

Tanawadee Kongsri 2019: Demand Forecasting and Package Inventory Management: A Case Study of Frozen Shrimp Manufacturer. Master of Science (Agro-Industrial Technology Management), Major Field: Agro-Industrial Technology Management, Department of Agro-Industrial Technology. Independent Study Advisor: Associate Professor Parthana Parthanadee, Ph.D. 108 pages.

This research considered the case study of a frozen shrimp manufacturer. The objectives were to find a proper forecasting model for vannamei shrimp purchasing quantity, to use the forecasts to construct a purchasing plan of paper carton packaging material, and to define appropriate safety inventory level and inventory management policy for the paper carton packages. The study was split into 2 sections. The first considered the forecast of vannamei shrimp purchasing quantity using 9 time series forecasting methods, namely, Single Moving Average, Double Moving Average, Single Exponential Smoothing, Double Exponential Smoothing, Holt-Winters' Seasonal Additive Model, Holt-Winters' Seasonal Multiplicative Model, Box-Jenkins, Seasonal Additive Model and Seasonal Multiplicative Model, by the Oracle Crystal ball Program. The Box-Jenkins was found to be the proper forecasting method, with SARIMA (1,0,0)(0,1,1)₁₂ as a model for forecasting the monthly quantities, with MAPE of 8.17% and RMSE of 149,693.56 kilograms, and SARIMA (1,0,0)(0,1,1)₅₂ as a model for forecasting the weekly quantities, with MAPE of 10.93% and RMSE of 46,263.55 kilograms. However, the proportional breakdown of monthly to weekly forecasts gave an MAPE of 20.88% and RMSE of 85,069.98 kilograms. Therefore, the SARIMA (1,0,0)(0,1,1)₅₂ was more appropriate for further planning. The second section studied an inventory management of paper carton packaging material. The study showed that the (s,S) policy with a 95% cycle service level was most fit to the situation of the case-study company, as it could reduce the chance of packaging shortages from the fluctuation in demand, while maintaining a low inventory management cost.

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