

A DATA MINING APPROACH TO OPTIMISE LARGE-SCALE OPTIMISATION PROBLEM

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ABSTRACT

The paper proposes a two-stage approach that combines data mining and complex network theory to optimize the locations and service areas of dry ports in a large-scale inland transportation system. In the first stage, candidate locations of dry ports are weighted based on their eigenvector centrality in the complex network of association rules mined from a large amount of international transaction data. In the second phrase, dry port locations and their service areas are optimized using the gravity-based community structure. The method is validated in a real case study optimizing a large-scale dry port network in Mainland China in the context of the Belt and Road Initiatives (BRI). A real-world database of Alibaba transactions between China and other BRI countries is collected for association rule mining to represent international purchasing patterns. The result shows that our proposed model is able to provide realistic and applicable solutions for dry port developments, since it accurately pinpoints key locations in the real BRI development plans.

Keywords: Data mining, Large-scale optimization, Dry port locations, Transportation.