Better shipping with machine learning

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Research in the *International Journal of Shipping and Transport Logistics* (*IJSTL*) has used a novel, machine learning approach known as MGGP to rank and prioritize performance criteria in evaluating a country's logistics performance using the World Bank's Logistics Performance Index (LPI). The LPI itself consists of six different components that

measure and rank international logistics performance. The components in question are: customs, infrastructure, ease of arranging shipments, quality of logistics services, tracking and tracing, timeliness.

The team from Turkey writing in an open-access paper in *IJSTL*, explain how the MGGP approach can build linear or nonlinear prediction models. The team used a selection of LPI datasets from 2010 to 2018 consisting of some 790 records to train their models and to test the predictions they can make against the other, non-training, datasets.

Bilal Babayigit and Feyza Gürbüz of Erciyes University and Berrin Denizhan of Sakarya University showed that the MGGP approach outperforms other methods in predicting the LPI score. Moreover, whereas previous tools have not examined the relative effects of each component of the LPI, this new approach reveals which components are most important.

The team discusses the six components in the following context:

- Customs: The efficiency of border clearance.
- Infrastructure needed to clear customs and move goods.
- International shipments with respect to the simplicity of arranging competitively priced shipments.
- Logistics service quality that allows fulfillment by logistics service providers.
- Tracking and tracing to ensure the smooth flow of goods from source to destination.
- Timeliness, a measure of schedule and expected delivery time.

The team suggests that the predictions generated by MGGP could be an invaluable tool for policymakers and researchers in the logistics field charged with developing more effective logistics plans. The work could thus have important implications for global trade and economic

[development](#) by allowing better-informed decision-making in logistics policy and planning to be made. This could lead to improved logistics performance at the international level and perhaps even reduce [energy use](#) and emissions.

More information: Bilal Babayigit et al, Logistics performance index estimating with artificial intelligence, *International Journal of Shipping and Transport Logistics* (2022). [DOI: 10.1504/IJSTL.2022.10044449](#)

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