
Designing of Combined Shewhart-CUSUM Chart under Transformed Gamma-Poisson Model

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ABSTRACT

In this paper the gamma-Poisson mixture model is derived. This is the probability model that derived by compounding the basic distribution with prior distribution. Then the method of transforming Gamma-Poisson data into Normal using double square root transformation method is discussed, and then monitored by the Combined Shewhart-CUSUM chart designed for normal data. ARL values and Chart parameters are calculated at different values of ARL_0 . The results show that the proposed transformed Combined Shewhart-CUSUM chart is more effective than the traditional c and np chart in detecting smaller, moderate and large improvement or deterioration.

Keywords- Average runs length, Gamma-Poisson model, Monte Carlo simulation, Statistical process control.