PRODUCTION PLANNING
USING FUZZY LINEAR PROGRAMMING
(CASE STUDY: CV MULTI REJEKI SELARAS)

FINAL PROJECT REPORT

A report submitted in fulfillment of the requirements for the award of the degree of Bachelor in Department of Industrial Engineering, Faculty of Engineering, Andalas University

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ABSTRACT

CV Multi Rejeki Selaras is a drinking water company located on Payakumbuh, West Sumatra. The company produces the drinking water with the brand of ASRI. The determination of production amount in the company is regulated by the production department by looking at the trend of consumer demand from the previous period. The company has no certainty in determining how much the products must be produced to achieve the optimal conditions. This leads to overproduction and accumulation of products in the warehouse, causing additional storage costs, increasing the likelihood of decreased product quality, and the occurrence of blocked capital turnover so as decreasing the profits. The limited resources owned by the company such as limited production capacity, working hours and the fluctuating demand, make the company has not found yet the proper method for production planning. The objective of this reasearch is to design the optimal production in the company to maximize the company's profit. For that purpose, the logic fuzzy is used in production planning because in determining the quantity of product to be produced, the company only makes subjective decisions that lead to ambiguity and vagueness. In this research, Fuzzy Linear Programming (FLP) method is applied. The calculation of FLP model is conducted using LINDO 6.1 software. The results of the research by FLP method gives the amount of optimal production that should be produced by the company. In term of the capacity for each work station, the availability of capacity is more than the capacity used so that the company does not need to conducted the overtime. The company can be utilize optimally the company's production capacity for all months. In term of availability of raw material, the company should increase the purchase of regrind because of actual availability is less than material used. Resin does not need additional purchase because of actual availability is greater than material used. In term of availability of water capacity in June, the company can optimize the usage of water requirement in previous period, i.e. in March, because in March the production planning of mineral water is lower than June. In term of results of optimal production amount using FLP, optimal production of drinking water 220 ml is constant with the demand and optimal production of drinking water 120 ml is more than demand. The company can produce drinking water 120 ml more than actual condition, therefore the company must expand its marketing area. Production planning using fuzzy linear programming can provide increased profit for the company. The company's profit using fuzzy linear programming is increase Rp 10,274,600 or 11.60% compared than the actual profit.

Keywords: *drinking water, fuzzy linear programming, optimization, production, profit*