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Aligning order picking methods, tools, incentives and people for performance: Making the right pick.

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Against the backdrop of global economic challenge, warehouses are increasingly investigating how operating costs can be reduced to remain competitive. This puts pressure on virtually all warehouse processes. One of these processes, order picking – *the retrieval of a number of products from their storage locations in the warehouse to satisfy orders of specific customers* –, is an essential activity in the supply chain that accounts for as much as 55% of the operating costs for a typical warehouse (Tompkins 2010). This relatively large share of costs automatically makes order picking an attractive area to take into consideration when searching for productivity improvements and potential cost-savings, and selecting an appropriate order picking method is instrumental in achieving this.

A substantial base of research on order picking exists. However, quite surprisingly, one very important factor in order picking seems to have been mostly ignored: the order picker him/herself. De Koster et al. (2007) noted less than 30 percent of the papers they included in their literature review on warehouse order picking concerned picker-to-part order picking systems. Yet, the large majority of all warehouses employs humans for order picking (De Koster, 2008). This illustrates that the importance of the human factor in order picking is essential and underexposed.

Investigating the potential effects of human behavior in this operational context calls for research from the perspective of behavioral operations management (Gino and Pisano 2008). Boudreau et al. (2003) have pointed out that taking human responses to OM systems into consideration can often explain part of the variance that would be considered randomness or error in traditional operations research models, and have proposed studies employing laboratory experiments to compare with predictions of OM models on topics such as order picking.

We have carried out a unique controlled field experiment with 330 participants to investigate order picking performance (in terms of throughput, quality, and job satisfaction) of different manual picker-to-parts order picking tools (pick by paper list, pick to light, pick by voice, and RF-terminal picking) and methods (parallel, zone, and dynamic zone picking). Also, the role of several behavioral factors (regulatory focus, motivational incentives) is investigated. The results of the experiment have direct practical implications regarding the optimal implementation of picking tools and methods, and regarding the selection and motivation of order pickers.

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