Bi-objective multi-product model for planning rail-truck multimodal transportation: A case study

Aslı Çalış Boyacı
Department of Industrial Engineering
Ondokuz Mayıs University
Samsun, TURKEY
asli.calis@omu.edu.tr

Ahmet Boyacı
Osmancık Ömer Derindere Vocational School
Hitit University
Çorum, TURKEY
ahmetboyaci@hitit.edu.tr

Abstract

Transportation, one of the main activities of the logistics, is the activity of creating space and time benefit for people and goods as a result of inter-enterprise competition to meet increasing consumer demands on time and has become more important in today's changing and developing conditions. Transportation modes are an essential component of transport systems. Despite the fact that railway transportation is superior in terms of risk and cost, the highway is widely used for freight transportation in Turkey. In this study, which focuses on the transportation of coal products, we propose a bi-objective multi-product transportation model for routing rail-truck multimodal shipments. The model aims at minimizing the total transportation cost and total transportation risk between supply and demand points in Turkey. The results are obtained by using GAMS/Cplex solver by collecting the necessary data from companies in Turkey.

Keywords
Case study, Cost, Highway, Railway, Risk, Transportation.

Biographies

Aslı Çalış Boyacı is an Assistant Professor in the Department of Industrial Engineering at the Ondokuz Mayıs University, Samsun, TURKEY. She earned B.S. in Industrial Engineering from Kocaeli University, Masters in Industrial Engineering from Kocaeli University, and PhD in Industrial Engineering from Gazi University. Her research interests include optimization, supply chain management, MCDM, and data mining.

Ahmet Boyacı is Lecturer in the Osmancık Ömer Derindere Vocational School at the Hitit University, Çorum, TURKEY. He earned B.S. in Politics and Public Administration from Kocaeli University, and Masters in Business Administration from Hitit University. His research interests include supply chain management, data mining, and MCDM.