

A Conceptual Framework Of Multi Objective Optimization For International Perishable Food Supply Chain Under Stochastic Demand And Fuzzy Deterioration Rate

Samatthachai Yamsa-ard

Department of Research
NEOMA Business School

Mont Saint Aignan, 76130, France

Samatthachai.YAMSA-ARD@neoma-bs.fr

Fouad Ben Abdelaziz

Department of Information systems, Supply chain management, and Decision-making
NEOMA Business School

Mont Saint Aignan, 76130, France

Fouad.BEN.ABDELAZIZ@neoma-bs.fr

Abstract

According to the data collected by World Bank in 2010, one third of the household expense for average income family is on food consumption. In the other hand, Food and Agricultural Organization of United Nation (FAO) has been published an annual report stated that a large majority of losses in food supply chain consist of two part. The first part is the food wastes from disregard products at retail store which link to the customer's behavior and the replenishment policy of the store and the second part is the food losses along the supply chain from producer to retail store such as storage, transportation and distribution. Since most of the international food supply chain is dealing with a random lifetime perishable product such as fruit, vegetable, and cereal, which have more complexity information to be managed by supply chain manager in order to satisfy the stochastic demand and prevent the lost sale while maintain the minimum spoilage and maximize the profit of the store. This paper proposes a multi objective optimization model for international perishable food supply chain under stochastic demand and fuzzy deterioration rate. The objectives of the model are maximizing the profit of retail store and minimizing the total cost by reducing the spoilage product at each node in the supply chain.

Keywords

Perishable Product, Food Supply Chain, Multi Objective Optimization, Uncertainty Demand

Biographies

Samatthachai Yamsa-ard is a Ph.D. student, and Research Assistance in Department of Research at NEOMA Business School, Rouen Campus, France. He earned B.E. in Electronics and Telecommunication Engineering from, King Mongkut's University of Technology Thonburi, Thailand, Masters of Science in Supply Chain Management from NEOMA Business School, France. He has written books chapter and published conference papers. Samatthachai has completed research projects with Agricultural Research Development Agency (Public Organization) Thailand, National Research Council of Thailand, Department of Primary Industries and Mines Ministry of Industry Thailand. His research interests include manufacturing, optimization, Food Business, and sustainable supply chain. He has been consulting for the manufacturing industry focusing on sustainable supply chain practice. He is the member of OSMEP.

Fouad Ben Abdelaziz is a Full Professor at NEOMA Business School, Rouen Campus, France, and Head of the M.Sc. in Supply Chain Management. He received his PhD in Operations and Decision Systems from Laval University, Canada. He was a Senior Fulbright scholar at the Rutgers Center for Operations Research, Rutgers University, NJ, USA. He is a leading researcher in multi-objective stochastic optimization. Aside his publications in outstanding journals like EJOR, ANOR and FSS, he served as Guest Editor of special issues of reputed international Journals. Dr. Ben Abdelaziz has been working/visiting many Universities around the world, as the University of Tunis, the American University of Beirut, the University of Dubai, and Pace University NY. He has been consulting for the chemical industry and was appointed as an accessor for the Dubai business award. His recent research interests are in Supply Chain Optimization and Applications. He was appointed as the director of the Doctoral School and the Director of the LARODEC Lab at the University of Tunis.