

## Clustering Logistics Facilities in a Metropolitan Area via a Hot-Spot Analysis

**İsmail Önden**  
Okan University  
Department of  
International Logistics,  
İstanbul, Turkey  
[ismail.onden@okan.edu.tr](mailto:ismail.onden@okan.edu.tr)

**Fahrettin Eldemir**  
Yildiz Technical University  
Industrial Engineering  
Department,  
İstanbul, Turkey  
[feldemir@yildiz.edu.tr](mailto:feldemir@yildiz.edu.tr)

**Metin Çancı**  
Okan University  
Department of  
International Logistics,  
İstanbul, Turkey  
[metin.canci@okan.edu.tr](mailto:metin.canci@okan.edu.tr)

### Abstract

Hot spots can be described as the high attraction points. Defining the hot spots and clustering approaches in a metropolitan area helps to provide solutions for balancing the freight flows between the sub-areas in the city center. It also helps to provide solutions for secondary problems, such as traffic congestion and air pollution. The technique assists decision-makers in making inferences about the city's future and taking precautions for sustainability. In this paper, a geographic information systems (GIS) analysis tool, spatial statistics based on the Getis Ord\* statistics, is used to illustrate which part of Istanbul has hot spots. The hot spot identification is based on logistics activities at the locations of the logistics facilities. The outputs of the analysis are discussed within the context of logistics costs and environmental effects. Anahtar Kelimeler: Mağaza yeri seçimi, delphi tekniği, makro analiz, mağaza yeri seçim kriterleri

**Keywords:** Sustainability; city logistics; clustering; geographic information systems (GIS); spatial statistics; spatial analysis