Shrinkage Estimators for Estimationi of the Multivariate Normal Mean Vector under Degrees of Distrust

By *Ibrahim Hanaish and Abdunnabi M. Ali Elbouzedi.*

The estimation of the mean vector of multivariate normal population with special covariance matrix is considered when uncertain non-sample prior information is available. In this paper, four possible estimators are considered, namely, the usual maximum likelihood estimator (UE), the restricted estimator (RE), the preliminary test estimator (PTE) and the shrinkage estimator (SE) under more general setting. The performances of the estimators are compared based on the criteria of unbiasedness and the risk function to a specific quadratic loss function in order to search for best estimator. Both analytical and graphical methods are explored. It is shown that neither PTE nor SE dominates each other, though they fare well compare to UE and RE.