A comparison between classical and robust method in a factorial design in the presence of outlier

ABSTRACT

Analysis of Variance (ANOVA) techniques which is based on classical Least Squares (LS) method requires several assumptions, such as normality, constant variances and independency. Those assumptions can be violated due to several causes, such as the presence of an outlying observation. There are many evident in literatures that the LS estimate is easily affected by outliers. To remedy this problem, a robust procedure that provides estimation, inference and testing that are not influenced by outlying observations is put forward. A well-known approach to handle dataset with outliers is the M-estimation. In this study, both classical and robust procedures are employed to data of a factorial experiment. The results signify that the classical method of least squares estimates instead of robust methods lead to misleading conclusion of the analysis in factorial designs.