

ABSTRAK

ANALISIS PERAMALAN FAKTOR PRODUKSI DAN MODEL FUNGSI PRODUKSI GULA MENGGUNAKAN MODEL COBB DOUGLAS DI PABRIK GULA XYZ KABUPATEN LAMPUNG UTARA

Oleh

WIDARTO

Peramalan produksi merupakan bagian penting dalam industri untuk mengetahui potensi produksi beberapa tahun mendatang. Pabrik gula XYZ beberapa tahun terakhir tidak mencapai target produksi karena belum memiliki metode yang tepat dalam membuat estimasi dan sasaran produksi. Diperlukan analisis beberapa metode dalam peramalan faktor produksi dan model fungsi produksi agar layak digunakan di Pabrik gula XYZ. Penelitian ini bertujuan untuk menganalisis model peramalan curah hujan, hari hujan, luas lahan, produktivitas, pol tebu, over all recovery, jam berhenti giling menggunakan metode *Linear Regression*, *Moving Average*, *Weighted Moving Average*, *Exponential Smoothing*, dan *Exponential Smoothing with Trend* serta menganalisis model fungsi Cobb Douglas untuk meramalkan produksi gula di Pabrik Gula XYZ. Metode penelitian menggunakan data sekunder untuk menghitung nilai MAD, MSE dan MAPE terkecil menjadi persamaan yang layak dipilih dan meramalkan produksi gula dengan model Cobb Douglas. Hasil penelitian menunjukkan bahwa metode *Moving Average* menghasilkan nilai MAD, MSE dan MAPE terkecil untuk peramalan curah hujan, hari hujan, luas lahan, pol tebu, over all recovery, jam berhenti giling sedangkan metode *Linear Regression* menghasilkan nilai MAD, MSE dan MAPE terkecil untuk peramalan produktivitas tebu. Model fungsi produksi Cobb Douglas di Pabrik Gula XYZ menggunakan data sekunder tahun 1997 - 2021 yang memenuhi uji klasik adalah $y = 0.000115048 X_1^{0,107} X_2^{-0,098} X_3^{0,763} X_4^{0,982} X_5^{0,971} X_6^{1,432} X_7^{0,018}$.

Kata kunci : Peramalan, Cobb Douglas, Produksi

ABSTRACT

FORECASTING ANALYSIS OF PRODUCTION FACTORS AND FUNCTION MODEL OF SUGAR PRODUCTION USING THE COBB DOUGLAS MODEL AT SUGAR FACTORY XYZ, NORTH LAMPUNG DISTRICT

By

WIDARTO

Production forecasting is an important part of the industry to determine the production potential in the next few years. In recent years, the XYZ sugar factory has not achieved its production target because it does not yet have the right method in making estimates and production targets. It is necessary to analyze several methods in forecasting production factors and production function models to be suitable for use at the XYZ sugar factory. This study aimed to analyze (1) the forecasting model of rainfall, rainy days, land area, productivity, sugarcane poll, overall recovery, milling stop hours using Linear Regression, Moving Average, Weighted Moving Average, Exponential Smoothing, and Exponential Smoothing with Trend methods; (2) Cobb Douglas function model to forecast sugar production at XYZ Sugar Factory. The research method uses secondary data to calculate the smallest MAD, MSE, and MAPE values into feasible equations to choose and predict sugar production using the Cobb Douglas model. The results show that the Moving Average method produces the smallest MAD, MSE, and MAPE values for forecasting rainfall, rainy days, land area, sugarcane crop, overall recovery, milling stop hours, while the Linear Regression method produces the smallest MAD, MSE and MAPE values for forecasting. The Cobb Douglas production function model at the XYZ Sugar Factory uses secondary data for 1997 - 2021 which meets the classical test, which is $y = 0.000115048 X_1^{0,107} X_2^{-0,098} X_3^{0,763} X_4^{0,982} X_5^{0,971} X_6^{1,432} X_7^{0,018}$.

Keywords: Forecasting, Cobb Douglas, Production