USE OF CONTROL CHARTS FOR CONDUCTING ANOVA STUDY FOR UNEQUAL NUMBER OF OBSERVATIONS

D. K. Ghosh*, Richa Seth[1] and N. D. Shah[2]

Department of Statistics, Saurashtra University, Rajkot - 360 005, India.
[1]K. S. School of Business Management, Gujarat University - 380 009, India.
[2]M. C. Shah Commerce College, Ahmedabad - 380 014, India.
E-mail : ghosh_dkg@rediffmail.com

Abstract : This paper discusses the control charts for the empirical study of Analysis of Variance (ANOVA). The concept of process control charts can be used for Factor Effect ANOVA study is explained here. Further, Charts for study of different treatment effects referred to as Factor Effect Study (FES) Charts are constructed here. These FES-Charts can be used to study analysis of variance techniques. Moreover, different examples are illustrated corresponding to unequal number of observations for different levels of the factors and null hypothesis being rejected or accepted under ANOVA study. In this investigation, we have shown that the results inferred from ANOVA at 5% level of significance can be compared with the conclusion drawn from control chart whose A_3 value of the control limits is recomputed for 1.96-sigma selection limits. We have further shown that if 3-sigma control limits are kept intact then the conclusions of control chart can be compared with ANOVA conducted at 0.27% level of significance.

Key words : Analysis of variance, Control Charts, Factor effects, Level of significance.