

Abstract

Improved estimation techniques are suggested for joint kurtosis and skewness parameters of 'k' multivariate normal populations in the presence of non sample information and where the skewness and kurtosis parameters are assumed to be homogeneous. It could be seen that the unrestricted estimator is a reasonable choice when the assumption of equality holds but in a case where non sample information becomes doubtful it is recommended to use the shrinkage and pretest estimators. Moreover, a large sample test statistics is also introduced. Asymptotic properties i.e asymptotic bias and risks are calculated for the proposed estimators under the series of local alternatives. Pairwise comparisons are made between the estimators and also such regions are identified in which one estimator outperforms the other. Moreover, simulation study is carried out and simulated risk efficiencies are plotted of these estimators in several dimensions which clearly suggests that there is a clear bond between analytical and theoretical findings.