

Inventory Optimization

Dinesh K. Sharma
Madhu Jain *Editors*

Data Analytics and Artificial Intelligence for Inventory and Supply Chain Management

 Springer

Dinesh K. Sharma · Madhu Jain
Editors

Data Analytics and Artificial Intelligence for Inventory and Supply Chain Management

 Springer

Contents

1	Markov Decision Processes of a Two-Tier Supply Chain Inventory System	1
	R. Sivasamy, Dinesh K. Sharma, and Keamogetse Setlhare	
2	Nature-Inspired Optimization for Inventory Models with Imperfect Production	23
	Neetu Singh, Madhu Jain, and Praveendra Singh	
3	A Multi-objective Mathematical Model for Socially Responsible Supply Chain Inventory Planning	45
	Apoorav Dhingra, Vijaypal Poonia, and Rakhee Kulshrestha	
4	Artificial Intelligence Computing and Nature-Inspired Optimization Techniques for Effective Supply Chain Management	63
	Madhu Jain, Dinesh K. Sharma, and Nidhi Sharma	
5	An EPQ Model for Imperfect Production System with Deteriorating Items, Price-Dependent Demand, Rework and Lead Time Under Markdown Policy	81
	Srabani Shee and Tripti Chakrabarti	
6	Retrial Inventory-Queueing Model with Inspection Processes and Imperfect Production	97
	Palak Mehta, Madhu Jain, and Sibasish Dhibar	
7	Inventory Model for Growing Items and Its Waste Management	113
	Jagannath Biswas, Nirmal Kumar Duari, and Tripti Chakrabarti	
8	Pavement Cracks Inventory Survey with Machine Deep Learning Models	133
	Aaron Rasheed Rababaah	

Chapter 7

Inventory Model for Growing Items and Its Waste Management

Jagannath Biswas, Nirmal Kumar Duari, and Tripti Chakrabarti

Abstract A novel mathematical model for the inventory control of growing items has been developed by considering the post-pandemic scenario. The farming of growing items like poultry can be tackled by well-managed vaccination process. The main objective of our investigation in the present chapter is to examine how a poultry farmer can manage the farm in spite of any type of viral flu scenarios. The model developed can provide an insight to save a growing item farm from any pandemic situation and can maximize the profit by finding the optimum order quantity, etc. We have calculated the profit from the slaughtering of livestock by considering all possible characteristics of a poultry firm which may be affected by viral diseases. Moreover, some of the items considered as wastes are deteriorating as well as ameliorating. The goal of the development of the mathematical model is to determine the profit from the slaughtering of livestock as well as profit from well managing the waste in another inventory. The present work is a blend of two inventory models where the first one is an inventory model of growing items considering viral disease & vaccination; whereas the second one is a sustainable waste management model. So in this, we have considered simultaneously viral disease & vaccination alongside general inventory issues. In the arena of micro, small and medium enterprises (MSMEs), these models are of great utility.

Keywords Growing item · Inventory · Viral Flu · Vaccination · Optimization · Waste management

J. Biswas (✉)
Department of Mathematics, Lalbaba College, Howrah, Kolkata, India
e-mail: jgntapmt@gmail.com

N. K. Duari
Department of Mathematics, Techno India University, Kolkata, India
e-mail: abnu1985@gmail.com

T. Chakrabarti
Applied Mathematics, University of Calcutta, Kolkata, India
e-mail: triptichakrabarti@gmail.com

© The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2022
D. K. Sharma and M. Jain (eds.), *Data Analytics and Artificial Intelligence for Inventory and Supply Chain Management*, Inventory Optimization,
https://doi.org/10.1007/978-981-19-6337-7_7