# The Resilience and Fragility of Türkiye's Transportation and Storage Supply Chain in Response to the Kahramanmaraş Earthquakes[1]

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## Abstract

This paper aims to analyse the transportation and storage industry supply chain in Türkiye, which was severely impacted by the two destructive earthquakes in early 2023, through the lens of complex network tools. To achieve this, we utilized inter-provincial trade data from 2019, released by the Ministry of Industry and Technology. The findings revealed that the supply chain network of the transportation and storage industry is highly interconnected and dense. However, this interconnectedness follows a power-law distribution and is statistically heterogeneous, indicating the presence of a few super-hubs within the supply chain. Centrality analysis based on the HITs algorithm highlights the significance of the earthquake-affected provinces in the transportation and storage industry supply chain in Türkiye, in terms of both demand and supply. Furthermore, an examination of the right and left eigenvector centralities reveals that the provinces in the region are systemically important within the chain. We also identified four trade communities within this supply chain, with ten provinces affected by the earthquakes belonging to the same community. We interpret this as a factor that increases the vulnerability of the supply chain network to disaster shocks. Aggregating the entire earthquake-affected region, the centrality analysis indicates that the region is both fragile and systemically important for Türkiye's transportation and storage supply chain.

**Keywords:** Transportation and storage industry, Supply chain, Resilience, Fragility, Systemic importance, Network analysis, Earthquakes

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