

ABSTRACT

In this study generalized exponential ratio type estimators have been proposed for estimating the finite population mean, using the information from single and two auxiliary variables, under sampling design such as single and two phase sampling.

For each proposed estimator bias of order two and mean square error of order one are derived using single and two phase equal probability sampling with single and two auxiliary variables. A class of these estimators have been developed and their bias of order one and mean square errors of order one have been derived. Mathematical comparison has been furnished of the generalized proposed estimators with the existing estimators.

Shrinkage estimators of the proposed estimators have been defined along with their mean square errors for single and two phase sampling.

To put side by side the proposed estimators with existing estimators, numerical study has been carried out with single and two phase equal probability sampling. It is experiential that the proposed estimators are more efficient than simple random sampling, Ratio, Bhal and Tuteja (1991), Samiuddin and Hanif (2006), Sisodia and Dwivedi (1981), Upadhyaya (1999), Singh and Tailor (2003) and Noor-ul-Amin and Hanif (2012) and others.

In case of unequal probability sampling the proposed estimator is also more efficient than the simple random sampling, Ratio, Bhal and Tuteja (1991), Sisodia and Dwivedi (1981) and Singh and Tailor (2003).

To study the properties of the estimators, simulation has been carried out and it is evident that the proposed estimators are consistent estimators of population mean. It also shows that normal distribution is the most significant fitted distribution on the proposed estimators.