

Alfika Triamartha, 2019. **Comparison of Exponentially Weighted Moving Average (EWMA) and Cumulative Sum (CUSUM) Control Chart with Mixed Exponentially Weighted Moving Average - Cumulative Sum (MEC) Control Chart in Quality Control of Antangin JRG Product at PT Deltomed Laboratories.** This research is under supervised Dr. Ardi Kurniawan, M.Si and Drs. Suliyanto, M.Si, S-1 Statistika Major, Mathematics Department, Faculty of Science and Thecnology, Airlangga University, Surabaya

ABSTRACT

Statistical quality control is used to quickly determine the average shift that can cause the production process to be out of control. One way to control quality is to use a control chart. Control chart is one tool that can be used to control the production process to run stably and minimize the occurrence of diversity of production. The most well-known control chart for now is the \bar{X} *Shewhart* control chart, but this control chart has the disadvantage of being less effective in detecting small process shifts. Therefore a control chart was developed that can calculate the shifts of small process averages that are Exponentially Weighted Moving Average (EWMA) and Cumulative Sum (CUSUM) control charts. Then to increase the sensitivity of the control chart, EWMA and CUSUM are combined into a new control chart, mixed EWMA-CUSUM (MEC), EWMA statistics will provide input for the CUSUM structure. Combining two EWMA and CUSUM control charts will make the control chart more sensitive to shifting small process averages than on EWMA or CUSUM control charts. In this study, we will compare the three control charts using the optimum weighting (λ) on each control chart. The results of the analysis of the application of EWMA, CUSUM, and MEC control charts on the production of Antangin JRG at PT Deltomed Laboratories, showed that based on the amount of data out of control the MEC control map was more sensitive in detecting small shifts than EWMA and CUSUM control charts.

Keywords : Statistical Quality Control, EWMA Control Chart, CUSUM Control Chart, MEC Control Chart, Antangin JRG