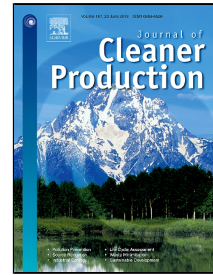


Accepted Manuscript

Sustainable inventory management with deteriorating and imperfect quality items considering carbon emission



Sunil Tiwari, Yosef Daryanto, Hui Ming Wee

PII: S0959-6526(18)31303-9
DOI: 10.1016/j.jclepro.2018.04.261
Reference: JCLP 12842
To appear in: *Journal of Cleaner Production*

Received Date: 07 February 2018
Revised Date: 27 April 2018
Accepted Date: 28 April 2018

Please cite this article as: Sunil Tiwari, Yosef Daryanto, Hui Ming Wee, Sustainable inventory management with deteriorating and imperfect quality items considering carbon emission, *Journal of Cleaner Production* (2018), doi: 10.1016/j.jclepro.2018.04.261

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.

Sustainable inventory management with deteriorating and imperfect quality items considering carbon emission

Sunil Tiwari¹, Yosef Daryanto^{2,3}, Hui Ming Wee^{2*}

¹The Logistics Institute-Asia Pacific, National University of Singapore, 21 Heng Mui Keng Terrace, Singapore 119613, Singapore

²Department of Industrial and Systems Engineering, Chung Yuan Christian University, 200 Chung-Pei Rd., 32023, Chung-li, Taiwan

³Department of Industrial Engineering, Universitas Atma Jaya Yogyakarta, Jl. Babarsari 43, 55281, Yogyakarta, Indonesia

Abstract: Sustainable inventory management seeks to reduce the environmental and social impacts of an industry without affecting its profitability. This study presents an integrated single-vendor single-buyer inventory model for deteriorating items with the imperfect quality considering carbon emission. Carbon emission is the result of transporting, warehousing, and keeping the deteriorating items. Transportation emission depends on the vehicle's fuel consumption, the fuel emission, and the distance traveled. Warehouse emission depends on the total inventory and the warehouse energy consumption per unit item. The emission due to deteriorating item is related to its disposal. The purpose of this model is to provide policy-makers insights to collectively decide on the frequency and quantity of product delivery as well as the inventory level to minimize both the total inventory and carbon emission costs. This paper proposes a solution procedure and provides a numerical example to illustrate the theory. The findings suggested that the integrated model is superior both in term of the cost and the carbon emission reductions. Sensitivity analysis is given to illustrate the validity of the model.

Keywords: inventory, deteriorating items, imperfect quality, sustainability, carbon emission

Email: sunil.tiwari047@gmail.com, daryanto@mail.uajy.ac.id, weehm@cycu.edu.tw

Download English Version:

<https://daneshyari.com/en/article/8094524>

Download Persian Version:

<https://daneshyari.com/article/8094524>

[Daneshyari.com](https://daneshyari.com)