Abstract

Linear programming (LP) is a method to achieve the best outcome (such as maximum profit or lowest cost) in a mathematical model whose requirements are represented by linear relationships. Linear programming is a special case of mathematical programming (also known as mathematical optimization). In other words, Linear Programming deals with the problem of optimizing a linear objective function subject to linear equality and inequality constraints on the decision variables. Linear programming can be applied to various fields of study and has many practical applications. It is widely used in mathematics, business, economics, and for some engineering problems. Industries that use linear programming models include transportation, energy telecommunications, and manufacturing.

Linear programming was developed during World War II, when a system with which to maximize the efficiency of resources was of utmost importance. George Dantzig, a member of the U.S. Air Force, developed the Simplex method of optimization in 1947 in order to provide an efficient algorithm for solving programming problems that had linear structures. Since then, experts from a variety of fields, especially mathematics and economics, have developed the theory behind linear programming and explored its applications.

In This report, we introduce the main concepts in linear programming, including some practical examples. Then, we present two types for solving linear programming.