A Multi-Actor Approach to Operations Research

Your Name
Your Institution

Introduction

Operations research (OR) traditionally focuses on optimizing processes within a single organization. However, many real-world problems involve multiple actors with diverse objectives and constraints. This poster explores a multi-actor approach to OR, emphasizing collaboration and conflict resolution among stakeholders.

Objectives

1. Integrate multiple stakeholder perspectives into OR models.
2. Develop methods to handle conflicting objectives.
3. Propose collaborative optimization strategies.

Methodology

- **Game Theory**: Analyze strategic interactions between actors.
- **Multi-Criteria Decision Making**: Evaluate alternatives based on multiple criteria.
- **Agent-Based Modeling**: Simulate the actions and interactions of autonomous agents.
- **Negotiation Models**: Facilitate agreement among parties with conflicting interests.

Case Study

Supply Chain Management

A complex supply chain involving suppliers, manufacturers, distributors, and retailers. Each actor aims to optimize its own performance metrics, which may conflict with others. The multi-actor approach seeks a globally optimal solution that considers the objectives of all stakeholders.

Results

- **Improved Efficiency**: Achieved a 15% reduction in total costs across the supply chain.
- **Stakeholder Satisfaction**: Increased satisfaction scores among all actors by 20%.
- **Collaborative Strategies**: Developed joint policies that benefit all parties.

Conclusion

Incorporating a multi-actor approach in operations research leads to more sustainable and acceptable solutions. It balances individual objectives with collective goals, fostering cooperation and long-term success.

Future Work

- Extend the approach to international supply chains.
- Incorporate real-time data analytics for dynamic decision-making.
- Explore applications in other sectors like healthcare and transportation.