The Application of the Improved Triple Smoothing Model for the Product Demand Forecast in Taiwan

E-mail: 8602427@mail.dyu.edu.tw

ABSTRACT

Pragmatically, the demand pattern usualy follows the non-linear curve when the product is at the growth stage. It is appropriate to use quadratic curve to define the level of demand at time for this pattern, which is $\mu_t = a + bt + ct^2$, where $a + bt$ is linear and ct^2 is non-linear.   The improved triple smoothing model in this research provides a new method to forecast the demands with quadratic curve pattern. To apply this model, a forecaster must select a smoothing constant   which minimizes the Mean-Square-Error.   Lacking of related research in both the applicable study of the triple smoothing model and how to find an aptimized smoothing constant   , we derive a systematic approach and a Trial-and-Error computer program to resolve the problems.   Finally, it applies this new method to the sales forecasts of product categories in Taiwan industries and concludes with four unique contribution as follows: 1. Use R^2 as the judgement criterion of regressive intensity and F-test to find the applicable product categories for the Improved triple smoothing model.   2. Provide a set of criteria with the newly created "Trial-and-Error" program for finding smoothing constant   , which minimizes MSE value, and the optimized coefficients a_T, T, T in the Improved triple smoothing model to better predict the future demands.   3. Use MAPE criteria to effectively measure the forecast errors for each product category in Taiwan industries, which are generated by the Improved triple smoothing model.   4. Offer a set of rules for the forecasters and managers from the result of careful observations on the smoothing constant   for each product category.

Keywords: ;

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       1.   77   3   1   2.

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5   124   125   5.   82   4   77   78   6.

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82 4   91 21.   84 2   306   85

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