

**OPTIMAL FACILITY LOCATION PROBLEM UNDER POSSIBILITY  
CHANCE CONSTRAINT CONDITIONS AND BARRIERS**

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**Abstract**

We consider the following problem: 1) There are demand points and possible construction sites in an urban area with some barriers. We adopt rectilinear distance. 2) We construct two facilities, one is welcome facility and the other obnoxious facility. We call welcome facility as A and obnoxious facility as B. Two facilities A and B can be constructed at the same site or constructed separately, that is, at two different sites. We assume that each construction cost of A and B is a random variable with fuzzy mean respectively and construction cost of both facilities simultaneously as a same site is also random variable with fuzzy mean. These are distributed according to normal distributions with fuzzy means. 3) The probability that total construction cost becomes below budget  $f$  should not be less than the fixed probability level  $\alpha$  and further the possibility that this chance constraint holds should be not less than the fixed level  $\beta$ . Under this possibility chance constraint  $f$  should be minimized. 4) We consider three criteria, (a) maximum distance from the construction site of A to all demand points to be minimized, (b) minimum distance from the construction site of B to all demand points to be maximized, (c) budget to be minimized. Since usually there exists no site optimizing three criteria at a time, we seek non-dominated solution after definition of non-domination. Finally, we conclude results and discuss further research problems.