# Solving the transportation problem when faced with uncertain data: A novel algorithm

In mathematics and logistics, the transportation problem has been studied for a very long time from many different angles. The objective when trying to solve this problem is finding the optimum solution to minimize the cost of distributing an abstract "product" from multiple sources to multiple destinations. While optimum solutions can be easily calculated when every aspect of the problem is known, such cases in real life are rare; most of the time, we have to deal with uncertain information, vague knowledge on some parameters, or merely statistical information and assumptions.

The branch of mathematics that deals with such uncertainty-ridden problems is called "fuzzy mathematics," whose counterpart is "crisp mathematics." Although researchers have tackled fuzzy problems and proposed fuzzy algorithms for solving them over decades, there are many variants with different scopes of application. In particular, Pythagorean fuzzy sets are a mathematical tool for representing uncertain values and allow for solving fuzzy problems that previous models and algorithms could not handle. These problems are formulated in what is known as a Pythagorean fuzzy environment, which applies to many real-life scenarios.