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Performance measurement in the warehousing industry

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Abstract

Warehouses are a substantial component of logistic operations and an important contributor to speed and cost in supply chains. While there are widely accepted benchmarks for individual warehouse functions such as order picking, little is known about the overall technical efficiency of warehouses. Lacking a general understanding of warehouse technical efficiency and the associated causal factors limits industry's ability to identify the best opportunities for improving warehouse performance. The problem is compounded by the significant gap in the education and training of the industry's professionals. This article addresses this gap by describing both a new methodology for assessing warehouse technical efficiency based on empirical data integrating several statistical approaches and the new results derived from applying the method to a large sample of warehouses. The self-reported nature of attributes and performance data makes the use of statistical methods for rectifying data, validating

models, and identifying key factors affecting efficient performance particularly appropriate. This article also identifies several opportunities for additional research on warehouse assessment and optimization. [Supplementary materials are available for this article. Go to the publisher's online edition of IIE Transactions for appendices and additional tables.]

Keywords:

Warehouse | facility logistics | data envelopment analysis | outlier detection | two-stage DEA