

2nd International Conference on **Big Data Analysis and Data Mining**

November 30-December 01, 2015 San Antonio, USA

A robust coefficient of variation control chart

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Study of relative dispersion control chart has vast application in manufacturing processes, clinical chemistry and health care. Sometimes conventional dispersion control charts become inappropriate due to varying nature of process dispersion parameter. Coefficient of Variation (CV) control chart properly addresses such types of situations where the extent of change in process location and dispersion parameters is same. The CV control chart proposed by Kang et. al (2007) is based on fundamental condition of normality which makes this structure highly sensitive to extreme values and outliers in underlying process of the quality characteristic. The purpose of this study is to propose a robust CV control chart based on interquartile range namely CV_{IQR} control chart that performs efficiently under the said violation. Design structure of the proposed control chart is developed and its performance of phase II monitoring is compared with the competing control charts. The run length comparisons reveal that CV_{IQR} performs better while being robust to non-normality.

Biography

Ali Muzaffar obtained his MSc in Statistics from Quaid-i-Azam University, Islamabad, Pakistan in 2007 and MPhil in Statistics from Allama Iqbal Open University, Islamabad, Pakistan in 2011. Currently, he is working in Statistics & DWH department, State Bank of Pakistan. He is pursuing his research work for PhD in Statistics. His research interest includes statistical process monitoring, regression analysis, econometrics & macroeconomics forecasting and computational statistics.

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