Optimizing the supply of commercial enterprise

Iztok HUDALES[1]

[1] University of Maribor Computer Centre, Maribor, Slovenia

Abstract— **By improving the processes of selection of products, procurement of orders and improved logistics services, B2C e-commerce market has boomed. B2C companies need large storage capacities. The sales volume can be very high and consequently amount of seasonally invested financial resources. With wrong investments we can have financial losses. As an example, in June, we do not expect large number of orders for winter clothing. We want to have balance of purchases and sales for the optimal utilization of warehouse space in the event of large quantities. Individual losses of some companies during 2014–2015 in the range of billions of Euros remind us of this problem. For us, the solution is to predict a time series of future orders. To achieve this, we first have to detect deviations, which are out of standard range. Deviations of number of orders, in which we are interested, are the ones that cause deviations of delivery time. If we notice deviation in number of orders for specified product, for example, enormous growth in specified quarter, we are checking delivery time for this product in this quarter. If delivery time is out of expected range, that is caused by enormous growth of number or orders and we should make a prediction of number of orders for next quarter and check its successfulness. At this point, we simulated data for number of orders of 29 products for 12 quarters and selected specified product (number 2, Appendix A) which sales values had mentioned deviations. Then, we tested predictions for a time series of future three orders for this product. The comparisons between prediction results and generated values in simulator were made by measuring the mean absolute error, the mean absolute percentage error and the root mean square error. The tested methods were Holt-Winters, ARIMA and Centered Moving Average method.**

Key words— **ARIMA, Holt-Winters, Centered Moving Average.**

Author

Iztok Hudales is PhD student at Faculty of Logistics, University of Maribor, Mariborska 7, 3000 Celje Slovenia (e-mail: iztok.hudales@um.si).