

The Application of the Location Problem in Defining the Locations of Delivery PNUs

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Abstract

The way consumers approach goods and services has shifted through time, and with those shifts, the workflow of postal/transport operators changed, too. With the population increase in urban environments, the development of e-commerce, and the increase in the number of e-commerce platforms, consumer expectations to receive what they want when, where, and how they want it have been raised. Instead of delivering larger amounts of goods to shopping centers and retail stores concentrated in central urban zones, the pattern has been replaced by high numbers of smaller deliveries to various locations reached through various routes. The mileage for larger deliveries is predicted to continue decreasing, while the mileage for smaller deliveries is predicted to keep increasing. Many companies will be forced to reexamine and redefine their transportation logistics, as commuting in urban environments has become more difficult and, in certain cases, impossible.

Since every postal network unit (PNU) faces at least three unavoidable conditions for successful operations (conform to consumer requests, conform to the defined local and national legislature, conform to the limitations and conditions on the road), to ensure the fulfillment of consumer requests, the locations of PNUs that take part in the transportation of parcels and goods must be close to the high-demand areas, enable maximum operational flexibility, and lead to the decrease in transport expenses and the number of vehicles on the road.

Although this problem may be approached from a micro and macro aspect, this paper will deal with the micro aspect, i.e., the method for finding a solution for PNU location on the levels of urban regions, city center zones, industrial complexes... The probability of disregarding all urban, transport, economic, organizational, and other limitations, as well as local and national legislature, all while conforming to consumer requests, is quite low, so, although there is the theoretical possibility to designate the location of institutions anywhere, the authors will limit themselves to *designated points*.