

# Linear Programming

Linear programming (LP) is a mathematical technique that will optimize the use of scarce (constrained) resources. LP is a method of determining the optimal solution when a firm is faced with constraints on resources; and it is considered one method of constrained optimization.

LP can be used by a firm to determine what product mix will maximize profits or minimize costs. It is also sometimes used by firms in making capital budgeting decisions.

A firm will be faced with an objective function (e.g. maximize profit or contribution margin) and it will be faced with constraints (e.g. a limited amount of resources such as production capacity, available employees, or labor hours).

This objective and these constraints are translated into mathematical expressions (these expressions must be linear in form). Once the analysts have a set of expressions, they can use either the simplex method or graphical method to solve the linear programming problem, and determine how to optimize the objective for the given constraints.