Dumpling Wrap Raw Material Inventory Planning Using the Material Requirement Planning (MRP) Method*: *A Case Study of CV. XYZ in Sidoarjo Regency

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ABSTRACT

Dumpling wrapis the outer layer of dim sum used to wrap the filling inside. The raw materials for dumpling wrap typically include wheat flour, salt, water, and tapioca starch. Based on the observations, the demand pattern for dumpling wrap was not completely identical in 2024 and 2025, where the demand trend for dumpling wrap experienced a significant increase during the March–April period as well as in December, and decreased at the beginning of the semester in July 2024. Therefore, the available data more accurately indicates changes in monthly demand rather than a fixed seasonal pattern. CV. XYZ *consistently orders* 85 *sacks of raw materials for dumpling wrap in each procurement. This purchasing pattern is unstructured and lacks a formal demand projection, thereby creating a potential risk of overstock and shortage. This study provides raw material inventory planning for dumpling wrap by implementing the* MRP *method with* LFL *and* EOQ *sizing techniques. This study utilizes a descriptive quantitative approach with 24 months of sales data analyzed using the Single Exponential Smoothing (SES) forecasting technique. The results show that the SES method with a parameter of α = 0.2 yields the lowest* MAD, MSE *and* MAPE *error values. Furthermore, the implementation of* MRP *using the* EOQ *method produces the lowest TIC of* IDR. 533.833,76 *which saves up to* 67,81% *compared to the* LFL *method, which has a total* TIC *of* IDR. 1.658.458,33. *Therefore, inventory planning using MRP with the EOQ method is the best inventory planning technique to be applied* at CV. XYZ.

Keywords: Dumpling wrap; *Inventory planning*; *Single Exponential Smoothing* (SES); *Material Requirement Planning* (MRP); *Economic Order Quantity* (EOQ); Total *Inventory Cost* (TIC).