A MIXED MODEL FOR FORECASTING IN A THAI NUTRITION MANUFACTURER

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Abstract

The aim of this research is to identify an appropriate systematic forecasting method for a Thai Nutrition Manufacturing Company which needs to increase utilization of its warehouse storage space and reduce dead-stock inventory. A systematic forecasting method will be able to predict the future demand as the demand follows a standard pattern, although with some irregular features.

The highest sales volume SKU was selected as a pilot. Historical data was used to plot and analyze the demand, which revealed a horizontal data pattern. Marketing campaign data was collected to analyze customer behavior. Three theoretical forecasting methods were applied: Moving Average, Exponential Smoothing, and Holt's Model. Use was made of MAPE (mean absolute percentage error) to evaluate forecast error in these models

The results of the theoretical methods proved to be unsatisfactory because the demand changes rapidly in promotion campaigns, and these methods could not include that feature. Thus, a mixed model for forecasting was developed, which is a mixture of Moving Average for Two Periods, which was selected to eliminate data variation, and an adjusted rule-based method was also developed to cope with marketing campaigns. The period of each campaign was analyzed from the historical demand patterns of 2007 and 2008. The result of the mixed model proved to be satisfactory as the MAPE was les than the present unsystematic method of forecasting. Sales targets can be achieved, as required by management. The firm gains from reducing total opportunity-lost and inventory costs when compared with the current method. This leads to warehouse utilization improvement and less inventory handling.