

An Economic Design of a Cumulative Score Control chart for Normal Distribution

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ABSTRACT

This paper presents a procedure for the economic design of a cumulative score(CUSCORE) control chart, which is more robust than the conventional CUSUM control chart and more sensitive than \bar{x} -type control chart for small process shift, to control the mean of a process with a normally distributed quality characteristic.

An expected loss-cost model as a function of four design variables(sample size, sampling interval, scoring limit and decision limit), whereas almost control charts have three design variables, is derived. Direct search techniques are used to optimize the model.

Numerical examples and sensitivity analysis of the model are presented. For selected values of situation parameters a comparison study with CUSUM charts is given. CUSCORE control chart compares favourably with CUSUM charts in costs for especially smaller value ARL in control.