THESIS

APPLICATION OF LINEAR PROGRAMMING TECHNIQUES FOR CONSTRUCTION PLANNING AND MANAGEMENT OF WATER RESOURCES PROJECTS - A CASE STUDY

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ABSTRACT

In any kind of project duration is one of the most important factors. There are cases during the course of a project in which the owner want the project to be completed earlier than the normal duration. To achieve this the shortest time in a CPM network is identified, within which an activity can be completed, using larger crew, overtime, extra shifts, or any combination of the three.

The study was conducted to explore applications of different linear programming techniques in construction management of water resources projects and to develop a linear programming model for making crashing decisions in a CPM network. Dearden Clough Reservoir, located in the North of England was taken as the case study. The model was based on the assumption that time and direct cost vary linearly, it was then run using LINDO (Linear INteger Discrete Optimizer) software.

The objective of Linear Programming model was to complete the project within the desired duration having minimum increase in direct cost. The model was subjected to the network, limiting the activity crash time and meeting the project completion date constraints.

To have a good view of the crash costs associated with different crash durations,

three different durations were made desirable and the output from LINDO for various durations were compared. The results of the model were good, as it quickly identified the activities to be crashed and the amount of crash to be applied.

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