

***Raw Material Inventory Planning for Tempeh Based on Demand
Forecasting Using the Time Series Method
(A Case Study at UMKM Rumah Tempeh Pak Pon Sidoarjo)***
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ABSTRACT

Tempeh is a soybean-based product rich in plant protein, dietary fiber, and isoflavones, and it was known as a popular food in Indonesia. Tempeh consumption is influenced by price fluctuations and soybean availability, which often caused a disparity between supply and demand. Rumah Tempe Pak Pon faced challenges in raw material inventory planning due to an inefficient procurement method. This study assessed the planning of raw material stock by implementing the Material Requirements Planning (MRP) approach through a descriptive and quantitative method. Demand data over a 24-month period were analyzed using the Time Series method, applying the Single Exponential Smoothing (SES) forecasting technique. The Lot-for-Lot (LFL) and Economic Order Quantity (EOQ) technique were applied to optimize purchasing quantities. The results indicated that the SES method with a smoothing parameter (α) of 0,1 produced the lowest forecasting error. The implementation of MRP with the EOQ approach resulted in the lowest inventory costs, reducing expenses by 69,5% and improving inventory planning efficiency at Rumah Tempe Pak Pon.

Keywords: *Tempeh, Inventory, Forecasting, MRP*