IJCBM International Journal of Commerce and Business Management
Volume 5 | Issue 2 | October, 2012 | 177-180
RESEARCH PAPER

Application of liner programming problem (LPP) in oil refinery

■ QUSE M.H. SHIHAB AND V.H. BAJAJ

Received : *30.04.2012;* **Revised :** *07.06.2012;* **Accepted :** *15.08.2012*

ABSTRACT

In recent years, many petroleum companies have made efforts to optimize refinery operations by means of linear programming problem. LP is an optimization problem of maximizing or minimizing objective function with variables called decision variables must satisfy a set of linear constraints. Here the objective function is to maximize the profits considering refineries configurations with constraints and the cost of crude production, transport and utilities. The solution of the problem involves identifying a number of aspects that affect the achievement of the objectives, types of product, products ex-refinery sales prices, minimal quality of products, market demand, variable fractions to be blended and physical chemical properties of all the fractions to be used.

KEY WORDS : Operations research, Linear programming, Maximization, Oil refinery

How to cite this paper : Shihab, Quse M.H. and Bajaj, V.H. (2012). Application of liner programming problem (LPP) in oil refinery. *Internat. J. Com. & Bus. Manage*, **5**(2): 177-180.

The refining operation begins with the atmospheric distillation of crude oil. The distillation yields a number of different products fractions, such as Naphtha's, straight run oils, and bottoms .These fractions can be routed to a number of different units for further treatment or sent directly to blending of final products Zhen *et al.* (2008).

Many final refinery products, such as gasoline, are formed by blending a number of different refinery streams. A product ofgiven quality can be obtained from many different blends. There are a number of different decisions to make in order to determine the final Mix of refinery products.First, which crude or mix of crude oil should be run? Next, what fraction of the outputs of crude distillation should go directly to blending and what fraction should go to successive conversion operations cracking etc.

MEMBERS OF THE RESEARCH FORUM

Correspondence to:
QUSE M.H. SHIHAB, Department of Statistics, Dr. Babasaheb Ambedkar Marathwada University, AURANGABAD (M.S.) INDIA
Email : qshihab@yahoo.com

Authors' affiliations:
V.H. BAJAJ, Department of Statistics, Dr. Babasaheb Ambedkar Marathwada University, AURANGABAD (M.S.) INDIA
Email : vhbajaj@gmail.com

Finally, at the blending stage, it has to be decided how to blend the various streams (Hillier and Liberman, 2008; Moro, 2003).

The constraints fall naturally into several categories. First, the constraints representing the availability of the various crudes oil and the constraints on the equipment capacity, which limit the volumetric through put in the various units. Next, the constraints representing the material balance equations which relate the input into any one unit and the various output streams from the unit.

Finally, the constraints representing the final products requirements (Joly *et al.,* 2002; Sergio *et al.,* 2004).

Problem and solution including objectives and hypothesis for oil refinery:

L.P. is an optimization problem of maximizing or minimizing the objective function which variables called decision variables must satisfy a set of linear constraints (Hillier and Liberman, 2008).

The first step is to define the problem that has to be solved, which includes specifying the objectives that have to be achieved and the aspects that must be studied before the problem can be solved.

The crude oil refinery processes different types of cured