

# **A Three Echelon Supply Chain Model with Fuzzy Demands and Disruptions**

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## **Abstract**

Customer demands fulfillment is most important issue in supply chain management due to its long term effect on corporation performance. In most recent researches, it is assumed that prominent parameters such as customer demands are deterministic while supply chain design is a strategic decision and its effect last for long terms. Furthermore, an efficient supply chain must be designed to response uncertainties. One of the most important interruptions in supply chain is disruption during transportation among different layers. In this study, a three echelon supply chain consists of manufacturer, distribution centers and customers are considered so that disruption may occur in distribution layers while satisfying customers with fuzzy demand. The main objective of this model is to minimize the total cost of supply chain network. Here, a fuzzy mathematical model is developed and solved by GAMS software. The results show that the proposed model is able to cover this problem properly and finding optimal solution.

## **Keywords**

Three echelon supply chain, Fuzzy demands, Disruption, Fuzzy Mathematical Model

## **Biographies**

**Iraj Mahdavi** is the full Professor of Industrial Engineering at Mazandaran University of Science and Technology, Babol, Iran. He received his Ph.D. from India in Production Engineering. He is also in the editorial board of five journals and scientific committee member of international conferences. He was awarded as the best researcher of engineering area in Iran and among the best professors of Iran. He has published over 300 research papers. His research interests include cellular manufacturing, production planning, supply chain, fuzzy networks, digital management and intelligent operations management.

**Mir Mehdi Seyed Esfahani** is the full Professor of Industrial Engineering at Amir Kabir University of Technology, Tehran, Iran. He earned B.S. in Industrial Engineering from Sharif University of Technology, Tehran, Master in Operation Research and PhD in Industrial Engineering from Bradford University, UK. He has published lot of journal and conference papers. His research interests include operation research, quality control, and reliability engineering. He is president of ICMS in Iran.

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