

ABSTRACT

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PET FOOD FACTORY CAPACITY PROJECTIONS WITH SHORT-TERM DEMAND FORECASTING

The research examines the dynamic expansion of the pet food industry, with a particular emphasis on the challenges associated with accommodating the growing demand in the face of limited production capacity. The industry's critical issues are further highlighted by the research, which utilises data from pet food manufacturer in Indonesia that produced cat food as the most product.

In comparison to the current capacity, the research aims to identify the sales pattern and one-year prediction. The objective is to enable strategic planning, which will guarantee that the factory can meet future market demands to maintain a competitive edge in the pet food industry

Five forecasting methods being tested in the research: three-month Moving Average, Naïve Forecasting, Exponential Smoothing, Linear Regression, and Seasonal Decomposition. Using machine learning to analyse the data and modelling the forecasting, the research determines that Seasonal Decomposition is the most precise method for all product category. The result show that for Cat Food Economy Category, the MAD is 17,656 and MSE is 491,800,800; while for Cat Food Super Economy the MAD is 2,977 and MSE is 13,861,330. The Cat Food Standard Category has MAD of 21,015 and MSE 622,244,300 and Dog Food Economy Category has MAD of 3,376 and MSE of 17,949,750.

The analysis found the major increase in demand for the next one year, particularly is Cat Food Economy category, which exceeding factory existing capacity. Increasing production capacity as to invest in additional two machines is one of the suggested actions that need to be taken by factory management.

Key Words : *Pet Food, Forecasting, three-month Moving Average, Naïve Forecasting, Exponential Smoothing, Linear Regression, and Seasonal Decomposition*