VISIONARY SOLUTIONS

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WHITE PAPER

Voice Directed Picking:
Expected ROI

Chris Pass
Business Computer Projects Ltd
Supply Chain and eBusiness Solutions

Introduction

The use of voice technology in the warehouse is starting to take off, particularly for order picking. Voice directed order picking involves the use of a wearable computer with a headset and microphone so that the order pickers are instructed by voice on what items to pick and where to pick them, verbally confirming their actions back to the system.

The wearable computer communicates with the warehouse management system via a radio frequency (RF) local area network (LAN).

The list of potential benefits is impressive:

- ✓ Increased accuracy – 99.9% plus
- ✓ Increased productivity – 15% plus
- ✓ Removes trips back to assignment desk
- ✓ Removes cost of printing and distributing picking documents
- ✓ Removes cost of re-keying order amendments, picking confirmations and catch weights
- ✓ Hands free and eyes free – makes picking easier
- ✓ Real-time feedback for proactive management
- ✓ Real time stock updating
- ✓ Improved safety – hands free and eyes free
- ✓ Reduced training – verbal prompts easier

The biggest benefits are obtained in low margin, high volume, labour intensive case picking operations, and because of this, the Foodservice Industry and Grocery Retailers and Wholesalers are leading the way in adopting the technology. Accuracy and productivity are

critical in these low margin, labour intensive operations, and the use of voice technology delivers this by freeing both the hands and the eyes for the picking task. The hands free operation is also particularly suitable for picking Frozen Foods and Chilled Foods, where gloves hamper the handling of paper or radio data terminals. Catch weights are easily captured, and the subsequent rekeying of information removed. Furthermore, the improved accuracy usually eliminates the need for costly order checking altogether.

Accuracy

The biggest cost benefit is increased accuracy, and this is frequently used on its own to cost justify the adoption of voice technology. However, the cost of a picking error is frequently underestimated, and of course differs for wholesalers and for retailers distributing to their own stores. The cost of a picking error also differs for short picks, over picks and mis-picks.

Wholesaler:

Short pick – The costs are the clerical effort of handling the credit claim and the margin on the lost sale.

Over pick – If reported, the costs are the transport costs of returning the item, labour costs in handling the return, and in some cases the cost of writing off stock if outside acceptable shelf life or QA parameters. If not reported, the cost is the stock loss incurred, perhaps an average of £10 ($15) per case.

Mis-pick – If the error is correctly identified and reported, the costs are the clerical effort of handling the credit claim, the margin on the lost sale, the transport costs of returning the item, the labour costs in handling the return, and in some cases the cost of writing off stock if the returned item is outside acceptable shelf life or QA parameters. If the error is incorrectly identified as a short pick (i.e. the item sent is not returned, but also not paid for), then the costs are the clerical effort of handling the credit claim and the cost of the stock loss incurred – a very costly error! The average cost per picking error for most wholesalers is in the range of £5 to £25 ($8 to $40) per error, with £5 ($8) being a significant underestimate in most cases.

Retailer:

Short pick – The costs are the clerical effort of recording an adjustment in the stock and accounts system and the margin on the lost retail sales if the short delivery results in a stock out in the store (typically 20% of short picks might result in stock outs)

Over pick – The costs are the clerical effort of recording an adjustment in the stock and accounts system, and if the overstocking is great enough to justify a return, the transport costs of returning the item and the labour costs in handling the return. The overstock situation may in some cases result in writing off short shelf life stock.

Mis-pick – The costs are the clerical effort of recording an adjustment in the stock and accounts system, and the margin on the lost retail sales if the short delivery results in a stock out in the store. If the overstocking of the incorrect item is great enough to justify a

return, the costs include the transport costs of returning the item, the labour costs in handling the return. The overstock situation of the incorrect item may in some cases result in writing off short shelf life stock.

For retailers, the greatest cost arising from picking errors is often the cost of checking orders on delivery to stores. In most cases, the improved accuracy arising from the use of voice technology is such that there is no longer any need to perform this check at all.

The reduction in picking errors resulting from voice picking can vary considerably (in some environments 99.9% accuracy is exceptionally good, while in others it is exceptionally bad!), but some recorded examples are error rates of:

- 3 per thousand reducing to 0.3 per thousand (accuracy of 99.7% improving to 99.97%)
- 8 per thousand reducing to 1 per thousand (accuracy of 99.2% improving to 99.9%)
- 1.1per thousand reducing to 0.1 per thousand (accuracy of 99.89% improving to 99.99%).

These represent reductions in picking errors of between 80% and 90%.

As an indication of the magnitude of the possible savings, a wholesaler picking 500,000 cases per week with an error rate of two per thousand (99.8% accuracy) is experiencing 50,000 errors per year. An 80% reduction to 0.4 per thousand (99.96% accuracy) will reduce errors by 40,000 per year, which at a cost of £10 ($15) per error represents savings of £400,000 ($600,000) per year.

Picking Productivity
Typical productivity improvements are between 10 and 20%, arising from:

- Hands free – no paper or bar code scanner to handle. The benefit is even greater for frozen and chilled foods.
- Eyes free – no stopping to read picking instructions, pickers listen and speak while moving.
- No return to assignment desk to collect next picking list.
- Voice direction 'pushes' pickers harder – workers respond well to verbal instructions.
- Faster recording of catch weights – spoken rather than written or keyed. The benefit is even greater for frozen and chilled foods.
- Fewer re-picks due to fewer empty picking slots because real time stock updating triggers replenishment instructions
- As an indication of the magnitude of the possible savings, a distribution centre employing 50 pickers might have a total labour cost of £1 million, and maybe significantly more if overtime payments are substantial. A 15% saving on £1 million is £150,000 ($240,000) per year.

Administration Productivity
Improvements in administrative efficiency arise from:

- Elimination of the tasks of printing and distributing picking documents
- Elimination of the re-keying of picking confirmations, order adjustments for out of stocks, and catch weights for variable weight items.

These cost savings are significant, and for a large wholesaler there may be several administrative staff no longer needed for those tasks.

Savings in Stationery Costs

Eliminating paper picking labels brings a significant cost saving in the cost of the paper alone. Many distribution centres spend in excess of £50,000 ($75,000) per year on purchasing picking labels.

Real Time Stock Updating

Real time stock updating allows:
- ✓ Triggering of let-downs to replenish picking faces, optimising the use of fork lift trucks and preventing re-picks or waiting time due to empty picking faces
- ✓ Cycle counting can be built in to the replenishment (letdown) task, improving the efficiency of the stock checking process.
- ✓ Immediate action to be taken on stock discrepancies if picking face is empty or from cycle counting, allowing picking face replenishment to take place and improving accuracy of stock recording.
- ✓ In turn, the improved accuracy of stock recording leads to improved service level and less time spent investigating stock discrepancies

Improved Safety
- ✓ The hands free and eyes free operation leads to fewer accidents.
- ✓ Eliminating paper leads to less waste paper or label backing sheets, resulting in a cleaner, tidier and safer warehouse.

Reduced Training

The training time for new pickers is reduced by the use of voice, as a voice directed task is easier to learn than interpreting a paper task. Training time can often be reduced by mas much as half.

Expected Return on Investment (ROI)

The expected ROI from voice directed order picking will, of course, vary significantly from one company to another, depending on:
- The current level of picking accuracy and the potential for improvement
- The current method of picking – paper based or radio data terminal
- Whether orders are checked before despatch
- How many picking shifts are in operation
- What infrastructure is already in place, e.g. RF Network
- Whether the existing Warehouse Management software (if any) supports voice technology

One of the biggest factors is the number of picking shifts in operation. If there is more than one picking shift per day, then equipment can be shared between pickers on different shifts. Typically each picker would have their own headset (and microphone), but would share the wearable computer or terminal, as their voice profile can be downloaded to the terminal then they log on. For a company with more than one picking shift moving from paper based picking to voice directed picking, the cost of installing voice technology is now such that payback can often be achieved within six months. For a company with a single picking shift per day, payback within one year would be a more realistic target.