

Research evaluates strategy for supply chains under pressure

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Recent upheavals in the global market have put supply chains under immense pressure, and the logistics and road transportation sectors are struggling to keep pace with geopolitical tensions, rampant inflation, and the rising demand for sustainability as well as many other issues. Rising

energy costs and a shortage of qualified drivers are also adding to the burden.

Research [published](#) in the *International Journal of Industrial and Systems Engineering* has looked at the potential for Horizontal Logistics Collaboration (HLC) to overcome many of the problems.

Taher Ahmadi, Jack A.A. van der Veen, and V. Venugopal of the Nyenrode Business Universiteit in Breukelen, The Netherlands, and Mehdi A. Kamran of the German University of Technology in Oman, Muscat, Oman, discuss how HLC involves different companies combining their transportation or logistics activities to [mutual benefit](#) in the face of the afore-mentioned growing challenges.

This strategy aims to enhance economic, social, and environmental outcomes by optimizing the use of vehicles and so reduce transportation costs as well as [carbon emissions](#).

However, while the theoretical benefits of HLC are well-documented, practical implementation has not lived up to expectations, the work suggests. The main obstacle is a lack of understanding regarding the hidden coordination costs, particularly those associated with inventory and warehousing.

The new study has investigated the complexities of HLC and developed a [quantitative model](#) of two supply chains. Each [supply chain](#) includes a single buyer and supplier situated in different regions. The model then compares and contrasts two scenarios: a standalone case in which each buyer manages transportation independently, and a second HLC scenario wherein the buyers coordinate inventory replenishments and deliveries using shared transport vehicles.

The team found that while the HLC scenario did reduce [transportation](#)

[costs](#) and carbon emissions, it also introduced a downside in terms of higher warehousing costs. This increase stemmed from the need for synchronized, but less-than-optimal, ordering frequencies. The extra warehousing costs could negate the benefits of HLC as well as adding a layer of complexity to the decision-making process for companies considering this [collaborative approach](#).

Nevertheless, the study shows just how important it is to evaluate the total costs for transportation and warehousing, rather than simply focusing on the potential transportation savings. Of course, there may well be ways to optimize such an approach and make it work better for all parties involved. If collaborating parties can mesh more effectively in terms of geographic proximity and order frequency, then they might gain all the pros with much-reduced cons of HLC.

More information: Taher Ahmadi et al, Conditions for viable horizontal collaborative transport: insights from a stylised model, *International Journal of Industrial and Systems Engineering* (2024). [DOI: 10.1504/IJISE.2024.139945](#)

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