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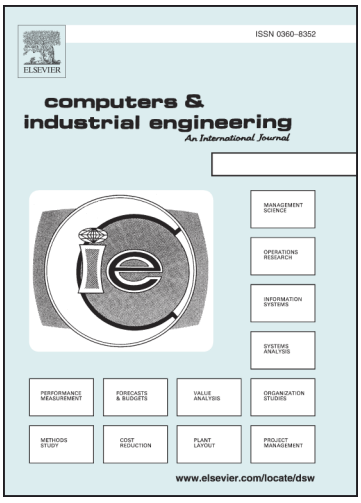

Collaborative Hub Location Problem under Cost Uncertainty

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Abstract

Collaboration in supply chains by sharing resources has an important role in Physical Internet. It allows the participating supply chains reducing their own and common objective costs. Due to a lack of literature, we focus on hub location problem in collaborative context of two distribution networks belong to different supply chains. The uncertainty corresponding to the supplementary cost included in the setup cost of establishing a shared hub facility is taken into account. Three cases of collaboration and four cost sharing strategies are investigated. Our work allows to verify whether a collaboration proposes better decision and how the total cost is shared among each network to obtain profitable solutions.

Keywords: Physical Internet, Horizontal Collaboration, Hub Location Problem, Uncertainty, Regret Model

1. Introduction

The Physical Internet (PI, π) is a new paradigm revolutionizing the way we manage logistics. It metaphors the Digital Internet into real transportation, logistics and supply chain through encapsulation, interfaces and protocols [1]. All involved supply chains are required to standardize and share some resources

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