Improving Warehouse Efficiency and Productivity with Hands-free Scanning Solutions

Traceability data is a key component of supply chain operation, efficiency and customer satisfaction. Collecting that data using hands-free technology brings incremental improvements for every parcel adding up to significant savings.

Introduction

A persistent workforce shortage is creating challenges for organizations across all industries. In the retail, manufacturing and logistics sectors, companies are struggling to fill positions in warehouses and distribution centers as the unemployment rate has stalled below 4% for more than a year. At the same time, demands on warehouse staff have intensified, largely as a result of an increase in e-commerce activity triggered by the COVID-19 pandemic.

This is forcing companies to try to accomplish more with warehouse staffs that for the most part have remained static in numbers. In some cases, warehouse teams have shrunk as workers leave to find employment elsewhere. With jobless rates remaining at historically low levels, workers are finding new opportunities with higher pay that for the most part would have been nonexistent a few years ago.

Since adding workers is a diminishing option to address staffing challenges, companies must look elsewhere to boost warehouse efficiency and productivity. The answer lies in technology solutions. Organizations have no shortage of technology options from which to choose, including robotics, and automated guided vehicles (AGV). But these are high-priced solutions that take time to implement, integrate and master.

For warehouses with an immediate need to boost efficiency and productivity, there is a more affordable option: hands-free scanning devices that simplify worker tasks and accelerate operational processes.

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Warehouse Workforce Pressure

Warehouses typically operate in multiple shifts, bustling with activity around the clock. Even as the use of technology and automation has increased in logistics environments, companies still need humans to complete tasks associated with fulfilling customer orders such as receiving, sorting, picking, kitting and packing. It's hard work that requires strenuous activity and repetitive tasks. For warehouse workers, 60-hour weeks are not uncommon, especially during peak times such as the Holiday shopping season.

When new workers are hired, it takes time to train them. Only 29% of warehouses are able to onboard and train employees in less than a month, according to ARC Research. Workers not only have to learn their specific tasks, but they also need instruction on how to use technology systems, conveyor belts, forklifts and any other relevant equipment. They also have to attend safety training to operate equipment correctly in order to avoid injury to themselves and others.

Clearly, warehouse onboarding is complex. It has become even more challenging as the workforce shortage continues. In 2013, a job vacancy would attract 6-10 applicants. In 2018, the number of applicants dropped to 2-5. In the current environment, a single applicant has a choice of multiple available jobs. In a warehouse environment, where the work is arduous and repetitive, applicants are scant. So organizations need to find ways to not only attract applicants but also make the jobs more appealing. Leveraging technology to make the job easier and less strenuous can help reach these goals.

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Increased Warehouse Activity

In addition to the worker shortage, warehouses today are grappling with other challenges, including an increase in e-commerce that places an even heavier strain on logistics centers. E-commerce purchases are growing at an estimated annual rate of 20.4%, according to a recent report.

At the height of the pandemic, many retail shops closed temporarily to comply with lockdown mandates, prompting a change in consumer behavior that is expected to prevail into the foreseeable future. Practices such as 'Buy Online, Pickup in Store' (BOPIS) and curbside pickup provided alternatives to in-store shopping. Omnichannel strategies that retailers had started implementing before the pandemic gained urgency. Omnichannel enables shoppers to switch between mobile, website and kiosk ordering systems to find items and complete an order.

One of the effects of the e-commerce increase has been a significant rise in purchase returns. According to a National Retail Federation study, shoppers in 2021 returned 16.6% of their purchases, up from 10.6% the previous year, and amounting to $761 billion worth of merchandise worldwide. In addition to BOPIS, consumers also have embraced the practice of BORIS (Buy Online, Return in Store), which has led to a reverse logistics challenge for warehouses. In addition to fulfilling more orders as a result of online purchases, warehouse teams have to handle a higher number of those orders when they are returned.

In urban centers, retailers promising to deliver in a day or less have opened micro fulfillment centers to enable quick delivery. But these micro centers also require staff and technology to fulfill orders. The process demands high levels of traceability so companies know where items are at all times and when they move from one place to another.

Also adding to the challenges for retailers and fulfillment centers is another phenomenon that the pandemic accelerated – the elimination of geographic borders for commerce. Traditionally, retailers have mostly sold to a customer base in their immediate region. The rise of e-commerce has lifted geographic barriers, enabling a small specialty shop or a mom-and-pop store to compete with large multi-national retailers as long as they have a website that users can find. This spurred an increase in international shopping, with 76% of online shoppers now making cross-border purchases.

With all of these demands on order fulfillment, warehouse operators are under pressure to boost worker productivity and overall efficiency. They must find ways to keep up with new customer expectations for purchasing online and having their order quickly fulfilled, whether customers pick it up themselves or have it delivered to their door. Fast fulfillment is a major contributor to driving customer delight.

Customer Experience

Whatever the pressures they are feeling on the backend, retailers must still deliver a delightful customer experience if they are to succeed in a demanding, highly competitive environment. The better they make the customer experience, the more likely they are to boost customer loyalty. The right experience also helps increase basket size when customers place orders.

For online retailers, a reliable e-commerce platform with intuitive interface is essential to delivering the right customer experience. This includes helping customers when they need it. Chatbots, or automated online assistants, can fulfill the role of a store associate, answering customer questions and making suggestions. Chatbots are becoming increasingly sophisticated as retailers invest in Artificial Intelligence (AI) to improve the quality of interaction and information they provide.

AI is also powering digital learning, another method employed by retailers to drive the customer experience. Examples of digital learning include the suggested and related items that appear on the screen when a shopper prepares to place an order. This digital approach to suggestive selling helps drive basket size by prompting customers to purchase additional items. And when an item is out of stock, customers can still place an order by purchasing a similar product.

Backend Improvements

Customer experience when shopping online is largely shaped by the interaction between the customer and e-commerce platform. However, it also requires well-oiled backend processes with optimized inventory management and reliable, accurate technology solutions. One area where retailers and fulfillment companies have heavily invested in recent years is warehouse automation, which delivers efficiency and traceability at every step of the process. The following types of robotics have gained traction in large installations:

Autonomous robots – These robots operate with little or no human interference to handle repetitive tasks. They can palletize and depalletize packages, transport them from one place to another, and place them on shelves or in delivery vehicles.

Collaborative robots – Also known as cobots, these machines assist workers on warehouse tasks, leveraging AI to learn from humans and perform tasks such as picking and moving packages. Cobots lift some of the pressure off of workers, enabling them to stay in the same area and focus on less arduous tasks.

Automated vehicles – Automated Guided Vehicles (AGV), or Autonomous Mobile Robots (AMR), use wiring or marked tracks to roll around fulfillment centers. These mobile robots can move pallets, stock, pick, and load and unload packages from trucks without human intervention, bringing efficiency and speed to the process.

Despite the benefits they deliver, robotics are not suitable to smaller environments. They require significant capital outlays and extensive integration with other warehouse systems, which places them out of reach to small and midsize warehouse operators. That being the case, these organizations need less-costly technology alternatives to drive efficiency and productivity. Hands-free scanning solutions can help them meet their goals.

Hands-free Scanning Solutions

Scanning solutions are an essential part of any warehouse environment, large or small, delivering traceability and visibility of inventory and simplifying workers' tasks. Every item that enters, moves around in, and exits a warehouse is scanned multiple times, feeding information to inventory management systems about its location at every touch point.

Scanning solutions started appearing in warehouses in the mid 1970s, and have increased in sophistication, accuracy and utility over the years. Newer hands-free models require minimal training and deliver unique features that can help retailers meet the challenges they face in fulfilling customer orders and reverse logistics. Specifically, two types of scanners merit consideration:

- Fixed overhead scanners
- Wearable personal hands-free scanners

Both types have wide applicability, providing functionality at multiple points in warehouse environments, whether large or small. They can replace handheld scanners for just about any task in a logistics center, including order fulfillment, cycle counting, sorting, picking and palletizing. They are intuitive and easy to implement since warehouses typically already have infrastructure in place to support scanning solutions.

Overhead Scanners

Fixed overhead scanners are best suited for tasks that require the user to move but the scanner is stationary. These scanners function similarly to those in retail self-checkouts, so they are intuitive to users and require minimal training. Users are not connected to the device; instead the worker picks an item, moves it across the scanner for a reading, and then places it in a box or pallet.

Fixed overhead scanners are suitable for tasks such as palletizing, sorting and fulfillment. They enable workers to complete tasks with easy hand-to-hand movements, requiring minimal body or hand twisting. The devices are designed

for ergonomics, featuring an adjustable depth of field – the distance between the nearest and farthest point that can be read – to accommodate the height of the person using the scanner. With overhead scanners, the field of view also can be adjusted to minimize the scanning area and prevent inadvertent scans of unwanted items. Conversely, users can expand the field for a wider scanning area for tasks such as moving packages from a truck to a conveyer belt.

Matrix 320 overhead hands-free scanning

Unlike handheld scanners, which use a trigger to read an image, overhead scanners use a distance detector equipped with sensors to determine exactly when to scan a code. This functionality helps prevent random scans. An illuminated bezel uses different colors to indicate whether a scan is successful – for instance, green for a good scan and red for bad. By watching the colors, users quickly learn from experience where the sweet spot is for scanning, which helps reduce bad reads that require rescanning.

Integrating overhead scanners with existing infrastructure is straightforward. The devices come with Ethernet and USB ports to connect to the network.

Personal Hands-free Scanners

In settings where warehouse workers have to move around to complete tasks, they need a scanning device that moves with them. Traditionally, workers have used handheld devices, but a new wearable form factor – the personal hands-free scanner – helps streamline operations by delivering two important benefits:

- It frees up both of the user's hands
- The user never has to stop working in order to grab the scanner

Rather than gripping the device, a user wears the scanner by attaching it to a purpose-built glove for functions such as picking, packing, palletizing, sorting and receiving. The trigger is on the glove by the thumb. Workers are able to update orders and pick up boxes with both hands. Since the device is attached to the user at all times, there is never a need to stop to pick it up or place it on a surface. The risk of dropping it by accident is minimized. The possibility of losing the device is removed, so users don't have to waste time trying to find the scanner or having to replace it. Personal hands-free devices are compact and lightweight, making the wearer truly mobile.

HandScanner™ personal hands-free scanning device

Wearable scanners are pairable with fixed workstations as well as mobile computers carried on a belt or forearm holster worn by the user. This enables users to update orders on the computer as needed. Personal hands-free scanners can communicate with a fixed workstation at more than 100 feet, and their scanning range is between 6 inches and 5 feet. They provide long battery life – up to 15 hours and 10,000 scans.

To ensure a good fit for each user, gloves are available in different sizes for both left and right hands. Each staff member can get a dedicated glove, but the scanners themselves are interchangeable so they can be passed from one user to another during a shift change. Wearable scanners are intuitive and non-intrusive, giving users freedom of movement and enabling them to complete tasks more quickly since they don't have to switch between holding scanners and picking up packages. The devices are easy to implement, using Bluetooth® connections to link with workstations, mobile computers and vehicle computers.

Hands-free Benefits

The implementation of hands-free scanning technology can deliver the efficiency and productivity that retailers and fulfillment companies need to keep up with growing demand. Hands-free scanners increase productivity by up to 20%, which is a welcome return on investment (ROI) at a time when warehouse operations are under pressure to do more with less.

In short, hands-free scanning solutions deliver multiple benefits such as:

- A lower the price of entry
- The ability to handle more volume without adding staff
- An increase in worker productivity and operational efficiency
- No need to invest in new infrastructure or costly integration
- Quick ROI

Conclusion

As consumers increasingly rely on e-commerce to do their shopping, retailers and logistics companies need to optimize warehouse operations to handle an increase in sales volume. They also need a reverse logistics strategy to handle an inevitable side effect of online shopping – a rise in returns for "sight unseen" purchases. While warehouse automation through robotics and autonomous vehicles helps boost productivity and efficiency, the technologies are too costly for smaller operations. For small and midsize retailers, a more suitable option is to invest in hands-free scanning solutions that help modernize operations and deliver a quick ROI.

For more information, please contact Datalogic at: www.datalogic.com.

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