

ABSTRACT

At the beginning of 2019, the market competition for the cotton industry was very tight. At PT DBAS, the main problem faced is the problem of sales and demand for BABY-GRADE-A cotton buds. If a production shortage occurs, the company loses sales leading to overwork and costs. Likewise, if there is overproduction, even though the product is durable with a longer expiration date, warehousing problems may arise, such as limited warehouses, higher inventory and storage costs, damaged products, and environmental problems such as damage to the production floor. Thus, this study was conducted to discover a suitable forecasting method for BABY-GRADE-A products to forecast its future demand, error numbers for each method, and sales figures for BABY-GRADE-A cotton buds in 2021 using the proposed forecasting method.

This research uses a quantitative description methodology by comparing the measurement of sales data errors in the Naïve, Moving Average, Weighted Moving Average, Single Exponential Smoothing, Holt's Exponential Smoothing, Holt Winter's Exponential Smoothing, Trend Projections, and Polynomial Regression methods. To test the accuracy of the forecasting method, three measurements were used, namely Mean Absolute Deviation (MAD), Mean Squared Error (MSE), and Mean Absolute Percent Error (MAPE). Then the proposed method and its calculations are verified and validated with the Moving Range Chart and Paired Sample t-Test.

Based on calculations and analysis, the most suitable forecasting method for BABY-GRADE-A cotton bud products is Polynomial Regression (smallest error). MSE and MAPE resulting from the proposed method are 6,103.18 and 9.07%, respectively. Then, the forecast demand in 2021 is predicted to be 11,426 cartons. In accordance with implementation, there are several aspects that should be considered by the company and future researchers such as market change, marketing strategy, inventory management and other operations activities.

Keywords: Forecasting, Forecasting Error, Moving Range Chart, Suitable Forecasting Method, Paired Sample t-Test, Polynomial Regression