ScanForce™
Automation Through Innovation

Begin Your Business Transformation with Barcoding

If you've been waiting for the right time to implement technology to digitally transform your warehouse or distribution center, the time is now. Logistics Management reports that, **93% of all warehouse and DC operations** use some form of warehouse management system (WMS). Organizations that continue to use manual processes will find it increasingly difficult to maintain market share when competitors are accelerating the terms of service level agreements (SLAs), increasing throughput, and minimizing shrinkage.

However, the Logistics Management study also found that after transitioning to a WMS, about half of warehouses and distribution centers (DCs) continued to use paper-based picking. To maximize the benefit of a WMS, however, warehouses and DC teams need a way to capture and access data on demand.

Whether you're just beginning your operation's digital transformation or need to complement your WMS with a more efficient way to collect data, barcode technology offers a high-value solution.

Next-Generation Warehouse Management Glossary

Before you consider the how and why of replacing paper-based processes with digital solutions, review some of the common warehouse management and barcode terms and abbreviations that you'll hear as you explore your options.

WMS

A warehouse management system (WMS) is a software solution that gives operators digital tools for tasks including receiving, putaway, inventory storage, picking, packing, shipping, and tracking stock levels.

Barcode

A barcode is a visual representation of data that machines can read. Encoded information contained in black-and-white bars or patterns creates an electrical signal that scanners decode into human-readable information.

Barcode Scanner

A barcode scanner, sometimes called a scan gun, handheld, mobile computer, or terminal, translates optical impulses into electrical signals. Devices can decode the signals or send the signals to a computer to share information.

AIDC

Barcoding falls into the automatic identification and data capture (AIDC) category of technology. These solutions collect information without manual data entry.

1D Barcodes

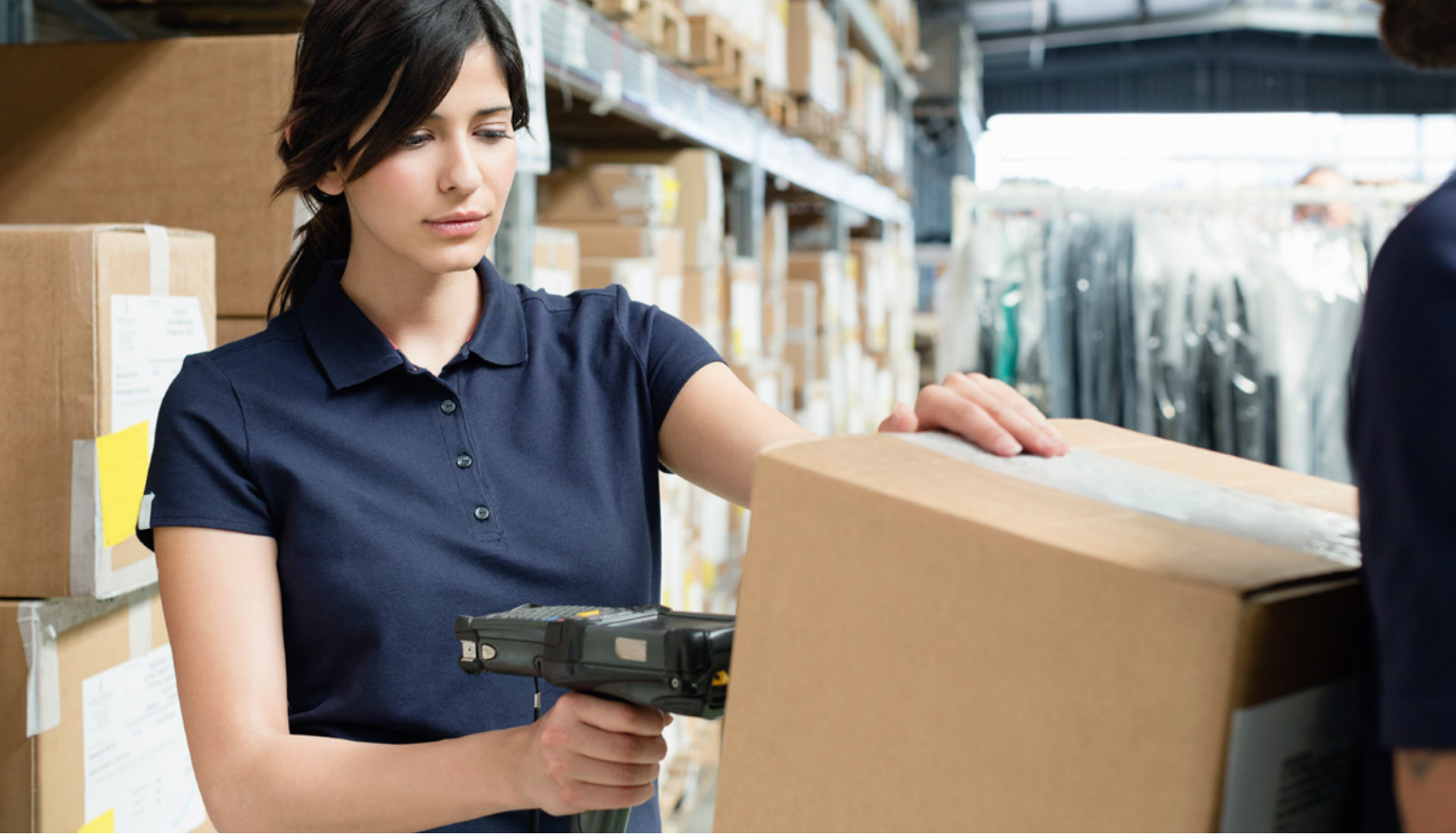
1D barcodes are a series of vertical bars and white space (think UPCs on retail products). The pattern of the bars stores data about parts, products, assets, or shipments.

2D Barcodes

2D barcodes store information in both horizontal and vertical directions. An example is QR codes. These codes hold much more data than 1D barcodes. Tech Target reports that 2D barcodes can store up to **7,089 characters**, much more than a 1D barcode with a 20-character capacity.

Automation

People often think of automation as deploying robotics or smart artificial intelligence-powered systems that can run without human intervention. However, "automation" is actually any use of technology to streamline tasks or processes. Barcode technology qualifies as a form of automation, and it's often one of the first steps in an operation's transformation that helps it stay competitive in an increasingly digital world.



How Barcodes Work for Warehouses, DCs, and Manufacturers

In simplest terms, barcode technology automates data collection. Barcode technology replaces processes that involve looking for a human-readable name or model number from a package to pick an item or writing data on a form to update the inventory management system. Instead, employees use a barcode scanner to capture information.

Barcodes have the potential to streamline virtually any process that requires data collection or data communication. For example, employees can scan barcodes when they pull products, parts, or assemblies from shelves or bins to automatically and accurately update the inventory count. Employees can create barcode labels to identify where items are located in a warehouse and scan barcodes to confirm they picked and packed the right items in an order. Barcodes also enable efficient tracking as materials or finished products move through the supply chain.

Remember that if items come through receiving with barcode labels, you may be able to use the information they contain to streamline data collection without the cost of relabeling. You can use barcodes to confirm the items you received are the items on the packing list to minimize shrinkage and losses. On the other hand, you can label items or shipments to share data with your supply chain partners or customers, creating an easy way to share data transparently with them and build stickier relationships with customers who rely on your barcodes.

Measurable Benefits of Barcode Technology

Because barcode technology replaces paper-and-pencil-based processes with efficient, accurate digital solutions, you'll see a positive impact on the bottom line. Operations that implement barcode technology typically see a fast return on investment (ROI) in several ways.

Employee Productivity and Throughput

Automated data collection with barcodes saves time. For example, using manual processes can take minutes per order to find items, mark paper that you picked the items, and update the inventory management system. Compare that time it takes to point a barcode scanner at a label, automatically confirming the right item and instantly updating the WMS. Employee productivity increases, which can increase throughput without increasing labor costs. A Zebra Technology study found that **81% of warehouse operators agree** that automation helps workers meet or exceed productivity goals.

Increased Accuracy

An unfortunate reality is that people make mistakes. They sometimes misread orders, write illegibly, and pack the wrong items. Barcode technology gives operations a way to accurately pick items, update inventory, and confirm shipments. Reducing errors lowers pick time, return and reshipping charges, and for industries with fragile or perishable products, waste. Mistakes can add up to more than **$40 per picking or packing mistake**, so minimizing them with barcode technology can save operations thousands per year.

Shorter Learning Curve for New Hires

Employee training is a big budget line item for many companies. As of December 2024, job openings in transportation, warehousing, and utilities **rose to 334,000**, up from 296,000 the previous month. The U.S. Bureau of Labor Statistics also reports that this sector experienced 366,000 separations (resignations and firings). These figures indicate that many organizations are investing significant time and resources into training new employees to keep their facilities staffed. Training requires even more time if new hires need to learn manual processes.

Automating data collection with barcode technology helps new employees learn processes and work independently more quickly. User-friendly and simple data collection reduces training time and costs while building a team of confident and competent employees.

Factors in Successful Barcode Technology Implementation

As with any technology implementation, maximizing the benefits of barcode technology takes planning and expertise. Before you begin to shop for barcode label materials or shop for barcode scanners, you need to define your goals to transition to barcodes for data collection. Those goals will dictate the solution you choose.

Barcode Symbology

You will need to decide on the barcode symbology you'll use. GS1 lists some of the most popular options, such as UPC barcodes, which are common in retail, and GS1-128 barcodes, which are often used in logistics. If you need to store and collect more data, you may choose 2D barcodes, like QR codes or data matrix codes. Also, keep in mind that standards vary in different global regions, so choose a code that works for your operation and all your supply chain partners and customers.

Barcode Label Locations and Media

Another decision is where to use barcode labels in the warehouse or distribution center. You can label racks and bins, but you can also label aisles, doors, and floors to facilitate movement throughout your facility. You need to ensure that label media – the label stock, adhesives, and inks – is suited to your operation's environment. Labels need to last to avoid inefficiency and errors, so work with an experienced provider to choose the right options for cold storage, labeling directly on metal parts, and floor labels that resist damage from abrasion.

Barcode Label Printing

Once you decide which barcode labels you need and where you'll use them to meet your objectives, you need to determine the best way to generate them. You can choose to use a label provider to preprint warehouse labels, which may help speed implementation. However, a print-on-demand solution will allow you to print labels in-house when you need them. Look for barcode label software that allows you to design labels, ensuring high-quality and accurate scans.

WMS Compatibility

A key to successful barcode technology implementation is choosing a system that works with your WMS. If you use Sage 100 or Sage Intacct, you have an easy path to integrating barcoding systems. With this integration, you'll have the technology necessary to automate data collection, replacing manual processes and gaining real-time visibility into your operation and inventory.

The first step toward transforming your operation will lead to numerous benefits, but planning a new technology implementation can be daunting. You can rely on our expertise to assist with barcode technology implementation for increased productivity, greater accuracy, and a more competitive operation. **Reach out today to schedule a consultation.**

(800) 219-5152 info@scanforce.com www.scanforce.com

ScanForce™