ABSTRACT

Control charts are one of the divine developments in the field of research to observed the production procedure of a product. The control chart presents outcomes graphically and state whether the computed quantities falls within the pre-specified limits or not. In modern times of industrial development, to detect the minor shifts in manufacturing process of the EWMA control charts are effectively used. In this study, new schemes of dispersion charts such as: EWMA_L_S^2, DEWMA_L_S^2 charts under log transformation and EWMA_J_S^2, DEWMA_S^2_J charts under Johnson's transformation for process variance are designed to identify minor shifts in a process. The anticipated charts are designed that access faults more efficiently in manufacturing process. The efficiency of existing and proposed charts is compared on the basis of different methods such as: Average-un- length (ARL), Median-run-length (MDRL) and SD-run-length (SDRL). The designed charts of EWMA_L_S^2, DEWMA_L_S^2, EWMA_S^2_J and DEWMA_S^2_J are evaluated on the basis of these performance measures. The results are obtained by the Monte-Carlo Simulation using Language. The simulation based results indicate that the proposed DEWMA charts for log and Johnson's transformation show efficient performance compared to EWMA charts for log and Johnson's transformation for the monitoring of process variance. The proposal charts are more sensitive specifically for small shifts and large sample size. The newly designed DEWMA charts of DEWMA_L_S^2 and DEWMA_J_S^2 are more sensitive for small shifts and large sample size while monitoring the sample variance.