A Decision Support System for Freight Transportation

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Abstract

There is an increasing focus on the development of sustainable freight transportation systems (SFTSs) due to escalating regulatory pressures and heightened environmental awareness. To attain the same, organizations are also focusing on the mitigation of sustainability risks associated with freight transportation (FT). Accordingly, this research aims to propose a decision support system to mitigate the sustainability risks inherent in FT to support the adoption of sustainability practices. The proposed system integrates D-number theory, Rough Set Theory and Grey Theory, offering complementary methodologies that enhance decision-making by reducing complexity and preserving information integrity. The analysis facilitates the determination of optimal strategies and the most suitable approach for managing sustainability risks across various scenarios, considering decision attributes such as cost, effectiveness, and time are determined. This research holds significant practical implications, as the proposed DSS is adaptable and can cater to the requirements of various organizations with differing objectives.

Keywords

Sustainable Freight Transportation, Sustainability Risks, Risk Mitigation, Rough Set Theory.