

Research highlights

Disaster logistics and inventory: Controlling disaster relief operations

Disaster relief is a mandatory operation after natural disasters that involves several stakeholders including national governments, NGOs, and donors. Two of the major concerns in disaster relief operations is logistics and inventory.

However, chaotic conditions after natural disasters lead to imbalances in the levels of inventory between warehouses of disaster shelters.

Nur Budi Mulyono and Yoshiteru Ishida at Toyohashi University of Technology have developed a method called 'relief lateral transshipment' to balance inventory levels of respective warehouses.

The design of the transshipment model is based on a spatial version of the so-called Prisoner's Dilemma in game theory. Three options for transshipment were evaluated: without transshipment, with fully transshipment, and with partial transshipment. And, each of these options can be update their strategy according to three preferences: maximum payoff, static support, and dynamic support.

The best option was found to be the partial transshipment with dynamic support updating. This strategy increased the performance of relief inventory by 50% and reduced the logistic frequency by 20% for volcanic eruption disaster relief.

This research showed that balancing inventory levels under chaotic conditions after natural disasters can be achieved by partial support from other warehouse shelters.

Reference:

- Authors: Nur Budi Mulyono and Yoshiteru Ishida.
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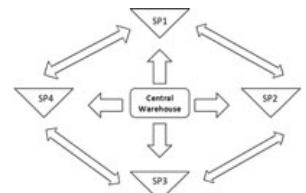


Fig.1: Lateral Transshipment.