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Interaction Frame Works and Supply Chain System Reliability

Deepa Sharma
Industrial and Systems Engineering
Oakland University
Rochester, MI 48309, USA
dsharma@oakland.edu

Sankar Sengupta
Industrial and Systems Engineering
Oakland University
Rochester, MI 48309, USA
sengupta@oakland.edu

Abstract

In this paper, we have explored the meaning of reliability of supply chain systems from the perspective of interactions. Reliability analysis of today's supply chain systems cannot be done by means of classical and analytical techniques. Representing interactions in modeling is important for analyzing supply chain systems. We have done literature review of formal frameworks of such interactions that happen within socio technical systems. This part of literature search has been taken from a very diverse domain of socio technical systems and not just the supply chains. Second part of literature review has been done for complexity metrics of supply chain systems. We have constructed our own complexity metrics for the example supply chain system. An example of supply chain model has been implemented in ARENA. This model is demonstration of reliability analysis of supply chain system through modeling interactions and measuring level of complexity. Being a complex system, a supply chain system failure is a emerging phenomenon of local interactions between pairs of neighbors. Understanding the local interactions is the key to reliable supply chain.

Keywords
Interactions, Supply chain Systems, Complexity, Reliability

Biography

Deepa Sharma is a Ph.D. student in Systems Engineering at ISE Department of Oakland University, Michigan USA. She earned B.E. in Mechanical Engineering and Masters of Engineering from M.B.M. Engineering College, Jodhpur, Rajasthan, India. She has taught various courses in Production and Industrial Engineering at graduate and undergraduate level in India. Author's research interest includes Socio Technical Systems as Complex System, Complexity Metrics, Reliability, Supply Chain Systems and Air Traffic Control Systems.

Sankar Sengupta is currently a professor in Industrial and Systems Engineering Department in Oakland University, Michigan.