SOME FACILITY LOCATION PROBLEMS

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P R E F A C E

This study of location problems in stochastic environment deals with location of facilities with Mini-sum and Multi-criteria formulations. In recent years, facility location problems have been studied in public and private sectors. The applications include locations of hospitals, libraries, bus complexes, warehouses, detection stations, components in an electrical network, pipe line facilities, air/naval bases and optimal locations of concentric ring roads in a city.

The thesis deals with the topic of Facility Location, one of the important realistic aspects of Operations Research. Some problems of locating optimal new facility locations (sources) with respect to existing facilities (destinations) in the given situations are investigated in the thesis. Throughout the investigations in our thesis, we have assumed that the existing facilities (demand points) are not fixed points but random variables specified by bivariate exponential distribution and the weights are also considered to be random variables. However, the weights are taken to be known positive quantities as their expected values are known. The weights are also assumed to be independent of the locations of existing facilities. Rectilinear norm is used to measure the distance between facilities. Two types of problems, viz., the single criteria objective of locating new facilities when the problems under consideration are of Minisum type and Multi-criteria objective of locating new facilities when the objectives to be satisfied are Minisum and Minimax criteria are considered.