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The Effect of Picking Congestion in Manual Order Picking Environments

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Abstract: Manual order picking is considered as one of the costliest and time-consuming processes in a manual picker-to-order system. The process starts with customer orders release. After distributing the orders to multiple order pickers, order picking associates starts to fulfill customer demands. Picking is the process of collecting (picking) the order items from their storage locations. Finding the most efficient route to visit all items locations is the main goal of optimizing order picking routing path. Due to the fact that each warehouse runs its operations with multiple pickers, and the pickers may work in the same zone to pick items on customer orders, congestion may occur during the picking time. This can affect the order picking finishing time. The optimization solution obtained without considering the order picking congestion might not provide the most satisfaction result. Most of the studies focus on the single picker to order systems, where the effect of the congestion does not exist. However, in reality, multiple pickers are used. Therefore, this research will focus on the congested order picking problem, and solve for the best picking route. Literature will be reviewed to identify the studies that consider the congestion effect in multiple picker systems, and to review the models used to represent this problem.

Keywords: Manual Order Picking, Picker-To-Order