An introduction and discussion on two-stage control process

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Abstract

We present in this talk a method, using finite Markov chains, to obtain the run-length properties of a two-stage control process. The method furnishes the obtaining of the distribution of waiting time to signal which gives a way to evaluate the design and performance of a control chart when the chart is used to monitor a two-stage control process featured by a warning zone and when a departure from the null assumption can be clearly defined. For an outlined process inspection scheme assisted by a fast algorithm, a numerical example will be given, when dependency is either naturally or synthetically introduced between data points, to show one of the possible extensions of our theoretical derivations.

Keywords: finite Markov chain, waiting time, quality control process, warning zone.