

AN EXPERIMENTAL MODEL FOR THE PLANT LOCATION PROBLEM

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Plant or factory location is one of the most important long term decisions, the top management of any organisation has to make. The design of a production system is dependent on its location, because resulting physical factors influence layout and because the location will partially determine operating and capital costs. The final decision will depend on many factors such as the cost of land, cost of plant construction, availability and cost of power, transport facilities, proximity to markets etc.

It is usual to analyse this type of problem mathematically using techniques of OR such as linear programming. However the use of computer becomes a necessity when the number of variables of the problem become large.

An experimental model has been constructed using a vertical board, pulleys and strings for the case of a single plant (source) distributing to a large number of markets or warehouses (sinks). The demand of the warehouses, the supply of the factory, transport costs, handling costs etc. are taken into account in this model. The optimum location of the plant can be found simply by allowing the system to come to the equilibrium position. It can be proved that this equilibrium position obtained using the laws of mechanics is identical to the optimum plant location.

The model is not only valuable as a demonstration model for the students in Production Engineering and Management, but will also provide quick and approximate solution to actual situations in practice without the use of complicated mathematical programming. A similar model has been suggested earlier but the present model incorporates several interesting modifications.