

عنوان مقاله:

A stochastic optimization model for designing a humanitarian relief chain considering operational and disruption risk

محل انتشار:

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خلاصه مقاله:

Due to the increasing the number of natural disasters such as earthquakes and floods and unnatural disasters such as war and terrorist attacks, Humanitarian Relief Chain (HRC) is taken into consideration of most countries. Besides, this paper aims to contribute humanitarian relief chains under uncertainty. In this paper, we address a humanitarian logistics network design problem including local distribution centers (LDCs) and multiple central warehouses (CWs) and develop a scenario-based stochastic programming (SBSP) approach. Also, the uncertainty associated with demand and supply information as well as the availability of the transportation network's routes level after an earthquake are considered by employing stochastic optimization. While the proposed model attempts to minimize the total costs of the relief chain, it implicitly minimizes the maximum travel time between each pair of facility and the demand point of the items. Additionally, a data set derived from a real disaster case study in the Iran area, and to solve the proposed model a exact method called ϵ -constraint in low dimension along with some well-known evolutionary algorithms are applied. Also, to achieve good performance, the parameters of these algorithms are tuned by using Taguchi method. In addition, the proposed algorithms are compared via four multi-objective metrics and statistically method. Based on the results it was shown that: NSGA-II shows better performances in terms of SNS and CPU time, meanwhile, for NPS and MID, MRGA has better performances. Finally, some comments for future .researches are suggested

کلمات کلیدی:

Humanitarian supply chain; Stochastic programming; Evolutionary algorithms; disruption risk

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