

Calculating the True Cost of a Mispick

White Paper

Increase your operation's accuracy and reduce costs associated with errors by deploying automated, goods-to-person, storage and retrieval systems



Introduction: What is a Mispick?

Most order fulfillment operations utilizing operators to manually select required products to fill a customer order have experienced picking errors. That's because humans are prone to making mistakes.

Picking involves much more than grabbing an item off a static storage rack or shelf. In the typical manual distribution center, picking means an operator receives a paper list of instructions about what to pick and where, travels to the correct storage location, locates the correct item within that storage location, refers to the paper pick list to determine the number of items required from that pick face, picks the items, confirms the pick by marking the paper, then delivers the items for packing.

All of those steps are fraught with potential for error. Factor in increasing fatigue as an operator walks through a warehouse again and again throughout a shift, and the typically less-than-optimal lighting in most facilities, and it's easy to see why picking mistakes happen.

These picking mistakes, or mispicks, come in a variety of types. Among them:

- The wrong item is picked instead of (or in addition to) the correct one.
- The wrong quantity of items is picked, either too many or too few.
- An item is omitted, or not picked at all.
- The condition of the item itself is unacceptable, such as damaged or mis-labeled.¹

So, while most operations understand mistakes will happen, very few have taken the time to calculate the true cost of those mispicks, and how they impact the bottom line. This white paper outlines a calculation for estimating the true cost of mispicks in order fulfillment to an operation. It also presents technology solutions to improve pick accuracy, and shares a calculation for determining the savings they can deliver.

Doing the Math: How Much Does a Mispick Cost?

In October 2012, a survey of 250 supply chain and distribution managers across the United States, United Kingdom, France and Germany—conducted by research company Vanson Bourne—found “distribution centers are losing an average of nearly \$390,000 per year due to mispicks.”²

The cost of a picking mistake includes not only the cost of the item, but also “the expenses associated with shipping the item back, processing it upon receipt, returning it to stock, and loss of customer

¹ Tobias Rammelmeier, et al. “Active Prevention of Picking Errors by Employing Pick-by-Vision,” accessed, May 15, 2014, <http://www.fml.mw.tum.de/fml/images/Publikationen/2011-06%20Active%20prevention%20of%20picking%20errors%20by%20employing%20Pick-by-Vision.pdf>

² “Mis-Picks Cost Businesses Nearly \$390,000 Per Year According to Intermecc Study,” accessed January 4, 2014, www.intermec.com/about_us/newsroom/press_releases/2013-01-21-Mis-Picks-Cost-Businesses.aspx

satisfaction.”³ Further time is lost in correcting the mistake by picking, packing and shipping the correct item back to the customer.

An estimated 35% of facilities experience ongoing mispick rates of 1% or more. Although 1% sounds like a slim margin for improvement, it adds up quickly, as illustrated here (and in Table 1):

A facility picking 250 lines per hour, averaging three SKUs per order, and running one 8-hour shift per day picks 6,000 items daily. If 1% of those picks are incorrect, that translates to 60 mispicks. The cost of each mispick... can average as much as \$100 apiece, or more. Therefore, 60 mispicks equal \$6,000 in lost revenue a day.⁴

TABLE 1: Calculating the Cost of a 1% Mispick Rate

	Example 1	Example 2	Calculate Your Own
Lines per Hour	65	250	
Average SKUs/Order	x 3	x 3	
SKUs Picked per Hour	= 195	= 750	
One 8 Hour Shift	x 8	x 8	
SKUs Picked per Day	= 1,560	= 6,000	
Mispick Rate	x 1%	x 1%	
Mispicks per Day	= 15.6	= 60	
Average Cost of a Mispick	x \$100	x \$100	
Total Lost Revenue per Day	= \$1,560	= \$6,000	
Working Days per Year	x 260	x 260	
Total Lost Revenue per Year	= \$405,600	= \$1,560,000	

Reducing Mispicks: Light-Directed Solutions Boost Picking Accuracy

Automated, goods-to-person storage and retrieval systems—such as horizontal carousels, vertical carousels and vertical lift modules (VLMs)—deliver items directly to an operator, eliminating walk and search time, as well as fatigue. In addition to delivering the items directly to the operator, automated storage and retrieval systems can be equipped with light-directed picking features which negate human error by helping operators with four basic functions:

1. Picking a specific or active item
2. Putting an item in an active order or location
3. Communicating a message such as a quantity or description of the item
4. Completing the pick and moving on to the next pick

³ Hannah Kain, “Simple Fulfillment Errors Will Affect The Bottom Line,” accessed January 5, 2014, <http://www.alom.com/resources/focus.asp?file=002.inc>.

⁴ Ibid.

Light-directed picking technologies have evolved into complete message centers that communicate to the operator the precise area within the carrier of the item to be picked, display the part number or description, pinpoint the exact location, direct either picking or storage, and indicate the required quantity. Not only do these devices dramatically reduce picking mistakes, but they also lead to happier customers who are more likely to buy again.

To increase picking accuracy up to 99.9%, the following light-directed technologies can be added to automated storage and retrieval systems:

Transaction Information Center: Applied to vertical carousels and VLMs, this dynamic pick-to-light system displays discrete item identification in 1/10-inch increments. The module displays descriptions, quantities and other messages to help an operator select the correct item and amount for order fulfillment.



Light Pointer: Used with VLMs, this system deploys an LED or laser light mounted on a slider that moves horizontally on a guiding system within the access opening of the storage and retrieval unit. Software-driven, the light pointer also swivels to project the light beam in the depth direction of the machine to illuminate any position within the storage tray. The light spot identifies the precise location of the item to be picked or replenished, eliminating search time.



Position Indicator Light Bar: Incorporated into the access openings of both vertical lift modules and vertical carousels, these LED lights illuminate in alignment with the position of the required item where it is stored in the tray.



