

Accepted Manuscript

Shop Floor Lot-sizing and Scheduling with a Two-stage Stochastic Programming Model Considering Uncertain Demand and Workforce Efficiency

Yihua Li, Guiping Hu

PII: S0360-8352(17)30316-9
DOI: <http://dx.doi.org/10.1016/j.cie.2017.07.014>
Reference: CAIE 4821

To appear in: *Computers & Industrial Engineering*

Received Date: 23 March 2017
Revised Date: 13 June 2017
Accepted Date: 12 July 2017

Please cite this article as: Li, Y., Hu, G., Shop Floor Lot-sizing and Scheduling with a Two-stage Stochastic Programming Model Considering Uncertain Demand and Workforce Efficiency, *Computers & Industrial Engineering* (2017), doi: <http://dx.doi.org/10.1016/j.cie.2017.07.014>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



**Shop Floor Lot-sizing and Scheduling with
a Two-stage Stochastic Programming Model Considering
Uncertain Demand and Workforce Efficiency**

Abstract

Efficient and flexible production planning is necessary for the manufacturing industry to stay competitive in today's global market. Shop floor lot-sizing and scheduling is one of the most challenging and rewarding subjects for the management. In this study, a two-stage stochastic programming model is proposed to solve a single-machine, multi-product shop floor lot-sizing and scheduling problem. Two sources of uncertainties are considered simultaneously: product demand from the market, and workforce efficiency, which is the major contribution of this study. The workforce efficiency affects the system productivity, and we propose different distributions to model its uncertainty with insufficient information. The model aims to determine optimal lot sizes and the production sequence that minimizes expected total system costs over the planning horizon, including setup, inventory, and production costs. A case study is performed on a supply chain producing brake equipment in the automotive industry. The numerical results illustrate the usefulness of the stochastic model under volatile environment, and the solution quality is analyzed.

Keywords: manufacturing system; production planning; lot-sizing and scheduling; automotive industry; stochastic programming

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات