

Mountain Brothers Coffee Company – Resource Optimization

Owen P. Hall, Jr., & Kenneth Ko
Graziadio School of Business
Pepperdine University, Malibu, CA 90263

Abstract

The coffee industry continues to experience unprecedented growth. Worldwide sales are now approaching \$100 billion annually, which places this commodity second only oil in revenue. The present trend is towards specialty coffee blends, which now comprise nearly 55 percent of the United States market. Mountain Brothers provides a number of blends into the specialty market segment. The purpose of this presentation is to illustrate how resource management modelling can be used to develop coffee blends that meet strict standards at minimize total costs.

Keywords: Coffee Industry, Resource Optimization, Sensitivity Analysis

Overview

The Mountain Brothers Coffee Company produces and distributes three coffee blends using four types of imported coffee beans. These blends, which are distributed throughout the United States, are European Mocha (a blend of the finest beans), Fresh Brew (aimed for home use) and Good Cup (used in hotels and restaurants). The company has recently received an order for its primary wholesaler for 25,000 pounds of Mocha, 100,000 pounds of Fresh Brew and 75,000 pounds of Good Cup. The blends are shipped in one-pound bags. Each blend must meet specific quality requirements to maintain its identity in the marketplace. The following table reports the characteristics, available quantities and cost per pound by bean type.

Type	Aroma	Body	Acidity	Quantity	Cost (\$/lb.)
Brazilian	7	8	4	25,000	2.50
Colombian	5	10	3	75,000	2.00
Salvadoran	5	6	3	100,000	1.50
African	3	5	5	150,000	1.00

The minimum product characteristics and production quantities by brand are reported in the following table.

Coffee Brand	Min Aroma	Min Body	Max Acidity	Min Amount (lb.)
Mocha	6	9	4	25,000
Fresh Brew	5	7	4	100,000
Good Cup	4	6	5	75,000

Discussion Questions

1. Formulate an analytics-based linear programming model for this case.
2. Determine the optimal blending strategy that minimizes total costs.
3. Which resources are completely used?
4. What is the impact on the mix if the demand for each of the three products is decreased by 10%?
5. What is the impact on the mix if the maximum acidity requirement for Good Cup is reduced to four?