Storage Planning for Reforming Order Picking Efficiency in Distribution Centres

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Abstract

Accounting for 40% of total cost for a distribution centre (DC), picking operation is the most critical part of DC operations. Generally, there are three significant warehouse policies decisions that determine the efficiency of order picking, picking routing, and storage assignment. Previous research has focused on either picking routing or order batching, but this paper attempts to reform order picking efficiency based on storage planning. To improve performance of picking operation, reasonable storage planning could play a decisive factor towards successful operations. In this research, we apply the approaches of association rules as the basic structure to integrate more than thirty thousand orders. Then, analyse the relationship between products to establish the picking characteristics. So, the storage location of products in a distribution centre can be planned in detail by the picking characteristics. And we can save the picking operation time by the planning. The objective of this paper is to improve order picking efficiency by proposing a method of grouping the products. This paper will run the simulation program, eM-Plant, to show the improvement and support its proposition.

Keyword：Supply Chain Management, Simulation, Storage Planning, Association Rule