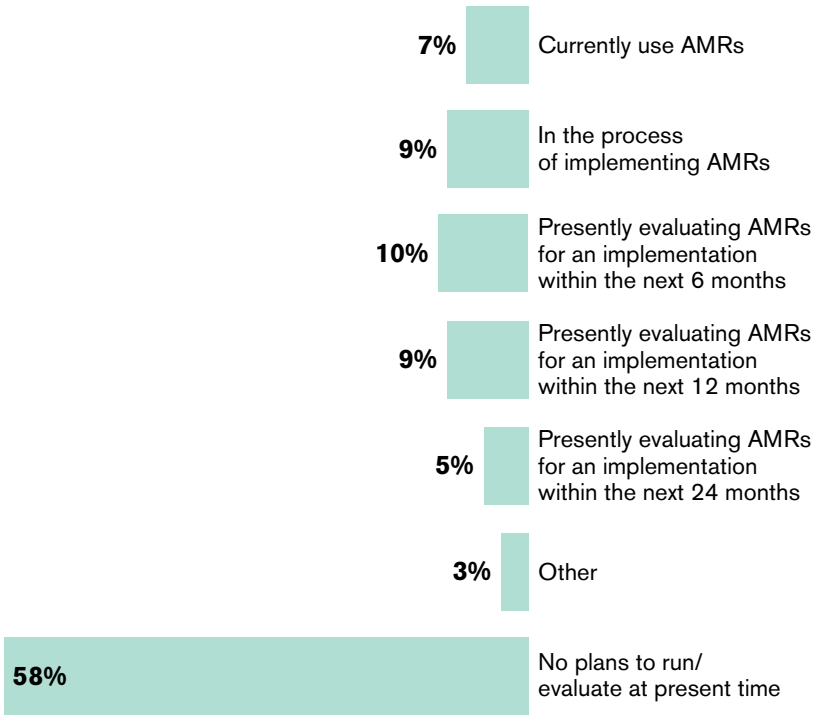
Twenty-two percent of respondents are planning or considering adding autonomous robot (AMR) technology for their post-pandemic order management, fulfillment, and distribution operations. This is an increase over prior years and aligns with what other industry and analyst groups are tracking in the market right now. Analyst estimates show that AMR adoption will grow at a 32% CAGR by 2026, representing nearly a 20% share of the market.

FIGURE 11

Those that currently use AMRs: As a result of the current pandemic, how will your usage of AMRs change?



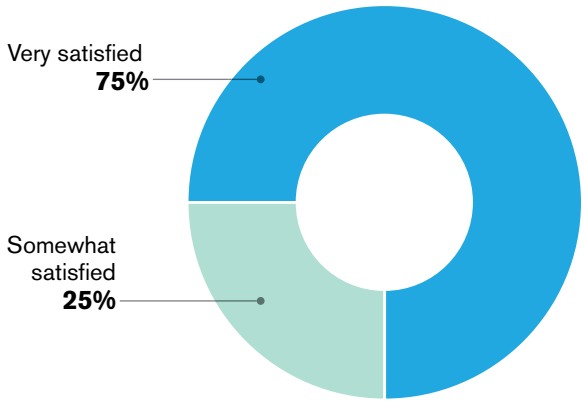
Which best describes your operation's status regarding the usage and adoption of autonomous mobile robots (AMR) for use in your warehouse and distribution operations?



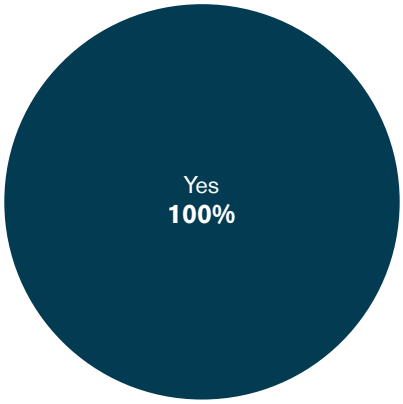
Currently, 24% of companies are evaluating AMRs for use in their operations and are planning to implement these robotics within the next six to 24 months. Nine percent are in the process of integrating AMRs in their fulfillment operations and 7% have already deployed robotics in their operations. Of those organizations currently using AMRs, 50% plan to add even more of these vehicles as a result of the global pandemic. This reveals a clear line between the use of robotics in fulfillment operations and the significant impacts that COVID-19 has had on these facilities.

FIGURE 12

Those that currently use AMRs: How satisfied are you with its ability to handle the tasks they perform?



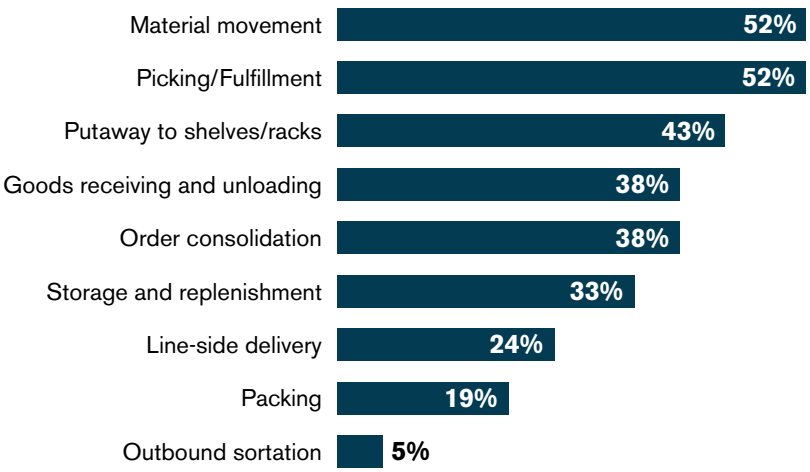
Those that currently use AMRs: Are you measuring the ROI for your AMRs?



All companies that are using AMRs are happy with the vehicles' performance. Of those companies currently use AMRs, 75% are very satisfied with the vehicles' ability to handle specific tasks, while 25% are somewhat satisfied. One percent of companies are measuring the return on investment (ROI) for their AMRs. They are measuring ROI through daily pick pace (50%), orders picked per day/hour (50%), and by lines picked per day/hour (25%). They anticipate return on investment between 12 to 24 months (50%) or between 24 and 48 months (50%).

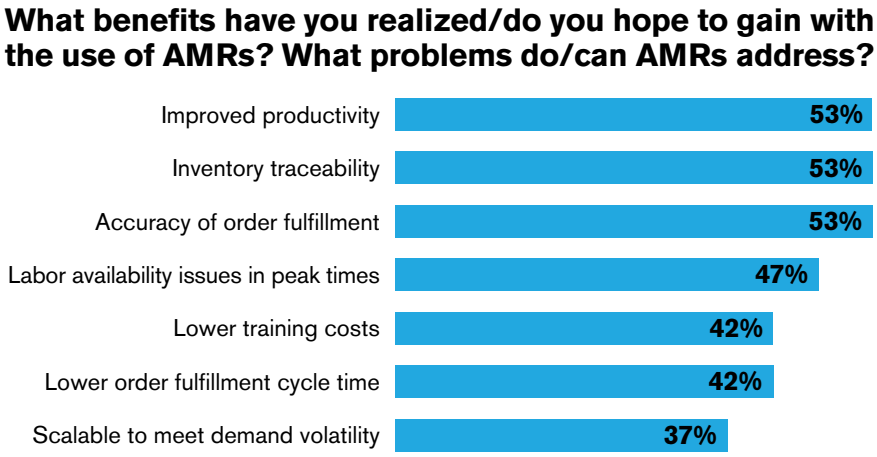
FIGURE 13

For which applications are or will AMRs be important for your warehouse/DC operations?



While AMRs can manage tasks in multiple different locations throughout the warehouse or DC, 52% of respondents say material movement is their top reason for investing in robotics. Forty-three percent want AMRs to manage putaway to shelves and racks; 38% for goods receiving and unloading; 38% for order consolidation; and 33% for storage and replenishment.

FIGURE 14

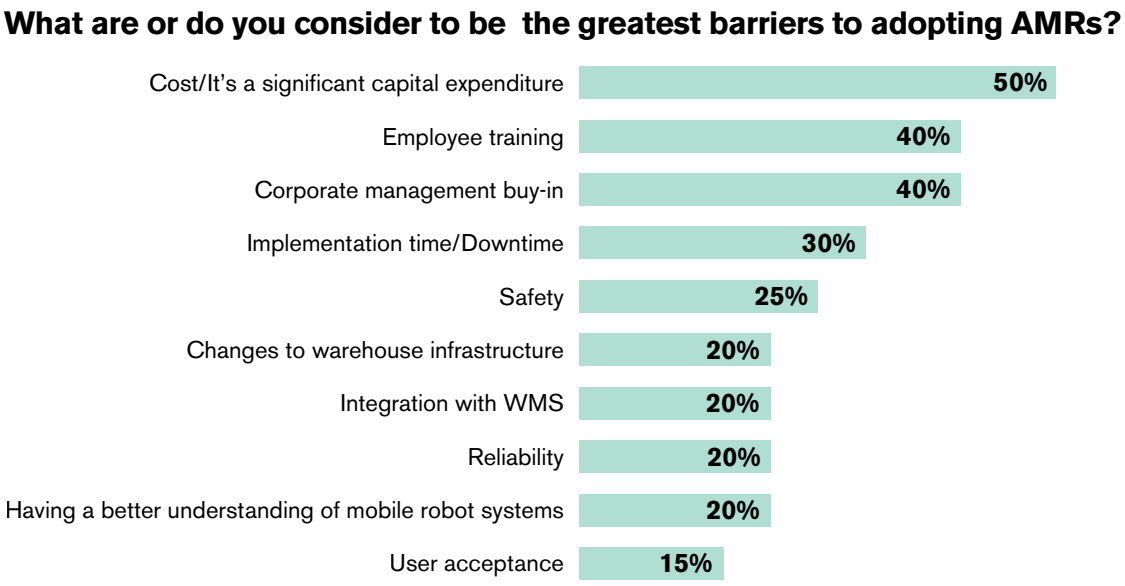


Recognizing the Benefits of Automation

In the warehouse and distribution setting, AMRs offer many benefits that range from eliminating manual tasks to reducing bottlenecks to increasing throughput (to name just few). According to 53% of survey respondents, the biggest realized or expected benefit is improved productivity, while 53% point to inventory traceability and 53% to accuracy of order fulfillment as the biggest advantages that automation provides.

Other key benefits that companies have either realized or, that they expect to realize after implementing AMRs, include labor availability issues in peak times (for 47% of companies), lower training costs (42%), lower order fulfillment cycle time (42%), and scalability to meet demand volatility (37%).

FIGURE 15



As with any advanced technology, AMR usage can also be challenging for organizations that are just beginning to implement automation and robotics. Half of respondents say the cost is their largest barrier and 40% say the need for employee training has kept them from investing in AMRs. Forty-percent say the delay in adopting robotics can be traced to a lack of corporate management buy-in; 30% are concerned with implementation time and downtime; and 25% say safety is their biggest concern.

Despite these challenges, the use of robotics and automation continues to grow in the fulfillment environment every year. As evidenced by this survey, the interest in robotics is high both due to the need for better efficiencies and because of the massive impacts that the pandemic has had on the world's supply chains. This will likely continue long after COVID-19 has been brought under control and life returns to a "new" level of normalcy.

Seizing the Opportunity to Grow and Change

The world as we've known has been permanently altered. The impact of COVID-19 continues to flip the script on all facets of everyday life and the actions we need to take to succeed. Eventually, we will all return to work, but the workplace – and even the work itself – will be forever changed.

With availability of labor being the key challenge to meeting growing volumes, AMRs give operators the flexibility to scale as needed, and to do it both inexpensively and seamlessly. Labor recruitment, retention, and training are also easier to manage since productivity of existing workers is significantly improved, while workplace quality, health safety, and general safety all become major labor value enhancers. Lastly, AMRs offer faster ROIs (e.g., Locus delivers an ROI of seven months, on average) and Robot-as-a-Service (RaaS) financial models have lowered deployment cost barriers.

Logistics executives and operators need to use this period of quarantine to restructure their strategy, so they may catapult their businesses forward when life returns to "normal." Those who will succeed are not waiting for the pandemic to lift; they are planning now, so they may be ready when the market is ready. It won't be the same market. Life post-pandemic will be very different. But in that difference lies an opportunity for those with the vision to seize it.

About Locus Robotics

Locus Robotics is the market leader in autonomous mobile robots (AMR) for fulfillment warehouses. The company has quickly become the leading warehouse robotics solution provider for retailers and third-party logistics (3PL) operators, industrial/automotive, and healthcare companies worldwide that are looking to meet the shifting demands of the booming e-commerce and fulfillment market.

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