Robust multivariate control charts to detect small shifts in mean.

ABSTRACT

The classical multivariate CUSUM and EWMA charts are commonly used to detect small shifts in the mean vectors. It is now evident that those charts are easily affected by outliers which may be due to small or moderate changes in the mean vector. In this paper, we propose a robust multivariate CUSUM and Robust multivariate EWMA charts to remedy the problem of small changed in scatter outliers. Both the empirical and simulation results indicate that the proposed robust multivariate CUSUM and EWMA charts offer substantial improvement over other multivariate CUSUM and EWMA charts. This article also discussed the robustness of the proposed charts, when there is a small or moderate sustained shift in the data set.

Keyword: Small shifts in Mean.