

ABSTRAK

PENGEMBANGAN MODEL *VENDOR MANAGED INVENTORY- CONSIGNMENT STOCK* UNTUK *SINGLE-VENDOR SINGLE-RETAILER* DENGAN MEMPERTIMBANGKAN PRODUK CACAT DAN KESALAHAN INSPEKSI

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Pengelolaan persediaan menjadi faktor penting untuk meningkatkan daya saing bisnis. Salah satu strategi yang digunakan dalam pengelolaan persediaan yaitu *Vendor Managed Inventory* (VMI) dengan kebijakan *Consignment Stock* (CS), permasalahan utama dalam VMI-CS terkait dengan ukuran lot, frekuensi *lots per batch* dan faktor produk cacat serta kesalahan inspeksi yang dapat meningkatkan biaya persediaan. Penelitian ini mengembangkan model persediaan dengan pendekatan *Vendor Managed Inventory* (VMI) dan kebijakan *Consignment Stock* (CS) untuk *single vendor single-retailer* dan *single item* dengan mempertimbangkan adanya produk cacat dan kesalahan inspeksi. dengan tujuan mengoptimalkan ukuran lot, frekuensi *lots per batch* dan meminimalkan total biaya gabungan antara vendor dan *retailer* menggunakan permintaan deterministik. Hasil dari pengembangan model VMI-CS telah dicoba dengan contoh numerik menggunakan *wolfram language* menunjukkan bahwa solusi optimal dicapai dengan jumlah *lots per batch* sebanyak 9 kali, dengan ukuran lot sebesar 153 unit dan total biaya gabungan senilai \$1199,8, sehingga vendor dan *retailer* dapat, mengetahui frekuensi pengiriman dengan ukuran lot yang optimal dan meminimalkan total biaya gabungan.

Kata Kunci: *vendor managed inventory, consignment stock, optimasi rantai pasok, single-vendor single retailer, produk cacat, kesalahan inspeksi, joint total cost.*

ABSTRACT

AN INTEGRATED VENDOR MANAGED INVENTORY WITH CONSIGNMENT STOCK MODEL FOR SINGLE SINGLE-RETAILER CONSIDERING IMPERFECT QUALITY AND INSPECTION ERROR

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Inventory management plays a crucial role in improving business competitiveness. One effective strategy in inventory management is Vendor Managed Inventory (VMI) with a Consignment Stock (CS) policy. However, VMI-CS faces key challenges, including determining the lot size, frequency of lots per batch, and managing defective products and inspection errors, which can increase inventory costs. This study develops an inventory model using a VMI approach with a CS policy for a single vendor, single retailer, and a single item, considering defective products and inspection errors. The study aims to optimize lot size, determine the ideal lot frequency per batch, and minimize the total combined cost between vendors and retailers under deterministic demand conditions. To test the model, the study applies numerical examples using Wolfram Language. The results show that the optimal solution includes 9 lots per batch, a lot size of 153 units, and a total combined cost of \$1,199.8. These findings help vendors and retailers determine the best delivery frequency and lot size while minimizing the total combined costs.

Keywords: *vendor managed inventory, consignment stock, supply chain optimization, single-vendor single retailer, defective products, inspection errors, joint total cost.*