

Application of Linear Programming in Resource Allocation

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Abstract

Resource allocation is an important problem in many organizations where limited resources must be distributed efficiently among competing activities. This paper presents the application of Linear Programming (LP) as a mathematical optimization technique for obtaining the best possible allocation of scarce resources. The study formulates a resource allocation problem by defining decision variables, an objective function, and a set of constraints representing available resources and operational requirements. The Linear Programming model can be solved using methods such as the Simplex Method to determine the optimal allocation that maximizes profit or minimizes cost. The approach demonstrates how mathematical optimization can support effective decision-making and improve the utilization of limited resources. The study highlights the practical importance of Linear Programming in production planning, budgeting, manpower allocation, and other resource management problems.

Keywords: Linear Programming, Resource Allocation, Optimization, Simplex Method, Decision Making, Mathematical Modeling.

