# CHAPTER 35

# OPERATIONAL RESEARCH

## Doctoral Theses

01.  AGGARWAL (Usha)
**Integrated Multi-Objective Optimization Models for Sustainable Transportation Network in Supply Chain Design.**
Supervisors: Prof. Pankaj Gupta and Dr. Mukesh Kumar Mehlawat
Th 25866

### Abstract

The objective of this thesis is to focus on providing approaches for incorporating a sustainable transportation network in supply chain design. Several extensions of transportation problems to multi-vehicle, multi-stage, and multi-path are explored to apply to real-world scenarios. Furthermore, for sustainable transportation problems, numerous multi-objective optimization models have been developed and integrated with various multi-criteria decision-making (MCDM) methodologies to facilitate the selection process of vehicles, paths, suppliers, etc. Optimal transportation networks have been developed by identifying the optimal number of units transported among various stages and the optimal selection of vehicles. The optimization models may also identify the optimum number of vehicles to use. The findings of the presented models provide a substantial contribution to the literature.

### Contents

1. Introduction 2. Sustainable transportation planning using integrated AHP-DEA approach 3. Two-stage fuzzy sustainable transportation problem involving 4. Three-stage fixed charge sustainable transportation problem in-volving customer-to-customer relationship 5. Sustainable multi-commodity transportation planning using in-tegrated AHP-TOPSIS and DEA approach 6. Four-stage sustainable supply chain with social benefits 7. Bibliography.

02.  GUPTA (Shivani)
**Performance and Dependability Analysis of Vehicular Communication Networks: A Stochastic Modeling Approach.**
Supervisor: Dr. Vandana Khaitan
Th 26517

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1. Introduction 2. Performance analysis of radio link control (RDC) protocol of long term evolution-vehicular (LTE-V) Network 3. Reliability and survivability analysis of long term evolution-vehicular (LTE-V) network 4. End-to-end delay and backlog bound for hybrid vehicular ad-hoc network (VANET) 6. Reliability and performance analysis of vehicular for computing network 7. Dependability analysis of vehicular for computing network under security attacks. Bibliography, Appendixes and List of publications.

03.    IRSHAD (Mohammed Shahid)
**Modelling and Analysis for Social Media Platforms with Special Reference to Youtube.**
Supervisor: Dr. Adarsh Anand
Th 25869

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1. Introduction 2. View, viewers and viewership for you tube videos 3. Story of multiple phases 4. Even you tube needs investment 5. MCDM approaches to understand you tube and OTT platforms 6. Other approaches to understand nature of you tube videos 7. Conclusion. References. Appendix.


04.    KHAN (Ahmad Zaman)
**Some Contributions to Fuzzy Multiobjective Portfolio Optimization using Evolutionary Approaches.**
Supervisors:Dr. Mukesh Kumar Mehlawat and Dr. Pankaj Gupta
Th 25871

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1. Introduction 2. Portfolio optimization using coherent fuzzy numbers 3. Multi-period portfolio optimization using coherent fuzzy numbers 4. Integrating fuzzy portfolio optimization with grey relational analysis 5. Integrating fuzzy portfolio optimization with technical analysis 6. Portfolio optimization in an uncertain random environment 7. Conclusions and future work. Bibliography.


05.    LALROPUIA (K.C.)
**Game Theoretic and Stochastic Modelling of Denial of Service (DOS) Attack and Its Impact on Network Dependability.**
Supervisor: Dr. Vandana Khaitan
Th 25870

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1. Introduction 2. A stochastic game model and dependability analysis of small cells under DoS attack in 5G wireless network 3. A bayeslan game model and availability analysis of small cells under DoS attack in 5G wireless network 4. A stochastic game model and dependability analysis of cyber physical system under DoS attack 5. Dependability analysis of cloud computing under DoS attack 6. A signalling game model of DoS attack in cloud computing. Bibliography.


06.    PACHAR (Nomita)
**Data Envelopment Analysis Models for Assessment and Improvement of Efficiency for Retail Stores.**
Supervisors: Prof. P.C. Jha and Dr. Anshu Gupta
Th 25868

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1. Introduction 2. Efficiency assessment and benchmarking for retail stores 3. Bi-level efficiency assessment of retail stores 4. Efficiency improvement strategies for retails stores based on optimal (Re) allocation of resources 5. Sustainable efficiency assessment of retail stores 6. Sustainable efficiency improvement strategies for retail stores based on optimal (Re) allocation of resources. Conclusion. References.

07.    VERMA (Vibha)
       **Some Contributions to Quantitative Assessment of Software Reliability and Related Optimization Problems.**
       Supervisors: Prof. Anu Gupta Aggarwal and Prof. Sameer Anand
       <u>Th 25867</u>

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1. Introduction 2. Hierarchical structure- based decision-making problems in software reliability 3. Impact of environmental factor on software reliability 4. Unified approach for reliability assessment of multi-release software under imperfect debugging environment 5. Optimal release policy for two- dimensional software reliability growth model 6. Impact of management review during testing on software reliability. Conclusions and Future Scope. References.

# M. Phil. Dissertations

08.    CHANCHAL
       **Study of Various Marketing Phenomena for New Product Management.**
       Supervisor: Prof. Ompal Singh

09.    GARG (Khushboo)
       **Study of Change Point Based Modelling in Marketing.**
       Supervisor: Prof. Ompal Singh