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Human-centric digitalization: How augmented reality optimizes manual logistics processes

CIO

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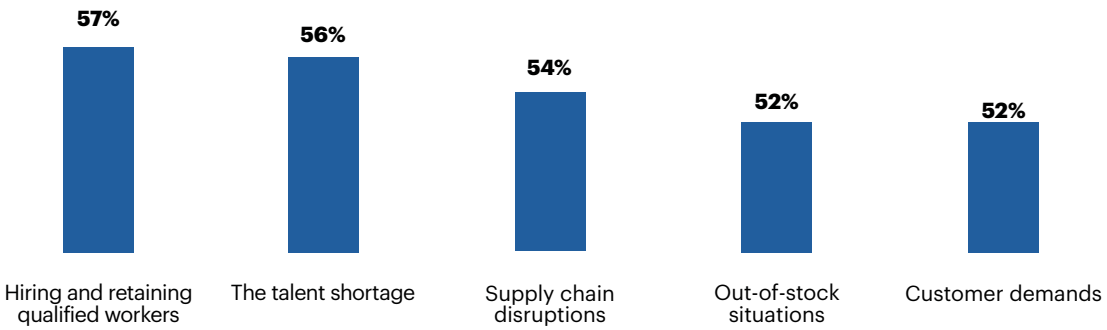
MANY WAREHOUSING AND SHOP-FLOOR FULFILLMENT PROCESSES ARE unsuited to full automation and robotics, particularly within e-commerce and retail. In many cases, the selection and collection of items for customer orders — commonly known as picking — can be better accomplished by human workers. Unlike many automated solutions, humans can adapt quickly and easily to changes in workflows and the introduction of new products and package sizes.

But technology still has a role to play. Vision picking, also known as pick-by-vision, is a good example. It functions with augmented reality (AR) technology provided via a wearable device, often in the form of smart glasses or another head-worn device, to digitalize workflows and transform crucial elements of the manual picking process. The result? Enhanced productivity and a more efficient warehouse, with people still doing the bulk of day-to-day work.

According to a survey released in March 2023 by MHI and Deloitte, top supply chain challenges cited by supply chain leaders include hiring and retaining qualified workers (57%) and the talent shortage (56%), followed by supply chain disruptions (54%), out-of-stock situations (52%), and customer demands (52%).[1] Vision picking addresses these challenges in a few notable ways.

Challenges cited by supply chain leaders



With vision picking solutions, companies can speed up manual order fulfillment or other manual intralogistics processes while reducing human errors. This is critical, considering the increasing complexity of orders and surging demand for rapid fulfillment — not to mention persistent labor and skills shortages.

[1] https://www.mhi.org/media/news/49351#:~:text=Friday%2C%20March%2024%2C%202023,of%2024%25%20over%20last%20year

Industry studies estimate that order picking accounts for 70% of warehouse operational time and 55% of operational costs.[2] Most of that work relies on manual labor, not robotic systems. According to the "Future of Jobs Report 2023" by the World Economic Forum, "expectations of the displacement of physical and manual work by machines has decreased" since a previous report in 2020 hinting about a resurgence of manual work.[3]

Hands-free order picking

Growth in manual-based picking is being driven by the need to pick a wide range of products. Whereas the addition of automation systems can require lengthy disruptions, upgrading processes for human pickers rarely affects operations. Automation tends to carry high up-front costs and relative inflexibility, too, making it even more difficult to justify in many operations.

Still, warehouses seek modern tools that will increase the efficiency and productivity of the picking process without compromising quality. Ultimately, they need to fulfill greater demand for more individualized products, ensure fast and adequate supply, and lower costs.

Vision picking is a proven industrial AR technology that can digitalize crucial elements of manual picking processes. Ergonomic smart glasses, in combination with sophisticated picking software, direct the worker's activities by displaying the relevant information without the need to look down at a handheld device or reprompt a voice picking system to repeat audio instructions.

Key benefits include:

- Higher productivity, with more orders fulfilled in less time
- Reduced manual picker errors
- Increased ROI, with greater integration of manual processes and warehouse management systems
- Ability to more quickly onboard and train workers
- Simplify workflows and speed up exception handling
- Improve workplace ergonomics

[2] https://www.sciencedirect.com/science/article/pii/S187770581731929X?via%3Dihubhttpwww.sciencedirect.com/science/article/pii/S187770581731929X?via%3Dihub

[3] https://www3.weforum.org/docs/WEF_Future_of_Jobs_2023.pdf

Solving key warehouse logistics challenges

Many businesses still rely on manual order fulfillment methods. Unwieldy and outdated handheld scanners still dominate operations, hampering worker productivity and perpetuating errors across the entire logistics value chain. These technologies are slow and provide limited assistance to workers.

Although other technologies, such as voice- and light-directed systems, offer high accuracy, they also have disadvantages: voice systems can require long onboarding times and do not offer always-on information, and light-directed systems tend to be inflexible and quite costly.

Smart glasses project important data — pick quantities and locations, product pictures, or instructions — into the worker's field of vision, providing contextual information more naturally than scanning devices or tablet computers. Vision picking software transforms complex input into bite-size information, leaving no room for misunderstandings.

With information projected directly into their line of sight, workers always know where to find a specific item in the warehouse. Once at the appropriate location, they can also receive text and visual aids to help with item selection, followed by directions to their drop-off location. This enables high-speed order picking while drastically reducing the number of manual errors. It also keeps pickers aware of their surroundings, preventing workplace accidents.

DHL Supply Chain adopted TeamViewer's Frontline vision picking solution for order picking globally in 2017. Currently, about 1,500 operators are equipped with smart glasses in DHL's U.S. warehouses, fulfilling orders for the technology, retail, consumer, and automotive industries.

With the vision picking technology, DHL pickers can work hands-free, reducing time spent per order. Operators see instructions clearly displayed in front of their eyes along with instant audio feedback, cutting down on errors and reducing training time by 50%.[4]

ABI Research forecasts that industrial AR active users employing mobile devices and smart glasses will increase from 11.5 million in 2023 to more than 267.3 million in 2030, a compound annual growth rate (CAGR) of 48.2% during that period. The number of active pick and pack users will be approximately 7.3% of that volume, with 884,000 in 2023 growing to more than 18.7 million, a CAGR of 46.5%.[5]

[4] https://www.teamviewer.com/en-us/success-stories/dhl/

[5] https://www.abiresearch.com/market-research/product/market-data/MD-IARMD/

Transforming operations with vision picking

With vision picking, organizations can more efficiently train novice workers who can learn by doing, with visual step-by-step guidance. Smart glasses can be voice command-enabled so workers can pull up relevant information while their hands are occupied, allowing a continuous and more efficient workflow. Benefits can be measured in speed (processed orders per time unit), quality (error rate in order picking), and flexibility (change and adaptation of warehouse infrastructure and software).

With visual step-by-step guidance, organizations can improve the workflow and quality of picking operations. Vision picking supports incoming goods handling, repacking, and sorting. For inventory management, the technology assists with replenishment and put-away, as well as conducting inventory and cycle counts.

U.S.-headquartered company GlobalFoundries, one of the world's leading semiconductor manufacturers and designers, previously relied on bulky handheld scanners and paper printouts of orders, which were manually sorted according to urgency. Arriving at a pick location, employees would put down their scanner to pick items with both hands and then pick up the scanner again to scan the code, finish the order, and throw away the printout.

By implementing vision picking, GlobalFoundries eliminated printouts and manual paper sorting and recognized a 25% reduction in overall picking time within the first month after adoption. Inventory accuracy has increased by one-third as picking errors have become negligible. On top of it all, the company has eliminated about 100,000 sheets of printed paper per year.[6]

Greater digitalization

Companies utilizing vision picking are providing workers with a better user experience and interaction with other digitalized systems, enabling the pickers to work hands-free, which improves workplace ergonomics. TeamViewer's vision picking software enables a direct connection between order fulfillment, inventory management, and product-level data.

Samsung SDS, one of the fastest-growing logistics providers in Europe, implemented vision picking with smart glasses to increase productivity and decrease mistakes. It was also important for the workers to be happy with the selected solution.

[6] https://www.teamviewer.com/en-us/success-stories/globalfoundries/

"Onboarding staff is simpler because the solution is easy to use and easy to understand. It's very intuitive," says Paul Berendsen, Samsung SDS Manager of Operations. "Our pickers can work hands-free because we have a ring scanner that we can pair with the glasses. It makes sure that we can do scanning, picking, and packing at the same time."[7]

As industrial AR solutions keep on proving to be a value-add to operations, it is expected that the number of AR smart glasses and head-mounted devices will increase from 1.89 million worldwide in 2023 to more than 44.3 million in 2030, a CAGR of 48.3%, according to ABI Research.[8]

Smart glasses, available from multiple manufacturers, can accommodate right-eye or left-eye dominance, comfortably fit with hard hats and ball caps, and be worn in conjunction with prescription eyeglasses and safety glasses. These devices are well suited for industrial use, with long-lasting battery life and the composition to withstand intense wear and tear.

Future applications for smart glasses in the warehouse hold great potential. "With the sensors on these devices, organizations can start applying artificial intelligence [AI] to do QA checks and count items," says Brian Ballard, TeamViewer senior Vice President, Solution Delivery. "We are at the beginning of what we think is an augmented-reality-based revolution in the logistics space."

[7] https://www.teamviewer.com/en-us/success-stories/samsung-sds/

[8] https://www.abiresearch.com/market-research/product/market-data/MD-IARMD/

Why TeamViewer

In today's demanding warehouse environment, a vision picking solution must be easily configurable and scalable, ensuring that it can meet your specific business needs now and in the future. Seamless integration into existing warehouse management systems and warehouse execution systems is essential. TeamViewer Frontline xPick is an award-winning AR solution for vision picking that gives industrial workers the digital tools they need to speed up processes, decrease error rates, improve quality, and save costs.

TeamViewer enables companies of all sizes and in all industries to digitalize their business-critical processes through seamless remote connectivity and industrial AR platforms and solutions. To help customers tackle business challenges, TeamViewer proactively shapes digital transformation and continuously innovates in the fields of AR, the internet of things (IoT), and AI.

TeamViewer's connectivity platform enables secure remote access, control, and support for any device, in any location. TeamViewer's software has been installed on more than 2.5 billion devices globally. Its leading enterprise AR platform for deskless workplace digitalization helps streamline onboarding, training, and operational work processes across the entire value chain, increasing productivity, reducing errors and inspection times, and simplifying daily tasks for frontline workers.

Learn more about TeamViewer
Frontline's industrial AR solutions.