
A FUZZY CIMAS–FUZZY VIKOR METHODOLOGY FOR PRIORITIZING LOGISTICS WAREHOUSE MANAGEMENT PROBLEMS

Ege YILMAZ¹, Emre YILDIRIM¹, Şura TOPTANCI^{1,*}

¹Department of Industrial Engineering, Faculty of Engineering, Eskişehir Technical University, 26555, Eskişehir, Türkiye

ABSTRACT

Warehouse management in logistics is critical for providing accurate and fast service, ensuring customer satisfaction, and sustaining the supply chain. However, various problems can arise in warehouse management, leading to significant losses for logistics firms. To minimize these losses under the constraints of limited resources, it is essential to first determine which of these problems should be prioritized for action. Such a strategic decision should be made by utilizing analytical approaches and evaluating the problems based on predetermined criteria. In this study, an integrated fuzzy multi-criteria decision-making (MCDM) model based on the Fuzzy CIMAS and Fuzzy VIKOR methods is used to prioritize the cost and loss criteria to be evaluated and to rank the common problems encountered in warehouse management in logistics. The data required for the study is obtained from an expert team consisting of individuals responsible for logistics and warehouse management. After prioritizing the problems, suggestions were presented to address those of highest importance. This study is the first in the logistics literature to address the decision-making problem and the proposed model under consideration.

Acknowledgements This study is supported by TUBITAK 2209-A - Research Project Support Programme for Undergraduate Students and Eskişehir Technical University, Scientific Research Projects Committee (25LOP024).

Keywords MCDM · Fuzzy set · Logistics · Warehouse management

References

- [1] Zadeh, L.A., Fuzzy sets. Information and control, 8(3): 338-353, 1965.
- [2] Opricovic, S., and Tzeng, G. H. (2004). Compromise solution by MCDM methods: A comparative analysis of VIKOR and TOPSIS. European journal of operational research, 156(2): 445-455, 2004.
- [3] Bošković, S., Jovčić, S., Simić, V., Švadlenka, L., Dobrodolac, M., and Bacanin, N. A New Criteria Importance Assessment (CIMAS) Method in Multi-Criteria Group Decision- Making: Criteria Evaluation for Supplier Selection. Facta Universitatis, Series: Mechanical Engineering, 2023.

*Corresponding Author's E-mail: sani@eskisehir.edu.tr