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EFFECT OF ESTIMATION OF THE PROCESS PARAMETERS ON THE CONTROL LIMITS OF THE UNIVARIATE CONTROL CHARTS FOR PROCESS DISPERSION

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ABSTRACT

Control charts are extensively used in many real world applications. Since process parameters are rarely known, common practice is to estimate them. Then, the control limits are modified and become actually random variables. In this paper, we deal with the univariate control charts for dispersion for both rational subgroups and individual measurements. We study the effect of estimating the process parameters of these charts on the first two moments of the run length distribution. The results are used for proposing appropriate values of sample size and number of samples in order to make the estimated control limits perform as the theoretical ones.

Key Words: Shewhart charts; S chart; Average run length

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