Taylor & Francis
Online

International Journal of Production Research ›
Volume 47, 2009 - Issue 24

278 Views | 6 CrossRef citations to date | 0 Altmetric

Original Articles

Flexible kanbans to enhance volume flexibility in a JIT environment: a simulation based comparison via ANNs

A.F. Guneri, A. Kuzu & A. Taskin Gumus

Pages 6807-6819 | Received 19 Jul 2007, Accepted 07 Aug 2008, Published online: 28 Oct 2009

Cite this article https://doi.org/10.1080/00207540802425351

Sample our Engineering & Technology Journals
>> Sign in here to start your access to the latest two volumes for 14 days

Full Article | Figures & data | References | Citations | Metrics
Reprints & Permissions | Read this article | Share

Abstract

Kanbans play an important role in the information and material flows in a JIT production system. The traditional kanban system with a fixed number of cards does not work satisfactorily in an unstable environment. In the flexible kanban-type pull control mechanism the number of kanbans is allowed to change with respect to the inventory and backorder level. Based on the need for the flexible kanban, a method was proposed by (Husseini, S.M.M., O'Brien, C., and Hosseini, S.T., 2006. A method to enhance volume flexibility in JIT production control. International Journal of Production Economics, 104 (2), 653–665), using an integer linear programming technique, to flexibly determine the number of kanbans for each stage of a JIT production system, minimising total inventory cost for a given planning horizon. Here, the effectiveness of the method proposed by Husseini et al. is examined by a case study and compared with the results

for the conventional method of fixed kanban determination. This is also confirmed by a simulation study using artificial neural networks (ANNs). The main aim of this paper is to show the cost advantage for Husseini et al.'s method over the conventional method in fluctuating demand situations, and especially to prove that simulation via ANNs ensures a simplified representation for this method and is time saving.

Keywords:

just-in-time | kanban | flexibility | volume flexibility | artificial neural networks

Related research

People also read | Recommended articles | Cited by 6

A simulative approach for evaluating alternative feeding scenarios in a kanban system

Francesco Lolli et al.
International Journal of Production Research
Published online: 25 Nov 2015

Information for

Authors

R&D professionals

Editors

Librarians

Societies

Open access

Overview

Open journals

Open Select

Dove Medical Press

F1000Research

Opportunities

Reprints and e-prints

Advertising solutions

Accelerated publication

Corporate access solutions

Help and information

Help and contact

Newsroom

All journals

Books

Keep up to date

Register to receive personalised research and resources by email

Sign me up

Copyright © 2026 Informa UK Limited Privacy policy

Cookies Terms & conditions Accessibility

Registered in England & Wales No. 01072954
5 Howick Place | London | SW1P 1WG

Taylor & Francis by informa