

Gaining an Operational Edge: Piece-Picking Process Optimization

by

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Submitted to the Program in Supply Chain Management
on May 6, 2016 in Partial Fulfillment of the
Requirements for the Degree of Master of Engineering in Logistics

Abstract

Order-picking is an integral operation in warehouses and distribution centers (DC), consuming considerable operating resources and expenses. Numerous studies have attempted to optimize the efficiency and reduce the cost of order-picking. In working with a partner company, this thesis evaluates a proposed mechanism for piece-picking that would achieve this end. The company has a shelf-pack number for each SKU, whereby the SKU must be piece-picked in a quantity that is a multiple of the number. The company has proposed to change this number from 1 to 2 to raise the number of units per pick and reduce the number of picks needed for a SKU. In this thesis, simulation is performed on the company's shipment data from DC to store to reveal the merits and demerits of this scheme. SKUs are segmented into different groups based on their suitability for this scheme as a means of mitigating the negative repercussions of the proposal. The scheme can reduce the number of picks and related costs needed, but it causes a shift of inventory from DC to store, thus creating an increase in store inventory. However, SKUs can be allotted into groups suitable or unsuitable for the scheme depending on the amount of savings generated for a given amount of impact on store inventory. The scheme's benefits and impact on store inventory are thoroughly examined, and their implications on DC inventory are also discussed. This thesis offers a novel perspective into piece-picking optimization, and it finds the proposed scheme viable, simple, and flexible.

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