Bar Coding ROI in Mail Order Fulfillment and Distribution Centers
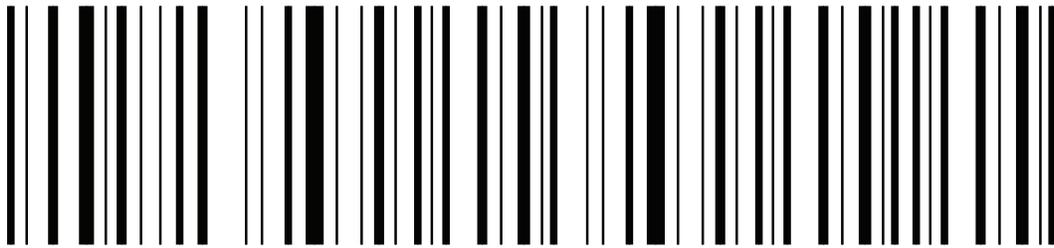
APPLICATION WHITE PAPER

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Executive Summary

Successful businesses run on information. Mail order fulfillment and distribution companies that cannot provide information with their products increasingly find themselves at a disadvantage versus their competitors that do. Bar code labels applied and scanned at various stages of the fulfillment operation can be a valuable tool for attaining competitive advantage and process improvements.

This paper shows how advanced bar code technologies can create sustainable advantages by providing the accurate information required for modern business practices. It summarizes the benefits of bar coding and demonstrates how to improve productivity and save money by using bar coding in receiving, inventory putaway, picking and packing, and shipping operations. By implementing bar coding, companies can reap significant return on investment (ROI).

General Benefits of Bar Coding

Participants at all points in the supply chain must produce and provide timely, accurate information or they will be dropped as suppliers and excluded from markets. Companies without good information carry excess inventory to ensure they can deliver what they have promised. Replacing excess inventory with improved information can reduce storage space and labor costs, improves asset utilization, increases inventory turns, enables faster billing cycles, and significantly contributes to cash flow.

Bar codes endure as the most widely used, cost-efficient, and effective tools for providing accurate data to company systems. Scanning a bar code—which produces greater than 99.9 percent data accuracy—is a far superior method of entering data into a host system than key entry by word processing or, worse yet, manual record keeping with pencils and forms. A widely accepted study found that skilled typists make one error approximately every 300 keystrokes; error rates for less-skilled warehouse and production workers are much higher. If a simple inventory application requires workers to write down a 10-digit product serial number, one in 30 records would be expected to be wrong. For companies with ERP systems, which reuse the same data for many different applications, inadvertent transcription errors on the floor can cause big problems later in inventory, planning, and customer order tracking systems.

Businesses should actively seek to replace manual data collection activities with bar code systems whenever possible. Besides improving accuracy, bar code data collection is faster than manual collection, which improves labor productivity (see for yourself by comparing the time it takes you to read and transcribe a 10-character serial number with the time it takes to scan a bar code). Replacing paper forms with much smaller bar code labels produces media savings that frequently reach six figures annually—even for companies with moderate levels of item tracking and shipping activity.

Benefits of Bar Coding in Fulfillment and Distribution Applications

Applying bar code labels and scanning them for data collection can speed up operations while ensuring picking and shipping accuracy, resulting in happier customers. Specifically, bar coding:

• Promotes known inventory and item location at all times, reducing product search time and improving inventory control.

• Helps ensure that companies have enough product on hand to meet changes in demand by scanning data that is accurate and automatically entered into their systems.

• Helps enhance productivity and reduce costs.

• Helps monitor current fulfillment processes and their level of efficiency; aids in moving product profitably and quickly to meet demand and reduce inventory costs; and reduces labor costs by eliminating manual steps.

• Increases order and shipping accuracy. Helps ensure that orders are shipped complete, error-free, and on time, improving customer satisfaction.

• Promotes real-time data capture via warehouse management systems (WMS) and enterprise resource planning (ERP) systems. Companies can manage warehouse space, time, and resources more effectively. They also know if distribution bottlenecks exist in their internal or external supply chain.

Benefits of Thermal, On-Demand Bar Code and Label Printing for Fulfillment and Distribution

With on-demand printing solutions such as those offered by Zebra Technologies, fulfillment and distribution operations can print labels precisely where and when they are needed—which is a real time saver if labels are currently batch-printed on or off site. Thermal printing saves money, reduces label waste, and improves bar code scannability compared with laser, ink jet, or line printing.

Materials Management: Receiving and Inventory Applications

The receiving dock represents one of the best opportunities to make major productivity improvements through bar coding.

Typically, shipping labels are scanned on the receiving dock to record incoming goods into the company's system. Shipping labels might not provide enough tracking detail for managing goods once they are entered into inventory, however. With millions of items to identify, locate, and move in and out of inventory, bar coding is extremely beneficial.

If shipping labels do not contain the necessary information, bar coded product identification labels—which can include the item's inventory routing instructions—can be created at the receiving dock or at the warehouse entrance. Once the item arrives at the warehouse, workers can use a wireless computer to scan the bar code label and record its arrival. The host system then directs the worker to the optimized putaway location based on the

item's size, shelf life, and predicted consumption schedule. One practical and efficient way to put away inventory is to use a forklift-mounted Zebra® mobile printer connected to the host system through a wireless terminal to print routing tickets that direct the forklift operator to the proper stocking location. Workers then store the item and scan a separate shelf label to verify the item's placement. Entering the location into the system updates inventory records and ensures that items can be easily tracked and found during picking.

Companies that do not use bar coding technology frequently overstock inventory to avoid disappointing customers. The consequence of this practice, however, is under-realized profits. With bar coding technology, enterprises are able to track inventories accurately—from all points of the supply chain to delivery to the customer—thereby reducing the need for carrying excess items. By scanning bar code labels, recording item arrival, and precisely tracking item locations, fulfillment and distribution operations realize tremendous savings in materials, labor, and overhead.

Zebra's wide variety of bar code label printers and supplies helps deliver the advantages of bar coding throughout the receiving and inventory areas:

• Mobile printers offer freedom of movement to bring bar code label printing directly to multiple points of application. For tracking applications in materials management, Zebra's wireless, mobile printers—mounted on forklifts, carried by shoulder strap, or attached to workers' belts—provide solid choices for printing product identification labels or updating warehouse shelf labels on demand. The extra-rugged Zebra QL 420™, for instance, offers interchangeable radio modules for flexible connectivity options, including Bluetooth® technology and 802.11b. A different module can be ordered as wireless needs change.

• Stationed at the dock or warehouse entrance, the high-performance 110*Xi*III*Plus*™ as well as industrial/commercial printers such as the 105*SL*™ and Z4Mplus™ are also suitable for printing product identification labels. Zebra's rugged industrial/commercial and high-performance printers are built to withstand high-traffic environments. Most can be networked and distributed throughout a facility for on-demand or batch printing wherever needed, and many can be centrally monitored and controlled from a remote location.

• The wide array of Genuine Zebra Supplies includes warehouse shelf labels in reflective materials that enable bar codes to be read at a distance (from the ground to upper racks).

Order Picking and Packing Applications

Bar coding can reduce picking time and increase picking accuracy compared to manual systems.

In traditional systems, warehouse associates might travel the floor looking for items according to paper picking lists generally printed on large laser printers. In modern, automated systems using bar coding, when orders are placed, employees are typically notified on mobile computer terminals. Drawing from item-placement data scanned during inventory putaway, the main computer system generates a pick list and displays it on the terminal with exact directions and location information.

> ### *Example*
> A distribution center that was previously losing valuable time in its picking operations provides an example of the efficiencies generated through such a bar code-based system. To fill an order, the forklift driver would receive a printed pick list from the shipping office and then drive through the distribution center to pick up the listed pallets. Once he had completed the picking operation, he would return to the shipping office to pick up the required shipping labels based on the number of cartons on each pallet.

The company now uses bar coding throughout this process to automate the development of the pick list, ensure picking accuracy, and prepare items for shipping. Forklift-mounted Zebra mobile printers enable the forklift driver to print on-demand shipping labels—saving the trip back to the shipping office.

Each forklift is now equipped with a small LCD screen that displays the pick list items in an order that optimizes the path to order fulfillment. The screen is updated continuously from the company's enterprise-wide wireless network. For each item, the driver scans the product and the shelf label, communicating the selection to the network. If it is the correct item, the network automatically sends a confirmation to appear on the LCD screen and sends the shipping label information to the Zebra printer, ensuring that the label is the right match for the picked item.

The introduction of bar coding has cut picking time in half, while reaching nearly 100 percent picking accuracy. The application is so efficient, it even saves mileage on the forklifts, enabling the company to extend the life of its costly vehicles.

As items are picked and placed into a carton, their product identification bar code can be scanned to report their removal from inventory and record the transfer to the order fulfillment/packing department. A "license plate," (a unique, serialized bar code label) is printed and applied to the carton to identify the order.

In the order fulfillment/packing area, the serialized bar code label is scanned and transmitted to the main system. The system retrieves the order data and transmits a packing slip format to a wide-label thermal printer such as Zebra's 220*Xi*III*Plus*™. This high-performance printer can print an 8.5-inch (215 mm)-wide packing-slip/invoice/return-label combination on-demand for insertion before the carton is filled with packing material and sealed.

Other Zebra solutions recommended for picking and packing include:

• Zebra's mobile QL 420 with optional forklift mount is ideal for stock picking because it's easily portable. It can also be used to print pick list hard copies, or serialized bar code carton labels.

• Custom packing slips with return labels can be preprinted in color with company graphics and logos for strong brand support. Zebra's supplies specialists design forms and labels for a wide range of on-demand printing applications, and can provide samples for testing.

Shipping Applications

The serialized bar code label on the packed carton is rescanned in the shipping department to acknowledge receipt and verify the order's identity. A 4" x 6" (102 mm x 152 mm) shipping label, usually formatted to comply with carrier requirements, is printed and applied to the carton. The shipping label is immediately scanned to confirm the label was applied and that its information ties to the order data transmitted originally at induct. This confirms that an accurate and complete order was shipped. Later, scanning the bar coded shipping label as the package is loaded onto a truck, plane, or delivery van can also help in tracking deliveries.

Zebra offers a variety of printer solutions that provide the 4-inch print width needed for shipping labels:

• High-speed, automated print-and-apply applications increase efficiency in the shipping area. A printer/applicator featuring Zebra's mission-critical 110*PAX*4™ OEM print engine, which offers a choice of left- or right-hand orientation and 203- or 300-dpi resolution, automatically applies the printed label to the carton. *PAX*4 print engines in remote locations can be centrally monitored and controlled with the ZebraLink™ Solutions connectivity and control solution.

- For high-output address and shipping label printing in high-traffic environments, shipping departments can rely on durable, high-performance *Xi*III*Plus*™ printers, which offer ZebraLink Solutions for centralized printer management.

Customer Self-Service Applications

With the accurate information captured through bar code technology, a company's system can automatically send notices via e-mail to customers, and place order shipment information on a self-service Web site to allow customers to check delivery status and tracking numbers. Keeping customers informed with efficient communications saves businesses money and keeps their customers coming back to order again and again.

Conclusion

Bar code systems provide a strong return on investment for users by reducing data entry and processing time, improving the data quality and the performance of business systems, and providing the ability to track items accurately throughout the supply chain. Mail order fulfillment companies and distribution centers gain greater accuracy, efficiency, and control in their entire process, from receiving and inventory to picking, shipping, and customer service. The results are reduced costs and higher customer satisfaction.

Visit Zebra Technologies' Web site at www.zebra.com or call +1 800 423 0442 to learn more about how your company can improve efficiency and cut costs by using the latest bar code techniques.